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Review of ESG Practice in Real Estate

As ESG considerations continue to shape global investment and regulatory landscapes, Real Estate Investment Trusts (REITs) face growing expectations to demonstrate both transparency in reporting and tangible progress in sustainability practices. In Singapore, this momentum is fuelled by a combination of both regulatory requirements and cross-jurisdictional investor expectations.

In addition to the Singapore Exchange's (SGX) mandatory requirement for all listed issuers to publish annual sustainability reports, SGX has phased in Task Force on Climate-related Financial Disclosures (TCFD) requirements since FY2022, with the Materials and Buildings industry coming under scope from FY2024. From FY Commencing (FYC) 2025 onwards, STI constituents, listed non-STI constituents and non-listed companies will have different milestones to align International Sustainability Standards Board-based (ISSB-based) climate-related disclosures (CRD) by phases. This provides a sufficiently long transition period for companies to build the necessary capabilities and prepare for full compliance.

Separately, the Monetary Authority of Singapore (MAS) has issued Guidelines on Environmental Risk Management for Asset Managers, applicable to REIT managers licensed for fund management. These guidelines set clear expectations for embedding environmental risk considerations into

governance, risk management, and investment decisions, making them directly relevant to Singapore-listed REIT managers.

Singapore-listed REITs and Property Trusts (S-REITs) with international portfolios must also navigate cross-border ESG expectations, including alignment with frameworks like Sustainable Finance Disclosure Regulation (SFDR) and taxonomies, particularly when engaging global capital markets. At the asset level, certifications have become a basic screening criterion, while climate risk assessments are playing an increasingly material role in investment and management decisions. This reflects the growing urgency to decarbonise property portfolios and manage transition risks, due to carbon-intensive operations or insufficient climate resilience, a concern heightened by the global push toward net zero and the rise in extreme climate events. As such, understanding how REITs are responding through both disclosure and on-the-ground implementation is essential to evaluating the sector's climate resilience maturity and future readiness.

This report is a collaborative effort between the REIT Association of Singapore (REITAS) and Knight Frank, offering a detailed review of sustainability disclosures and implementation practices among S-REITs, with a particular focus on climate readiness and resilience.

In the real estate sector, ESG is not a checkbox exercise for regulatory reporting compliance.

It represents a strategic opportunity to build long-term resilience by embedding sustainability into every stage of the asset lifecycle. Through asset-level implementation and alignment with evolving global standards, ESG practices help real estate companies future-proof their portfolios.

By integrating climate-related and ESG considerations into both asset management and investment strategies, organisations not only enhance operational efficiency and bolster risk management but also strengthen transparency and accountability to key stakeholders that include investors, tenants, and regulators.

This proactive approach also reduces the risk of asset obsolescence amid tightening national net-zero targets and shifting market expectations, ultimately supporting long-term value creation and sustainable growth.

Jackie Cheung
Director ESG
Asia-Pacific & Singapore
Knight Frank

The S-REIT industry, has made tremendous progress in sustainability reporting. We therefore felt it was an opportune time to ask a more practical question, and get some answers, on what is actually being implemented on the ground. This report—the first of its kind in Singapore—does just that, combining a survey of our REIT managers with an analysis of their published disclosures.

The findings provide a clear picture of where we stand on climate readiness: the progress achieved, the challenges that remain, and the opportunities to accelerate action. They also highlight what more must be done if we are to deliver on the ambitious sustainability goals many of our REITs have set.

As stewards of a S\$100 billion market, S-REITs are

accountable to investors and other stakeholders while contributing to Singapore's position as a leading sustainable finance hub and helping achieve the targets of the Singapore Green Plan. By strengthening climate readiness at the asset level, we affirm our role as responsible stewards—committed to mitigating climate risks, adapting to them, and positioning our industry for long-term resilience.

Nupur Joshi
Chief Executive Officer
REIT Association of Singapore
(REITAS)



About Singapore-listed REITs and Property Trusts





Singapore has the largest REIT market in Asia (ex-Japan), representing about 10% of the country's total listed stock market capitalisation, and is increasingly positioning itself as a global REIT hub. There are 40 listed S-REITs with a combined market capitalisation of about S\$100 billion. These entities own properties across diverse asset classes, including commercial, data centres, healthcare, hospitality, industrial, logistics and retail.

The S-REIT market is also geographically diverse: S-REITs collectively own properties across 28 countries, with more than 90% holding some or all of their assets outside Singapore, while only three REITs hold all their assets

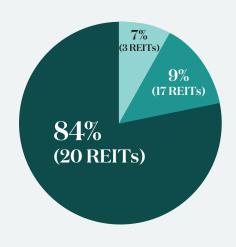
domestically. With an increasingly global investor pool, S-REIT managers must meet the expectations of international investors while also navigating ESG regulations across multiple overseas jurisdictions in addition to local requirements.

This global and multi-asset footprint makes climate resilience and adaptation readiness not just a local obligation but a strategic imperative for safeguarding long-term competitiveness and resilience.

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Data extracted as at 2 September 2025.

Portfolio Composition

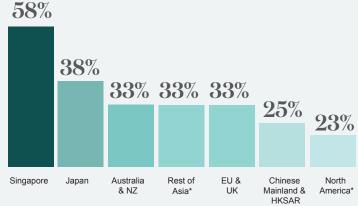


Mixed assets (Singapore & overseas)

Overseas-only assets

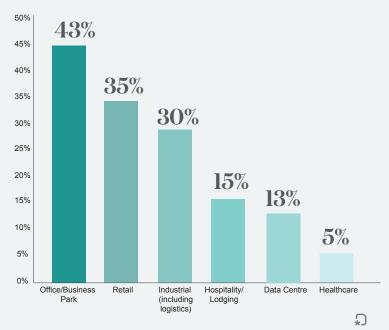
Singapore-only assets

Data extracted as at 2 September 2025. Percentages are by market capitalisation



*Rest of Asia includes Malaysia, India, Indonesia, Vietnam, Philippines, Maldives, South Korea, etc. *North America includes US & Canada

% represents no. of S-REITs having exposure to that geography.



Executive Summary

About the Data



Analysis of Sustainability Reports

The first data set examines the latest sustainability reports published by 40 S-REITs as of 31 May 2025, with a particular focus on climate-related disclosures. It assesses the extent and prioritisation of reporting across key areas such as climate risk assessment, carbon emissions, and the sustainability reporting frameworks adopted.

REIT Managers' Responses to ESG Investment and Asset Management Survey

The second data set shifts the lens from disclosure to implementation. Drawing on responses from 33 REIT managers to a curated ESG Investment and Asset Management Survey, it explores how ESG factors are incorporated into investment decisions and asset-level initiatives. These insights reveal practices and priorities that may not be fully reflected in formal sustainability reports.



