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Abu Dhabi Investment Authority

# ADIA

## 2018 Review
Prudent Global Growth

Real Progress

## Our Mission

# ADIA's mission is to sustain the long-term prosperity of Abu Dhabi by prudently growing capital through a disciplined investment process and committed people who reflect ADIA's cultural values.

# Letter from Hamed bin Zayed Al Nahyan

*Managing Director*

With a long-term mandate to generate returns for future generations, ADIA's inherent preference is to view market performance in any given year within a broader context, to gain a more nuanced picture of overall trends. On this basis, 2018 provided ample reassurance despite challenging conditions.

While most equity and fixed income markets ended the year lower, 2018 marked a decade since the onset of the global financial crisis, a period during which investors have benefitted from largely uninterrupted wealth creation.

By the end of 2018, global equities had recorded an annualised return of 10% over the previous 10 years, with real returns benefitting from the backdrop of historically low inflation. Private assets, such as real estate, private equity and infrastructure, have also surged to near record levels, aided by the widespread availability of low-cost funding stemming from years of accommodative monetary policy.

Bond returns have recorded less impressive growth during this period. However, with yields hovering near zero, that should come as no surprise.

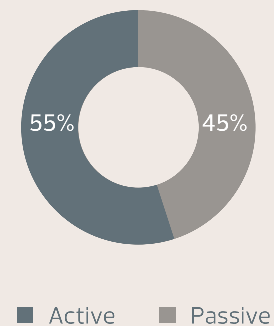
The economic expansion over the past decade is one of the longest on record, and this remained intact last year even as markets paused for breath before recovering their losses and more in the early months of 2019.

Economies did slow last year, but the overall result was still an above-trend rate of economic expansion.

A slowdown in China received much attention, but to date the reality does not appear to have matched the degree of concern. European growth did weaken materially, but there was no evidence of any major turn in the cycle. While some emerging market countries experienced recession, this did not spread more broadly to other markets. India, Russia, and to a lesser extent, Brazil, were relatively resilient in 2018.

The U.S. economy grew faster than in 2017, buoyed by a fiscal policy boost from tax cuts and spending increases. Outperformance of the U.S. economy and equity markets in 2018 was one of the most important outcomes of the year, although it is unlikely that the relative performance gap will be permanent. In a still closely integrated global economy, divergences of this kind more often ebb and flow than persist indefinitely.

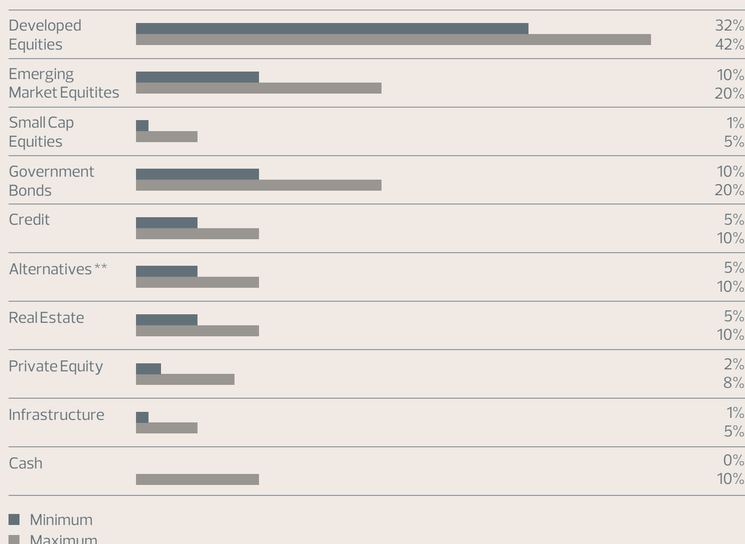
**PORTFOLIO OVERVIEW**
ACTIVE VERSUS PASSIVE MANAGEMENT




■ Active ■ Passive

One of the noteworthy events of last year was a broad and regrettable deterioration in trade relations. This included both increases in tariffs and greater resistance to cross border flows of both capital and labour. This was not typical volatility; rather it appeared more as an inflection point in the process of globalisation that has been a tail wind for economies and markets over the past several decades.

The myriad potential outcomes of a less hospitable international economic system will result in new challenges – but also ample opportunities – for global long-term investors.




* The above denotes long-term strategy portfolio ranges within which allocations can fluctuate; hence they do not total 100%.
** Alternatives comprises hedge funds and managed futures.

In 2018, as throughout our history, ADIA continued to deliver on its mission of prudently managing capital on behalf of the Government of Abu Dhabi. By building a highly diversified portfolio, spread across asset classes and regions, ADIA has been able to withstand the ups and downs of markets over many years to produce sustainable, long-term returns for the benefit of Abu Dhabi.

In 2018, ADIA's 20-year and 30-year annualised rates of return were 5.4% and 6.5% respectively. While these rolling averages were impacted somewhat by the exclusion of strong gains in the mid-to-late 1980s and 1990s, ADIA's real returns remained largely consistent with previous years and historical levels. For global investors, the past decade can be viewed as a qualified success story. Faced with a challenge of historical proportions, policymakers in different countries worked together to restore the global economy to a stable footing, leading to a decade of near uninterrupted wealth creation.

The world economy may not be strong, and valuations of many assets are now at cyclical highs, but the financial system is more robust than it was 10 years ago.

## OUTLOOK

Looking ahead is always an exercise in managing uncertainty, and accepting that the unexpected will likely happen. At ADIA, our primary goal is to develop a broad picture of long-term opportunities and risks so that we remain optimally positioned to manage them.

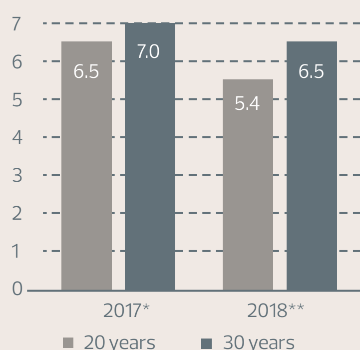
The state of the business and financial cycle has received increased attention as the last downturn recedes into the past. We understand that economies have recessions and that markets have drawdowns. What is less certain is their respective timing. While "late-cycle" has become a common term in market outlooks for 2019, we believe that the diversity and adaptability of economies means that the current cycle may well surprise with its resilience.

Most of our thinking about the future goes beyond cyclical forces to seek to uncover important secular themes. Of these, one that concerns us most is the possible retrenchment of globalisation. Increasing freedom of movement of goods, capital and people across borders has been a dominant tailwind boosting economic growth and asset prices over the past several decades. It is clear that the gains from trade have not always been shared equally within and across countries, and that forces of nationalism have gained traction at the expense of economic liberalism. It is incumbent on participants in capital markets, who see the benefits of globalisation first hand, to present the positive case and ensure that the public debate is well informed.

A more positive trend is the growing attention to ESG (Environmental, Social, Governance) factors in asset management, which is encouraging capital allocation to investments with positive societal, and not just financial, impact. While investors – including ADIA – have long been concerned with these issues, progress is now being made in developing quantitative metrics to measure companies' performance in line with ESG factors. We welcome the greater transparency around these issues.

One way that ADIA has played a role in this process has been through its founding membership of the One Planet Sovereign Wealth Fund Group. In 2018, the Group developed a framework to assist funds with long-term investment strategies in integrating climate change analysis into their investment processes.

### ANNUALISED RATES OF RETURN




* As of 31 December 2017
** As of 31 December 2018
Note: Performance for 2018 remains provisional until final data for non-listed assets is included.

Performance is measured based on underlying audited financial data and calculated on a time-weighted basis.

Finally, trends in technology remain an essential element of our thinking about the future. Progress is definitely accelerating, and few industries are likely to remain untouched by advances already underway or at the cusp of reaching commercial viability. The potential for these innovations to boost productivity and economic wealth is substantial, and offers an important counterpoint to the pervasive "growth pessimism" that is gaining traction among investors.

