

The Benefits of Diversity

APAC's Role in Investment Portfolio Growth

September 2023





Introduction

A fast-evolving landscape of geopolitical tension, elevated inflation, rising interest rates, and shifting policy developments presents both challenges and opportunities for investors navigating a wave of transformative change in international asset classes. In particular, as investment funds move to revise their strategies, the dynamic real estate (RE) markets of the Asia Pacific (APAC) are now drawing increasing attention, as managers seek to tap their historically strong track record for growth as well as their potential for portfolio diversification at a time of rising levels of market risk.

The purpose of this study, therefore, is to shed light on how RE as an asset class can help investors in APAC markets achieve the goals of diversification and enhanced risk-adjusted returns¹, focusing especially on the nuances specific to pairwise correlations, both inter-regionally and intra-regionally.

Based on our analysis, incorporating APAC RE into a global portfolio has significant potential to augment portfolio values. Key benefits include:

- **Economic Diversification:** APAC's economic growth has limited correlation with the United States (US) and Europe (EUR), while intra-regional pairwise correlations within APAC economies are also notably lower than in EUR. Both divergences present tangible opportunities for diversification.
- **Asset Class Diversification:** Historically, APAC RE has consistently delivered solid total returns while also displaying low to negative correlations with other regional asset classes, including equities, bonds, and real estate investment trusts (REITs). This again highlights the potential of APAC RE to diversify portfolio returns and mitigate overall investment risk.
- **Enhanced Risk-Adjusted Returns:** APAC RE's unique characteristics mean that a strategic allocation of up to 30% will allow investors both to optimise risk-adjusted returns and simultaneously manage volatility.

This being said, it is important to acknowledge the theoretical nature of our research on the diversification benefits of constructing a well-balanced portfolio. In addition, we recognise the limitations of the historical data adopted by this report and note that investment decisions will always involve other factors investors must consider.

We hope this latest Perspective offers investors insights into the compelling potential that portfolio diversification offers. To further discuss our views on APAC and global real assets landscapes, we invite you to reach out to the CapitaLand Investment team.

¹ Measured by the total return per unit of volatility, based on the ratio of the average gross total returns to standard deviation for each hypothetical investment portfolio.

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Global investors should consider exploring APAC RE markets to diversify their portfolios and potentially improve risk-adjusted returns.

Boosting Opportunity and Returns Potential with APAC RE

Recent market developments have increased pressure on global investors to explore growth markets, which offer a combination of benefits including robust secular tailwinds, strong demand fundamentals, rapid urbanisation, and the growing influence of an emerging middle-class. In this context, APAC has consistently held a leading position as a result of its long-term prospects for solid growth. Beyond that, the ongoing institutionalisation of APAC markets should also serve to enhance the investment pool as they attract more inward foreign direct investment and increase the number of product offerings.

A strategic focus on growth markets (and in particular on APAC) not only helps generate alpha but also offers a way to diversify investment portfolios² by mitigating risks associated with traditional markets and products — an increasingly crucial feature given the limited options for enhancing returns in the current environment.

1. APAC: A Catalyst for Economic Diversification across Markets

CAPITALISING ON ECONOMIC CORRELATIONS

The first factor that makes APAC a compelling choice is the potential for economic diversification. This is apparent from the

pairwise correlations of annual GDP growth between APAC, US and EUR markets during the period 1990 to 2022 (Figure 1). The pairwise correlation for APAC-US is lowest, with APAC-EUR correlation marginally higher. Notably, US-EUR correlation for the same period was significantly higher, reflecting the stronger positive relationship between the two economies.

INTRA-REGIONAL ANALYSIS REVEALS NUANCES

Drilling deeper, the respective pairwise correlations of US and EUR were assessed relative to select APAC economies, including Japan, South Korea (Korea), China, Hong Kong (HK), Singapore, and Australia.

The analysis revealed that correlations between the US and Korea, as well as between the US and China were lowest. Conversely, the correlation between the US and Australia was the strongest by a significant margin (Figure 2). Similar patterns were observed in the analysis of EUR/APAC markets.

Overall, these findings indicate that APAC demonstrates only a moderate level of correlation with the US and EUR, as a result (among other factors) of their varying economic structures, levels of development, and political systems.