More than

4,000 data points in total



Key Takeaways

Financial Impact and Expectations

of S-REIT respondents reported financial impact on their assets caused by extreme climate events in the past three years

of S-REIT respondents cite difficulties in balancing the longer-term investment horizon for portfolio decarbonisation with short-term distribution per unit (DPU) payout expectations as a top challenge

70%

of S-REIT respondents expect a green premium for sustainability-compliant buildings or brown discount for non-compliant buildings

Commitment and Data Readiness

78%

of S-REITs have established carbon neutrality or net zero targets, showing strong commitment at the sector level

of S-REITs disclosed short-to long-term physical risk severity in their sustainability reports

of S-REIT respondents expressed board-level commitment to sustainabil in guiding organisational strategy and board-level commitment to sustainability asset-level decision-making

18%

of S-REITs disclosed short-to long-term transition risk severity in their sustainability reports

50%

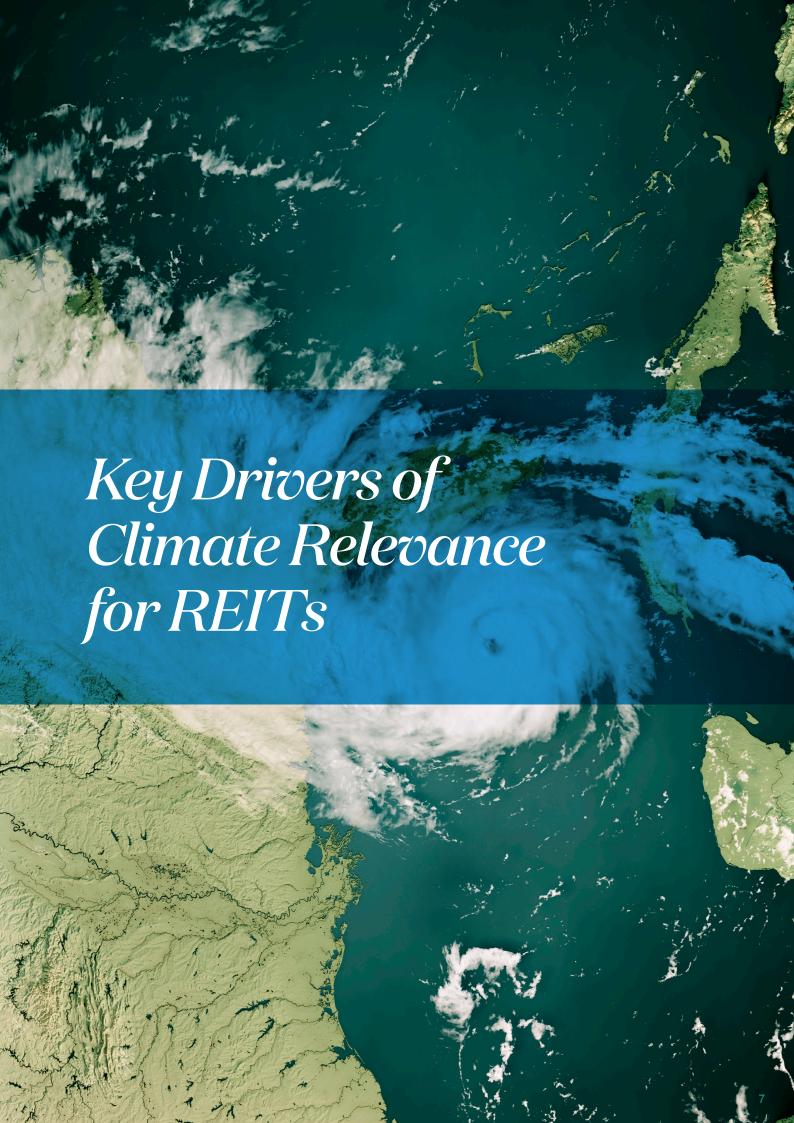
of S-REITs have started reporting Scope 3 emissions

Asset-Level Downstream Implementation: Successes and Challenges

of S-REIT respondents have more than 80% of their portfolio green-certified

of S-REIT respondents actively engage tenants on sustainability, yet 55% cite tenant resistance as a top

of S-REIT respondents have developed renewable energy investment strategies



Top Five ESG Drivers Ranked Under Asset Management Strategies

The survey findings show that ESG integration in asset management is driven first and foremost by **regulatory mandates**, which exerts the strongest influence. **Internal corporate commitments**, such as net-zero targets and ESG reporting requirements, follow closely. **External stakeholder expectations**, particularly from occupiers and investors, rank next. Access to sustainable finance (e.g. ESG loans, green bonds etc), is viewed more as an enabler than a primary driver.

Other factors, including enhanced returns, reputational risk management, taxonomy alignment, and share price performance, were ranked lower. Overall, the results suggest that current ESG strategies are still largely compliance- and governance-focused, with external stakeholder expectations reinforcing these priorities. Financial and market-based incentives play a supportive role to advance the focus on ESG practices.

Survey 1: Rank the ESG drivers/incentives under your asset management strategy

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Asset level regulatory mandate

(e.g. sustainability certifications mandate, energy efficiency improvement mandate, building energy performance disclosure mandate)

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In-house corporate ESG compliance

(e.g. net zero/carbon reduction target, corporate ESG reporting and ratings requirements)

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Occupier preference/requirements

(e.g. occupiers' green lease terms, power purchase agreements, data transparency)

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Investor expectations

(e.g. alignment with responsible investment principles, disclosure regulations, pre-investment due diligence)

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Access to sustainable finance

(e.g. ESG loan, ESG bond)

OTHER DRIVERS •

- Enhanced returns (e.g. rental premium, higher exit value)
- Reputational risk management (Corporate Image, peers' comparison)
- Taxonomy compliance (e.g. EU Taxonomy, ASEAN Taxonomy, Singapore-Asia Taxonomy, etc.)
- Enhanced share price

Source: REITAS and Knight Frank ESG Survey of REIT Managers

Regulatory Mandates to Stakeholders Across the Asset Lifecycle

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S-REITs typically manage diversified portfolios across Singapore and overseas markets, exposing them to a wide range of regulatory requirements, investor expectations, and tenant demands. As these stakeholders increasingly call for climate accountability, REITs are becoming key players in the decarbonisation effort.

National policies are accelerating ESG adoption across operational assets while regulations and government frameworks, such as mandatory energy reporting, building performance standards, carbon pricing, and disclosure requirements, are putting external pressure on REIT Managers to prioritise ESG implementation. This policy-driven push makes embedding ESG into daily operations and tenant engagement not just optional but integral to compliance and competitiveness.