Beyond these impacts on economies, it has become obvious how technology is affecting our own investment industry. We believe the effective use of new tools for gathering and interpreting data will be a key source of competitive advantage that will allow active management to succeed. Like other investors, ADIA has been testing data processing systems to increase efficiency and extract meaningful insights.

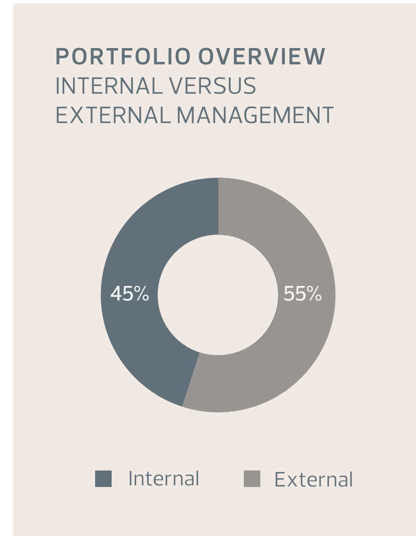
Looking ahead, it appears likely that global growth will remain stable for the foreseeable future, although contributions will be spread unequally between countries. Demographic trends continue to favour emerging over developed economies, with India and China in particular expected to remain important engines of growth. We will continue to seek opportunities to invest in these higher growth markets, most typically alongside local partners in sectors that are closely aligned with the growth priorities of their respective governments.

The world will continue to change, often in unexpected ways. As in the past, ADIA's investment approach will prioritise diversification, to ensure it continues to generate steady risk-adjusted returns over time. In what is an increasingly complex and fast-moving world, our success will also be determined by our ability to prudently innovate and evolve on a continuous basis, so that we are able to respond quickly and with confidence to capture opportunities when they emerge.

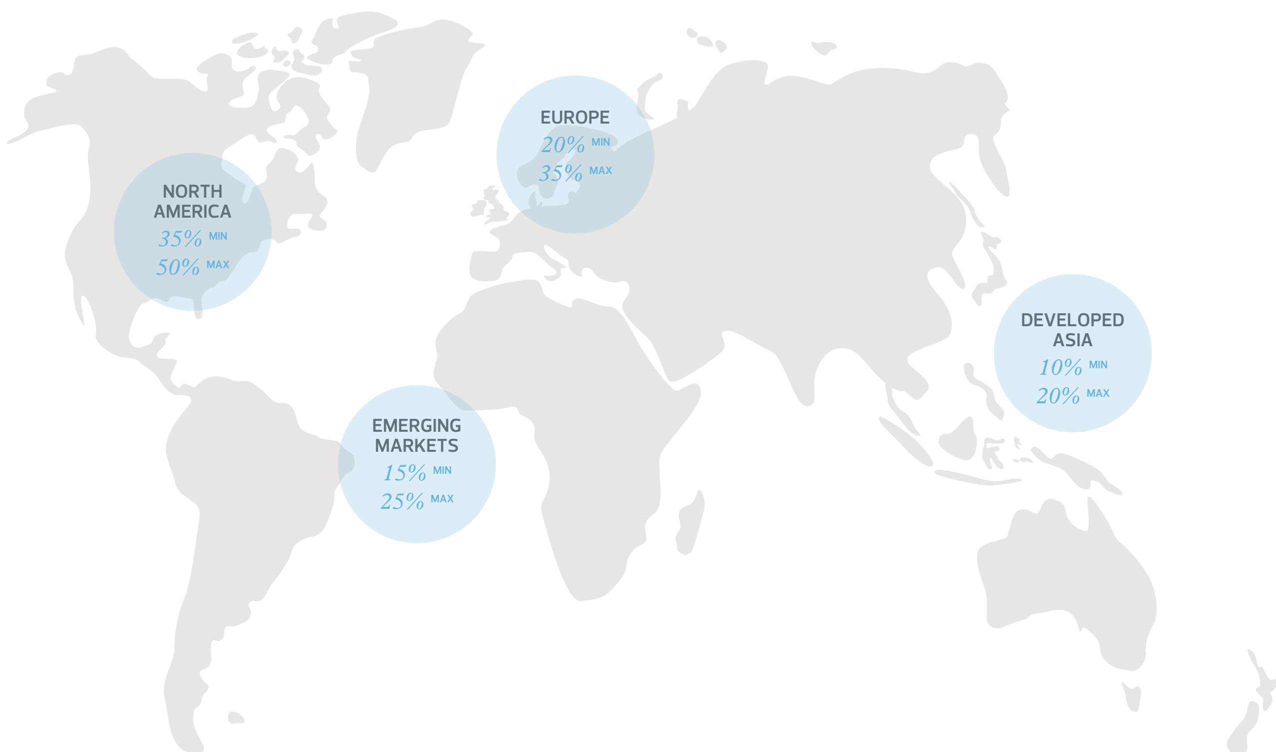
I look forward to the future with quiet confidence in ADIA's ability to draw on the lessons of the past while embracing the opportunities and realities of the future.

Together, these traits will ensure that we continue to deliver successfully on our mission.

**PORTFOLIO OVERVIEW**
INTERNAL VERSUS EXTERNAL MANAGEMENT




## LONG-TERM STRATEGY PORTFOLIO BY REGION*




*ADIA, as a matter of practice, does not invest in the UAE.

# Operational Review

At ADIA, we believe the business of investing is undergoing a significant transformation, with information and data now more readily accessible than at any time in history. This, in turn, has placed a premium on investors' ability to analyse data in innovative ways, in order to develop insights that generate financial outperformance.

With this in mind, we have identified two key priorities that will form the core of our organisational strategy in the years to come: a more structured approach to gaining actionable insights; and enhancing our organisational agility so that we can respond quickly and with purpose when opportunities emerge.

Among related initiatives in 2018, ADIA conducted a risk-return project involving all of our investment departments to identify opportunities and constraints across the total portfolio. In what will be an annual exercise, these findings were then analysed by ADIA's Investment Committee, enabling it to fine-tune its investment and process-related priorities.

In recent years, ADIA has created a number of cross-departmental working groups and forums to foster new perspectives and support insight generation. This process has identified opportunities that reside on the fringes of different asset classes, in particular between public and private markets. By breaking down the barriers between our asset classes, we are better equipped to identify and pursue potentially attractive opportunities that might be overlooked by the broader market.

Much has been written about the benefits of big data, and ADIA is no different in recognising the potential value it can bring. With the use of custom-made software that aligns with our long-term perspective, ADIA is actively using advanced numerical techniques involving artificial intelligence in our portfolio construction and asset allocation. We will continue to build and grow our expertise in this area, to identify applications with the greatest promise to assist us in meeting our performance targets.

In 2018, we also cast our attention outward, completing a two-year research exercise involving more than 20 of our global peers, to build a picture of how large organisations manage information and apply it to their decision-making process. These findings, combined with those from more than 70 internal interviews, will help to inform how we continue to evolve as well as how we analyse and use information.

*"We have identified two key priorities that will form the core of our organisational strategy in the years to come: A more structured approach to gaining actionable insights; and enhancing our organisational agility..."*

At ADIA, we recognise that competitive advantage is often fleeting. This is why we have sought to empower our investment professionals, as the experts closest to their markets, with greater discretion in how they deploy capital and risk.

In 2017, ADIA began the process of consolidating a large number of investment pools, or portfolios, into single pools. This provides our investment professionals with the flexibility to allocate funds between different asset types according to where they see opportunities.

This process continued in 2018, and our investment departments are now focused on developing further their internal capabilities and investment strategies to deliver enhanced returns from their simplified portfolios. Our Fixed Income & Treasury Department, for example, has begun scaling up its active investing, with a view to going fully active in coming years, compared with around 40% currently.