Focusing the analysis on an intra-regional basis, the resultant pairwise correlations are varied, with Australia displaying broadly the lowest pairwise correlations, followed by China, Japan and Korea. Conversely, HK and Singapore are more in sync with other regional economies.

Figure 1: Pairwise Correlation of Annual Real GDP Growth (1990 to 2022) by Region

	APAC	US	EUR
APAC	1.00		
US	0.45	1.00	
EUR	0.57	0.75	1.00

APAC has historically provided higher diversification benefits with the US and EUR

Source: Oxford Economics, CLI Group Research, September 2023

Figure 2: Pairwise Correlation of Annual Real GDP Growth (1990 to 2022) by Region and APAC Economy

	APAC	US	EUR	Japan	Korea	China	HK	Singapore	Australia
APAC	1.00								
US	0.45	1.00							
EUR	0.57	0.75	1.00						
Japan	0.74	0.54	0.71	1.00					
Korea	0.51	0.26	0.38	0.57	1.00				
China	0.51	0.32	0.17	0.16	0.35	1.00			
HK	0.84	0.49	0.48	0.65	0.63	0.66	1.00		
Singapore	0.79	0.52	0.49	0.68	0.68	0.57	0.86	1.00	
Australia	0.34	0.76	0.51	0.16	0.09	0.42	0.29	0.36	1.00

Both the US and EUR recorded the lowest correlations with Korea and China

Source: Oxford Economics, CLI Group Research, September 2023

2 Refer to CLI Group Research Topical Paper – Finding Opportunity in Volatility within Asia Pacific: Reprioritising Fundamentals in Challenging Times, June 2023.

By contrast, EUR exhibits a relatively higher and narrower range of correlations among its constituents (Figure 3), with consequently less potential for diversification within the region compared to the wider correlations observed

within APAC economies. Specifically, the average pairwise correlation in EUR is 0.79 – this is in stark contrast to the APAC average of 0.48, reflecting higher levels of economic and policy integration among EUR economies.

Figure 3: Pairwise Correlation of Annual Real GDP Growth (1990 to 2022) by Region and European Economy

	APAC	US	EUR	France	Germany	Italy	Spain	UK
APAC	1.00							
US	0.45	1.00						
EUR	0.57	0.75	1.00					
France	0.58	0.81	0.95	1.00				
Germany	0.57	0.45	0.82	0.70	1.00			
Italy	0.56	0.77	0.96	0.94	0.71	1.00		
Spain	0.47	0.70	0.92	0.89	0.62	0.91	1.00	
UK	0.58	0.85	0.84	0.90	0.52	0.88	0.83	1.00

Intra-regional pairwise correlations across EUR are considerably more positive

Source: Oxford Economics, CLI Group Research, September 2023

2. APAC RE: Opportunities for Asset Class Diversification

SPOTLIGHT ON ASSET CLASS PERFORMANCE

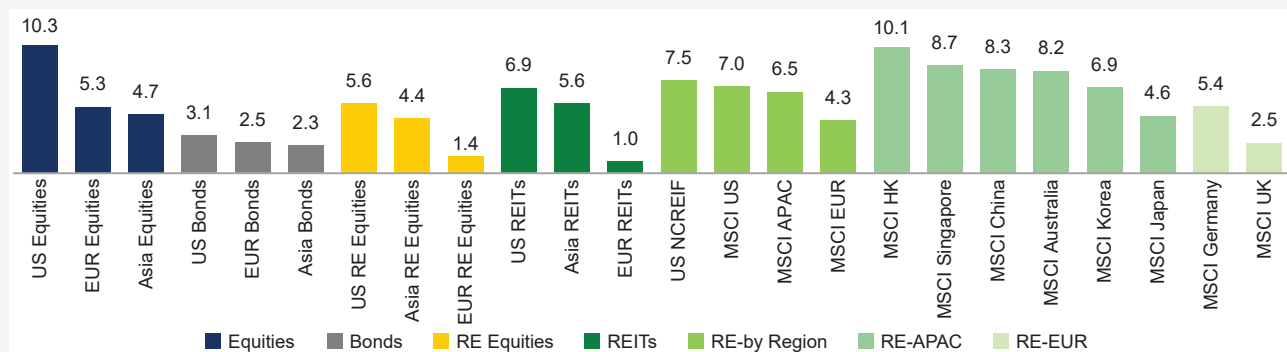
An analysis of average annual US dollar (USD) total returns across asset classes from 2007³ to 2022 produced some interesting insights into performance variances between different global regions and their investment types.