D ¹Singapore BCA (2025), BCA MEI regime, Available at: https://www1.bca.gov.sg/buildsg/sustainability/regulatory-requirements-for-existing-buildings/mandatory-energy-improvement-regime ²Malaysia ST (2025): Energy Efficiency and Conservation Act (EECA) 2024, Available at: https://www.st.gov.my/eng/microsites/index/19/106

At asset level

In Singapore

Frameworks led by the Building and Construction Authority (BCA), including Green Mark certification and the new Mandatory Energy Improvement (MEI)1 regime, are designed to improve energy performance in existing buildings and reduce the sector's carbon footprint, which accounts for over 20% of national emissions. The MEI regime will be effective from 30 September 2025; it requires that owners of energy-intensive buildings to appoint a qualified professional to conduct energy audits and develop an energy efficiency improvement plan to reduce the building's Energy Used Intensity (EUI) by at least 10% from pre-audit levels.

In Hong Kong

The Buildings Energy Efficiency Ordinance⁴ 2025 updates the BEEO (Cap. 610) by extending its scope to cover more building types that must comply with prescribed efficiency standards, shortening intervals for mandatory energy audits, and requiring asset owners to publicly disclose key building energy-related information enhance market transparency and accountability. These include equipment efficiency and energy use intensity.

At the investor level

For asset managers overseeing global portfolios, compliance is further shaped by asset-level regulations in overseas markets. S-REITs may be subject to EU regulations such as the Sustainable Finance Disclosure Regulation (SFDR), which calls for ESG data transparency at the asset level in each local country. The European Commission is preparing an Omnibus package8 in Q4 2025 to revise the Sustainable Finance Disclosure Regulation (SFDR). This "reset" aims to simplify ESG product classifications, clarify definitions of sustainable investments. and streamline disclosure templates to reduce complexity while strengthening safeguards against greenwashing.

In Malaysia

The Energy Efficiency and Conservation Act (EECA)2, effective 1 January 2025, applies to large energy consumers, office buildings with a gross floor area (GFA) ≥ 8,000 m², and manufacturers or importers of energy-using

Entities must comply as follows:

- · Large energy consumers must appoint a Registered Energy Manager (REM) Type 1 or Type 2, depending on energy consumption levels, to supervise data collection, energy management system implementation, energy audits, and annual Energy Efficiency Conservation reporting. REMs are required to hold valid practicing certificates and maintain continuous professional development.
- Office buildings with GFA ≥ 8,000 m²

(other than those classified as large energy consumers) must apply for and display Energy Intensity Labels that reflect energy performance. Non-compliance may result in mandatory energy audits and the implementation of corrective action plans.

· Manufacturers or importers of energy-using products

such products comply with Minimum Energy Performance Standards (MEPS) and carry the appropriate labels.

At the occupier level

According to data from (Y)OUR SPACE 2025, Knight Frank's global research campaign exploring the forces reshaping work and the workplace-global occupier respondents ranked the integration of ESG at the portfolio level as the third most significant challenge. Pioneering multinational corporates have developed net-zero roadmaps for their global portfolios, leading them to prioritize green leases for green-certified buildings, low-carbon construction materials, smart energy systems, and more. Beyond environmental targets, social and governance considerations are also shaping commercial real estate decisions, from inclusive workplace design the ethical procurement of services.

In Australia

The Commercial Building Disclosure (CBD)3 program requires sellers/lessors of office space spanning 1,000 m² or more to obtain a Building Energy Efficiency Certificate (BEEC) that includes a NABERS Energy rating; disclosure has been shown to drive material energy-use reductions. A review process and public consultation are underway to assess whether the legislation should be extended to cover other sectors such as shopping centres, hotels, data centres, and hospitals.

In UK & EU

The UK government has signalled that under the upcoming Efficiency Minimum Energy Standards (MEES) regulation⁵, commercial premises must achieve an Energy Performance Certificate (EPC) rating of 'B'. The exact date will be reformed after consultation⁶.

The revised Energy Performance of Buildings Directive7 in EU requires Member States to renovate the worst-performing 26% by 2033, as part of national rollout of minimum energy performance standards.

Increasingly, occupiers view ESG as a value driver, not just a compliance exercise.

The convergence of top-down investor pressure, midstream property management execution, and bottom-up tenant demand is making ESG performance an integral part of the S-REIT value chain, with climate-related performance now viewed as both a compliance obligation and a competitive differentiator. This alignment makes the operationalisation of ESG more effective, as it is supported by clear targets and accountability.

Strong Board-level Commitment and Dedication to Sustainability

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The survey indicates a robust institutional commitment to sustainability among S-REITs with 100% of respondents expressing board-level commitment to integrating sustainability organisational strategy asset-level decision-making.

Around a quarter identified ESG as a core principle, signalling that it is deeply governance embedded within frameworks and long-term planning. Half viewed it as a strategic priority, regularly integrated into board-level discussions and decision-making. The remaining quarter considered it an emerging focus, present on the agenda though not yet central to strategy.

Survey 2: How would you describe your board-level involvement and commitment to sustainability in guiding organisational strategy and asset-level decision-making?



Ω 3Australia CBD: NABERS Energy for offices rating, Available at: https://www.cbd.gov.au/how-get-certified/nabers-energy-offices-ratings/nabers-energy-offi

FU (2025): Omnibus package, Available at: https://finance.ec.europa.eu/publications/omnibus-i-package-commission-simplifies-rules-sustainability-and-eu-investments-delivering-over-eu6 en

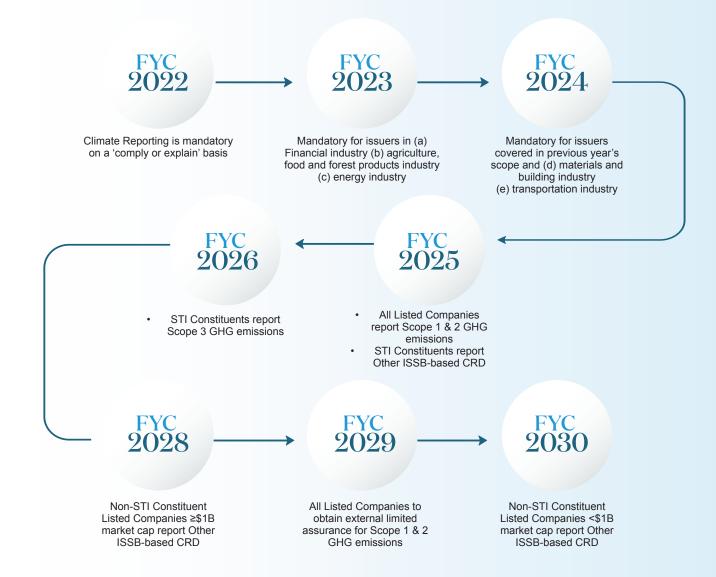
Tightening Climate Disclosures

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In addition to the **Singapore Exchange's (SGX)** mandatory requirement for all listed issuers to publish annual sustainability reports, SGX has phased in Task Force on Climate-related Financial Disclosures (TCFD) requirements since FY2022, which spotlights the **Materials and Buildings industry from FY2024**. From FYC 2025 onwards, STI constituents, listed non-STI constituents and non-listed

companies will have different milestones to align International Sustainability Standards Board-based (ISSB-based) climate-related disclosures (CRD) by phases⁹. This provides a sufficiently long transition period for REITs to build the necessary capabilities and prepare for full compliance.

