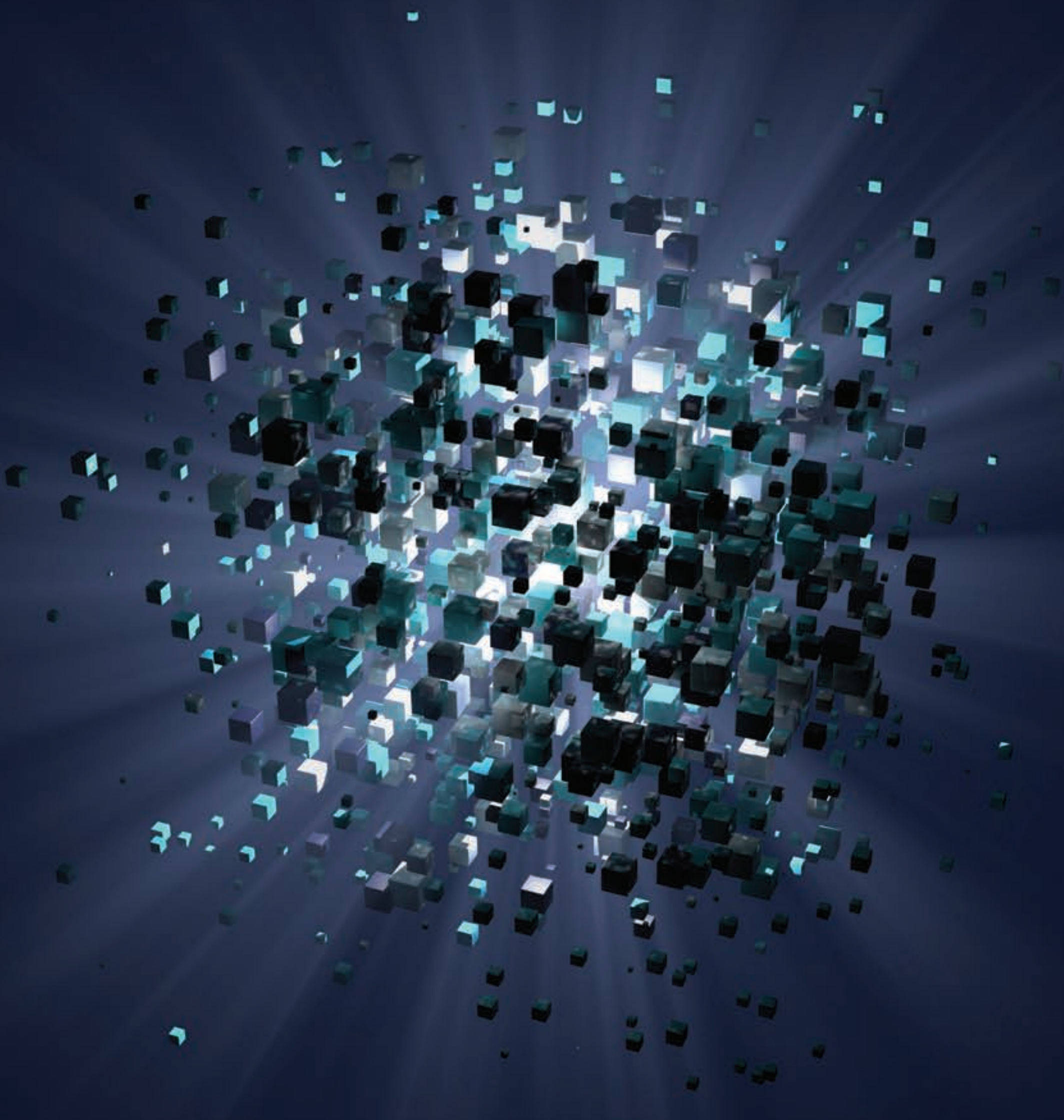
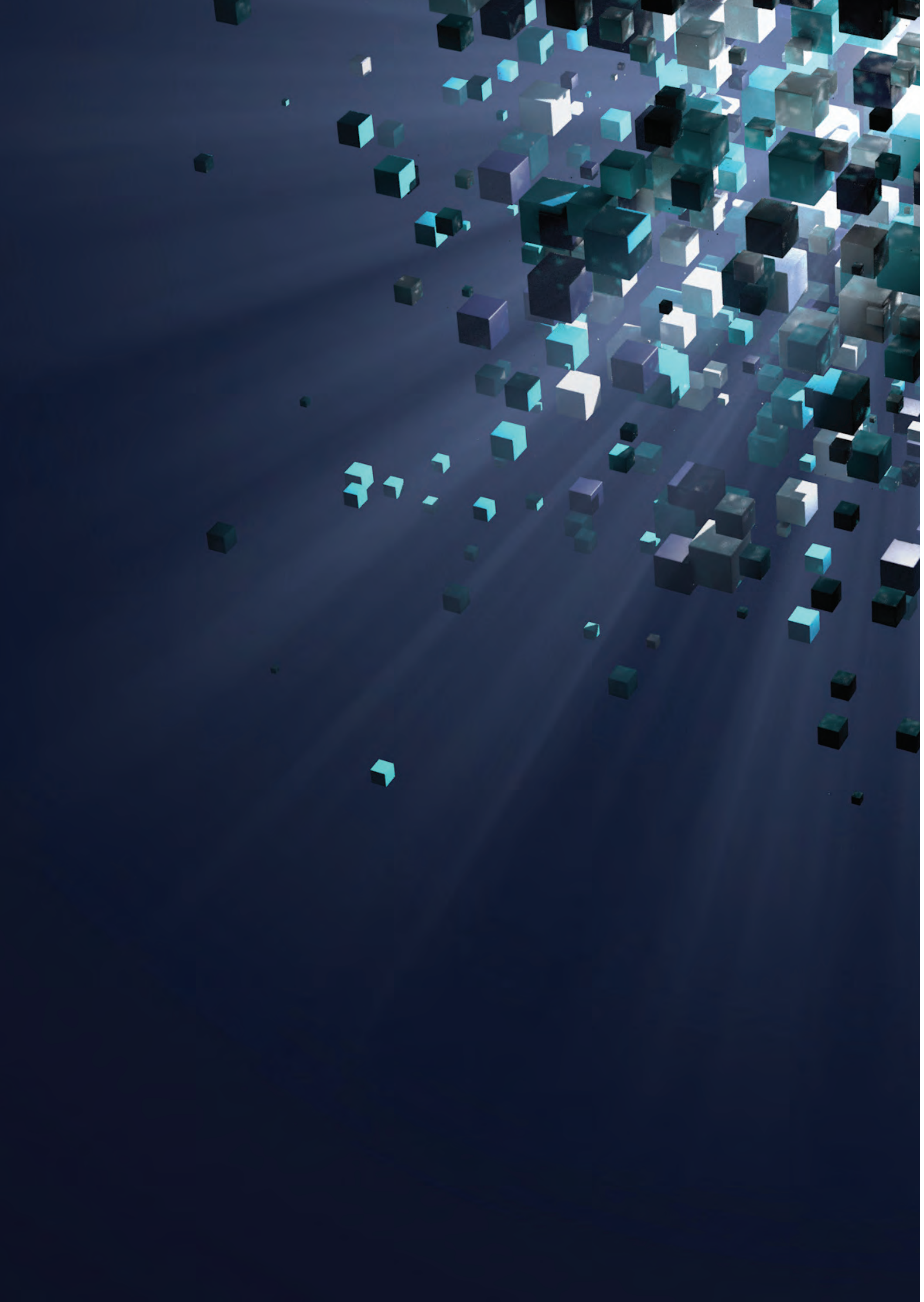
Knight Frank

ACTIVE CAPITAL

TRENDS IN GLOBAL REAL ESTATE INVESTMENT





WELCOME TO

ACTIVE CAPITAL

THE SUSTAINABLE ACCELERATION BY NEIL BROOKES

HEAD OF GLOBAL CAPITAL MARKETS

Active Capital offers a unique perspective on the outlook for global real estate investment: from our forecasts of capital flows to our analysis of the most pressing strategic considerations, this research is designed to help you understand the myriad of forces at play.

Built upon thousands of data points, machine learning, and purpose-built modelling processes, our findings are combined with 'on the ground' insights from our brokers and advisors throughout our global partnership.

Cross-border investment is back, and we predict that 2022 will see a record year of activity. The US, the UK, Germany, France, and the Netherlands are set to be the most popular destinations for real estate investment capital, and the office sector is forecast to welcome over half of all cross-border investment volumes in 2022, driven by income-focused strategies. The retail and hotel sectors are also likely to rebound, while private equity funds and investment managers chase the ever-growing logistics sector. Indeed, as the world learns to live with the pandemic, we expect an extended period of resurgence in global real estate investment.

