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WHAT ENABLES CLIMATE-RESPONSIVE AND RESOURCE-EFFICIENT OFFICE BUILDINGS IN A SMALL ISLAND DEVELOPING STATE? A STAKEHOLDER-WEIGHTED READINESS GAP ANALYSIS

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ABSTRACT

Climate-responsive and resource-efficient office buildings, often described in practice as green office buildings, are increasingly promoted in Small Island Developing States (SIDS). However, there remains limited understanding of how policy, finance, skills, and supply conditions interact to constrain adoption, as the literature largely focuses on barriers and drivers rather than readiness as a systemic condition. This study aims to examine what enables such buildings in Mauritius through a systems-informed, stakeholder-weighted readiness gap analysis. A mixed-methods approach combined 33 survey responses with five expert interviews. Survey respondents were regrouped into four stakeholder clusters such as developer/owner, government/policy, commercial/advisory, and technical delivery. Weighted Likert-scale responses were normalised into four readiness domains: market and finance, technical and supply, policy and institutional, and collaboration and delivery. Interview evidence was coded into causal relationships to produce a qualitative system map and identify reinforcing adoption traps and leverage points. The largest weighted gaps were found in market and finance readiness (0.735), technical and supply readiness (0.666), and policy and institutional readiness (0.652), while collaboration and delivery showed a lower but still material deficit (0.449). By contrast, respondents expressed strong support for feasible implementation priorities, particularly flood resilience (0.860), life-cycle assessment (0.852), daylighting (0.843), rainwater harvesting (0.843), passive cooling and efficient air-conditioning (0.834), and digital technologies (0.831). The findings show that the main challenge is not the absence of technical pathways, but weak enabling conditions. The paper contributes a multi-stakeholder study and a practical readiness-to-action framework for scaling uptake in SIDS office building markets.

Keywords: *Climate-responsive office buildings; Mauritius; Readiness gap; Resource efficiency; Small Island Developing States.*

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1. INTRODUCTION

The building sector is a major focus of global decarbonisation and resource-efficiency agendas because design-stage decisions lock in long-term energy use, material demand and infrastructure burdens (Madadizadeh et al., 2024). This issue is particularly important in Small Island Developing States (SIDS), where construction is shaped by import dependence, climate risk, limited domestic markets and institutional capacity constraints (Salomon, 2024). In Mauritius, office development has strategic importance as the country positions itself as a regional business and services hub, yet the environmental performance of new commercial buildings remains uneven (Briguglio et al., 2020). Climate-responsive and resource-efficient office buildings are often framed around technical measures such as improved envelopes, renewable energy systems, efficient services, water management and waste reduction (World Green Building Council, 2019; Cheshire, 2016). This study adopts a broader interpretation that includes passive design, climate resilience, water efficiency and life-cycle resource performance. Although the questionnaire used the more familiar term “green office buildings”, the analysis interprets the findings through the narrower climate-responsive and resource-efficient lens, supported by expert interviews. Existing evidence from Mauritius and comparable contexts shows that such strategies are recognised by professionals, but implementation remains inconsistent (Rana & Rughooputh, 2014; Joyram et al., 2024). The central problem is therefore not the absence of technical solutions, but the weak readiness conditions that prevent known measures from becoming routine practice. This paper addresses this issue by developing a stakeholder-weighted readiness gap analysis and a systems-oriented framework for identifying enabling deficits, leverage points and practical pathways for uptake in the Mauritian office-building sector. Accordingly, this paper is structured as follows. Section 2 presents the literature review. Section 3 outlines the research methodology. Section 4 presents the results, followed by a discussion in Section 5 and Section 6 concludes the paper.

2. LITERATURE REVIEW

2.1 FROM BARRIERS TO SYSTEMIC READINESS IN SUSTAINABLE BUILDINGS

The transition towards climate-responsive and resource-efficient buildings has often been examined through barriers and drivers, including high upfront costs, regulatory limitations, lack of technical expertise and low stakeholder awareness (Darko & Chan, 2017; Häkkinen & Belloni, 2011). Although useful, this approach can treat barriers as separate issues rather than interacting conditions. Recent studies suggest that sustainable-building adoption is better understood as part of a wider socio-technical system in which technological, institutional, economic and behavioural factors interact (Geels, 2011; Poorisat et al., 2024; Heinz et al., 2025; Hong et al., 2025; Dharmarathna et al., 2026). Readiness therefore provides a more integrative lens, as it captures whether markets, institutions and stakeholders are prepared to implement available low-carbon solutions (International Energy Agency [IEA], 2021; United Nations Environment Programme[UNEP], 2021).