Climate Reporting Roadmap for Singapore Listed-companies



Access to Sustainable Finance

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The survey results highlight that 42% of S-REITs have already linked asset-level ESG key performance indicators (KPIs) to financing instruments. This suggests a growing recognition that sustainability performance directly influences access to capital. By meeting measurable ESG outcomes such as energy efficiency, renewable energy adoption, or green building certifications, S-REITs can secure preferential financing terms, often through sustainability-linked loans (SLLs) or green bonds.

This linkage not only provides financial benefits (e.g. lower interest rates or access to a wider investor pool) but also strengthens accountability, as REIT managers must demonstrate ongoing ESG improvements to maintain those terms.

Concurrently, the **Monetary Authority of Singapore (MAS)** plays a pivotal role in advancing sustainable finance by endorsing

taxonomies and embedding their principles into published Guidance for Singapore's broader financial regulatory Singapore-Asia Taxonomy landscape.

The Singapore-Asia Taxonomy for Sustainable Finance (Singapore Taxonomy) and the ASEAN Taxonomy for Sustainable Finance (ASEAN Taxonomy) provide classification frameworks for sustainable economic activities. Both focus primarily on climate change mitigation and adaptation, setting technical screening criteria to determine which activities are considered environmentally sustainable.

The Singapore Taxonomy adopts a "traffic-light" system (green, amber, red) to reflect alignment and transition progress, and it is now supported by practical guidance from the Singapore Sustainable Finance Association (SSFA) on applying this taxonomy for credible green and transition financing. In July 2025, the SSFA

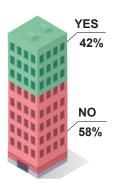
published Guidance for Leveraging the Singapore-Asia Taxonomy in Green and Transition Financing¹⁰, a guide that helps financiers and borrowers address challenges when applying the Singapore Taxonomy in green and transition financing instruments.

The current uptake of local green finance taxonomies, such as the Singapore Taxonomy and the ASEAN Taxonomy, remains relatively low at around 12%. This may stem from how their application is limited to local assets. In practice, banks are expected to continue bilateral arrangements sustainable financing corporates, particularly where S-REITs already have established Sustainable Financing Frameworks that pre-date the Singapore-Asia Taxonomy. Nonetheless, these taxonomies play a crucial role by setting common definitions and criteria for what qualifies as 'green' or 'sustainable,' thereby reducing the risk of greenwashing and strengthening investor confidence.

While awareness around them continues to develop, taxonomies are already embedded into banks' sustainable finance frameworks. REITs that align earlier can gain an advantage in securing funding. Over time, alignment with these frameworks will become a baseline expectation for accessing real estate capital.

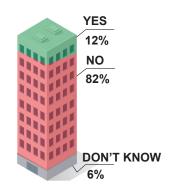
Survey 3

Has your company linked ESG KPIs at the asset level into financing instruments, such as ESG loans or bonds?



Survey 4

Have your projects been assessed against the Singapore Green Finance Taxonomy or ASEAN Taxonomy?





10 PSSFA (2025), Guidance for Leveraging the Singapore-Asia Taxonomy in Green and Transition Financing, Available at:
 https://www.ssfa.org.sg/wp-content/uploads/2025/07/SSFA-Taxo-WS-Guidance-for-Leveraging-the-SAT-in-Green-and-Transition-Financing-FULL-Jul-2025.pdf



Financial Impact of Climate Risks Intensifying

Survey responses reveal that in the past three years, extreme climate conditions have increasingly affected real estate assets—underscoring both the rising frequency of such events and their financial consequences for REIT managers.

Majority of Respondents Affected by Climate-related Asset Impacts

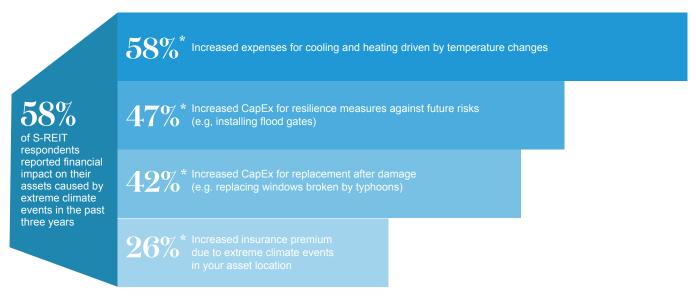
According to the survey, **58%** of respondents faced direct impacts on their assets from extreme climate events over the past three years. These findings highlight that climate-related disruptions, while not yet universal, are increasingly common and require consideration in asset management strategies.

Climate Impact Affecting Capital Expenditures (CapEx) and Operational Expenditures (OpEx)

Among those experiencing climate-related impacts, more than half (58%) cited higher heating and cooling expenses from temperature changes as well as increased capital expenditure on resilience measures to adapt to future risk (47%).

Additionally, 42% of respondents incurred capital outlays for asset replacement following damage and 26% faced rising insurance premiums driven by location-specific risks. These findings show that climate risks are generating tangible financial costs, from higher operating expenses to capital investments in preventive and corrective measures, as well as escalating insurance premiums in vulnerable areas.

Survey 5: Have any of your assets been affected by extreme climate conditions in the past three years?



 $\mathfrak Q$ % among REITs surveyed that have been affected by extreme climate conditions in the past three years.



Preparing to Meet Advanced Climate Disclosure Standards

Based on the latest sustainability reports, all S-REITs have reported making progress in climate-related disclosures. The majority of them referenced established frameworks such as the Global Reporting Initiative (GRI) and the TCFD. Encouragingly, some 20% have also begun referencing advanced standards such as IFRS S2 Climate-related Disclosures. This early adoption reflects a valuable transition period provided by regulators, allowing REITs to work toward full compliance within the phased timeline outlined earlier in the report.

However, when examining the progress of quantitative climate disclosures, most say they have yet to quantify climate impacts over time.





Source: S-REITs' sustainability reports

While several S-REITs stated that these analyses were conducted internally, best practices require them to disclose the short- to long-term results to support preparedness for IFRS compliance. The following section highlights key findings about Climate-Related Risks and Opportunities (CRRO), serving as both a knowledge-building resource and an initial step toward developing broader understanding.