In particular, US equities emerged as the best-performing asset class, with an average annual total

return of 10.3%. They were followed by a broader selected index of global equities, which delivered an average return of 6.8%. Finally, bonds and REITs provided average returns of 2.6% and 4.5% respectively (Figure 4).

RE, meanwhile, generated a global average total return⁴ of 6.1%⁵ over the same period, significantly surpassing the 3.8% delivered by its RE equities counterparts. This outperformance was primarily driven by the US (7.5%), but was followed closely by APAC⁶ (6.5%), with most markets in the region delivering returns higher than the APAC average.

Figure 4: Average Annual USD Total Returns (2007 to 2022) by Asset Class and Geography (%)⁷



Source: Bloomberg, NCREIF, MSCI, CLI Group Research, September 2023

3 Due to data availability constraints, our analysis focused on a shorter historical time series to be consistent with the MSCI RE total returns in APAC countries that start from 2007.
 4 Refers to income returns and capital gains from direct RE in USD terms, unlevered and before tax and other associated costs.
 5 Average of US NCREIF, MSCI APAC and MSCI EUR.
 6 Composition of the MSCI APAC – Japan (33%), Australia (26%), HK (13%), Singapore (12%), Korea (5%), China (4%) and Others (7%), as of December 2022.
 7 Index benchmarks are in order of sequence: S&P 500 Index, CAC 40 Index, FTSE Asian Pacific Index, Bloomberg Barclays US Aggregate Index, Bloomberg Euro Aggregate Index, Bloomberg Asian-Pacific Aggregate Index, S&P 500 Real Estate Sector GICS Level 1 Index, STOXX Europe 600 Real Estate Index, FTSE EPRA Nareit Asia Pacific Index, MSCI US REIT Index, S&P Asia Pacific REIT Index, S&P Europe REIT Index, US NCREIF Property Index, MSCI US Annual Property Index, MSCI APAC Annual Property Index and MSCI Europe Annual Property Index.

ASSET SYMPHONY: SEEKING HARMONY IN LOW REGIONAL CORRELATION

With APAC RE already providing significant total returns on a stand-alone basis, we then analysed the value-add of potential diversification by including RE as part of a global investment portfolio alongside other asset classes, including equities, bonds, and REITs.

Using a global RE portfolio as a baseline, we see obvious diversification benefits reflected in the low-to-moderate

pairwise correlation range of 0.23 to 0.30 between three regional indices (Figure 5). Correlation variations between US, APAC and EUR regions are mostly attributed to differences in occupier profiles, lease structures, and land use policies, amongst others.

When other regional asset classes were included in the analysis, returns from APAC and US RE consistently displayed low-to-negative correlations. On the flipside, EUR displayed considerably stronger correlation across regions and asset classes, indicating fewer diversification benefits (Figure 6).

Figure 5: Pairwise Correlation of USD RE Total Returns (2007 to 2022) by Region

	MSCI APAC	US NCREIF	MSCI EUR
MSCI APAC	1.00		
US NCREIF	0.23	1.00	
MSCI EUR	0.30	0.24	1.00

Source: MSCI, Bloomberg, CLI Group Research, September 2023

A global RE portfolio can benefit from low to moderate cross-regional correlations

Figure 6: Pairwise Correlation of USD RE Total Returns (2007 to 2022) by Asset Class

	MSCI APAC	US NCREIF	MSCI EUR
US Equities	-0.16	0.18	0.71
US Bonds	0.58	-0.11	0.29
US RE Equities	-0.14	0.27	0.38
US REITs	-0.17	0.23	0.30
EUR Equities	-0.18	0.06	0.76
EUR Bonds	0.16	-0.16	0.11
EUR RE Equities	-0.21	-0.03	0.58
EUR REITs	-0.26	0.00	0.53
Asia Equities	0.06	-0.09	0.80
Asia Bonds	-0.27	0.32	0.24
Asia RE Equities	-0.05	-0.02	0.63
Asia REITs	-0.09	0.09	0.54
Average	-0.06	0.06	0.49

Source: MSCI, Bloomberg, CLI Group Research, September 2023

MSCI APAC and US NCREIF can provide meaningful diversification value add with other asset classes globally

UNCOVERING CORRELATION BETWEEN INDIVIDUAL APAC MARKETS

Delving deeper into individual APAC markets, we next analysed RE total return pairwise correlations involving both core global economies and markets within the region.