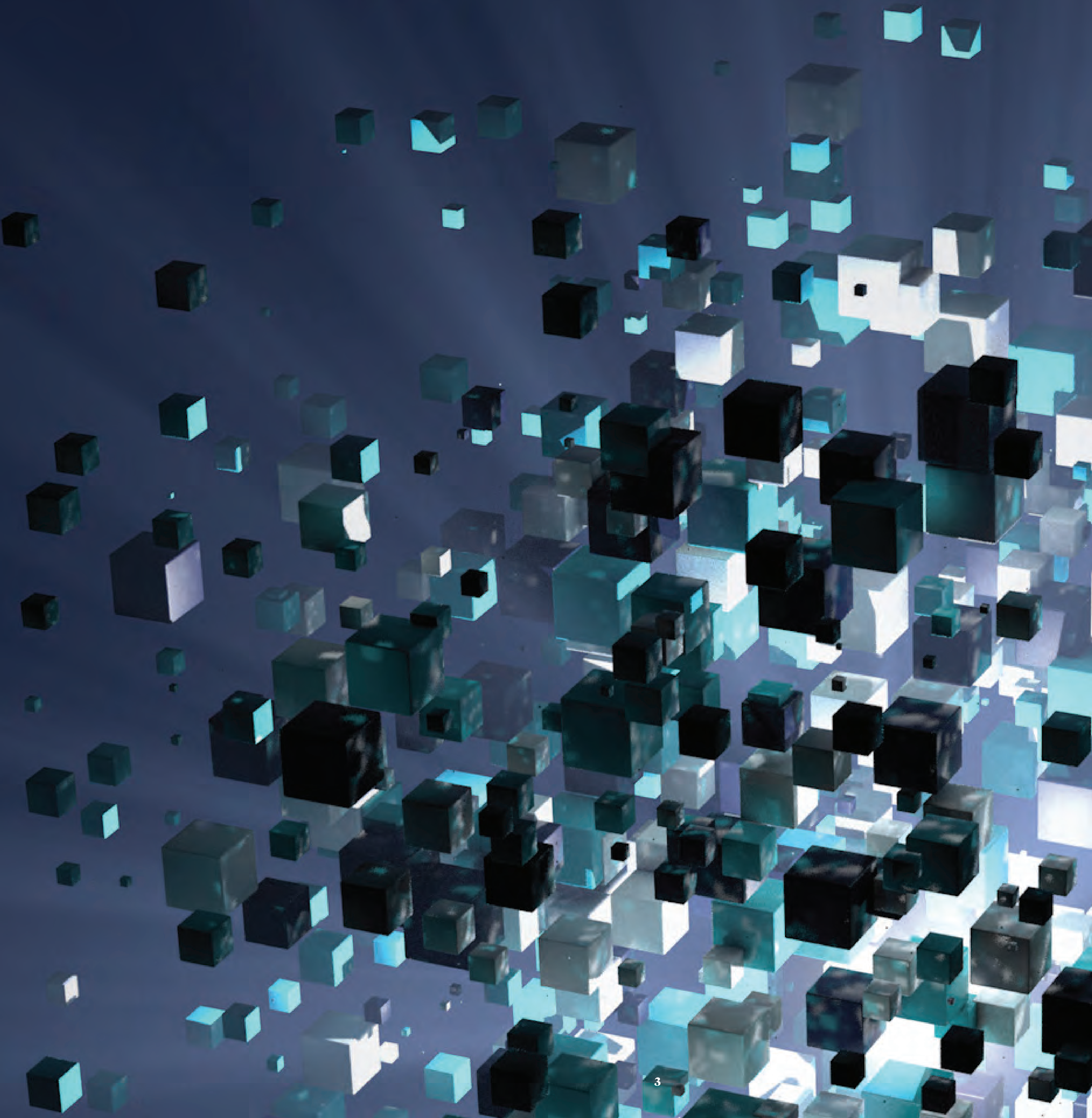
Meanwhile, as the world works against the clock on a climate recovery plan, the themes encompassed within ESG (Environmental, Social, and Governance) have never been of greater importance. With the wider industry accounting for 40% of global carbon emissions, real estate must play a critical role in safeguarding our future. In this edition of Active Capital, we set out to quantify the implications for investors at a city, corporate, building, and finance level.

As we look out over our forecast period, we predict both a more active and a more responsible global real estate investment market: one in which leading decision makers will balance the imperatives of sustainability with the ambitions of growth.

> **“We predict both a more active and a more responsible global real estate investment market.**

CONTENTS

ACTIVE CAPITAL



ACTIVE CAPITAL

ACTIVE CAPITAL IN 60 SECONDS

In addition to our annual capital flow predictions, this year's report takes a deep dive into the factors that make a city sustainable, and we introduce our index of the world's most sustainable cities for real estate investors.

We quantify the extent to which green credentials increase building value, we track the global rise of green finance, and we analyse the impact of E, S and G measurements on corporate performance.

2022 IS FORECAST TO BE **A RECORD YEAR** FOR GLOBAL CROSS-BORDER REAL ESTATE VOLUMES.

United States
OUT $94.2bn
IN $44.1bn

United Kingdom
OUT $15.7bn
IN $38.0bn

GLOBALLY, THE OFFICE SECTOR IS EXPECTED TO ATTRACT OVER **50%** OF ALL CROSS-BORDER INVESTMENT VOLUMES.

TOP DESTINATIONS FOR CROSS-BORDER CAPITAL

- UNITED STATES
- UNITED KINGDOM
- GERMANY
- FRANCE
- NETHERLANDS

LONDON, SHANGHAI, NEW YORK, PARIS, AND WASHINGTON DC ARE THE TOP **5** GREEN RATED CITIES.

HOTELS ARE FORECAST TO SEE HEIGHTENED DEMAND IN 2022, WITH PARTICULAR INTEREST FROM PRIVATE EQUITY INVESTORS.

WE FOUND AN **8-18%** SALES PRICE PREMIUM FOR GREEN-RATED BUILDINGS COMPARED TO EQUIVALENT BUILDINGS WITHOUT A BREEAM OR NABERS RATING ACROSS LONDON, SYDNEY, AND MELBOURNE.

SECTION 1

CAPITAL GRAVITY

FORECASTING GLOBAL CROSS-BORDER CAPITAL FLOWS

Our Capital Gravity model forms one of the cornerstones of our Active Capital research. Now in its sixth year, we have used the latest machine learning techniques and unique datasets to predict where real estate capital will flow in 2022 and beyond. For the first time, we have been able to extend our forecasts beyond geographical destinations and into investor and sector types.

The following pages highlight some of the trends we predict for 2022 and beyond.

HEADLINE RESULTS

SECTORS

OFFICES

The office investment market is alive. 2022 is expected to be a bumper year for activity, with the highest demand from income-focused investment managers and institutions targeting the US, the UK, Germany, France, and the Netherlands.

LOGISTICS

Investment managers and private equity funds, particularly from the US and Canada, are forecast to remain major players in the logistics market in 2022, particularly targeting the US, the UK, Germany, France, the Netherlands, and Greater China, as well as Spain, Poland, and Australia.

RETAIL

2022 could see interest from investment managers and listed/REITs investing into destinations across the globe, notably the US, Germany, and the UK. France, the Netherlands, Italy, Poland, Spain, and Japan could also see inbound investor interest.

RESIDENTIAL

The broader residential sector is an increasing area of interest, right across the investor spectrum. Sources of capital are likely to be broad based, targeting a geographically diverse area, including the US, Germany, the UK, the Netherlands, and Japan.

HOTELS

Hotels are likely to see a record year in 2022, with particular interest from private equity investors, who could contribute to almost half of volumes next year, targeting the UK and the US.

STUDENT HOUSING

Interest from investment managers is expected to grow over the next few years, while private equity is likely to make up more than half of investment demand in 2022.

INVESTOR TYPES

PRIVATE EQUITY

Our forecasts show that private equity investment will continue to be dominated by US players in 2022, targeting a wide range of sectors in the UK, as well as the office sector across a diverse set of destinations – from India to Germany.

INVESTMENT MANAGERS

We predict that investment managers will increase their investment into EMEA, while overall global cross-border investment from this group could lift by 50% in 2022 from 2021.

Over half of capital from investment managers is forecast to be from the US and Canada in 2022 (with other top players including the UK, Germany, and Switzerland) targeting the office and residential sectors.

INSTITUTIONS

Our model suggests that for institutions, the office, residential and industrial sectors will be the top three sectors of interest in 2022, with a globally spread range of sources and destinations of capital across the Americas, EMEA, and APAC.

LISTED/REITS

Listed real estate companies and REITs will have some of the most diverse appetites in 2022, with investors from Canada, the US, Singapore, Greater China, the UK, and Australia targeting sectors across office, retail, industrial, residential and hotels.