The most prevalent Climate-Related Risks and Opportunities (CRRO) identified from S-REITs' sustainability reports were found to be:

Physical Risk



Extreme heat events

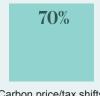


Rainfall & flash floods



Typhoon and severe wind events

Transition Risk



Carbon price/tax shifts



External stakeholder expectation changes (e.g. customer, consumer, investor)



Green building regulatory and policy changes

Transition Opportunities



Investments and green financing opportunities

50%

Improved efficiency and technology driving OpEx savings or premium 25%

Expansion/Increased demand of low carbon products and services

% represents the proportion of total S-REITs that have disclosed such CRRO. Source: S-REITs' sustainability reports

Physical Risk Disclosure

It is encouraging that most S-REITs have begun tracking their efforts associated with physical risk analysis. **98**% measured their risks through minimally qualitative assessments – marking strong initial progress. However, only **20**% have disclosed short-to long-term risk severity. This highlights the need for greater maturity in climate risk assessments, and a shift beyond high-level benchmarking toward more robust, data-driven evaluation in the real estate sector.

Respondents also highlighted the need for stronger governance of third-party **climate modelling platforms**, as results for the same assets can vary significantly even under identical pathways (e.g. Representative Concentration Pathways, Shared Socioeconomic Pathways).



Source: https://www.scmp.com/property/hong-kong-china/article/2164935/repairing-properties-thrashed-typhoon-mangkhut-wont-be

Such inconsistencies place a disproportionate burden on corporates and impede industry stakeholders from making progress with confidence and comparability. To address this, **greater cost-effectiveness and robustness are required.**

Among S-REITs that have conducted preliminary quantitative scenario analyses, physical risks are generally perceived as low risk in the short term (up to 2030). However, in the **medium- to long-term (beyond 2030)**, perceptions shift markedly, with over half of the S-REITs studied identifying **rising temperatures, drought, and water stress** as high-risk factors.

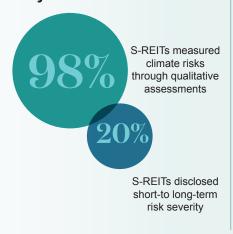
The simulation results can inform forward-looking investment strategies and adaptive asset management to safeguard long-term portfolio resilience. With physical climate risk identified as a key priority, the next step after conducting climate risk modelling is to implement measures at both the strategic and asset levels. This includes developing a climate risk register and integrating findings into enterprise risk management and investment policies, as well as conducting asset-level vulnerability assessments to identify exposures and adaptation measures. The results of these efforts should be disclosed clearly, both qualitatively through a risk matrix, and quantitatively with high-level metrics such as investments or expenditures on climate resilience measures. This would provide stakeholders with a balanced view of both the methodology and the tangible actions being taken.

Transition Risk Disclosure

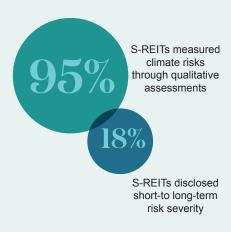
Progress in disclosing transition risks mirrors that of physical risk. While about 95% of S-REITs have identified transition climate risks through qualitative assessments, only 18% have disclosed short-to long-term risk severity.

Sustainability reports indicate that risk perceptions are expected to intensify significantly in the medium to long term (beyond 2030). External stakeholder expectations and green building regulations are projected to escalate to high-risk levels, reflecting growing investor, consumer, and regulatory pressures on sustainability performance. Carbon pricing is also expected to pose a moderate-to-high risk, in line with an anticipated tightening of climate-related fiscal policies. In contrast, compliance risks related to environmental laws and regulatory shifts are expected to remain moderate. Material cost increases, though currently considered low risk, are projected to rise into the low-to-moderate range, suggesting a gradual but manageable impact on construction and supply chain dynamics.

Physical Risk Disclosure



Transition Risk Disclosure



Source: S-REITs' sustainability reports



Transition Opportunities Disclosure

About 70% of S-REITs identified transition opportunities in their reports. More than half highlighted investments and green financing opportunities, as well as improved efficiency and technology that deliver OpEx savings or premiums—as key opportunities.

This reflects a growing recognition of the strategic potential in climate-aligned transformation. However, the remaining 30% have yet to articulate meaningful transition pathways, underscoring variability in how S-REITs use mandatory disclosures to signal long-term value creation and competitive positioning.



Positive Momentum on Net Zero Targets Enhances Business Resilience

How are S-REITs Performing?



78%

S-REITs have formally established carbon neutrality or net-zero emissions targets, reflecting a strong sector-wide commitment to long-term decarbonisation goals.

What Do Greenhouse Gas (GHG) Emissions Mean to REITs?

Scope 1 emissions are direct emissions from owned or controlled sources, while Scope 2 emissions are indirect emissions from purchased electricity, heat, or steam. Scope 3 emissions, in contrast, cover a broad range of upstream and downstream activities connected to a company's operations but not directly owned or controlled by it. For REITs, Scope 3 emissions can often represent the largest share of their total carbon footprint, highlighting impacts beyond the immediate control of property owners, yet remain influenced by their business activities.

On a positive note,



88%

S-REITs reported their Scope 1 and 2 emissions and 53% have set interim carbon reduction targets to support long-term decarbonisation goals.



50%

S-REITs have started reporting Scope 3 emissions, preparing for ISSB-based CRD.

Source: S-REITs sustainability reports

The Progress of Scope 3 Emissions.

Among S-REITs that have started disclosing Scope 3 emissions, these categories are the most **commonly reported**¹¹:

Category 3: Fuel-and Energy-Related Activities

This includes emissions related to the extraction, production, and transportation of fuels and energy purchased and consumed by the REIT, which are not already accounted for in their Scope 1 or Scope 2 emissions. For example, emissions from the upstream processes involved in generating the electricity that powers their buildings.

Category 5: Waste Generated in Operations

Emissions resulting from the disposal and treatment of waste produced through the REIT's property operations, such as landfill methane emissions from discarded materials or emissions from waste incineration.

Category 6: Business Travel

Emissions from employee travel for business purposes using vehicles or transport modes not owned or controlled by the REIT, including flights, taxis, rental cars, and trains.

Category 7: Employee Commuting

Emissions associated with employees travelling to and from their workplace, which can be a significant contributor in urban office environments, including cars, public transport, and other means.

Category 13: Downstream Leased Assets

Emissions from the operation of properties or assets that the REIT leases out to tenants, which are not included in the REIT's direct operational emissions but are relevant as they reflect the environmental impact of leased space.