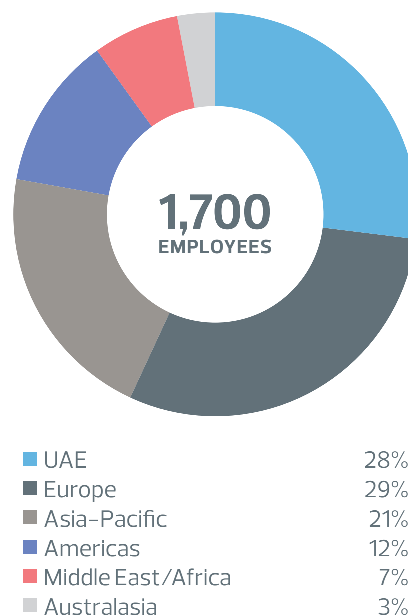
*"ADIA took the decision in 2018 to formally integrate climate change considerations into its investment proposal review process."*

With an outlook that spans decades, ADIA spends considerable time seeking to identify the themes and trends that will influence markets in the future. One such area has been climate change, and this remained a key focus in 2018. ADIA held its annual internal Global Investment Forum in late 2017 - early 2018, entitled "Climate Change and the Potential Investment Impact". This involved the creation of eight internal asset-class specific task forces to consider the potential implications for ADIA and its portfolio in coming decades. It culminated with a two-day event in February attended by more than 400 ADIA employees, where the findings and recommendations were presented. While our investment departments routinely consider a wide range of factors in assessing opportunities, ADIA took the decision in 2018 to formally integrate climate change considerations into its investment proposal review process. Meanwhile, ADIA also worked alongside five global sovereign wealth funds (SWFs) to develop and publish the One Planet SWF Framework, which seeks to promote the integration of climate change analysis in the management of long-term portfolios. Building on current industry best practice, the Framework aims to foster a shared understanding among long-term asset owners around key principles, methodologies, and indicators related to climate issues. The publication of the Framework, in July, marked the culmination of six months' work by the One Planet SWF Working Group, of which ADIA is a founding member.

Finally, ADIA continued to devote its full energy and resources into attracting, retaining and motivating its people to achieve their potential and drive ADIA's performance. The development of UAE Nationals remained a focus as we strive to foster new generations of talent that will drive ADIA's success in the future. In 2018, ADIA formally launched its "Fundamentals" programme for UAE National graduates, as part of its Early Career Development Framework. The programme aims to prepare our graduate trainees for a career at ADIA by taking them on a developmental journey with a variety of immersive workshops, projects and challenges to build technical and professional skills.

ADIA's initiatives in 2018 serve as markers for our future direction, and we look forward to making further progress against our priorities in the year ahead.

## 1,700 EMPLOYEES REPRESENTING MORE THAN 65 NATIONALITIES




| | |
|---|---|
| UAE | 28% |
| Europe | 29% |
| Asia-Pacific | 21% |
| Americas | 12% |
| Middle East/Africa | 7% |
| Australasia | 3% |

Investment Review

# Equities

Global equities had a challenging year in 2018, experiencing their steepest decline since the onset of the financial crisis in 2008 as doubts emerged about the sustainability of the economic recovery.

Last year also marked the return of volatility after a relatively calm 2017, with markets swinging sharply at several key points during the year and for different reasons. This culminated in December, as steep drops in U.S. equities were swiftly followed by the largest one-day points rise in history. The MSCI AC World Index traded in a 20% range from peak to trough during 2018 before ending the year almost 9% lower.

*In the External Equities Department, meanwhile, judicious manager selection and a sharp focus on its target markets helped to offset the impact of the challenging market conditions.*

The market conditions conspired to make 2018 a difficult year for active managers, with investors crowding into a small number of perceived safe haven stocks, such as Netflix and Amazon.

The U.S. market outperformed the rest of the world, supported by tax cut stimulus, but the S&P500 Index still ended the year 4.4% lower on a total return basis – its first reversal in a decade. The reduced risk appetite hit cyclical sectors hardest, with energy, materials and industrials stocks all underperforming. The largest sector, technology, was also the most volatile, as a 20% gain in the first nine months of the year was all but erased in the fourth quarter.

Europe was among the biggest laggards in 2018, as a host of regional issues – ranging from Britain's departure from the EU to budget turmoil in Italy and protests in France – merged with global concerns about slowing growth and trade disputes. The MSCI Europe Index ended the year 14.3% lower, with auto companies and banks hardest hit.

Meanwhile, China-related issues dominated the narrative in emerging markets, with external pressures including a trade dispute with the U.S. compounding domestic policy challenges, resulting in a near 19% drop in the MSCI China index.

More broadly, the MSCI Emerging Markets Index posted a 14.2% decline in U.S. Dollar terms, with slower corporate earnings growth and currency depreciations taking a toll on Brazil, Russia and India.

At a department level, the Internal Equities Department was confronted by the same macroeconomic and stylistic headwinds facing many active managers in 2018. While the Department has an inherent bias towards smaller and mid-cap stocks, it was mega-cap growth stocks that performed best early in the year before being replaced by large-cap defensive stocks.

Among other initiatives in 2019, the Internal Equities Department will explore the possibility of creating sub mandates within some regional and country portfolios to capture specific opportunities.

In the External Equities Department, meanwhile, judicious manager selection and a sharp focus on its target markets helped to offset the impact of the challenging market conditions.
The Department's strategy typically involves targeting less efficient markets and identifying quality managers who can produce high levels of excess returns within acceptable risk parameters. To this end, it introduced a new single country mandate for Canada during 2018 and appointed a respected manager to lead its efforts in capturing local opportunities.

Looking ahead, the External Equities Department is considering complementing its current pool of managers with new strategies that target modestly lower returns over time, with lower risk – an approach aimed at further enhancing its ability to generate consistent excess returns.

During 2019, the Department will also explore the possibility of creating additional single country portfolios where it believes opportunities exist.

The Indexed Funds Department received approval in late 2018 to implement new enhanced indexation strategies. These innovative strategies are aimed at building on the Department's success in recovering costs and generating added value while adhering to ADIA guidelines. The Department is also collaborating with other stakeholders to investigate alternative index solutions in areas such as ESG.

## OUTLOOK

Heading into 2019, equity markets appear finely poised. After the selloff in 2018, valuations began the year at what some would consider attractive levels relative to expected earnings. Despite a sharp recovery in the early months of 2019, doubts remain about the sustainability of earnings growth at a time of record high profit margins and signs of a slowing global economy.

The result is an environment that will likely remain highly sensitised to economic growth signals. Geopolitical events are also expected to play a continued role in driving sentiment, and volatility.

In the U.S., equity valuations remain within historical norms even after their gains in early 2019, although with profit margins at record highs they remain vulnerable to negative surprises. Investors will be watching closely for any sign that fund flows are shifting away from mega large-cap stocks to small and

mid-cap companies, where valuations are relatively more attractive. Such a move, which some consider overdue based on historical precedent, would mark a return to more supportive conditions for active managers than those experienced in 2018.

In Europe, markets will be driven by many of the same factors as those across the Atlantic, in addition to a number of significant regional political events.

Meanwhile, the performance of emerging markets will remain heavily correlated to global growth and the outcome of trade disputes, even though valuations are relatively attractive at the stage. If, as expected, growth slows only modestly then these markets appear well placed to recover some of the losses experienced in 2018. Any slowdown in the pace of monetary tightening in the U.S., and subsequent weakening in the U.S. Dollar, could also provide much needed support.

Over the longer term, we remain confident about the relative prospects of emerging markets — particularly China and India — versus the developed world, and this will be reflected in the emphasis we place on these markets.

# Fixed Income

After the relative calm of 2017, fixed income investors were confronted with a more complex constellation of factors to manage in 2018, most notably a return to monetary normalisation after an unprecedented decade of ultra-loose policy.