HNWI

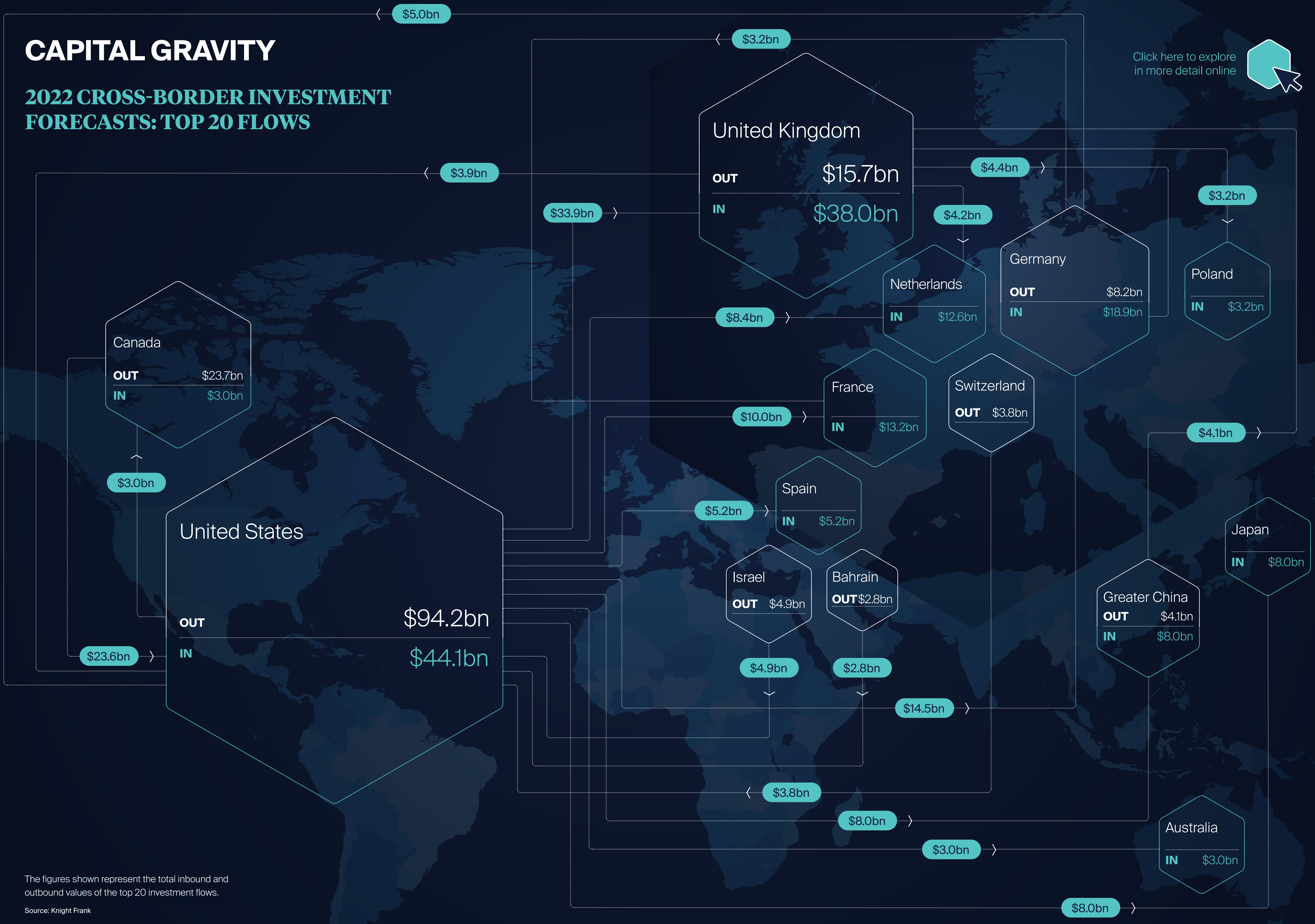
Half of HNWI (high-net-worth individuals) capital is predicted to come from EMEA in 2022, notably including Spain and Israel. The US is also forecast to be a top source of HNWI investment, targeting largely office and retail assets.

OTHER INVESTOR TYPES

Banks, sovereign wealth funds, and corporates based in Greater China, the UK, Canada, and France, will be important sources of capital, focusing in particular on the office and retail sectors.

CAPITAL GRAVITY

2022 CROSS-BORDER INVESTMENT FORECASTS: TOP 20 FLOWS



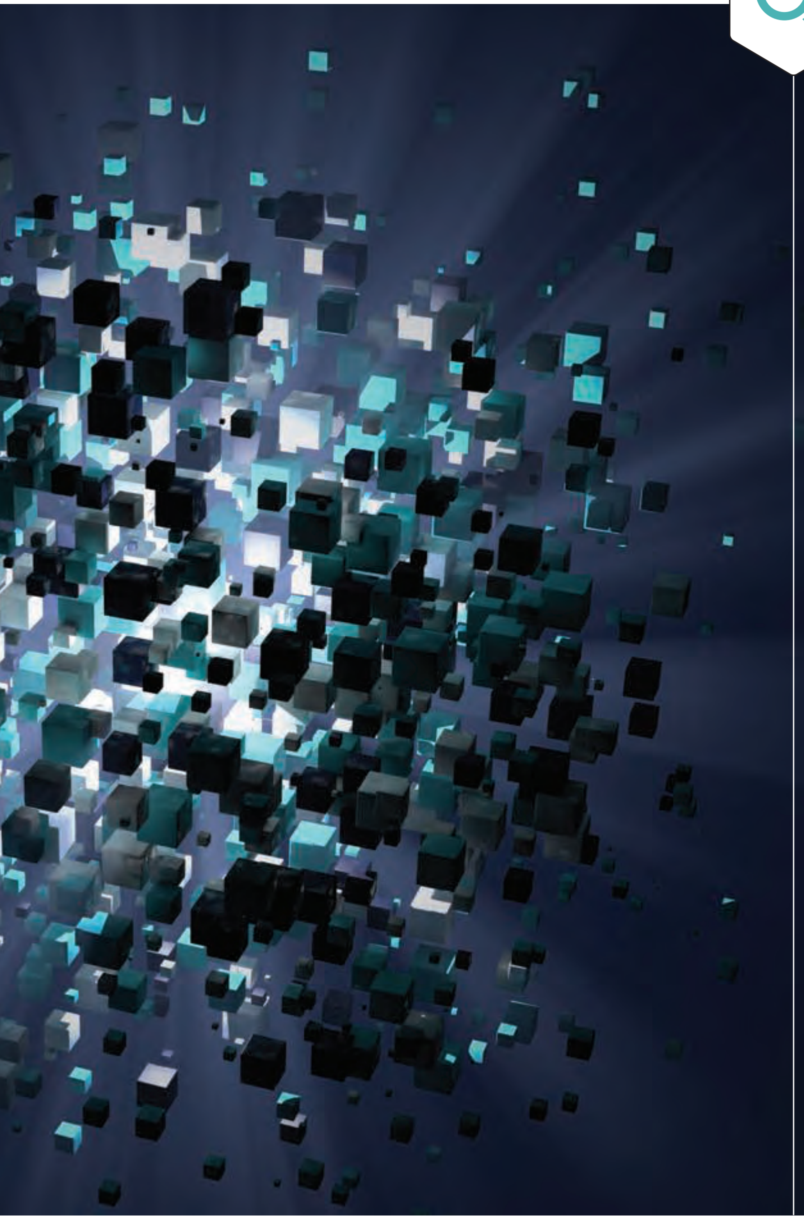
The figures shown represent the total inbound and outbound values of the top 20 investment flows.

Source: Knight Frank

Last year, our Capital Gravity model predicted that in 2021, the US would be the top destination for global cross-border real estate capital, followed by the UK, Germany, Australia, and France. Now, as we watch the US and the UK vie for the top spot at the time of writing, followed by Germany, Australia, and France, we can see that our forecasts passed the predictive test.

2022 PREDICTIONS AT A GLANCE

We predict that 2022 will be a record year for capital flows, with the US, the UK, Germany, France, and the Netherlands forecast to be the most popular destinations for that capital. We expect a resurgence of interest in the office sector, as well as continued growth in residential and industrial investment. The US, Canada, the UK, and Germany are forecast to be the largest sources of cross-border capital, dominated by investment managers, institutions, and private equity investors.



THE STORY BEHIND THE DATA

Each year we enhance our modelling to reflect the most cutting edge methods. This year is no exception. We have employed the Extreme Gradient Boosting methodology to forecast capital movements. This is a prize-winning machine learning methodology, first developed in 2016, which has been used in a number of academic papers to model global flows.

The methodology builds upon classic Decision Tree Regression techniques through Boosting, where new models are added to correct the errors made by existing models. These models are built sequentially until each new model offers no improvement over the existing one. It is by using this updated methodology that for the first time we have been able to distill our forecast capital flows down into major investor types, as well as sectors of interest. This has enhanced the model's ability to provide insight into demand and pricing, and can offer further insight into buy, develop, hold and sell strategies.

The algorithm draws on a number of property, economic and geographical inputs including FDI (Foreign Direct Investment), share prices, exchange rates, the geographical distance between countries, shared borders, and common languages. This is combined with historic investment data including data from Real Capital Analytics, to predict the largest global cross-border real estate flows for the coming year.

WHERE WILL CAPITAL FLOW TO IN 2022?

As the world moves into the next phase of living with Covid-19, we could see a period of elevated volumes. Indeed, we forecast that 2022 will be a record year for global cross-border real estate investment.

The largest increases in activity are likely to be seen in EMEA and APAC, with EMEA predicted to be the top region of interest next year. While overall investment into the Americas is expected to moderate, the US is forecast to remain the number one destination for inbound capital over the coming year, as well as the largest global deployer of capital.

Our forecasts show that UK offices are expected to be a top destination for US capital, driven particularly by private equity as they invest into new markets and ride the recovery. In addition to UK offices, US private equity money is forecast to target the core European markets of Germany, France, and Spain, as well as further afield in Japan and India.

Overall, the office sector globally is expected to account for just over half of all cross-border investment volumes, indicating that interest in this sector remains very much alive, even as we continue to see a rotation of assets by investors, particularly private equity, into the industrial, residential, life sciences, and data centres sectors.

Investment managers and institutional investors are expected to lead the demand for office assets, while HNWIs will demonstrate strong interest too, particularly into the UK and US office markets.