Scope 3 Emissions 3 fuel and energy 5 waste generated 7 employee 13 downstream 6 business related activities commuting leased assets in operation 4 & 9 transportation and 1 purchased goods 2 capital 8 upstream 10 processing of and services distribution sold products assets 11 use of 12 end-of-life 14 franchises 15 investments sold products

Water and Waste Management Disclosure

treatment of sold products

While initiatives targeting Scope 1 and 2 carbon emissions dominate, broader environmental goals lag. Only **40%** of S-REITs have disclosed quantitative water reduction targets, and a mere **25%** have established quantitative goals for waste management.

This limited progress on water and waste targets reflects a broader gap in Scope 3 emissions management, as these categories often fall under indirect emissions.

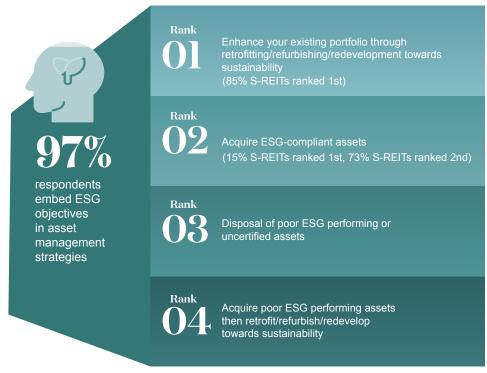
Initial Steps in Climate-Aligned Investment Planning

An encouraging 97% of respondents reported incorporating specific ESG objectives or initiatives into their asset management strategies, reflecting sector-wide alignment with sustainability-focused investment principles. A closer look at their strategic priorities showed a preference for optimising existing assets, coupled with a clear inclination to acquire ESG-compliant assets that enhance portfolio sustainability. Together, these findings point to a clear shift towards embedding ESG considerations into both operational and acquisition decisions, laying foundation for more climate-aligned investment planning.

Investment Due Diligence Criteria: Climate Tops the List

Acquisition strategies are typically guided by ESG due diligence criteria, focusing on long-term resilience and regulatory alignment. The top five criteria show that S-REITs are increasingly aligning investment decisions with climate priorities and evolving regulatory trajectories. This approach positions S-REITs to capture value from tenant demand for green-certified spaces and sustainability-linked incentives, such as lower CapEx and OpEx.

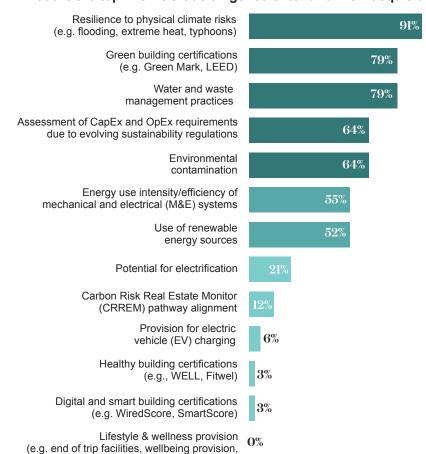
Survey 6: Rank the strategic approaches for enhancing sustainability across your portfolio.



Source: REITAS and Knight Frank ESG Survey of REIT Managers

Survey 7:

What are the top five ESG due diligence criteria for new acquisitions?



amenities)



Source: https://www.thekhybermail.com/record-rainfall-triggers-widespreadflooding-across-tokyo-and-northern-japan/

Asset-Level Downstream Implementation: Successes and Challenges

Early-stage Adoption of Renewable Energy:

52% S-REITs respondents

ranked use of renewable energy sources as an ESG investment due diligence criterion

Survey results indicate that renewable eneSurvey results indicate that renewable energy adoption across S-REITs is presently at an early-stage, even as net zero commitments gather pace. Most S-REITs reported that renewable energy accounts for less than 20% of total energy consumption, with only a minority achieving higher penetration levels, highlighting a significant opportunity to better align decarbonisation ambitions with current energy sourcing practices. Progress in this area is shaped by factors such as cost-effectiveness, regulatory support, geographical conditions, technological and limitations.

Encouragingly, renewable energy remains firmly on the strategic agenda. A majority (91%) of S-REITs have developed renewable energy investment strategies, with onsite generation, such as solar panels, reported by 76% of respondents, emerging as the most common approach. In contrast, relatively fewer S-REITs have adopted off-site procurement solutions such as Power Purchase Agreements (PPAs). Certificates Renewable Energy (RECs), or direct capital investment in renewable energy assets. Taken together, these findings show that while adoption is still modest, renewable energy is increasingly embedded in both investment due



91% S-REIT respondents have established renewable energy investment strategies

Source: REITAS and Knight Frank ESG Survey of REIT Managers



Survey 8:

What percentage of your properties' total energy consumption is supplied by on-site or procured renewable energy sources?



000

Proportion of S-REITs



Percentage of S-REITs properties' total energy consumption (including stationary fuel use and purchased electricity) is supplied by on-site or procured renewable energy sources

Source: REITAS and Knight Frank ESG

Survey 9: What strategies have you adopted to decarbonise your portfolio through the use of renewable energy?



On-site renewable energy generation within your properties



Off-site renewable energy procurement via Power Purchase Agreements (PPAs)



Purchase of Renewable Energy Certificates (RECs) by your electricity provider



Capital investment in renewable energy assets



Survey of REIT Managers

No investment in renewable energy

Strong Uptake of Green Building Certifications

Ranked #2 ESG Investment Due Diligence Criterion Green building certifications are significantly more widespread than other types of sustainable building certifications, largely because they provide a clear and widely-accepted screening criterion. Around one-third of respondents reported that more than 80% of their portfolio (by gross floor area, GFA), is green-certified, while about 63% of S-REIT respondents have certified over 40% of their portfolio.

In comparison, healthy building certifications (e.g. WELL, Fitwel, etc.) and smart building certifications (e.g. WiredScore, SmartScore) show much lower adoption, with coverage ranging from 0% to 20%. This indicates that these standards are still at an early stage of uptake and remain emerging areas of focus

Survey 10:

Percentage of your properties (in terms of GFA) that are green building certified



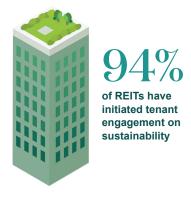
Proportion of S-REITs



Percentage of S-REITs' properties (in terms of GFA) that are green building certified

Source: REITAS and Knight Frank ESG Survey of REIT Managers

REITs Actively Engage Tenants, But Joint Climate Action Remains Limited



Source: REITAS and Knight Frank ESG Survey of REIT Managers Survey results show a high level of tenant engagement on ESG initiatives. A large proportion (94%) of REITs have initiated tenant engagement on sustainability, reflecting a strong sector-wide commitment to collaborative sustainability efforts.

The most widely adopted tenant engagement strategies are green leases or mandatory green fit-outs (71%) and the provision of ESG guidelines (68%). Other common approaches are individual tenant feedback sessions (65%), ESG-related training or awareness programs (58%), and the sharing of ESG data and targets between landlords and tenants (35%). Together, these practices point to a growing emphasis on structured collaboration to embed sustainability within tenant operations.