The gradual reduction in the U.S. Federal Reserve's balance sheet combined with the explicit raising of policy rates in the U.S., U.K. and Canada, weighed on markets throughout 2018. Political uncertainty in Europe and the U.K, as well as trade tensions between the U.S. and China, further unsettled markets at various points during the year.

Another key theme for 2018 was the return of volatility. After hitting decade-low levels of 10% at the beginning of the year, the VIX equity volatility index soared before settling into a higher range throughout 2018, while interest rate volatility also spiked from historically low levels. As is often the case during periods of rising volatility, investor risk appetite fell, causing credit spreads to broadly widen and safe haven investments such as the U.S. Dollar to rally. The combined effect of widening credit spreads, a stronger Dollar, modestly higher U.S. interest rates and growth moderation outside the U.S., produced a largely negative total return across the major sectors of the bond market during 2018.

Interest rates began the year close to multi-decade lows in most non-U.S. markets. Ex-U.S global government bonds closed the year three basis points higher to yield around 1%. In the U.S., a late cycle flattening of the yield curve in response to central bank tightening, caused the U.S. 10-year Treasury yield to jump 80 basis points during the year before ending 30 basis points higher at 2.8% after a fourth quarter rally. In response to falling market inflation expectations and a general risk-off sentiment, the U.S. Inflation-Linked Bonds market saw the 10-year break-even dropping from over 2% to close the year at 1.65%.

During 2018, relatively strong U.S. growth and a large positive interest rate differential between the U.S. and other major developed economies contributed to an average 4.5% appreciation of the Dollar versus other G10 currencies.

Credit markets faced a challenging environment in 2018. The combination of rich valuations at the start of the year, coupled with rising equity volatility and the withdrawal of liquidity by central banks, pressured credit spreads to widen as the year progressed. U.S. credit, both investment grade and high yield, underperformed cash. Emerging market assets also came under pressure from the global slowdown, liquidity tightening, trade tensions, and other factors.

As it was for other asset classes, 2018 provided a challenging environment for active management in fixed income markets. However, tactical decisions made by ADIA in early 2018 to reduce exposure to Credit and overweight the U.S. Dollar benefitted performance during the year.

The Fixed Income & Treasury Department made significant progress in 2018 to prepare for the launch of a single pool, or portfolio, into which all its existing pools will be combined. This provides a framework that will eventually enable the Department to manage all of its assets actively across market segments. In addition to reducing complexity, we expect this to increase net revenues without compromising strategic asset allocation or liquidity provisions.

During 2019, as part of its transition toward increased active management, the Department plans to add a number of new positions, mostly within investment and research-focused roles.

## OUTLOOK

From a market perspective, valuations in 2019 will likely continue to gravitate towards historical norms. This may include wider spreads, higher yields and modestly higher volatility as markets assume a greater role once again in determining appropriate risk premiums.

Fading fiscal stimulus and ongoing Federal Reserve monetary tightening are expected to result in a narrowing of the growth gap between the U.S. and other developed economies, and a gradual convergence in policy rates. Central banks in the Euro Area, Sweden and Norway are all candidates for rate rises, while tapering of asset purchases in Japan is likely to continue. As a result, 10-year bond yields in these markets may edge closer to those in the U.S.

In Europe, the outlook for government debt will be shaped, to some extent, by the European Central Bank's (ECB) decision to end the bond-buying programme it began in 2015. As the ECB's purchases helped depress yields, the absence of such a large buyer could be expected to exert some upward pressure, although this may be hindered by the ECB's reinvestment of its proceeds from maturing debt that it already owns. Investors will also pay close attention to European Parliament elections in May, where Eurosceptic candidates are predicted to perform strongly.

After experiencing considerable volatility last year, emerging markets may begin to look attractive if conditions stabilise in 2019. Political events will likely remain in focus, with closely watched elections due in Argentina and India.

Meanwhile, credit markets may come under growing pressure in 2019 against an increasingly complex geopolitical backdrop. There are also concerns that valuations remain too high given deteriorating fundamentals and liquidity conditions.

# Alternatives

Financial markets faced a more challenging environment in 2018 than the year before, as resurgent concerns about global growth triggered volatility and damped returns.

With equities achieving new record highs at the start of the year, the margin for error was limited, as demonstrated on several occasions as sentiment swung between complacency and sudden anxiety. Global stocks ended 2018 almost 9% lower, making for a largely unsatisfying year for many equity-linked alternative strategies.

Despite the market backdrop, some hedge fund strategies were able to generate solid returns in 2018. In Discretionary Macro, managers who positioned themselves for rising interest rates in the U.S. coupled with a rising Dollar were rewarded as these events played out as expected. Emerging markets also proved to be fertile territory, as managers were able to take advantage of an increasingly diverse range of tradeable securities to capitalise on market-moving events.

The Alternative Investments Department has a mission to diversify and enhance risk-adjusted returns in ADIA's overall portfolio, primarily by investing across hedge fund strategies. Within this context, the Department not only fulfilled its mission but also outperformed its benchmarks.

The Department was able to capitalise on positive trends in large part through prudent manager selection, allowing it to end the year ahead of relevant benchmarks.

As has been the case since 2015, Relative Value strategies outperformed in 2018, as correlations between asset prices continued to unwind after years of quantitative easing. This trend has allowed managers to generate consistent outperformance by capitalising on differences in fair value between related financial instruments. However, while Relative Value has been the most consistently successful strategy of recent years, history shows that it may be tested if volatility increases further and liquidity or financing decreases.

Not surprisingly, given the performance of equity markets during the year, equity-related strategies including Equity Hedge and Event Driven ended the year slightly down.

It was a more challenging picture for Systematic, or trend-following, strategies in 2018. These strategies struggled to capitalise on the sudden market swings that emerged during the year.

As with other strategies that seek to diversify portfolios against market downturns, Systematic hedge funds tend to perform best when markets trade on fundamentals, creating consistent price trends. However, disruptions caused by unexpected policy shifts, such as trade disputes, make it harder to capitalise on market trends, as was the case in 2018.

Meanwhile, the Alternative Investments Department had another active year, as it sought to further enhance its ability to capture new and emerging alternative investment opportunities. Key developments included finalising the build out of its Emerging Opportunities (EO) team, which was fully staffed by year-end in preparation for its first investments in early 2019. While the EO mandate constitutes a small portion of the portfolio, it provides the Department with the flexibility to gain first-hand experience in new areas of investing, with a view to increase exposure to those that show the most promise.

## OUTLOOK

Looking ahead, there are indications that last year's performance may signal what is likely to be a more volatile market environment going forward. As almost a decade of monetary easing gives way to gradual tightening, investors are likely to focus increasingly on geopolitical factors, slowing growth, and the fading effects of tax cuts on spending in the U.S.

Recent data suggest that investors are already beginning to position themselves more defensively, with increased inflows to Systematic and Discretionary Macro strategies.

For the hedge fund industry as a whole, the Department has identified a number of emerging trends that are likely to further develop in the years to come. Among these, we expect that the boundaries between strategies will blur, as successful single-strategy managers develop their offerings and business models. There are already examples of this, with systematic managers applying their models across different asset classes, including credit default swaps, interest rate swaps, and cash equities. This trend is being driven in part by an increased migration of investor capital toward established and well-regarded managers, who may also look to inhabit areas that were once the sole responsibility of banks, such as providing liquidity.

However, as more money coalesces under fewer large funds, this will also encourage new funds to push the boundaries with alternative offerings. Technology will continue to play a large role, as managers across strategies invest heavily in new areas to seek a competitive edge.

By investing in a diverse range of funds and strategies, of varying size, the Department is seeking to ensure it remains optimally positioned to capitalise on key trends in the industry.

# Real Estate

The global real estate market recorded its ninth consecutive year of growth, albeit amid signs of slowing momentum as the cycle continued to mature.

Key metrics pointed to a gradual cooling of activity, with a nuanced and varied story playing out at a regional level and between asset types.