2.2 CLIMATE-RESPONSIVE AND RESOURCE-EFFICIENT OFFICE BUILDINGS

Climate-responsive design uses passive strategies such as orientation, shading, natural ventilation and envelope optimisation to reduce reliance on mechanical systems, while resource efficiency reduces energy, water and material use across the building life cycle (Xu et al., 2025; Poorisat et al., 2024; UNEP and Global Alliance for Buildings and Construction [Global ABC], 2025). These strategies are especially relevant to office buildings, where cooling demand, lighting, plug loads, dense occupancy and concentrated operating hours increase operational energy use (D. Hong et al., 2025; IEA, 2025). Buildings also offer major mitigation potential through passive and active strategies (Intergovernmental Panel on Climate Change [IPCC], 2022). However, the persistent gap between design intent and actual performance remains a concern and reflects not only technical issues but also misaligned incentives, fragmented responsibilities and limited user engagement (de Wilde, 2014).

2.3 THE SIDS CONTEXT: CONSTRAINTS AND VULNERABILITIES

Small Island Developing States (SIDS) face structural constraints that affect sustainable-building adoption, including geographic isolation, narrow resource bases, climate vulnerability and limited economies of scale (United Nations, 2024). These conditions shape readiness in several ways: import dependence can increase costs and reduce flexibility (Briguglio, 2016), limited institutional capacity can weaken enforcement (Robinson & Dornan, 2017), and small domestic markets can slow supply chain development. In such contexts, implementation is therefore better understood as a systemic readiness challenge than as a simple lack of technical knowledge.

2.4 MULTI-DIMENSIONAL ENABLERS AS READINESS COMPONENTS

Recent reviews show that sustainable-building uptake is shaped by financial and economic, policy and government, technological and technical, knowledge and training, and socio-cultural or stakeholder-related factors (Poorisat et al., 2024; Dharmarathna et al., 2026). In this study, these themes are consolidated into four operational readiness domains: market and finance readiness; technical and supply readiness; policy and institutional readiness; and collaboration and delivery readiness, as presented in Table 1. This classification reflects the view that building transition depends on investability, delivery capability, regulatory support and stakeholder collaboration working together rather than in isolation (Organisation for Economic Co-operation and Development [OECD], 2024; Vakeva-Baird et al., 2025).

Table 1: Literature derived readiness domains and expected influence on adoption

Readiness domain	Constructs examined and influence on adoption	Source
Market and finance	High initial cost, ROI uncertainty and investment confidence shape whether green office specifications are viewed as investable	Darko & Chan, 2017; Madadizadeh et al., 2024; IFC, 2025
Technical and supply	Expertise, training, technology availability and supplier capacity determine whether design intentions can be procured, installed and maintained	Häkkinen and Belloni, 2011; Poorisat et al., 2024; Dharmarathna et al., 2026
Policy and institutional	Policy clarity, incentives, standards, enforcement and government leadership create the certainty needed for wider uptake	IEA, 2021; UNEP, 2021; OECD, 2024
Collaboration and delivery	Early stakeholder involvement and interdisciplinary coordination reduce	de Wilde, 2014; Falana et al., 2025; Vakeva-Baird et al., 2025

Readiness domain	Constructs examined and influence on adoption	Source
	fragmentation and help close the performance gap	

2.5 STAKEHOLDER INFLUENCE AND THE WEIGHTED PERSPECTIVES

Office building delivery involves clients, designers, contractors, suppliers and policymakers, each influencing different stages of decision-making. Recent net-zero and sustainable-building research shows that interdisciplinary engagement is necessary but uneven, as actor roles differ across project stages and decision types (Falana et al., 2025; Vakeva-Baird et al., 2025). Clients and policymakers tend to shape strategic direction, regulation and investability, while designers, contractors and suppliers influence technical implementation. Treating stakeholder views as homogeneous may therefore understate how readiness deficits emerge, making analytical weighting necessary.