On the other hand, while listed/REITs and private equity investors are likely to increase their investment into offices, the two investor types are forecast to account for less than 40% of total cross-border investment volumes into the sector. This is likely because REITs are becoming more specialised, and private equity investors are investing into sectors which capture structural changes, such as industrial, residential, data centres, and life sciences. Private equity, investment managers, and institutions are also expected to have a focus on the industrial sector in EMEA, which should lead to a bumper year for inbound investment, particularly into the UK, Germany, France, and the Netherlands.

The past year has illustrated the relative resilience of real estate as an asset class, albeit with a bifurcation in performance between those well-located, sustainable, core assets and the rest. Our Capital Gravity model suggests that while the next few years will see a boost in investment volumes, 2022 is likely to see a sharp rise in activity, providing investors the opportunity to rebalance portfolios, execute business plans and further their strategic goals.

WHAT OTHER FACTORS COULD INFLUENCE CAPITAL FLOWS IN 2022?

ASSET ROTATION

Assuming a five-year hold, transaction activity in 2017 helps indicate the level of asset rotation we might see in 2022. Global volumes in 2017 were circa 11% above the long-term average. Given that some assets purchased in 2016 and earlier are also likely to have been held back from sale through the pandemic, asset rotation could be a significant contributor to assets coming to the market in 2022.

CURRENCY AND HEDGING

Currency hedging benefits for US investors into the UK and Europe remain muted compared to levels seen pre-pandemic, while both the Euro and Sterling have seen moderate strengthening against currencies such as the USD and KOR over the course of the past year or so. Currently, there are few indications of significant appreciation, but if this were to change, assets across Europe could become relatively more expensive compared to those in the US and Asia-Pacific.

VIEWS ON INFLATION

Debate over the trajectory of global inflation is leading to some degree of oscillation of government bond yields. However, they remain below pre-pandemic levels and are unlikely to put outwards pressure on property yields in the medium term. The consensus is that inflation should be transitory, albeit there are questions around the risk of cost-push inflation. Real estate is seen by some investors as an inflation hedge which means an inflationary environment could boost demand.

RECOVERY FROM THE PANDEMIC

The next phase of the Covid-19 pandemic involves learning to live with it, supported by the ongoing global vaccination programme. There remains the risk of a 'vaccine busting' variant which could introduce new headwinds to recovery, however, at the time of writing, markets are cautiously optimistic and forecasting a post-pandemic bounce in activity in 2022.

ESG

Sustainability is an increasingly global focus for real estate investors, and we expect this to spur capital flows towards green-rated buildings and buildings which have the potential to be made 'green' over the coming year. As embodied or lifecycle carbon emissions gain importance for investors, 2022 could also see more interest in asset repurposing and refurbishment opportunities.

SECTION 2
THE SUSTAINABLE RECOVERY

This year, ESG is central to our Active Capital research, with a particular focus on sustainability. Real estate has a crucial part to play in addressing the climate emergency with implications reaching across every aspect of the global marketplace. A combination of top-level investor pressure, risk mitigation, regulatory changes, and the search for outperformance by investors is driving forward the demand for sustainable real estate around the world. For this reason, we have put our resources into understanding these trends and their implications for the investment market.

While demand for sustainable investment opportunities is growing, the quantitative benefits that investors, landlords, and developers can reap from targeting ESG have been challenging to measure accurately. That is where this year's Active Capital adds to investor intelligence: we have quantified the ESG conversation at the city, building, finance, and corporate level.

IN THIS CHAPTER

2.1 SUSTAINABLY LED CITIES

We take a deep dive into the factors that make a city sustainable, distilling more than 150,000 data points into scores for the amount of green space, resource-use per person, climate change-reducing initiatives, climate risk, and urbanisation pressures across 286 global cities.

2.2 QUANTIFYING GREEN BUILDING VALUE

We present a hemisphere to hemisphere assessment of the green sales price premium on office buildings in London (UK), Sydney, and Melbourne (Australia). We have used hedonic pricing methods to develop a proprietary model which measures the extent to which green credentials increase building value, controlling for building, lease length, time, and locational factors.

2.3 SUSTAINABLE FINANCE

We share our latest experiences, observations, and predictions on the rise of green finance – a rapidly expanding opportunity and a critical part of the solution to climate change.

2.4 CORPORATE PERFORMANCE AND ESG

We investigate the impact of ESG factors on the performance of global corporate real estate.

WHY DO THESE INSIGHTS MATTER?

These themes transcend geography. While not all countries and markets are currently at the same stage in recognising their importance, they have relevance to all.

The greening of investment and development activities is influencing decision making at the highest levels – from the consideration of environmental obsolescence to green rental premiums, from the use of innovative development materials to beneficial green financing terms – sustainability is already having an enormous impact on asset management and selection.

Likewise, owners and advisors of real estate are increasingly measured and valued on their environmental, social impact and governance standards. A failure to comprehend the forces at play amid the growing importance of ESG poses risks to real estate investors in terms of performance and scrutiny, as well as risks to society at large.

ACTIVE CAPITAL

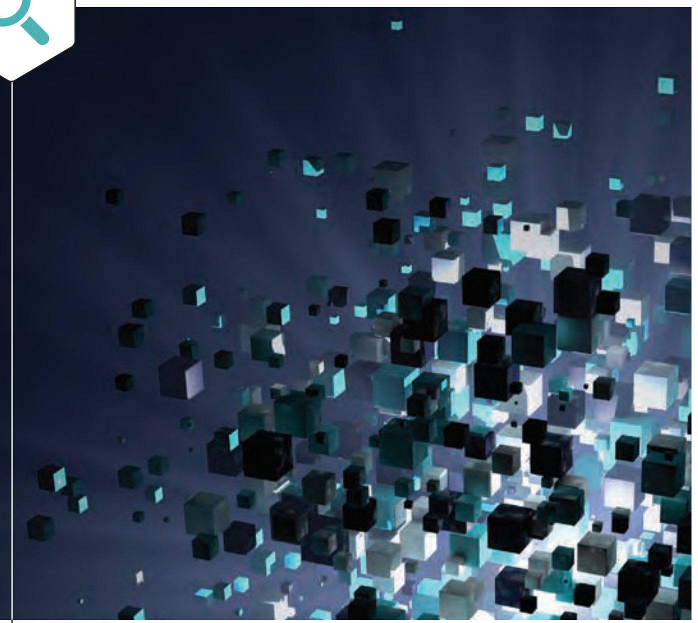
2.1 THE SEARCH FOR SUSTAINABLY LED CITIES

INVESTORS ARE INCREASINGLY MINDFUL OF ESG CONSIDERATIONS, WHETHER AT AN INDIVIDUAL BUILDING, PORTFOLIO, OR CORPORATE LEVEL.

This is the result of both a rapid uptick in the benchmarking of ESG metrics and a desire to mitigate exposure to climate risk.

INTRODUCING OUR SUSTAINABLY LED CITIES RESEARCH

The aim of our Sustainably Led Cities research is to help investors understand how the cities they are investing into might influence their benchmarking and risk outcomes. We focus on the environmental rather than social aspects of city sustainability, distilling over 500 variables across 286 global cities, scoring their emissions trajectory (brown sub-score); carbon mitigants (green sub-score); climate risks; and urbanisation pressures, which can be combined into an overall sustainably led cities score.



WHICH CITIES ARE MOST SUSTAINABLE?

Based on our unique index of the considerations most applicable to real estate investors, London, Paris, New York, Seoul, and Tokyo sit as the top five global sustainably led cities for real estate. These cities benefit from a range of factors, such as declining carbon emissions per person; well-developed public transport networks; and a relatively high number of green-rated buildings. For example, London has almost 3,000 BREEAM-rated commercial assets. It is also notable that all of these cities also have universities which are benchmarked against the UN Sustainable Development Goal 11, the strength of research into and contribution to sustainable cities and communities.

However, while all of these cities are making strides in supporting carbon reduction – at least on a relative per person basis – they are not immune to climate risks, as we have seen over the last year. In fact, globally, none of the 286 cities surveyed scored much above six out of ten for resilience against the impacts of climate change, such as extreme weather events.

Some regions are impacted more than others, with cities in the Asia-Pacific region facing some of the higher levels of climate risk. However, the story is not that simple, as many cities and buildings in this region are adapting to the risk of these events. The conclusion here is that investors, almost universally, need to be accounting for the prospect of increased weather events and climate change, and the resulting impact on their portfolios.