To begin with, we note the US produced consistently low positive correlations with most APAC markets, with values typically confined within a tight range of 0.04 to 0.36 (Figure

7). In contrast, correlations involving EUR were again generally higher, while also featuring significant variability, ranging from -0.03 and 0.88.

Within APAC markets, varying levels of pairwise correlations were observed. While correlations within the region mostly indicate weak associations, there were instances where levels were moderate-to-strong, including one notable example where the relationship was highly positive (i.e., Korea-Australia).

Figure 7: Pairwise Correlation of USD RE Total Returns (2007 to 2022) by APAC Economy

	MSCI APAC	US NCREIF	MSCI EUR	MSCI Japan	MSCI Korea	MSCI China	MSCI HK	MSCI Singapore	MSCI Australia
MSCI APAC	1.00								
US NCREIF	0.23	1.00							
MSCI EUR	0.30	0.24	1.00						
MSCI Japan	0.86	0.04	-0.03	1.00					
MSCI Korea	0.15	0.14	0.88	-0.23	1.00				
MSCI China	0.66	0.15	0.18	0.47	-0.06	1.00			
MSCI HK	0.48	0.25	0.29	0.10	0.38	0.46	1.00		
MSCI Singapore	0.74	0.36	0.44	0.41	0.44	0.51	0.58	1.00	
MSCI Australia	0.48	0.07	0.70	0.11	0.83	0.09	0.56	0.60	1.00
Average	0.56	0.17	0.41						

US NCREIF recorded broadly lower positive correlations with APAC economies compared to MSCI EUR