2.6 READINESS ASSESSMENT AND GAP ANALYSIS

Readiness assessment frameworks, including technology readiness levels, smart-readiness tools and adoption-readiness models, are used to evaluate preparedness for innovation adoption (Mankins, 1995; European Commission, 2026; U.S. Department of Energy, 2025). Gap-based diagnostic approaches similarly compare current and desired states to identify priorities for sustainability and organisational change (Klassen et al., 2025; Cambridge Institute for Sustainability Leadership, 2023). However, many frameworks remain linear and focus on single dimensions rather than interactions across technical, economic, political, social and behavioural conditions (Heinz et al., 2025; Anyanya et al., 2025). In the built environment, readiness applications remain fragmented across rating systems, smart-readiness tools and roadmaps, while SIDS literature continues to emphasise wider governance, finance and implementation constraints rather than integrated building-readiness models (Anyanya et al., 2025; World Green Building Council, 2025). Although low-carbon and net-zero building studies increasingly stress stakeholder engagement and partnership, these aspects are rarely embedded directly into readiness assessment (Vakeva-Baird et al., 2025; Falana et al., 2025). Three gaps therefore remain. First, empirical work on climate-responsive and resource-efficient office buildings in SIDS contexts such as Mauritius is still limited compared with the broader sustainable-building literature (Poorisat et al., 2024; Dharmarathna et al., 2026). Second, much of the literature continues to focus on barriers and drivers rather than readiness as a systemic condition (Poorisat et al., 2024; Heinz et al., 2025; Dharmarathna et al., 2026). Third, few studies integrate multi-dimensional readiness, stakeholder-weighted analysis and systems interpretation in the building sector. The present study addresses these gaps.

3. METHODOLOGY

This study adopts a mixed-method approach, combining a questionnaire survey with expert interviews to capture both breadth and depth of insight. Mixed-methods research is increasingly recognised as appropriate for addressing complex-built environment challenges that cannot be fully understood through a single method (Creswell and Plano Clark, 2018; Venkatesh et al., 2016; Johnson et al., 2007). Data collection was undertaken in two stages. First, a structured questionnaire was distributed purposively to 50 built-environment professionals with experience relevant to office building delivery, sustainability, policy, commercial appraisal or technical implementation in Mauritius. The questionnaire covered respondent profile, perceived readiness barriers and enablers, and implementation priorities. Thirty-three complete and usable responses were retained for analysis. As Table 2 shows, the sample is experienced but unevenly distributed across job categories, which is analytically important for the weighting procedure.

Table 2: Profile of the questionnaire survey respondents

Job category	**Number**	**Years of experience**		
		5-10	**11-15**	**15+**
Architect	1			1
Consultant	18	7	4	7
Contractor	1	1		
Developer	3	1	1	1
Government	3	3		
Project Manager	4	3		1
Property Valuer	1	1		
Sustainability Experts	2		2	
Total	**33**	**16**	**7**	**10**

Second, five semi-structured expert interviews were conducted to explain the survey patterns and explore mechanisms not captured through structured items. Interviewees were selected because of senior experience across property development, architecture, valuation, quantity surveying, project management and engineering consultancy, as presented in Table 3. The interviews focused on practical barriers, enabling conditions, actor roles, market confidence, supply-chain capacity and policy interventions. Given the exploratory nature of the study, depth of insight was prioritised over sample size (Patton, 2015; Saunders et al., 2019; Brinkmann, 2022). The integration of qualitative and quantitative data followed a triangulation logic to enhance interpretation (Patton, 2015; Venkatesh et al., 2024).

Table 3: Profile of the expert interviewee

Code	**Position**	**Area of Expertise**	**Years of Experience**	**Organisation**
INT1	Senior Executive Officer	Property Development; Facilities Management	20+	Government Insurance
INT2	Director	Architecture	20+	Architectural Practice
INT3	Director	Valuation	20+	Consultancy
INT4	Executive Director; Quantity Surveyor	Project Management; Quantity Surveying	20+	Consultancy
INT5	Business Development Manager	Structural Engineering Consultancy	15+	Consultancy

The quantitative analysis used a stakeholder-weighted readiness gap analysis. This approach was developed by adapting established practices in Likert-scale survey analysis, composite-indicator construction, directional item recoding and relative-importance ranking (Norman, 2010; OECD, 2008; Vigil-Colet et al., 2020; Holt, 2014; Gündüz et al., 2013; Al Khatib et al., 2020). Because the survey responses were unevenly distributed across job categories, respondents were first grouped into four implementation-relevant stakeholder clusters: developer/owner, government/policy, commercial/advisory, and technical delivery. To prevent the largest respondent group from dominating the results, each cluster was assigned equal analytical weight. Equal weighting and arithmetic aggregation are commonly used in composite-indicator construction where the purpose is to give comparable importance to predefined dimensions or groups (OECD, 2008).For each survey item, the mean score was first calculated within each stakeholder cluster:

$$\bar{x}_{ic} = \frac{1}{n_c}\sum_{j=1}^{n_c} x_{ijc} \qquad (01)$$

Where $\bar{x}_{ic}$is the mean score for item i in stakeholder cluster c, x_{ijc} is the score given by respondent j in cluster c, and n_c is the number of respondents in cluster c. The stakeholder-weighted mean scores were then normalised to a 0–1 readiness-gap scale. Normalisation is widely used in composite indicator construction to place variables on a common scale before aggregation (OECD, 2008). In this study, larger values indicate weaker readiness. Because the questionnaire contained both negatively framed barrier items and positively framed enabling items, item direction was standardised before aggregation. This follows the logic of reverse coding, where items are recoded so that all items have the same directional relationship with the construct being measured (Vigil-Colet et al., 2020). For negatively framed barrier items, stronger agreement indicates a larger readiness gap. The readiness gap was therefore calculated as:

$$G_i = \frac{\bar{x}_i^W - 1}{A - 1} \qquad (02)$$

Where $G_i$is the readiness-gap score for item i, $\bar{x}_i^W$is the stakeholder-weighted mean score for item i, and $A = 5$ is the highest possible score on the five-point Likert scale. For positively framed enabling items, weaker agreement indicates a larger readiness gap. The readiness gap was therefore calculated as:

$$G_i = \frac{A - \bar{x}_i^W}{A - 1} \qquad (03)$$

Where $G_i$is the readiness-gap score for item i, $\bar{x}_i^W$is the stakeholder-weighted mean score for item i, and $A = 5$ is the highest possible score on the five-point Likert scale. This standardisation ensured that all item scores were interpreted in the same direction, with larger values representing weaker readiness. Item level readiness gaps were then grouped into four composite readiness domains: market and finance readiness, technical and supply readiness, policy and institutional readiness, and collaboration and delivery readiness. For each domain, the overall score was calculated as the arithmetic mean of the item-level readiness gaps assigned to that domain:

$$D_d = \frac{1}{m_d}\sum_{i=1}^{m_d} G_i \qquad (04)$$

where D_d is the readiness-gap score for domain d, G_i is the readiness-gap score for item i, and m_d is the number of items assigned to domain d. In addition to readiness-gap items, the questionnaire included potential implementation measures covering energy efficiency, water efficiency, climate resilience and resource management. Respondents rated the priority of each measure on a five-point Likert scale, where 1 indicated very low priority and 5 indicated very high priority. Priority ranking was calculated using a stakeholder-weighted Relative Importance Index (W-RII). The Relative Importance Index is widely used in construction management research to rank questionnaire items according to respondents perceived importance (Holt, 2014; Gündüz et al., 2013; Al

Khatib et al., 2020). First, an RII was computed for each item within each stakeholder cluster:

$$RII_{ic} = \frac{\sum_{j=1}^{n_c} w_{ijc}}{An_c} \qquad (05)$$

Where RII_{ic} is the relative importance index for item $i$in stakeholder cluster c, w_{ijc} is the priority rating assigned by respondent $j$in cluster c, $A = 5$ is the highest possible rating, and n_c is the number of respondents in cluster c. The overall stakeholder-weighted priority score for each item was then calculated as the simple average of the four cluster-specific RII values:

$$W\text{-}RII_i = \frac{1}{C}\sum_{c=1}^{C} RI\,I_{ic} \qquad (06)$$

where $W\text{-}RII_i$ is the stakeholder-weighted relative importance index for item i, and $C = 4$ is the number of stakeholder clusters. Higher W-RII values indicate higher implementation priority. Items were ranked in descending order to identify the most strongly supported implementation measures.

Expert interviews were analysed to explain the survey findings and identify practical intervention points for improving uptake. Transcripts were thematically coded for recurring barriers, enabling conditions, proposed actions and actor roles, then grouped into higher-order themes and causal relationships, following established approaches to thematic analysis and qualitative data reduction (Braun & Clarke, 2006; Miles et al., 2014). These relationships were consolidated into a qualitative system map using causal-loop and systems-thinking principles (Sterman, 2000). Leverage points were identified where interviewees described interventions capable of disrupting reinforcing mechanisms and generating wider system change (Meadows, 1999). Finally, these leverage points were cross-checked against the stakeholder-weighted readiness gaps and implementation priorities to ensure consistency across the qualitative and quantitative findings.