> **London, Paris, New York, Seoul, and Tokyo sit as the top five global sustainably led cities for real estate.**

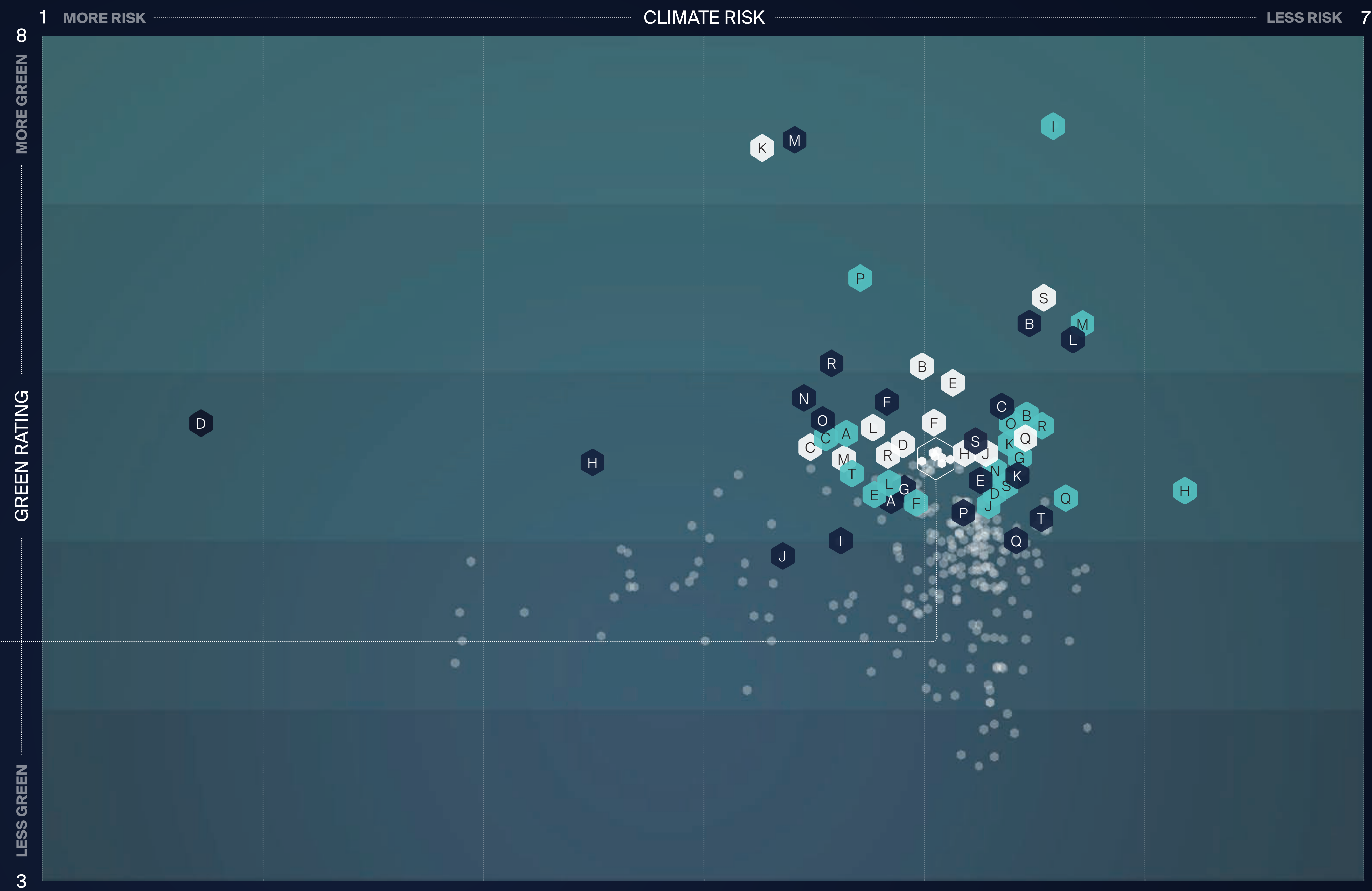
The underlying components of these scores are closely aligned to what investors are interested in when benchmarking their portfolios and individual buildings. For example, when considering the sustainability of a building, it is not just the building itself, but where it is located and what surrounds it, such as the availability of public transport, reflected in the green sub-score. By also including the number of green buildings in the green sub-score, this highlights those cities with an established market of investible green assets as well.

The highest-scoring 'green' cities, London, Shanghai, New York, Paris, and Washington DC are truly global, highlighting that regardless of geographic focus, there are cities across the world which can support investors' sustainability strategies.

THE TOP REGIONAL GREEN CITIES FOR REAL ESTATE

WE HAVE PLOTTED THE GREEN CITY SUB-SCORES AGAINST THE CLIMATE RISK SCORES FOR ALL 286 CITIES, HIGHLIGHTING A SELECTION OF THE TOP GREEN SCORING CITIES FOR EACH REGION.

The scores are between zero and ten. The higher the green score, the more these cities are supportive of green real estate benchmarks. The higher the climate risk score, the less exposure the city has to the effects of climate change.



Sources: Knight Frank, Corbane et al. (2018), EARTHDATA, Florczyk et al. (2018), GBIG, Harris et al. (2014), Lloyd's and Cambridge Centre for Risk Studies, Oxford Economics, THE World University Rankings

LEADING GREEN CITIES BY REGION

THE AMERICAS

- A Akron, OH, United States
- B Atlanta, GA, United States
- C Boston, MA, United States
- D Charlotte, NC, United States
- E Chicago, IL, United States
- F Cincinnati, OH, United States
- G Columbus, OH, United States
- H Grand Rapids, MI, United States
- I Kansas City, MO, United States
- J Montreal, Canada
- K New York, NY, United States
- L Orlando, FL, United States
- M Philadelphia, PA, United States
- N Portland, OR, United States
- O Seattle, WA, United States
- P Syracuse, NY, United States
- Q Toronto, Canada
- R Vancouver, Canada
- S Washington, DC, United States
- T Worcester, MA, United States

EMEA

- A Bergen, Norway
- B Berlin, Germany
- C Bern, Switzerland
- D Cambridge, United Kingdom
- E Dublin, Ireland
- F Glasgow, United Kingdom
- G Hamburg, Germany
- H Istanbul, Turkey
- I London, United Kingdom
- J Lublin, Poland
- K Madrid, Spain
- L Milan, Italy
- M Moscow, Russia
- N Munich, Germany
- O Oslo, Norway
- P Paris, France
- Q Saint Petersburg, Russia
- R Stockholm, Sweden
- S Warsaw, Poland
- T Zurich, Switzerland

ASIA PACIFIC

- A Bangkok, Thailand
- B Beijing, China
- C Chengdu, China
- D Chongqing, China
- E Delhi, India
- F Guangzhou, China
- G Hangzhou, China
- H Hong Kong SAR, China
- I Kuala Lumpur, Malaysia
- J Nagoya, Japan
- K Nanjing, China
- L Seoul, South Korea
- M Shanghai, China
- N Shenzhen, China
- O Singapore, Singapore
- P Suzhou, China
- Q Tianjin, China
- R Tokyo, Japan
- S Wuhan, China
- T Xi'an, China

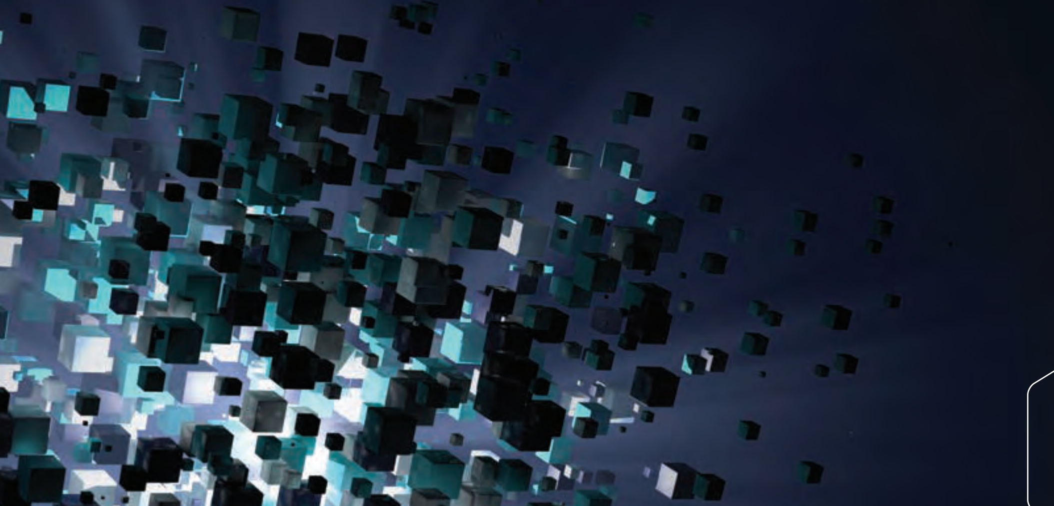
THE STORY BEHIND THE DATA

There are four parts to the methodology. Firstly, determining the appropriate cities to consider for real estate investors; secondly, undertaking an extensive meta-analysis where we reviewed a large number of city sustainability indices and real estate benchmarks; thirdly, sourcing and cleaning potentially relevant variables; and finally, running the econometric analysis to determine the most representative sustainably led cities score.

Our research covers the most relevant 286 cities across the globe, narrowed down from a long list of 750. All these cities are of a minimum size and have sufficient transactional evidence to be potentially relevant to real estate investors.

We undertook the meta-analysis by reviewing other non-real estate specific sustainable city indexes, as well as different real estate ESG benchmarking tools, in addition to what major investors are considering when benchmarking their portfolios and assets against the 'E' of ESG or carbon-reducing specific criteria. The purpose of this step was to create a score that more specifically supports investor strategy and client benchmarking, than a more general green city index.

On the basis of this meta-analysis, we collected circa 500 variables for each city ranging from the number of green-rated buildings to the proportion of urban area exposed to flood and storm surge risks. We then used exploratory factor analysis to reduce these down into the most relevant 21 variables, which combine across four sub-categories to create an overall sustainably led cities score. Each of the sub-scores and total scores are between 0 and 10, with 10 being the best outcome and 0 the worst.



The four sub-scores are:

BROWN

This is a measure of the change in emissions and resource-use per person over time, as well as the degree of green space within the city. A higher 'brown' score suggests that a city has lower total emissions and/or is benefitting from a reduction in emissions per person. Rapidly growing cities may find their emissions per person reducing, even if overall emissions are increasing.