Notably, some respondents selected "Other" initiatives, such as supporting tenant renewable energy procurement, signalling early steps towards deeper, integrated forms of partnerships.

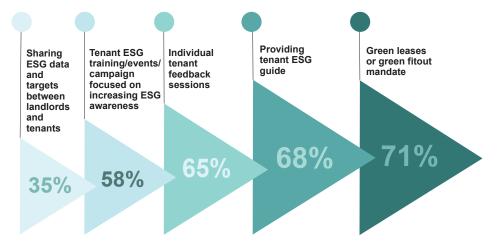
However, while engagement is broad, examples of genuine joint climate action remain limited. In fact, in the survey, "Tenant resistance or low engagement in green initiatives (e.g. green leases)" was ranked among the **top three challenges** to advancing decarbonisation or sustainability initiatives at the asset level.

Tenant emissions are categorised as an asset owners' downstream or scope 3 emissions, which can contribute toward their net-zero goals.

Some respondents noted the difficulty of obtaining tenant consumption data in certain asset types. This presents a practical barrier to Scope 3 disclosures and hinders the ability to baseline whole-building performance.

complexity of This gap underscores the translating engagement into actionable outcomes. partnerships mutual commitment are required to advance implementation.

Survey 11: Please select the way(s) in which you have engaged tenant in ESG?





Strengthening Climate Disclosure Efforts in Sustainability Reporting

Encouraging progress has been observed among S-REITs, particularly in reporting carbon emissions. Yet further improvements, especially in climate risk assessments and mitigation and adaptation planning, are needed to fully align with the latest climate disclosure requirements set by SGX.

Presently, most climate disclosures are qualitative, leaving a significant gap before they can be considered to be ISSB-aligned. Incorporating quantitative financial impact metrics on climate risk, such as Climate Value-at-Risk (CVaR) or the percentage of assets vulnerable to climate risks, would give asset managers more robust insights for decision-making.

Closing this gap will require S-REIT to strengthen data management and analytical capabilities, not only to satisfy regulatory requirements, but also to better manage climate-related risks, safeguard asset values, and inform long-term investment strategies. As the physical impacts of climate change become more frequent and severe, combining scenario analysis with financial modelling will be critical for asset planning and capital allocation. Meanwhile, growing regulatory and investor focus on transition risks will require more proactive risk management, resilience-building and the development of transition plans that go beyond basic compliance.

Integrating Climate into Finance and Asset Investment Frameworks

REITs are already doing pre-investment ESG due diligence

Climate-related risks can materially impact asset value, operating costs, and long-term viability. Incorporating taxonomy criteria into due diligence, investment screening, and financing documentation allows S-REITs to systematically evaluate and mitigate climate risks while aligning with key reporting frameworks, including the SGX Sustainability Reporting Requirements, Carbon Risk Real Estate Monitor (CRREM), and EU's Sustainable Finance Disclosure Regulation (SFDR).

The integration of ESG into investment markets has matured significantly and is unlikely to abate. Investors, particularly European institutions, now routinely apply ESG screeners to acquisitions. For example, some will not consider assets if the CRREM year of misalignment precedes the lease's expiry. However, the emphasis is often less on CRREM timelines and more on the ability

What are "misalignment points"?

The potential for a property asset, with high $\mathrm{CO_2}$ emissions and all relevant GHG emissions, to face transition risks earlier than expected as it no longer aligns with its decarbonisation pathway or science-based climate targets.

Pathway divergence analysis

CRREM supports strategic planning, benchmarking, and compliance with investor and climate-related disclosure requirements. It translates global carbon budgets into science-based decarbonisation targets for real estate, measuring annual GHG and energy intensity of assets or portfolios and benchmarking them against country and sector-specific pathways.

to improve a building's efficiency prior to the year of misalignment. As a result, CRREM analysis or Taxonomy reporting are increasingly seen as valuable tools in assessing asset readiness for market. That said, there may be merit in CRREM updating its models to better reflect regional nuances, particularly for the Asian market, where climate risks and regulatory timelines can differ significantly. For S-REITs, adoption is still at an early stage as only 12% of S-REITs respondents ranked CRREM as their top five due diligence criteria.

Yet, momentum is gradually building as regulators and investors show growing interest in stronger alignment with international best practices. While these global frameworks offer useful benchmarks, aligning with them may involve clearer reporting, not only on whether an asset's trajectory diverges from CRREM pathways, but also on the anticipated capital expenditure required to manage transition risk. At the same time, it is important to acknowledge that international best practices are still evolving and may benefit from further refinement to reflect the diverse conditions across different geographies. This highlights the value of regional contextualisation in supporting more meaningful and effective adoption.

While CRREM previously offered two scenarios, limiting global warming to 1.5 °C and 2.0 °C, the 1.5 °C pathway is now the primary focus, aligned with the Science Based Targets initiative (SBTi).

CRREM Version 2.07 (14 Aug 2025) seeks to enhance accuracy and relevance by calculating emissions using total energy consumption, incorporating updated 2020–2023/24 country-specific emission factors (excluding transmission and distribution losses), and projecting grid decarbonisation trajectories to 2050

However, obstacles in adopting these pathways arise because they may not fully account for the unique context and significant challenges faced by the real estate industry in Singapore, ASEAN and the broader Asian region. These include aging infrastructure, climate-driven energy demand due to high humidity, uneven grid decarbonisation across ASEAN countries, and regulatory or financial barriers to implementing deep energy efficiency upgrades.

Recognising these realities, greater contextualisation of sectoral net zero pathways is essential, underpinned by a robust evidence base and sustained stakeholder dialogue, to ensure that transition strategies are both practical and impactful. The adoption of contextualised net zero pathways, where they diverge from global trajectories, should be viewed as a legitimate and responsible response to local conditions rather than a reflection of diminished ambition.

As a starting point, S-REITs can embed climate-related KPIs into their due diligence process. Common examples include green building certifications, building energy use intensity, physical climate risk exposure, Scope 1, 2 and 3 emissions, carbon intensity, and decarbonisation pathways. CRREM supports the integration of these KPIs, such as energy intensity, carbon footprint and decarbonisation pathways, into due diligence and reporting. Adopting these practices, enables S-REITs to strengthen their ESG credibility, aligns portfolios with global capital flows, future-proofs assets against climate risks, and ensures strategic compliance with emerging regulations.



Operationalising ESG in Property Management and Tenant Engagement

The Role of Property Managers in ESG

Partnering with property managers who are well-versed in sustainable practices is **key to ensuring effective ESG implementation**. These professionals play a critical role by driving energy-efficient operations, leading occupier engagement programmes, and implementing green lease frameworks. They also help assets achieve and maintain sustainable building certifications through data-driven performance monitoring and transparent reporting, while responding to evolving ESG expectations of occupiers.