4. FINDINGS

4.1 STAKEHOLDER-WEIGHTED READINESS GAPS

Table 4 presents the stakeholder-weighted readiness gap scores and item-to-domain mapping. The largest gap is market and finance readiness (0.735), showing that adoption is constrained mainly by high upfront costs and uncertain returns rather than by lack of awareness. Technical and supply readiness is also weak (0.666), reflecting concerns over expertise, training, supplier availability and implementation capacity. Policy and institutional readiness follow closely (0.652), particularly around incentives and enforcement. Collaboration and delivery show a lower but still relevant gap (0.449), suggesting that project coordination is stronger than the wider enabling environment. At item level, high initial cost is the largest deficit, with a stakeholder-weighted mean of 4.28/5. Other sizeable gaps include limited awareness, inadequate incentives, weak enforcement, constrained supplier availability, insufficient training and uncertain ROI. By contrast, early stakeholder involvement (3.42/5) and professional collaboration (3.34/5) are comparatively stronger. Overall, the sector appears able to coordinate projects once they proceed, but still lacks the enabling conditions needed to make climate-responsive and resource-efficient office buildings routine practice.

Table 4: Stakeholder-weighted readiness gap scores by domain

Domain	Key items included	Gap score	Interpretation
Market & Finance	High initial cost; ROI uncertainty/investment confidence	0.735	Highest deficit: adoption is not yet investable at scale
Technical & Supply	Limited expertise; insufficient training; supplier/product availability	0.666	Skills and supply chains remain fragile
Policy & Institutional	Policy clarity; incentive adequacy; enforcement; government support	0.652	Rules and incentives are perceived as weak or inconsistent
Collaboration & Delivery	Stakeholder awareness; Early involvement; professional collaboration; government role	0.449	Project coordination exists, but enabling support is uneven

4.2 STAKEHOLDER-WEIGHTED IMPLEMENTATION PRIORITIES

Table 5 shows the highest stakeholder-weighted implementation priorities. The readiness-gap results should not be interpreted as evidence that stakeholders lack preferred technical pathways.

Table 5: Highest stakeholder-weighted implementation priorities

Category	Priority item	W-RII
Climate resilience	Flooding	0.860
Resource management	Lifecycle assessment of materials and systems	0.852
Energy efficiency	Optimisation of natural daylighting	0.843
Water efficiency	Rainwater harvesting	0.843
Energy efficiency	Adoption of passive cooling and efficient AC systems	0.834
Resource management	Use of digital technologies	0.831
Energy efficiency	Optimisation of building envelope	0.824

The priority analysis shows the opposite. The strongest weighted priorities are flood resilience (0.860), life-cycle assessment of materials and systems (0.852), optimaisation of natural daylighting (0.843), rainwater harvesting (0.843), passive cooling and efficient air-conditioning (0.834), and digital technologies (0.831)and building-envelope optimisation (0.824).These values provide direct quantitative support for a feasible design agenda built around passive efficiency, climate resilience, water efficiency, life-cycle resource management and digital monitoring. A second pattern is that lower-complexity or design-integrated measures often outrank more capital-intensive or operationally demanding systems. Daylighting, passive cooling, envelope optimisation, and rainwater harvesting all score strongly. This suggests that stakeholders do not primarily resist climate-responsive and resource-efficient office buildings as an idea; rather, they resist uncertain investment conditions and implementation risks around them.

4.3 SYSTEMS INTERPRETATION AND LEVERAGE POINTS

The interview findings indicates that these gaps behave as an interacting system rather than a set of independent barriers. Figure 1 summarises the qualitative system map derived from the coded interviews and open-ended responses. Three reinforcing mechanisms are particularly important. The first is an investment-confidence trap, Weak public signalling, and limited incentives suppress project uptake; low project uptake produces few demonstrator projects and little performance evidence; and scarce evidence sustains ROI uncertainty and weak market confidence, which further suppress adoption. The second is a supply-chain trap. When adoption stays low, suppliers have little incentive to deepen stock, service capacity, or spare-parts availability. Import dependence remains high, maintenance risk remains visible, and costs stay elevated, which further discourages project uptake. The third is a capability trap. Low adoption reduces incentives for firms and institutions to invest in continuous professional development, shared knowledge platforms, and implementation support; this keeps technical confidence fragile and reinforces perceived delivery risk. The three loops interact: poor evidence feeds finance concerns, low market volume weakens suppliers, and shallow supplier capacity makes skills acquisition less attractive. Table 6 identifies the principal leverage points emerging from the systems analysis and shows how each intervention responds to a specific reinforcing mechanism.