GREEN

This includes initiatives reducing climate change, such as the size of the local metro network, the amount of green space, the number of green-rated commercial buildings and the number of universities benchmarked against the UN Sustainable Development Goal 11, related to supporting safe, inclusive, resilient and sustainable cities.

CLIMATE RISK

This considers changes in precipitation, temperature, extreme weather events, and estimated exposure to weather and climate-related disasters. The higher the score, the less exposed the city is to climate risk.

URBANISATION PRESSURES

This measures the degree of urbanisation and population growth. The higher the score, the less pressure the city faces from rapid growth. Most high scoring cities are large both in terms of population and area and relatively more established.

> **The conclusion here is that investors, almost universally, need to be accounting for the prospect of increased weather events and climate change, and the resulting impact on their portfolios.**

2.2 GREEN BUILDING VALUE

DO GREEN-RATED BUILDINGS ADD A PREMIUM TO SALES PRICE?

The importance of ESG in real estate has been widely publicised. But the precise influence of green credentials on a building's sales price is less well understood. Our research shows that in both hemispheres of the world, green building ratings are already having a positive impact on building values, and we have quantified it.

We combined proprietary Knight Frank data with green ratings and other geographical evidence for prime office buildings in London, Sydney and Melbourne. We found an 8-18% sales price premium for green-rated buildings compared to equivalent buildings without a BREEAM or NABERS rating across these markets, depending on the level of green rating. This supports our Sustainability Series research which finds a 3%-13% rental premium, depending on rating for prime Central London office buildings compared to equivalent unrated buildings.

We found an 8-18% sales price premium for green-rated buildings compared to equivalent buildings without a BREEAM or NABERS rating.

METHODOLOGY

We estimated the green premia for office buildings using hedonic price modelling, a popular methodology used in the residential sector to estimate house prices, and in academic eco-certification research[1]. This method of analysis enables the price of an asset to be represented as the sum of its attributes, including features of the building, as well as where it is and what surrounds it.

Using in-house expertise and academic literature to identify possible factors that contribute to sales price, we then used statistical tests to help us build the most representative models for London, Sydney and Melbourne. Including a large number of explanatory variables in the models helps to ensure that the estimated impact of the green rating is robust and accurate. However, to do this, a significant amount of transactional evidence is needed. This is why Knight Frank, as far as we are aware, is the first commercial firm to apply this type of methodology to investment transactions, due to the strength of our proprietary data, which helped us carry out the analysis.

While there are some location-specific differences, there are common contributors to price, which suggests these factors might also be expected to apply to building sales prices in other locations around the world.

The added benefit of this type of modelling is that while we have been able to use the results to identify the contribution of green ratings to sales price, we have also been able to identify the degree to which locational, lease term and building related factors contribute to a building's sale price. As a consequence, we can be confident that the premia identified relate directly to buildings' green certifications, as influences from other factors are also captured and quantified.

1

Chegut, Eichholz & Kok (2013), Supply, Demand and the Value of Green Buildings, Urban Studies (51,1)

Das & Wiley (2013) Determinants of premia for energy-efficient design in the office market, Journal of Property Research (31,1)

Eichholtz, Kok & Quigley (2010), Doing Well by Doing Good? Green Office Buildings, American Economic Review (100)

Fuerst & McAllister (2011) Eco-labeling in commercial office markets: Do LEED and Energy Star offices obtain multiple premiums, Ecological Economics (70)

Newell, MacFarlane & Walker (2014) Assessing energy rating premiums in the performance of green office buildings in Australia, Journal of Property Investment & Finance (32,4)

Ott & Hahn (2017) Green pay off in commercial real estate in Germany: assessing the role of Super Trophy status, Journal of Property Investment & Finance (36,1)

THE VIEW FROM LONDON

London is an ideal petri dish for this type of research, having large and active investor and occupier markets. The UK's capital also has one of the biggest pools of green buildings, with the longest history of green ratings of any city globally. We collaborated with BRE, who provided us with BREEAM green rating information which we combined with Knight Frank's proprietary building data to develop our hedonic price model. This led us to a sample of almost 1,500 green-rated and unrated building sales across 17 Central London submarkets between Q1 2010 and Q1 2021. In addition to green ratings, the model also reflects building attributes such as size, height, age, whether the building was leasehold or freehold, its grade, and its lease term. Location and distance to railway stations were also included, as well as year of sale, to capture cyclical and other time-specific impacts on sales price. BREEAM ratings range from Pass to Outstanding. Due to a lack of transactional evidence, we excluded buildings with Pass, Good and Outstanding ratings, and compared unrated buildings with BREEAM Very Good and BREEAM Excellent to determine our results.

Each BREEAM rating level broadly represents performance equivalent to:

Outstanding	Less than top 1% (innovator)	**≥ 85% of score**
Excellent	Top 10% (best practice)	**≥ 70% of score**
Very Good	Top 25% (advanced good practice)	**≥ 55% of score**
Good	Top 50% (intermediate good practice)	**≥ 45% of score**
Pass	Top 75% (standard good practice)	**≥ 30% of score**

ACTIVE CAPITAL

Finding sales price premia for office markets on opposite sides of the world indicates that demand for green buildings is a global phenomenon, and one which we expect will see continued growth.

SYDNEY & MELBOURNE

Prime office buildings in Melbourne and Sydney with a NABERS rating of 5+ enjoy a 17.9% premium on sales price compared to equivalent unrated buildings, while even those with a lower NABERS rating enjoy an 8.3% premium.

What is NABERS?
The National Australian Built Environment Rating Scheme (NABERS) measures the energy efficiency of a building by comparing its energy consumption to averages across the sector.

NABERS
5+
RATING

PREMIUM
17.9%
ON SALES PRICE

LONDON

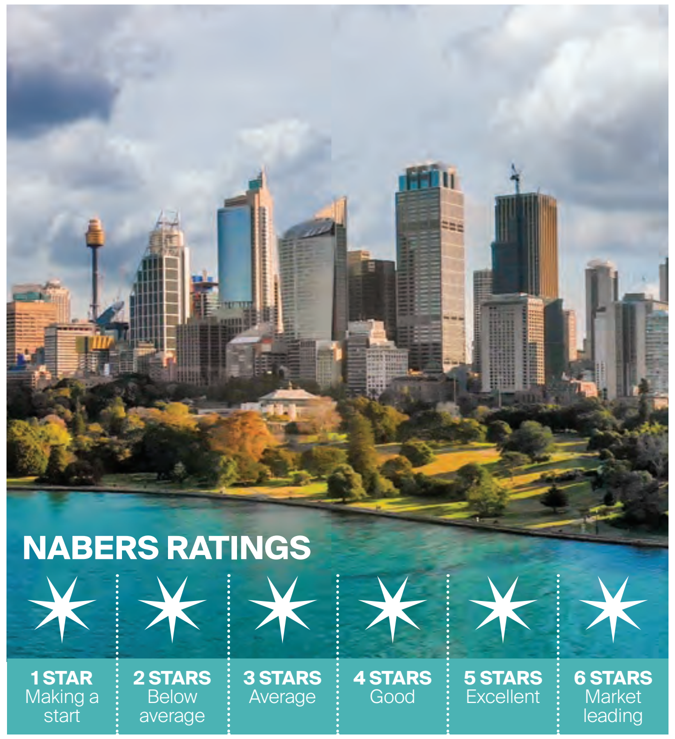
Prime Central London office buildings with a BREEAM Excellent rating enjoy a 10.5% premium on sales price compared to equivalent unrated buildings, while those with a BREEAM Very Good rating enjoy a 10.1% premium.

What is BREEAM?
The first building assessment was undertaken by Watford-based Building Research Establishment in 1990, which has since morphed into BREEAM, one of the most recognised international sustainability assessment methods for master-planning projects, infrastructure, and buildings. It recognises and reflects the value in higher performing assets across the built environment lifecycle, from new construction to in-use and refurbishments.

BREEAM
EXCELLENT
RATING

PREMIUM
10.5%
ON SALES PRICE

> Our findings show that green ratings on prime offices on average are having a significant impact on sales prices.

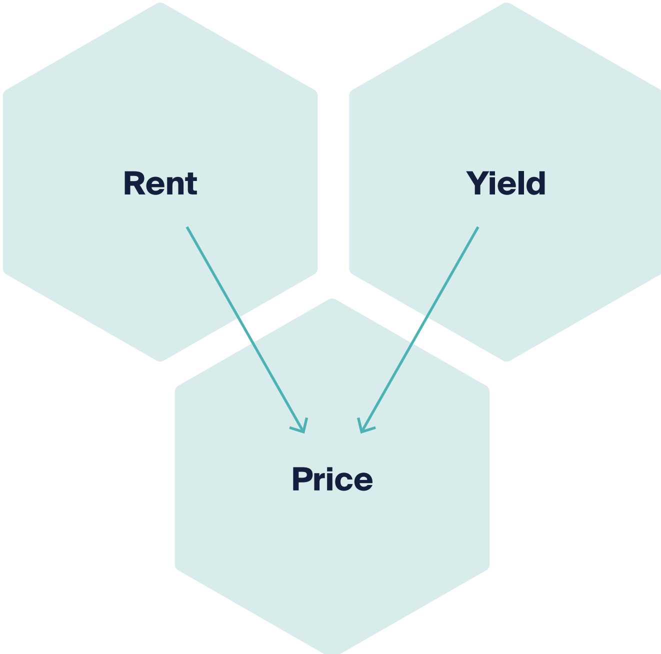


THE VIEW FROM SYDNEY & MELBOURNE

NABERS is the dominant green rating used across Australia and we undertook the hedonic price analysis by combining this rating information with Knight Frank proprietary data. This led us to a sample of almost 330 green-rated and unrated asset sales across Sydney and Melbourne between Q1 2010 and Q1 2021. In addition to green ratings, the model also reflected building attributes such as size, height, age, building grade, and lease term. Locational factors such as market – and in the case of Sydney, submarket – were captured, as well as distance from the waterfront. Year of sale was also included to capture cyclical and other time-specific impacts on sales price. NABERS ratings range from 1 to 6 and we split the model into buildings without a NABERS rating; those with a rating of less than 5; and those with a rating of 5 and above.