While capitalisation rates in 2018 matched the record levels of the past two years, prices of U.S. assets came under more pressure than those in other markets as rising interest rates squeezed margins. Meanwhile, strong demand for industrial and residential assets was offset by an equally steep decline in retail and stagnating prices for offices.

Average vacancy rates remained at historically low levels, due in part to relatively low construction activity since the financial crisis and steady growth in demand.

Dry powder, or funds available for investment, also hit a record high, as capital raising continued apace, suggesting that investor appetite for the asset class remains robust. This pent-up demand may help to underpin the market and improve the chances of a soft landing as prices drift back from their highs.

In line with its long-term focus, ADIA's Real Estate team continued to manage its portfolio and direct its activities in ways that seek to capture the industry's future growth trends. This included selling certain assets to make room for new investments in emerging or high-demand areas.

The success of this approach was shown in 2018, with new investments achieving average equity-weighted internal rates of return (IRR) of more than 10%.

Material progress was also made at several of ADIA's development projects, including the Territoria Apoquindo mixed use project in Santiago, Chile, in which ADIA holds an 80% stake. In Asia, development of the mixed-use Paya Lebar quarter in Singapore was completed in late 2018. Separately, the 60-storey One Museum Place office tower in central Shanghai was completed last year and was already more than 50% leased by the end of 2018 (see case study). In the Hospitality sector, the 29-storey Four Seasons Hotel in Sao Paulo, Brazil, opened its doors to guests in October after a three-year construction process, boasting 258 rooms and 84 private residences.

Market volatility in 2018 led to periods of pricing dislocation between public and private real estate, resulting in relatively attractive entry points for new acquisitions during the course of the year.

The Real Estate team also continued to seek out opportunities in emerging markets, encouraged by tangible improvements to legal frame works . China, in particular, remained a key focus, with ADIA's overall real estate exposure up by one third over the past two years alone.

*Case Study*

## H-CARE PLATFORM

In India, mass urbanisation, rising wages and a rapidly growing middle class have led to a significant shortfall of housing supply. In 2015, the Indian government estimated that shortage to be up to 20 million homes, and analysts forecast up to 40 million affordable and mid-income homes will be needed to meet demand over the next seven years.

Addressing this issue has been a longstanding priority for the Indian government. Over recent years, numerous policies under the 'Housing for All by 2022' initiative have aimed to support residential construction, improve affordability and ultimately boost housing supply.

One key impediment for construction companies and developers has been a lack of financing options for purchasing land and funding early stage, pre-approval schemes.

In January 2016 and December 2017, ADIA completed investments in two funds: HDFC Capital Affordable Real Estate (H-CARE) 1 and 2. In total, the two funds form a $1 billion platform that aims to meet demand from developers for flexible funding, targeting both equity and debt opportunities in affordable and mid-market for-sale residential projects around India.

HDFC is one of the largest mortgage lenders in the country, with extensive relationships with leading development companies as well as in-house construction and project management expertise.

Since the H-CARE platforms were launched, they have supported the development of more than 43 residential projects and 130,000 units across six states in India, providing financing solutions to developers to meet their capital requirements.

In 2018, 11 investments were completed in the Mumbai Metropolitan Area, National Capital Region, Bangalore, Pune and Kolkata. India's National Investment and Infrastructure Fund (NIIF) also joined ADIA as an investor in H-CARE-2, further strengthening the platform.

The platform entered 2019 with a strong project pipeline, with further investments planned to continue supporting the development of mass-market residential projects.

As 2019 began, real estate market fundamentals remained well supported, as the weight of capital seeking quality investment returns continued to grow.

However, yields are likely to remain under pressure across the sector with resulting implications for our investment strategy.

As in 2018, ADIA's real estate team will seek to balance its emphasis on portfolio and asset management with selective acquisitions in areas with long-term growth potential. Meanwhile, we will look to deploy additional capital to existing, high potential assets, while continuing to assess new opportunities in line with our philosophy of "global relative value".

As the cycle continues to mature, the team will seek to maintain leverage on individual assets at moderate levels to reduce the need for future refinancing. It will also continue to take advantage of favorable capital markets to optimise leverage on its portfolio and extend maturities.

Emerging markets will remain a key focus in coming years, particularly China, India, and Latin America, where growth will be driven by urbanisation, a growing middle class and increased consumption.

We expect demand in both developed and emerging markets to remain strong for industrial assets, including logistics. As e-commerce continues to increase its share of the retail market, so will the need for larger and technologically superior warehouses, with efficient goods handling and last-mile delivery solutions. The Real Estate team is also positive about the prospects for the residential market, as population growth and urbanisation fuel substantial and growing demand for affordable housing. Within this sector, we expect growth to be increasingly concentrated in multi-family and student accommodation in developed markets, with build-to-sell residential projects a key focus in emerging markets.

In the office market, technology is expected to play a central role in dictating how workplaces of the future will look. The growth of co-working means tenants will demand flexible workspaces and leases, requiring more technologically advanced buildings that can adapt to shrinking or changing workforces.

In the hospitality sector, global demographics and changing consumer preferences for services and experiences are driving tourism and travel spend growth above that of GDP growth.

Meanwhile, the retail sector faces some of the greatest challenges in coming years as consumers increasingly migrate to online shopping. However, retail assets that dominate their catchment area offering a strong mix of food and beverage, entertainment and non-discretionary goods are likely to remain relevant.

*Case Study*

## ONE MUSEUM PLACE

One Museum Place is a 60-storey office building in central Shanghai that opened in 2018 after a five-year development process.

Majority-owned by an ADIA subsidiary and a leading global developer, the prime Grade-A tower forms the centrepiece of a new commercial zone – the Suzhou Creek Riverfront Hub – in downtown Shanghai.

Built to conform to the highest international premium standards, One Museum Place also includes an adjacent retail podium spread across six floors and provides direct access to a new subway station.

In total, One Museum Place provides almost 140,000 square metres of leasable area, helping to meet the demand for quality office space in central Shanghai, one of the world's fastest-growing cities.

The project embodies many of the core attributes that ADIA brings to its investments, including patience, and an ability to provide solutions in complex situations.

ADIA acquired the site in 2013, following a competitive government-run bidding process. Its success was partly based on its ability to provide a fully funded proposal and a compelling vision for the site that aligned with Jing An District and city-level objectives.

The building is one of the first in Shanghai to be certified LEED Platinum, the highest standard of environmental efficiency, and includes advanced air filtration systems that aim to provide the best possible working environment.

Among tenants to sign leases during 2018 were Shanghai financial services group Guotai Jun'an Securities and its subsidiary Guotai Jun'an Futures – which will take multiple floors – global pharmaceutical firm Pfizer, and a subsidiary of fast-growing Chinese tech firm Tencent. Other tenants include venture capital firms, consulting companies, architecture firms and advertising agencies.

The official opening of One Museum Place is due to take place later in 2019, at which time the leasing process is expected to be largely complete and the retail podium fully operational.

# Private Equity

The private equity market enjoyed another record-breaking year in 2018, with fundraising and deal activity maintaining a robust pace even as valuations topped all-time highs.

The asset class continued to exert a strong pull on both existing and new investors, attracted by expectations of future outperformance relative to public markets.

Having already hovered above their post-crisis average since 2014, median entry multiples broke assertively higher in 2018 to a new record of more than 10-times pre-tax earnings. Leverage multiples also reached levels last seen a decade ago, supported by investors' continued appetite for sub-investment grade debt as a source of yield.

At first glance, the market conditions shared certain similarities with those from the last cyclical peak in 2007. However, they also differed in several important respects.

The percentage of equity contributed to acquisitions in 2018 remained comfortably above 40% on average, compared with just over 30% in 2007, providing a significant cushion in the event of a downturn. Companies also continued to face little difficulty in servicing their debt, with interest coverage multiples still at healthy levels. Meanwhile, default rates remained both stable and low – below 1.8% in the U.S. and negligible in Europe.