Table 6: Leverage points underpinning the proposed uptake framework

Enabling mechanism	Leverage point	System mechanism addressed	Sequencing implication
Signal	Permit-stage integration of minimum green criteria.	Strengthens public signalling and shifts green requirements from optional to expected	Near-term
Demonstrate	Public demonstrator projects plus performance disclosure	Turns projects into local evidence and weakens ROI uncertainty	Near-term
De-risk	Targeted fiscal de-risking; subsidies, tax breaks, concessional loans	Reduces upfront cost pressure and supports early market volume	Near- to medium-term
Standardise	Structured CPD and shared technical-support platform	Counters the capability trap and improves maintenance confidence	Medium-term
	Supplier standards, procurement support, and spare-parts availability	Deepens the market and reduces cost and maintenance risk	Medium-term

The five leverage points were clustered into the four enabling mechanisms according to their dominant intervention logic: whether the action primarily signals expectations, demonstrates local evidence, de-risks investment or standardises repeatable delivery capability. CPD support and supplier standards were both grouped under Standardise because they convert one-off project learning into repeatable market capability.

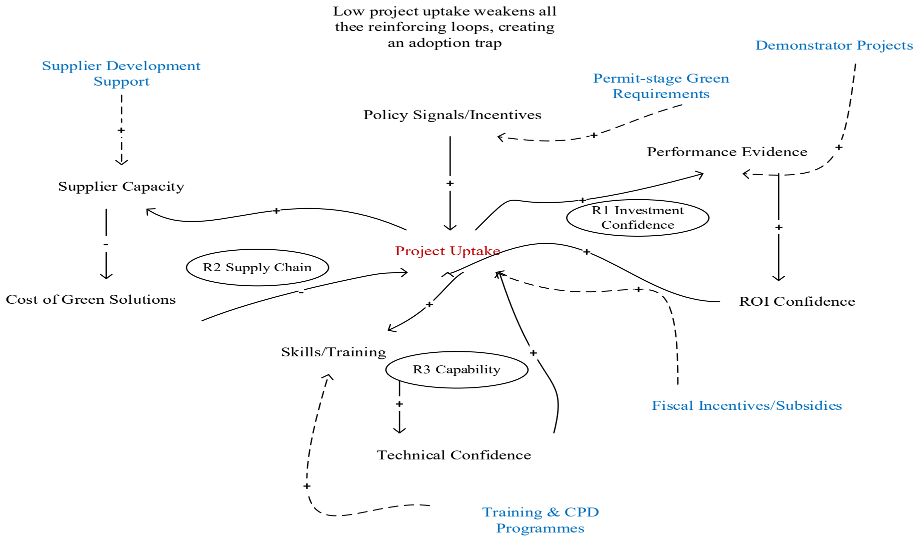

Figure 1: Causal loop diagram of adoption dynamics for climate-responsive and resource efficient office building

4.4 SYSTEMS-INFORMED FRAMEWORK FOR SCALING CLIMATE-RESPONSIVE AND RESOURCE-EFFICIENT OFFICE BUILDINGS

Building on the leverage points identified in Table 6, Figure 2 translates the readiness diagnosis and qualitative systems analysis into a structured readiness-to-action framework for Mauritius. The centre of the framework presents four cross-cutting enabling mechanisms: Signal, Demonstrate, De-risk and standardise. The mechanism labels were derived from the clustering logic reported in Table 6 and therefore describe broad types of systemic change, while the leverage points specify the concrete actions through which that change can be activated. Signal strengthens policy direction through permit-stage and procurement criteria.

Demonstrate builds local evidence through demonstrator projects and post-occupancy disclosure. De-risk reduces upfront cost and ROI uncertainty through subsidies, concessional finance, tax relief and valuation reform. Standardise supports repeatable delivery through CPD, supplier standards, technical support platforms, spare parts access and shared knowledge. Together, these mechanisms connect stakeholder priorities passive cooling and daylighting, rainwater harvesting, flood resilience, life-cycle assessment and digital monitoring to the conditions needed for scale; stronger project pipelines, market confidence, supplier ecosystems and maintenance confidence. The framework therefore links diagnosed readiness gaps to mainstream uptake in Mauritius rather than presenting a generic policy list.