WHAT THESE RESULTS MEAN FOR INVESTORS AROUND THE WORLD

Ultimately, our findings show that green ratings on prime offices on average are having a significant impact on sales prices (and even rents in London, as shown by our Sustainability Series), with higher ratings typically resulting in higher monetary benefits.



The sales price premia from green ratings appear to be driven by both rental and yield effects, both of which influence price.

These results are important for two key reasons. Firstly, they indicate that the highest sales prices are achieved by those investors who aim for the best level of green credentials, rather than satisfying to meet a minimum threshold. Secondly, the results for sales prices are found at opposite ends of the globe and in different sized markets – suggesting a strong, global pattern between sustainability and value.

ACTIVE CAPITAL

THE DRIVERS BEHIND THE INCOME EFFECT ON PRICE

On the rental side, our research finds that the most ESG-driven occupiers are willing to pay a rental premium for a building that matches their ethos. While overall occupier demand for green buildings is still somewhat nascent, occupier interest is expected to expand further due to the built environment's contribution to global carbon emissions. For example, our latest (Y)OUR SPACE survey found that only 8% of almost 400 global occupiers currently believe that real estate supports their ESG strategy while 40% have a stated net carbon emissions target. The type of buildings that occupiers choose to locate is a vital factor in achieving these targets.

Green-rated buildings should also increasingly support income, through increased occupier demand and reduced vacancy rates.

> As more and more investors use ESG criteria as a screening tool, demand and therefore liquidity of buildings with green ratings is likely to increase.

THE DRIVERS BEHIND YIELD EFFECT ON PRICE

Green-rated buildings may reduce risk premiums due to improved liquidity and lower legislation and obsolescence risks, supporting downwards pressure on yields. As more and more investors use ESG criteria as a screening tool, demand and therefore liquidity of buildings with green ratings is likely to increase. Green-rated buildings also enjoy a greater degree of futureproofing against potential legislative changes, as governments embed carbon targets into law. This reduces the risk of assets becoming 'stranded' due to obsolescence.

Finally, with the increase in benchmarking requirements of financial and non-financial institutions, against different climate change outcomes for example, bank and non-bank lenders are increasingly incentivised to weight their lending towards both green assets and firms that wish to pursue sustainable goals. All these effects serve to lower the risk premium of such assets, which also reduces the cap rate, or yield.

Against this backdrop, many real estate investors are positioning to rotate towards green buildings, or redevelop existing buildings into green assets in their search for outperformance.

2.3 THE GLOBAL RISE OF SUSTAINABLE FINANCE

A YEAR ON SINCE WE HIGHLIGHTED THE RISE OF SUSTAINABLE FINANCING AS A FUNDAMENTAL DRIVER OF INVESTMENT RESILIENCE, SUSTAINABLE LENDING HAS CONTINUED TO DEVELOP AT PACE ACROSS THE GLOBE.

Central banks and governments around the world have announced new frameworks designed to promote sustainable finance, in particular and we have also seen further growth in sustainable lending across the commercial real estate sectors. While Europe remains a leader in this space, other locations, from China to Canada, are rapidly catching up.

THE AMERICAS

By the end of H1 2021, the Americas accounted for 43% of global sustainable lending, according to Refinitiv, the highest share since records began, meaning the region is rapidly catching up with EMEA.

While overall, there are fewer sustainable financing structures in place in the Americas compared to other locations, there is evidence of banks undertaking sustainable commercial real estate lending in the US. Fannie Mae, The Federal National Mortgage Association, has also started to lend green financing against multifamily residential, offering preferential pricing and turning these loans into green bonds.

Canada also saw its first sustainable lending to real estate in 2020 and this is expected to expand at pace, while sustainable bond financing, more generally, is seeing growth in Latin America.

> **It is no longer enough for a borrower to simply claim to consider ESG requirements. Now, they have to evidence those claims.**

EMEA

Europe has been an early adopter and leader in the rise of sustainable finance. In the first half of 2021, nearly half of global sustainable lending came out of Europe. The demand for sustainable finance is supported by central banks implementing new policy initiatives to facilitate the transition to a net-zero carbon emissions economy.

With the built environment accounting for about 40% of total carbon emissions, both bank and non-bank lenders across Europe increasingly consider ESG credentials in their real estate lending. At the EU level, real estate financing activities will need to be aligned with the EU taxonomy and meet the Technical Screening Criteria amongst other standards.

In the UK, the Bank of England has had its remit extended to support carbon targets and develop green finance, while the government has created the Green Technical Advisory Group (GTAG) to create a taxonomy that will act as a framework for green investment and mitigate the risk of greenwashing.

We expect the real estate market to see more sustainable financing over the coming year as the political and regulatory focus on developing a greener economy increases.

APAC

Asia-Pacific is quickly catching up to the rest of the world and we see governments across the region actively fostering an ecosystem for sustainability. There are now sustainability reporting requirements in stock exchanges and green lending facilities across the region to incentivise ESG goals and investment into green technology.

Singapore's Green Plan 2030 includes the goal of transforming the country into a green finance hub for the region, while South Korea has announced a bolstering of its green finance programme through a number of measures including a public-private joint task force.

In China, a high priority for the central bank (PBOC) – second only to price and economic stability – is to accelerate the creation of a green financing system. The PBOC is to offer other banks low-cost funding to provide discounted loans to companies making significant impacts on emission reductions. This move makes ESG a high priority for China's corporations and its commercial real estate sector.

The Bank of Japan has announced a new climate lending facility that offers interest-free loans to banks, allowing them to provide financing for environmentally friendly projects or companies. To be launched by year-end, it will run until 2030 and provide loans with a term of up to one year. Commercial banks that provide loans under the new facility will have their reserves exempted from the negative interest rates currently charged on their deposits.

Q&A

HOW IS THIS IMPACTING LOCAL LENDING MARKETS?

Around the world, the growing green agenda is having a direct impact on lenders and borrowers. We caught up with Lisa Attenborough, our Head of Debt Advisory in London, and Brad Nelson, our Head of Debt Advisory in Sydney, for an 'on the ground' view.

HOW IS THE GREEN AGENDA CHANGING LENDING CRITERIA IN LONDON?

Attenborough: The beginning of 2021 signalled a new era of real estate lending, one where debt providers, on a global scale, acknowledged the part they must play in bringing environmental considerations to the front of borrowers' minds.

In Q1, this manifested itself in a drive towards offering green loans which presented pricing benefits to the borrower. In Q2 and Q3, the level of detail and ESG analysis undertaken by lenders has stepped up. For example, it is no longer enough for a borrower to simply claim to consider ESG requirements. Now, they have to evidence those claims.

Lenders are interrogating business plans and asking questions regarding refurbishments carried out on a net-zero carbon basis; energy efficiency standards; on-site renewable energy generation and water reduction; contractors; their approach to whole-life carbon impacts of construction methods; and material selection. This enhanced diligence into ESG claims is a reflection of how seriously this subject is now being taken.

WHAT IS THE STATE OF SUSTAINABLE FINANCING IN AUSTRALIA?

Nelson: It is early days for ESG financing in Australia and currently, the focus is more from the borrower side in terms of establishing their "green" credentials through ESG consideration with dedicated internal resources that have oversight of assets and performance based on ESG principles.

However, there is evidence of global banks rewarding green buildings with lower debt pricing on a like for like basis. We also have federal government financiers such as the Clean Energy Finance Corporation (CEFC) and Arena who actively assist in this approach, CEFC in particular.

Local banks are currently tending to consider more the merits of the borrower and their strategy towards ESG. For example, banks are tending to do less with fossil fuel counterparties these days, i.e. they don't lend to a sector, rather than provide differentiated pricing within a particular sector based on ESG or "green" credentials. However, we could see this begin to change over the coming years ahead.

ACTIVE CAPITAL

2.4 HOW DOES ESG IMPACT CORPORATE PERFORMANCE?

OUR RESEARCH HIGHLIGHTS GOVERNANCE, INCLUDING DIVERSITY OF DECISION MAKING, AS A SIGNIFICANT DRIVER OF OPERATING PROFIT MARGINS FOR THE GLOBAL LISTED REAL ESTATE FIRMS.

Lower energy use and environmental partnerships also positively impact performance.

ACTIVE CAPITAL

By analysing the operating profit margins of over 600 global listed real estate firms, we have found that governance has the most significant contribution to firm performance out of multiple ESG benchmarks.

The number of non-executive directors; experience through board tenure; gender diversity at board level; moderated executive compensation relative to total firm assets; and high board meeting attendance all contributed to higher operating profit margins.

Lower energy use and environmental partnering also positively impact performance. Such environmental partnerships consider whether a firm partners with or is otherwise involved in initiatives with organisations focused on improving environmental issues.