Aligning Daily Property Operations with Regulatory and Policy Priorities

Daily property operations should align with national policies and regulations mentioned earlier in the Key Drivers of Climate Relevance for REITs. This involves implementing energy performance tracking, developing retrofitting plans, and adopting protocols that deliver measurable targets while leveraging available incentives to

support ESG integration and carbon reduction.

Managing Climate and Cost Pressures

The growing recognition of whole-life carbon, together with rising energy costs, tighter carbon regulations, and new disclosure requirements on embodied carbon, is reshaping how developers, property owners, and other stakeholders approach ESG. For S-REITs specifically, higher cooling and heating expenses from temperature fluctuations have been the most frequently reported climate-related impact over the past three years.

Future-Proofing Assets through Climate Transition Plans

Managing operational emissions is now critical to securing long-term asset resilience. Rising carbon taxes, stricter regulations, and escalating energy costs are intensifying pressure to reduce emissions across the entire building lifecycle.

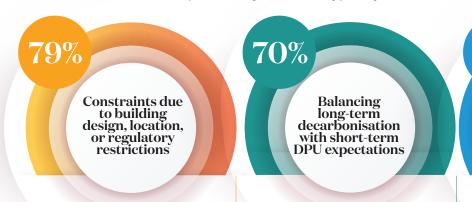
In response, S-REITs are encouraged to develop climate transition plans that set clear decarbonisation pathways, timelines, and performance metrics. Such plans not only mitigate long-term regulatory and financial risks but also align portfolios with leading frameworks such as IFRS Sustainability Disclosure Standards, CRREM, and EU's SFDR.

Strengthening Tenant Engagement for ESG Outcomes

Tenant collaboration is critical to achieving building-level sustainability goals. S-REITs can strengthen performance by embedding green lease clauses, aligning shared sustainability targets, and facilitating data transparency. Education and engagement programmes further promote responsible resource use and reinforce climate-aligned operations.

Tackling Challenges to Shape the Future of Sustainable S-REITs

Survey 12: What are the key challenges your organisation faces in advancing decarbonisation or sustainability initiatives at the asset level, particularly those not typically disclosed in sustainability reports?



Many REITs manage assets with inherent structural limitations, such as outdated designs, single-use layouts, or sites in tightly regulated zones, that restrict opportunities for retrofits or renewable energy installation. Overcoming these barriers often requires creative, and sometimes costly, solutions to achieve meaningful sustainability gains.

Sustainability investments typically deliver benefits over a multi-year horizon, yet listed REITs face pressure from unitholders to maintain competitive distribution payouts (quarterly or semi-annual). This tension between immediate financial returns and long-term environmental outcomes remains a persistent challenge.

Tenant resistance or low engagement in green initiatives

Although many S-REITs actively promote green leases and fit-out guidelines, tenant buy-in remains uneven. For some occupiers, sustainability measures are perceived as additional costs or operational burdens, slowing joint progress towards net-zero targets.

Source: REITAS and Knight Frank ESG Survey of REIT Managers

Nevertheless,

70%

S-REIT respondents expect a green premium for ESG-compliant buildings or a brown discount for non-compliant ones. This anticipated market repricing strengthens the case for decarbonisation, helping managers bridge the gap between near-term DPU pressures and long-term value creation.

Other factors—limited availability of green financing, investor focus on disclosure over outcomes, and weak local government support—were cited by only 3% of respondents, suggesting they are not considered major barriers. **None reported insufficient board support**, emphasizing that sustainability enjoys strong leadership backing.



Advancing Climate Transition

To conclude, overcoming structural and regulatory constraints will require asset-specific strategies, such as phased retrofits, modular upgrades, or repurposing underutilised spaces, coupled with early engagement with regulators to explore flexibility in zoning or retrofit approvals. For the DPU–decarbonisation trade-off, managers can develop multi-year investment roadmaps that explicitly link sustainability upgrades to long-term cost savings, asset value protection, and investor returns. Tenant resistance can be reduced through co-created sustainability targets, green lease incentives, and clear demonstration of both operational and reputational benefits. Strong board-level commitment empowers S-REITs to build on a leadership foundation that can align these actions into a coherent, sector-wide decarbonisation pathway.

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Abbreviations

Acronyms	Definitions
ASEAN	Association of Southeast Asian Nations
BCA	Building and Construction Authority (Singapore)
BEEC	Building Energy Efficiency Certificate (Australia)
BEEO	Buildings Energy Efficiency Ordinance (Hong Kong)
СарЕх	Capital Expenditures
CBD	Commercial Building Disclosure
CO ₂	Carbon dioxide
CRD	Climate-related Disclosures
CRREM	Carbon Risk Real Estate Monitor
CRRO	Climate-related Risks and Opportunities
CVaR	Climate Value-at-Risk
DPU	Distribution Per Unit
EECA	Energy Efficiency and Conservation Act (Malaysia)
EPC	Energy Performance Certificate (UK)
ESG	Environmental, Social, and Governance
EU	European Union
EUI	Energy Used Intensity
EV	Electric Vehicle
Fitwel	Facility Innovations Towards Wellness Environment Leadership (Certification)
FY	Financial Year
FYC	Financial Year Commencing
GFA	Gross Floor Area
GHG	Greenhouse Gas
GRI	Global Reporting Initiative
IFRS	International Financial Reporting Standards

Abbreviations

Acronyms	Definitions
IFRS S1	International Financial Reporting Standards S1 (General Requirements for Disclosure of Sustainability-related Financial Information)
IFRS S2	International Financial Reporting Standards S2 (Climate-related Disclosures)
ISSB	International Sustainability Standards Board
KPI	Key Performance Indicators
LEED	Leadership in Energy and Environmental Design (Certification)
M&E	Mechanical and Electrical
MAS	Monetary Authority of Singapore
MEES	Minimum Energy Efficiency Standards
MEI	Mandatory Energy Improvement (Singapore)
MEPS	Minimum Energy Performance Standards (Singapore)
NABERS	National Australian Built Environment Rating System
OpEx	Operational Expenditures
PPA	Power Purchase Agreement
RECs	Renewable Energy Certificates
REITAS	REIT Association of Singapore
REITs	Real Estate Investment Trusts
REM	Registered Energy Manager (Malaysia)
SBTi	Science Based Targets initiative
SFDR	Sustainable Finance Disclosure Regulation
SG	Singapore
SGX	Singapore Exchange
SLL	Sustainability-linked loans
S-REITs	Singapore-listed REITs and Property Trusts
SSFA	Singapore Sustainable Finance Association
STI	The Straits Times Index
TCFD	Task Force on Climate-related Financial Disclosures
WELL	WELL Building Standard (Certification)