5. DISCUSSION

The central empirical insight of this paper is that Mauritius does not mainly face a deficit of technical imagination in climate-responsive and resource-efficient office development. The priority results indicate a coherent implementation agenda because stakeholders rated passive and design-integrated measures highly: natural daylighting (0.843), passive cooling and efficient air-conditioning (0.834), and building-envelope optimisation (0.824). They also rated climate resilience and measurable resource performance highly, including flood resilience (0.860), rainwater harvesting (0.843), life-cycle assessment

(0.852) and digital technologies (0.831). What is missing are the system conditions that allow these measures to be financed, trusted, maintained and repeated across projects. This finding aligns with reviews arguing that sustainable building transitions depend less on a lack of design options than on the alignment of finance, policy, delivery capability and stakeholder coordination (Poorisat et al., 2024; Dharmarathna et al., 2026). The systems interpretation adds an important aspect to the readiness-gap results. High upfront cost, weak incentives, supplier fragility, limited training, and uncertain ROI should not be read as isolated variables. They function through feedback. Weak policy and limited public leadership reduce the number of demonstrator projects; low demonstrator volume reduces locally credible evidence; without evidence, valuation practices and tenant expectations do not change; without stronger commercial signals, private developers continue to see greener specifications as risky cost additions. In Repenning and Sterman's (2002) terms, parts of the Mauritian system resemble a capability trap: low volume justifies low investment in capability, and low capability in turn justifies low volume. This interaction is especially important in SIDS contexts. Thin markets and import dependence mean that even technically feasible solutions can remain commercially fragile for longer than in larger economies. A policy package that focuses only on codes may therefore underperform if it is not sequenced with demand creation, performance disclosure, skills support, and supplier development. Conversely, awareness campaigns without permit integration or financial de-risking are unlikely to move the system materially. This interpretation is consistent with recent policy and finance literature emphasising that building transition depends on coordinated regulatory signals, investability, and market development rather than isolated interventions (OECD, 2024; IFC, 2025).

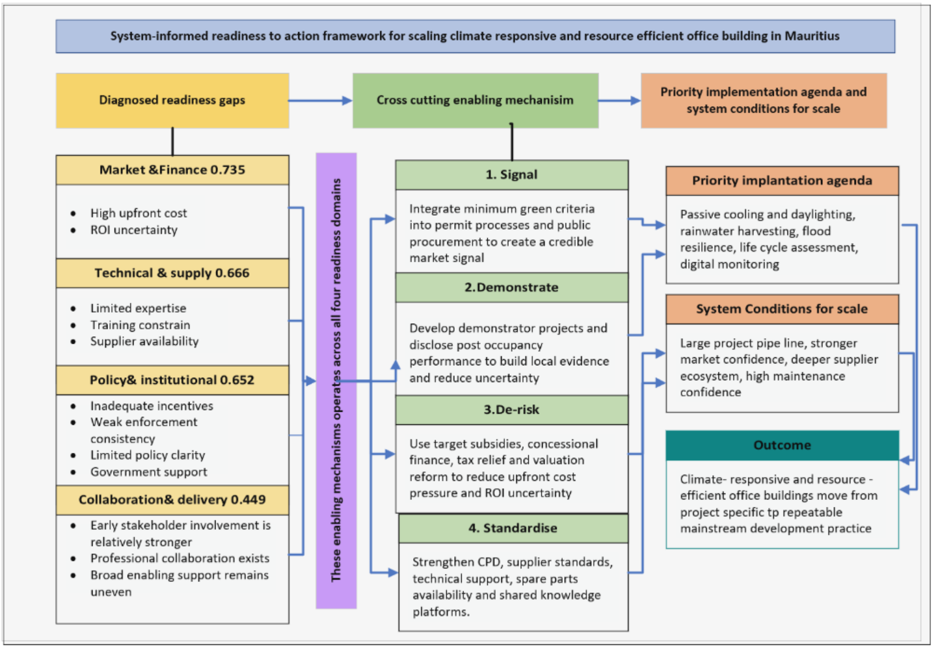

Figure 2: Systems-informed readiness-to-action framework for scaling climate-responsive and resource-efficient office buildings in Mauritius

6. CONCLUSIONS

This paper reframed the uptake of climate-responsive and resource-efficient office buildings in Mauritius as a readiness and systems challenge. The stakeholder-weighted readiness gap analysis shows that the main constraints are market and finance readiness, technical and supply capacity, and inconsistent policy support, despite stakeholder agreement on feasible technical priorities. The implication is that Mauritius does not only need further promotion of sustainable design features; it needs an enabling environment that allows these measures to move from one-off projects to routine practice. The proposed framework suggests a transition sequence of signal, demonstrate, de-risk, and standardise. Public signalling, demonstrator projects, performance disclosure, financial de-risking, capability building, and supplier development should therefore be treated as connected interventions rather than separate actions. The study is limited by its small purposive sample, particularly the small developer/owner and government/policy clusters, meaning that individual responses may affect weighted scores. The qualitative system map is also based on expert interpretation rather than empirical validation of feedback dynamics. Future research should use larger samples, cross-SIDS comparison, sensitivity testing of weighted indicators, through simulation, longitudinal data and post-occupancy evidence to strengthen the readiness framework.