Source: MSCI, Bloomberg, CLI Group Research, September 2023

3. Enhanced Risk-Adjusted Returns Via Allocation to APAC RE

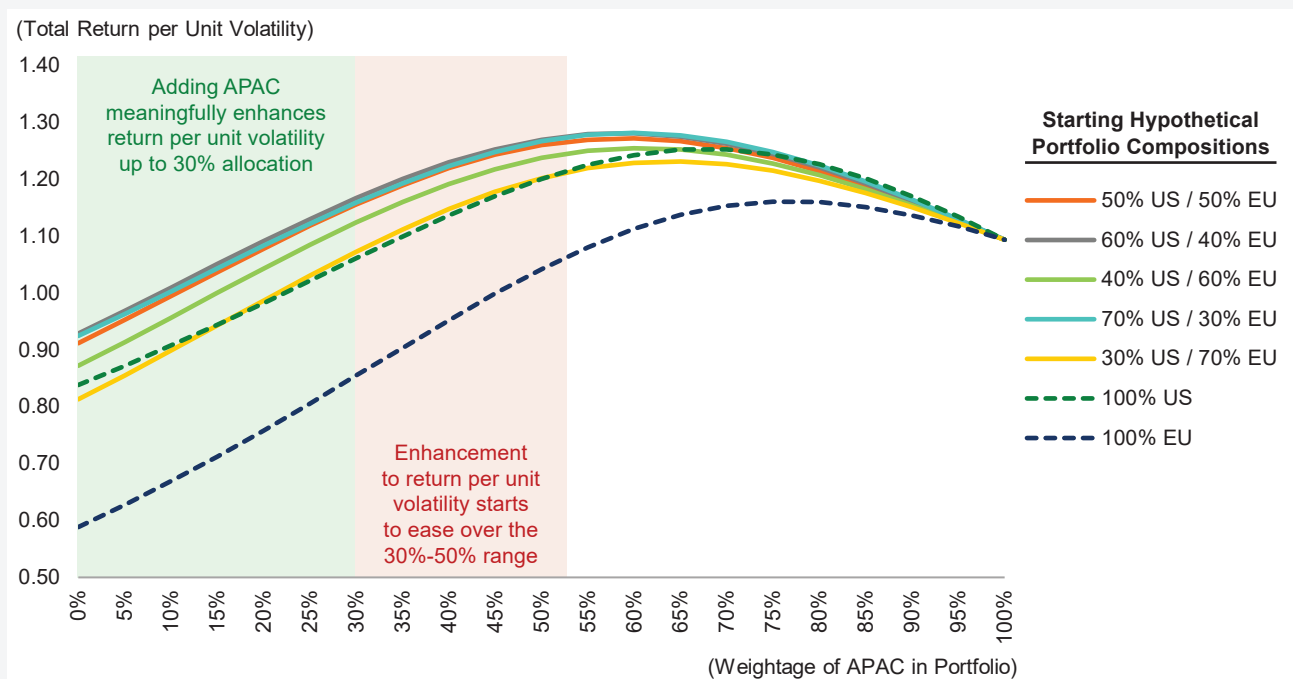
AMPLIFY RETURNS WITH REDUCED VOLATILITY

A final benefit offered by APAC RE is that investors can meaningfully improve risk-adjusted returns while simultaneously reducing overall risk through a sound system of portfolio construction and rebalancing. To this end, we conducted an analysis comparing risk-adjusted returns associated with different combinations of US and EUR RE allocations.

Seven diverse scenarios were analysed, each representing different RE allocation mixes. In each scenario, the allocation to APAC RE was incrementally raised by 5%, with corresponding risk-adjusted returns then plotted and analysed (Figure 8).

The analysis yielded two main insights. First, incorporating APAC RE into a hypothetical portfolio with an allocation of up to 30% significantly enhances risk-adjusted returns. Second, when the allocation to APAC RE reaches 50%, the incremental increase in total return per unit volatility becomes more moderate. Notably, these observations remained consistent across all seven scenarios.

Figure 8: Derived Risk-adjusted Returns Through Adding APAC to Varied US and EUR RE Portfolio Mixes



Source: MSCI, Bloomberg, CLI Group Research, September 2023

APPROACH TO OPTIMISING RE PORTFOLIO STRATEGY

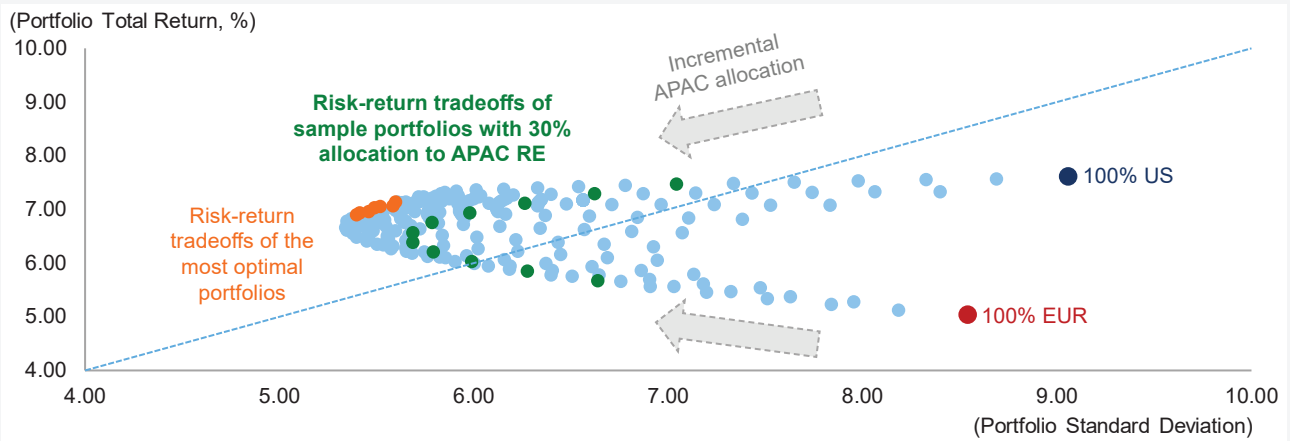
An assessment was undertaken to analyse portfolio allocation scenarios that offer maximum expected total returns for a given level of risk. This involved plotting an efficient frontier representing a range of hypothetical portfolios. This could then be used by investors to evaluate potential risk/return tradeoffs compared to their own portfolios.

Although portfolio compositions indicating 55% to 65% APAC, 21% to 32% US, and 8% to 18% EUR achieved the

highest level of risk-return tradeoffs (Figure 9), we recognise these allocations may not be feasible for investors whose primary focus lies outside the APAC region.