The results suggest that by ensuring that the mechanism of decision making is optimised through a process of good governance, performance is enhanced for global listed real estate companies. The results around gender diversity representation at board level also reinforce the idea of the importance of diversity in decision making. This may help minimise behavioural biases such as 'groupthink' and social proof (where an individual follows the same beliefs as the group) by providing different perspectives, potentially enhancing innovation and helping to mitigate risk.

With a plethora of information and ESG pathways available, these findings indicate that by drawing on environmental expertise through partnerships and optimising the internal decision making process, listed real estate firms are more likely to make the right sustainability decisions at the city, asset and financing level, contributing to performance.

WHAT IS GOVERNANCE AND WHY DOES IT MATTER?

Governance, or more fully, corporate governance, relates to the strength and effectiveness of the decision-making process. We first considered governance in Active Capital two years ago by analysing the impact of governance on the performance of global listed retailers. We undertook this initial analysis on the basis that retailers were a particular tenant sector facing well-documented headwinds. The results suggested that governance may also inform on tenant covenant as global listed retailers with enhanced governance measures enjoyed higher average profitability and return on equity. This initial research echoes the findings of our latest analysis of the impact of ESG on global listed real estate companies.

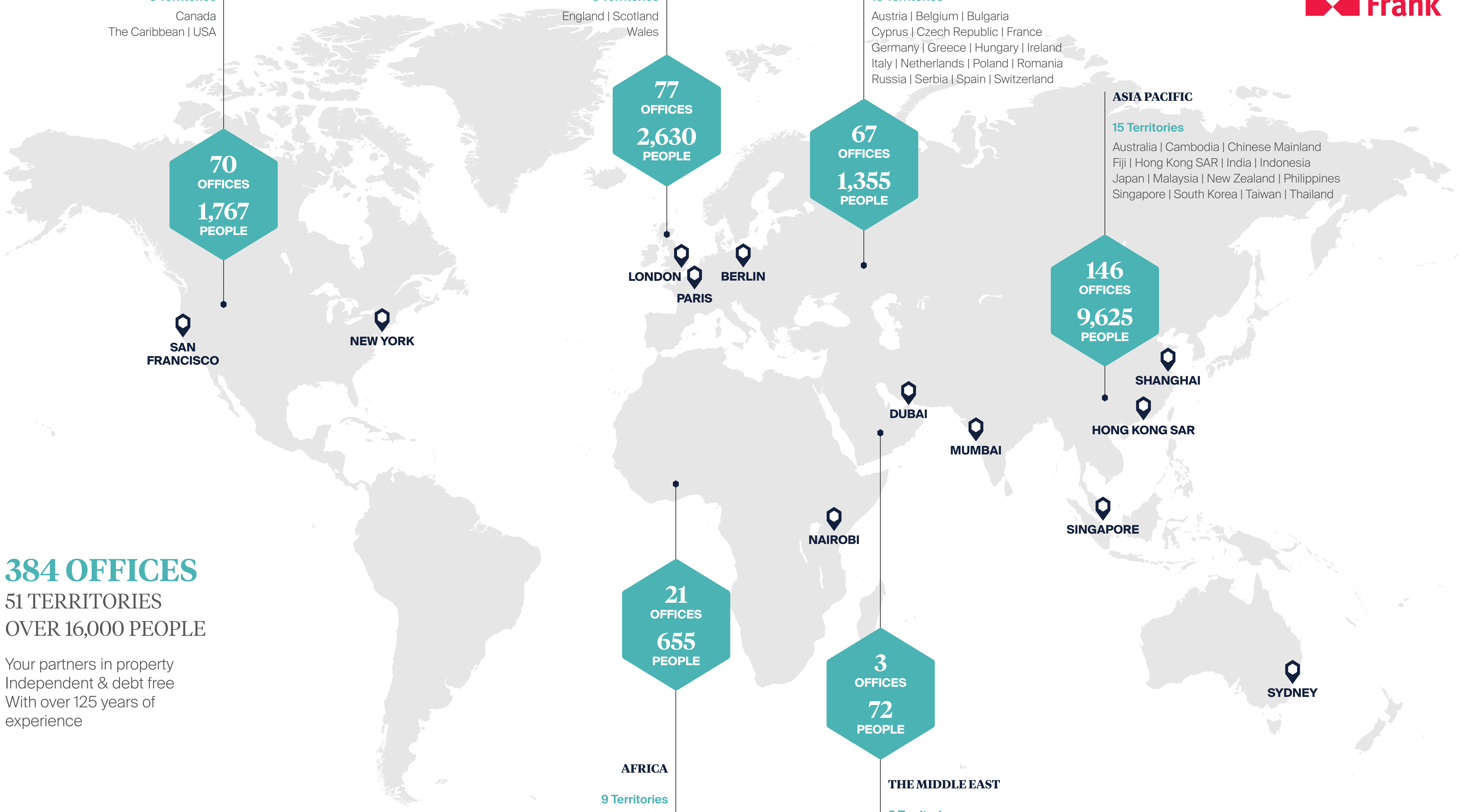
THE STORY BEHIND THE DATA

METHODOLOGY

Using Global Industry Classification Standard (GICS) real estate company data, covering over 600 firms between 2009 and 2020, we identified the statistically significant ESG drivers of operating performance by using a panel regression. We included non-ESG related variables to control for the effects of firm size (total assets, market capitalisation and common shareholder equity) and risk (debt to total assets and the standard deviation of firm total returns), as well as firm age, location and time factors. Both the ESG and non-ESG data was sourced from Refinitiv. We also replicated the analysis using purely cross-sectional analysis for the years 2019 and 2009 and across different performance metrics to check for the robustness of the results.

ACTIVE CAPITAL

Knight Frank



THE AMERICAS

3 Territories

Canada
The Caribbean | USA

70 OFFICES
1,767 PEOPLE

UNITED KINGDOM

3 Territories

England | Scotland
Wales

77 OFFICES
2,630 PEOPLE

EUROPE

18 Territories

Austria | Belgium | Bulgaria
Cyprus | Czech Republic | France
Germany | Greece | Hungary | Ireland
Italy | Netherlands | Poland | Romania
Russia | Serbia | Spain | Switzerland

67 OFFICES
1,355 PEOPLE

ASIA PACIFIC

15 Territories

Australia | Cambodia | Chinese Mainland
Fiji | Hong Kong SAR | India | Indonesia
Japan | Malaysia | New Zealand | Philippines
Singapore | South Korea | Taiwan | Thailand

146 OFFICES
9,625 PEOPLE

384 OFFICES

51 TERRITORIES
OVER 16,000 PEOPLE

Your partners in property
Independent & debt free
With over 125 years of experience

21 OFFICES
655 PEOPLE

AFRICA

9 Territories

Botswana | Kenya | Malawi
Nigeria | South Africa | Tanzania
Uganda | Zambia | Zimbabwe

3 OFFICES
72 PEOPLE

THE MIDDLE EAST

3 Territories

Abu Dhabi | Dubai
Saudi Arabia

GATEWAY CITIES

CONTACTS

NEIL BROOKES
Global Head of Capital Markets
neil.brookes@asia.knightfrank.com

VICTORIA ORMOND, CFA
Partner, Capital Markets Research
victoria.ormond@knightfrank.com

ANTHONY DUGGAN
Chief Strategy Officer & Head of Global Capital Markets Research
anthony.duggan@knightfrank.com

WILLIAM MATTHEWS
Head of UK Commercial Research
william.matthews@knightfrank.com

ABOUT KNIGHT FRANK

At Knight Frank, we build long-term relationships which allow us to provide personalised, clear and considered advice on all areas of property in all key markets. We believe personal interaction is a crucial part of ensuring every client is matched to the property that suits their needs best – be it commercial or residential. Operating in locations where our clients need us to be, we provide a worldwide service that's locally expert and globally connected. As a partnership, we are independent, debt free and not beholden to external shareholders.

GLOBAL CAPITAL MARKETS AT KNIGHT FRANK

Our Global Capital Markets Group acts on the most high-profile property transactions around the world. The group works with institutional, private equity, family offices, sovereign wealth and real estate companies in the cross-border acquisitions and disposal of international property. We cover the office, residential, retail, industrial, leisure, hotel, student property, healthcare and data centres sectors.

To find out more go to knightfrank.com/globalcapitalmarkets

ACTIVE

CAPITAL

Knight Frank

125

Your partners in property for 125 years

knightfrank.com/active-capital

Knight Frank Research provides strategic advice, consultancy services and forecasting to a wide range of clients worldwide including developers, investors, funding organisations, corporate institutions and the public sector. All our clients recognise the need for expert independent advice customised to their specific needs. Important Notice: © Knight Frank LLP 2021 This report is published for general information only and not to be relied upon in any way. Although high standards have been used in the preparation of the information, analysis, views and projections presented in this report, no responsibility or liability whatsoever can be accepted by Knight Frank LLP for any loss or damage resultant from any use of, reliance on or reference to the contents of this document. As a general report, this material does not necessarily represent the view of Knight Frank LLP in relation to particular properties or projects. Reproduction of this report in whole or in part is not allowed without prior written approval of Knight Frank LLP to the form and content within which it appears. Knight Frank LLP is a limited liability partnership registered in England with registered number OC305934. Our registered office is 55 Baker Street, London, W1U 8AN, where you may look at a list of members' names.