In keeping with the backdrop, 2018 was also a year of firsts for ADIA's Private Equities Department (PED), particularly in its now mature principal investing activities.

Since 2012, PED has built a substantial team of professionals with direct transaction experience organised by region and across five industry sub-sectors.

In 2018, investments sourced by this team in collaboration with its partners comprised approximately 40% of PED's overall new commitments, a new high, and up from around 30% in 2017. The total value of new principal investments by PED increased 50% in 2018 compared to 2017, and has more than doubled since 2016.

The Department successfully completed 15 principal investments across its core sectors in 2018, in addition to several smaller direct venture capital investments, with an emphasis on opportunities where it could provide a differentiated capital solution to a seller or GP partner.

Of these, two transactions alone involved a total commitment of more than $1 billion: the acquisition of a significant minority stake in Pensions Insurance Corp (PIC), a leading player in the U.K.'s bulk-purchase annuity sector; and an investment into UPL Corp., the international operating unit of Indian agrochemicals solutions provider UPL Ltd (see case studies).

The UPL deal was also a demonstration of PED's increased focus on the Asia-Pacific region, which included investments in China and India during the year.

## OUTLOOK

With valuation and leverage metrics at or near record levels, private equity returns are likely to face headwinds going forward. Indeed, there were signs during 2018 of heightened caution in the market, as investors took note of sudden, sharp drops in public equities at various points during the year. While these proved short-lived, they served as an indicator that the prolonged equity bull market may be entering its latter stages.

As it did in 2018, PED will continue to favour opportunities with defensive or structured characteristics that will prove resilient across market cycles.

*Case Study*

## PIC: SUPPORTING AN INDUSTRY LEADER FOR FURTHER GROWTH

Over recent years, ADIA's Private Equities Department has been actively reviewing opportunities in the UK's pension insurance sector. The industry has experienced significant growth, driven by increasing demand from pension schemes looking to de-risk their defined benefit pension obligations.

A thorough understanding of this growing but still relatively niche area allowed the Department's Financials team to move rapidly in early 2018, when it became aware that J.C. Flowers & Co., a major shareholder in the U.K's Pension Insurance Corporation (PIC), was considering selling its stake. With its knowledge of the industry and of PIC, one of the UK's leading providers of pension insurance and bulk annuities, the ADIA team was able to move quickly in assessing the opportunity and enter negotiations with the seller.

This combination of deep industry knowledge and speed of execution resulted in a wholly owned subsidiary of ADIA agreeing in June to purchase a significant minority stake in PIC's parent company, Pension Insurance Corporation Group, from funds advised by J.C. Flowers & Co.

The investment was consistent with the Department's strategy of drawing on its specialist teams to pursue principal investment opportunities in market-leading businesses.

In keeping with its long-term focus, the Department has identified a number of important secular trends across sectors that it believes will provide significant opportunities in the years to come.

In financial services, a key focus will be the ongoing digitisation of traditional products and services. The potential of fintech is widely recognised, and this has been reflected in valuations. However, we see promising opportunities to support businesses seeking growth capital, and established companies seeking to transform existing assets with technology across a range of industries.

PED also remains attentive to the healthcare space, which is evolving rapidly to meet the needs of ageing populations and to lower costs for overstretched healthcare systems. These range from life science companies to the "over-the-counter" and specialty pharmaceutical space, to the areas of wellness and disease prevention.

In the Industrials sector, PED is working closely with founders, corporations and private equity partners to provide solutions to a range of challenges, including providing capital to companies seeking to expand globally, and helping businesses retool for the digital age.

Key areas in Industrials include sustainability, with a focus on energy efficiency, food safety and security, and water and waste management. We also see opportunities emerging from the growth of industrial connected devices, which will fuel demand for capital in areas such as automation, robotics, machine learning and cybersecurity.

With its specialised sector teams and a broad mandate to invest globally, PED is well positioned to capitalise on these and other trends.

In the year ahead, the Department will continue to seek out principal investments in its core sectors. It will also continue to make new fund commitments to partners with which it has developed broad relationships built on a mutual understanding of priorities.

*Case Study*

## UPL-ARYSTA: FACILITATING A MAJOR CORPORATE PARTNERSHIP

In July 2018, ADIA and alternative asset management firm TPG agreed to invest $600 million each in UPL Corporation Limited (UPL), the international operating company of UPL Limited, a global agrochemical solutions provider listed on India's National Stock Exchange.

The investment was made to support UPL's acquisition of US-based Arysta LifeScience (Arysta) for $4.2 billion, creating a global market leader in post-patent agricultural chemicals, with proforma revenues of over $4 billion and pre-tax earnings of over $1 billion. The combined business brought together UPL's strong manufacturing capabilities and well-diversified product portfolio, with Arysta's asset-light business model, strong research and development capabilities, and exposure to fast-growing niche products. The new company expects to benefit from significant cost and revenue synergies given its complementary product portfolio and geographic exposure.

To facilitate this transaction, ADIA's Private Equities team drew on its global network of corporate relationships. PED was already familiar with the Arysta business and the strategy of its parent company, Platform Specialty Products, and so approached UPL's management group to develop a compelling investment proposal. This appreciation of both buyer and seller objectives, combined with the relationships held with both parties, was a key advantage in positioning UPL as the most logical buyer of the business.

The structure of the deal ultimately enabled UPL to complete a transformative transaction while preserving its investment grade rating.

# Infrastructure

Demand for infrastructure assets scaled new heights in 2018, as investors continued to seek out the asset class for its diversification characteristics and reputation for relatively stable returns.

In addition to more established investors, growing interest from pension funds and insurance companies helped to underpin the market even as valuation multiples continued to climb.

*"For ADIA's Infrastructure team, the market's continued strength resulted in another year of solid performance"*

One sector that attracted interest in 2018 was renewable energy, reflecting its growing maturity and acceptance as a clean and viable alternative to power generated from fossil fuels. This trend will continue in both developed and emerging markets, particularly as wind and solar energy prices approach, or fall below, parity with more conventional sources of energy.

For ADIA's Infrastructure team, the market's continued strength resulted in another year of solid performance, with strong dividend income and capital gains across the portfolio.

Despite the more competitive landscape, the Infrastructure team also successfully deployed more than $2 billion to new and follow-on investments. Among these, ADIA was part of the successful consortium to acquire a 51% stake in WestConnex, the largest road infrastructure project in Australia (see case study). It also acquired a 5.2% indirect stake in Cellnex Telecom SA, Europe's largest independent telecom tower company, with a network of more than 28,000 wireless telecommunications sites across the Continent and the U.K.

The Infrastructure team also allocated additional capital to existing investments, including the U.K.'s Anglian Water and Indian renewable energy company Greenko (see case study).

Heading into 2019, there are few signs of a slowdown in demand for infrastructure assets, which will likely ensure that valuations remain at elevated levels.

## OUTLOOK

In 2019, investors are likely to continue to diversify their strategies and explore new markets such as China and India, as well as major markets in Latin America.

Investors are also becoming more willing to take on construction and development risk in exchange for higher expected returns.

In addition, certain asset types once deemed less attractive are being reassessed as views around technology and obsolescence continue to evolve. One such example is telecoms, as demonstrated by the Infrastructure team's investment in Cellnex. This is due to the massive capital requirements needed to build infrastructure to accommodate the growing demand for data, network digitisation and 5G delivery.

*Case Study*

## WESTCONNEX

WestConnex is a major infrastructure project comprising concessions over the M4, M5 and M4-M5 Link motorways in Sydney, Australia. WestConnex will support Sydney's long-term economic and population growth with improved transport access and connections to western Sydney, key employment hubs and Sydney's major international gateways at Sydney Airport and Port Botany.

In 2017, an ADIA subsidiary collaborated with well-aligned and proven partners – Transurban Group, AustralianSuper and Canada Pension Plan Investment Board – to participate in the process for the New South Wales (NSW) Government to privatise a 51% stake in WestConnex. The consortium, Sydney Transport Partners, was one of several international groups bidding for the asset.