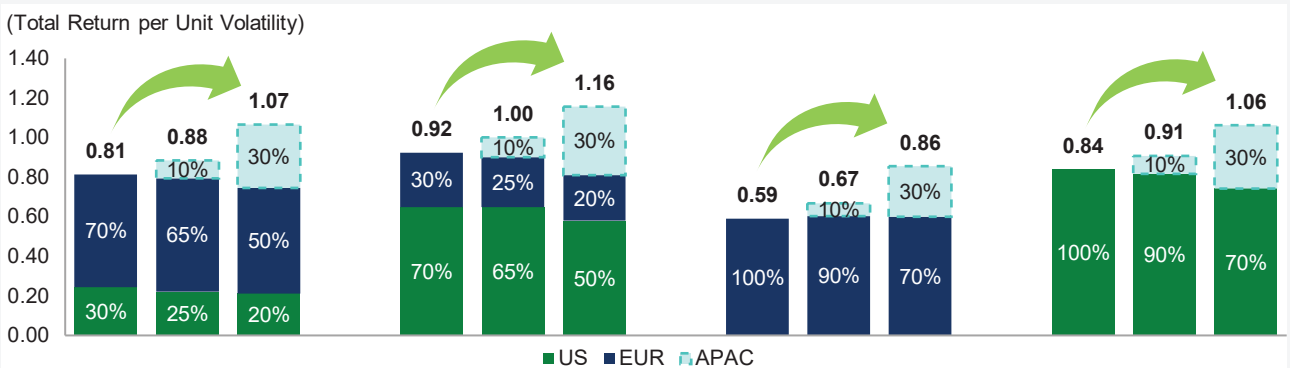
To address this, we framed the analysis with lower and upper allocation limits to ensure portfolio compositions remained reasonable and were aligned with US and/or EUR-centric investors. After applying a hypothetical 10% and 30% allocation to APAC RE (Figure 10), the results suggest that additions are accretive to risk-adjusted returns, with the constrained maximum level of 30% providing the highest value add.

Figure 9: RE Portfolio Total Return vs. Standard Deviation – Efficient Frontier



Source: MSCI, Bloomberg, CLI Group Research, September 2023

Figure 10: Total Returns per Unity Volatility – Select RE Portfolio Mix with 10% and 30% Allocations to APAC*



Source: MSCI, Bloomberg, CLI Group Research, September 2023

* Percentages represent composition by region in respective hypothetical portfolios.

REBALANCING AND FUTURE-PROOFING RE PORTFOLIOS IS KEY

The conclusion from this analysis is that inclusion of APAC RE into global investment portfolios offers investors dual benefits: an opportunity to tap the region’s robust economic growth and attractive RE market total returns, while at the same time achieving a high level of portfolio diversification by adding real assets that demonstrate low correlation with other global asset classes.

To optimise performance, maintaining a well-balanced RE portfolio is essential. This requires regular strategic

reviews and adjustments to portfolio allocations, with a specific focus on APAC RE. The objective is to minimise volatility and achieve favourable risk-adjusted returns over the long term. Collaborating with established regional investment managers who possess extensive local presence and operational proficiency can provide valuable insights for navigating a multitude of diverse APAC RE markets.

By adopting these strategies, investors can effectively respond to market dynamics, optimise risk-adjusted returns, and position themselves for sustained success in a fast-changing RE investment landscape.



About CapitaLand Investment Limited

Headquartered and listed in Singapore, CapitaLand Investment Limited (CLI) is a leading global real estate investment manager (REIM) with a strong Asia foothold.

As at 30 June 2023, CLI had S\$134 billion of real estate assets under management, and S\$89 billion of real estate funds under management (FUM) held via six listed real estate investment trusts and business trusts, and more than 30 private vehicles across Asia Pacific, Europe and USA. Its diversified real estate asset classes cover retail, office, lodging, business parks, industrial, logistics and data centres.

CLI aims to scale its FUM and fee-related earnings through fund management, lodging management and its full stack of operating capabilities, and maintain effective capital management. As the investment management arm of CapitaLand Group, CLI has access to the development capabilities of and pipeline investment opportunities from CapitaLand's development arm.

As a responsible company, CLI places sustainability at the core of what it does and has committed to achieve Net Zero emissions for scope 1 and 2 by 2050. CLI contributes to the environmental and social well-being of the communities where it operates, as it delivers longterm economic value to its stakeholders.

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