As part of its bid, the consortium was required to conduct a detailed assessment of construction and traffic risks and seek the approval of competition and foreign investment regulatory bodies.

In August 2018, the NSW Government selected Sydney Transport Partners as the winning bidder for the 51% stake in the entities holding the WestConnex assets. The acquisition included three distinct toll road concessions, at different stages of development.

In addition to its investment in WestConnex, the ADIA subsidiary also participated in Transurban Group's equity raising on the Australian Securities Exchange, highlighting an ability to participate actively in both listed and unlisted markets to support our partners. This also followed an earlier successful investment alongside Transurban Group in the Queensland Motorways network in Brisbane, Australia in 2014.

Various sections of the M4 Motorway opened to traffic in 2017, while other sections of the infrastructure project are expected to reach construction completion and open to traffic over the coming years. The twin 7.5 kilometre tunnels of the M4-M5 Link are due to open in 2023.

ADIA began allocating funds to infrastructure in 2007, through a flexible mandate that enabled it to invest globally, in equity or debt, direct or through funds and in both unlisted and listed assets. Since then, the Infrastructure team has successfully built a substantial and diversified portfolio across regions and asset types that has exceeded its benchmark over the same period.

Going forward, the team will seek to balance its strategy between continuing to grow its portfolio with value-enhancing investments, while increasing its emphasis on asset management. This will involve ongoing, in-depth analysis of the underlying value drivers and risks within the portfolio.

In seeking new opportunities that meet its risk-return criteria, the Infrastructure team's preference is for bilateral negotiated transactions. However, it will also continue to participate in competitive auctions for large, market-leading assets in its preferred sectors, alongside experienced partners.

Given the size and maturity of the portfolio, the value of new investments is likely to be higher on average than in the past. However, the team will also continue to make follow-on investments in existing assets as demonstrated by its participation in capital raisings by Indian renewable energy companies Greenko and Renew Power, among others.

Over the next 20 years, traditional infrastructure is likely to face challenges from new technological developments, including autonomous vehicles, 3D printing and new forms of travel such as hyperloop and even intercity rocket travel. The Infrastructure team is closely monitoring these and other developments, to ensure its portfolio continues to deliver sustainable long-term returns.

*Case Study*

## GREENKO

Based in Hyderabad, Greenko has been one of India's fastest-growing independent power producers since 2006, focusing on developing, building and operating renewable energy power plants.

Greenko's emergence coincided with a concerted push by the Indian Government to increase renewable energy capacity to 175 Gigawatts by 2022. This included 100 Gigawatts of solar capacity and 60 Gigawatts of wind capacity. Its targets were driven by, among other factors, a deficit of power production in India, growing per-capita power consumption, and the declining cost of renewables.

In 2015, ADIA analysed India's renewable energy market and identified Greenko as an attractive market leader, with sufficient scale, a self-development business model, and experience in wind, hydro and solar energy generation.

By 2016, ADIA had acquired approximately 15% of the company and established a strong relationship with the Greenko team and other investment partners. It has since supported the company in its growth path from less than 1GW of operating capacity in six states to more than 4GW of capacity in 15 states – enough to provide power to 2.3 million households.

This growth effort has entailed acquiring and/or developing over 90 sites and directly employing and training over 2,000 people. It has also involved interacting closely with local partners and stakeholders, providing education, skills development, healthcare, rural development and a host of environmental activities.

Since ADIA's investment in Greenko, India has made substantial progress in achieving its targets and the price of renewable energy has continued to decline. This has led the Indian Government to respond by further increasing its target for renewables to 225GW in capacity by 2022.

Against this backdrop, Greenko remains well placed to play a leading role in the decarbonisation of the Indian power market.

Board of Directors
and Investment
Committee

# Board of Directors

H.H. Sheikh Khalifa bin Zayed Al Nahyan
*Chairman*

H.H. Sheikh Mohammed bin Zayed Al Nahyan
*Deputy Chairman*

H.H. Sheikh Mansour bin Zayed Al Nahyan

H.H. Sheikh Hamed bin Zayed Al Nahyan
*Managing Director*

H.H. Sheikh Mohammed bin Khalifa bin Zayed Al Nahyan

H.E. Mohammed Habroush Al Suwaidi

H.E. Khalil Mohammed Sharif Foulathi

# Investment Committee

H.H. Sheikh Hamed bin Zayed Al Nahyan
*Board Member*
*Managing Director*
*Chairman, Investment Committee*

H.H. Sheikh Mohammed bin Khalifa bin Zayed Al Nahyan
*Board Member*
*Executive Director, Indexed Funds Department*

H.E. Khalil Mohammed Sharif Foulathi
*Board Member*
*Senior Deputy Chairman, Investment Committee*

Majed Salem Khalifa Rashed Alromaithi
*Executive Director, Strategy & Planning Department*
*Deputy Chairman, Investment Committee*

Mohamed Ahmed Mohamed Bandouq Alqamzi
*Executive Director, Internal Equities Department*

Obaid Murad Hassan Abdulla Alsuwaidi
*Executive Director, External Equities Department*

Dhaen Mohamed Dhaen Mahasoon Alhameli
*Executive Director, Fixed Income & Treasury Department*

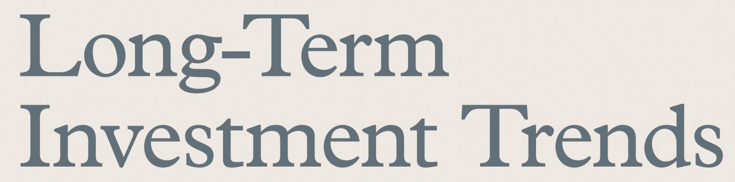
Khalifa Matar Khalifa Saif Almheiri
*Executive Director, Alternative Investments Department*

Khadem Mohamed Matar Mohamed AlRemeithi
*Executive Director, Real Estate & Infrastructure Department*

Hamad Shahwan Surour Shahwan Aldhaheri
*Executive Director, Private Equities Department*

Nasser Shotait Salem Rashed Al Ketbi
*Executive Director, Investment Services Department*

Juma Khamis Mugheer Jaber Alkhyeli
*Executive Director, Accounts Department*


Long-Term
Investment Trends

# Long-Term Investment Trends

*ADIA maintains a focus on the major themes and issues shaping financial markets over the long term. We view this as central to our ability to fulfil ADIA's mission, which is inherently long term in nature. Our people are encouraged to devote time to analysing the forces that will define the global economy of the future.*

*In this section we ask a selection of ADIA investment professionals to identify just some of the ways that their asset classes might be impacted by two major trends over the next decade: technology and climate change.*

## TECHNOLOGY

*The business of investing has been transformed by rapid advances in technology over recent years. In the articles below, we explore how the next phase of technological development might affect markets, private equity investing and the real estate sector.*

### DR. TOM ARNOLD

*Global Head of Real Estate,*
*Real Estate & Infrastructure Department*


Technological advances are transforming the way people work, live and travel. For real estate investors who anticipate these changes and adapt their strategies accordingly, the competitive advantages may be significant. Those that don't are likely to underperform.

For end users of real estate, the future offers increased transparency, efficiency and flexibility. Collaborative workplace organisations are knocking down literal and figurative 'walls' and changing real estate dynamics. These shared office spaces provide users with greater choice while charging flexible rents driven by demand / supply algorithms and used services.

With greater availability of real estate data and the rise of technologically advanced buildings, the role of real estate operators is changing. The smart buildings of the future will be equipped with sensors that internet applications can read and translate into usable data, more popularly known as the "Internet of Things". IoT can improve both the real estate industry and the everyday lives of individuals through the application of predictive maintenance and smart energy management.

Although still in its infancy, autonomous transportation is expected to have the greatest impact on the urban landscape and future building uses. Buildings designed today will deliver into a world where private car ownership is even lower than it is today. Developers are already adding drop-off platforms and building infrastructure to accommodate car sharing services. Also under consideration is the need to 'future-proof' parking facilities, with the garages of today potentially becoming the urban logistics, housing or even data centres of tomorrow.

It is important to remember that physical assets cannot be transformed overnight. This requires owners to be especially attuned to the trends and expectations that will drive demand for their assets, not just now, but potentially decades in the future.

## HUMAID SALEM AL DARMAKI

*Head of European Growth, Internal Equities Department*

Technology has already transformed the business of investing in listed equities, but will become an increasingly significant driver of returns in the years and decades to come.

For investors, technology is likely to provide new and dynamic tools to efficiently gather and analyse data, and ultimately generate insights. For companies themselves, the ability to harness technology and counteract the risk of potential disruption will become important differentiators.

In the distant past, investors manually analysed companies on an individual basis. Now, they have real time access to financial data sets – from company financials and broker estimates to economics data – that enable them to build complex valuation models used to forecast future returns.

This systematic, data-based approach, known as quantitative investing, is likely to become increasingly sophisticated in the years to come, as processing power increases and new sources of data emerge. These could include, for example, payment processing databases and satellite imagery.

However, while data is a powerful tool it does not provide all the answers. Investors seeking an edge must also look carefully at which companies are using technology to drive operational efficiencies and improve margins. Companies that successfully harness their internal data to improve performance will differentiate themselves against peers and achieve higher valuations.

On the flip side, companies will continue to face challenges to their business models from potentially disruptive technologies, and either adapt or fall behind. In some sectors, the trends are already clear. For example, leaders in the industrial software space are now well known and their valuations reflect their success. Among automakers, the emergence of electric and autonomous vehicles is weighing on valuation multiples and will likely continue to drive sentiment and pricing for years to come.

For investors, there is no one-size-fits-all framework for analysing the threats and opportunities that technology will bring. However, one thing is already becoming clear: Management teams that embrace technology should benefit from faster growth, higher barriers to entry and higher stock valuations. Those that do not, risk being serial underperformers.

## HISHAM HASAN

*Senior Portfolio Manager, Private Equities Department*

Private equity has made significant inroads in the tech space over the last decade, helping to identify and fund many innovative technologies. In the years to come, private equity firms are likely to apply this thinking to themselves: using technology to transform the way they source, analyse and grow their investments.

While adoption is still in its early stages, PE firms have begun to augment their manual, relationship-driven approach to identifying investment opportunities with an overlay of data analytics. This involves gathering data from multiple public and proprietary sources into an analytics platform, enabling them to identify companies and sectors that display attractive investment characteristics. Doing so can provide a significant edge in identifying proprietary opportunities and prioritising where they deploy resources.

Technology also has a powerful role to play in due diligence. Given the increasingly compressed timeframes for many sell-side processes, the ability to deploy in-house data analytics teams is becoming ever more valuable. By working alongside investment professionals, data analysts can rapidly validate the rationale for a transaction by analysing their target's data from multiple perspectives .

However, over the medium-to-long term, the ability of PE firms to generate outsized returns is likely to come from their ability to use technology to enhance value at their portfolio companies. Early adopters are already starting to develop analytical frameworks to capture data from a wide range of internal and external sources, as well as from across their investments. Their objective: to ensure that knowledge and best practices are shared efficiently between their portfolio companies.

Those firms that effectively implement this data-centric strategy will likely see their competitive advantage increase over time as they build a moat of proprietary talent, data and insights.

# CLIMATE CHANGE

*As financial markets continue to respond to policy changes and advances in climate change technology, we look at some of the opportunities and risks for investors brought about by the transition to a lower carbon global economy.*

## MARC ANDRE LEWIS

*Head of Portfolio Construction, Strategy & Planning Department*


The story of how climate change will affect global economies and financial markets over the next decade is likely to be a complex and nuanced one. Accepting this, and finding methods that both mitigate risks and capture opportunities, will be a key challenge for investors of all sizes.

At a macro level, financial markets are already being influenced by the increasing amount of capital deployed in line with climate change and Environment, Social and Governance (ESG) principles. This trend is certain to continue into the future.

Discussion is often too focused on identifying the companies deemed to contribute to climate change and then excluding them from investment mandates. This approach relies solely on current-state data, and does not factor in the significant potential for companies to innovate and evolve to the needs of a global economy less dependent on fossil fuels.

Looking to the future, there are many uncertainties to consider. The pace of climate change is not pre-determined and could be altered by a number of factors, most notably changes to government policy, regulation and the rate of technological change. The reaction of global financial markets, and companies themselves, to that undefined pace of climate change is also difficult to forecast. Accordingly, there is no easy split between those that will benefit and those that will suffer from the impact of a changing climate.

One of the main goals of portfolio construction is to build the necessary resilience to manage uncertainty.

This is best achieved by ongoing and detailed scenario modelling that considers evolving market dynamics in the context of an investor's specific objectives and investment horizons. When done well, this will allow investors to manage the downside risk of a changing climate by identifying negative scenarios and allowing them to plan accordingly.

The winners of a lower carbon future may not be clear for some time. Capturing the opportunities at an asset allocation level will require an ongoing assessment – and reassessment – of portfolio robustness combined with agile decision-making, applied consistently over time.

## MUJEEB QAZI

*Head of Energy, Real Estate & Infrastructure Department*


Over the past decade, renewable energy has moved from a promising but still-emerging technology to a viable and ever-increasing part of the global energy mix. The outlook is positive for that growth to continue, although improving the consistency of supply will be the defining challenge for renewables over the next decade.

There is significant positive momentum behind renewable energy development and this will continue, driven by advances in technology – particularly for solar and wind power – and supportive government policies. Some studies suggest that by as early as 2020, the price of energy generated from commercially available renewable technologies will be at least equal to or cheaper than fossil fuels. Indeed, this is already the case in some markets such as India and Mexico.

However, reaching cost parity with power generated from fossil fuels is only half the equation. Renewable energy sources are intermittent: solar power can only be generated during the day, for instance, and works best in cloudless conditions.

A new generation of flexible gas turbines is likely to be part of an interim solution for future energy networks based primarily on solar and wind power. These turbines will act as a low-emitting and cost-effective option, able to meet the varying residual load requirements caused by intermittent renewable power generation. But without adequate storage technology, there will remain a natural ceiling on the proportion of base load energy renewable sources can supply.

Battery storage capacity is already growing rapidly, in large part due to demand from electric vehicles. However, the technology remains in its infancy and further advances are essential. If, as many expect, they are forthcoming, then renewables will continue their inexorable march towards eventually replacing traditional fuels entirely.

## BRIAN TIPPLE

*Global Head of External Equities, External Equities Department*

Climate change is having a gradual, rather than revolutionary, impact on public markets, but the pace of change is accelerating. As it does, investors are increasingly focused on climate change as a return driver, rather than principally an exercise in demonstrating social, regulatory or political sensitivity.

Over recent years, there has been strong growth in the number of ESG strategies available in the market. Investors now have a much larger number of ESG options to choose from and even conventional strategies are likely to begin incorporating these factors into their research process in the coming years.

Climate change is a driver of significant innovation for businesses, and real opportunities are emerging for companies and sectors to become early adopters – which capital markets tend to reward with higher valuations. Sometimes these are not the obvious candidates; for instance, industrial companies designing the components for new wind turbines.

For asset managers, climate change is moving from the periphery to a field that requires the development of highly concentrated strategies. These are based on deep research of specific markets, certain sectors and companies, to find stocks that align with demand created by climate change.

As ESG linked investments proliferate over the next decade, these products will be among the most interesting to watch. By targeting the 'real world' profit opportunities that exist for early adopters, they have the potential to attract investors across the spectrum, from those that invest for a social purpose to those that are purely driven by return considerations.

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