7. REFERENCES

Al Khatib, B., Poh, Y. S., & El-Shafie, A. (2020). Delay factors management and ranking for reconstruction and rehabilitation projects based on the relative importance index (RII). *Sustainability, 12*(15), 6171. https://doi.org/10.3390/su12156171

Anyanya, D., Paulillo, A., Fiorini, S., & Lettieri, P. (2025). Evaluating sustainable building assessment systems: A comparative analysis of GBRS and WBLCA. *Frontiers in Built Environment, 11*, 1550733. https://doi.org/10.3389/fbuil.2025.1550733

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Briguglio, L. P. (2016). Exposure to external shocks and economic resilience of countries: Evidence from global indicators. *Journal of Economic Studies, 43*(6), 1057–1078. https://doi.org/10.1108/JES-12-2014-0203

Briguglio, L., Byron, J., Moncada, S., & Veenendaal, W. (Eds.). (2020). *Handbook of governance in small states*. Routledge. https://doi.org/10.4324/9780429061356

Brinkmann, S. (2022). *Qualitative interviewing: Conversational knowledge through research interviews* (2nd ed.). Oxford University Press.

Cambridge Institute for Sustainability Leadership. (2023). *CISL's business transformation framework: Preliminary diagnostic*. University of Cambridge Institute for Sustainability Leadership. https://www.cisl.cam.ac.uk/news-and-resources/publications/cisls-business-transformation-framework-preliminary-diagnostic

Cheshire, D. (2016). *Building revolutions: Applying the circular economy to the built environment*. RIBA Publishing.

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE.

Darko, A., & Chan, A. P. C. (2017). Review of barriers to green building adoption. *Sustainable Development, 25*(3), 167–179. https://doi.org/10.1002/sd.1651

De Wilde, P. (2014). The gap between predicted and measured energy performance of buildings: A framework for investigation. *Automation in Construction, 41*, 40–49. https://doi.org/10.1016/j.autcon.2014.02.009

Dharmarathna, D., Bunster, V., & Graham, P. (2026). Barriers and drivers of sustainable building adoption and influencing factor dynamics: A systematic review and meta-analysis. *Renewable and Sustainable Energy Reviews, 226*, 116361. https://doi.org/10.1016/j.rser.2025.116361

European Commission. (2026). *Smart readiness indicator: Implementation tools*. https://energy.ec.europa.eu/topics/energy-efficiency/energy-performance-buildings/smart-readiness-indicator_en

Falana, J., Osei-Kyei, R., & Tam, V. W. Y. (2025). Critical barriers and success strategies to stakeholder partnership towards achieving net zero emissions building: A systematic literature review. *Cities, 163*, 106061. https://doi.org/10.1016/j.cities.2025.106061

Geels, F. W. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions, 1*(1), 24–40. https://doi.org/10.1016/j.eist.2011.02.002

Gündüz, M., Nielsen, Y., & Özdemir, M. (2013). Quantification of delay factors using the relative importance index method for construction projects in Turkey. *Journal of Management in Engineering, 29*(2), 133–139. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000129

Häkkinen, T., & Belloni, K. (2011). Barriers and drivers for sustainable building. *Building Research & Information, 39*(3), 239–255. https://doi.org/10.1080/09613218.2011.561948

Heinz, E., Sovacool, B. K., Kwan, T., & Petit, V. (2025). Reviewing the 95 sociotechnical barriers to the decarbonization of buildings. *Nature Communications, 16*, 9983. https://doi.org/10.1038/s41467-025-64923-9

Holt, G. D. (2014). Asking questions, analysing answers: Relative importance revisited. *Construction Innovation, 14*(1), 2–16. https://doi.org/10.1108/CI-06-2012-0035

Hong, D., Cheng, R., Lei, H., Zhou, X., Yang, L., Feng, C., & Gao, S. (2025). Comprehensive review on the impact of building envelopes on indoor thermal comfort in office buildings: Balancing occupant comfort and energy efficiency. *Building and Environment, 289*, 114018. https://doi.org/10.1016/j.buildenv.2025.114018

Hong, J., Chan, I., & Ma, P. (2025). Towards an integrated socio-ecological approach in green building transitions: A systematic literature review. *Sustainability, 17*(12), 5491. https://doi.org/10.3390/su17125491

International Energy Agency. (2021). *Net zero by 2050: A roadmap for the global energy sector*. https://www.iea.org/reports/net-zero-by-2050

International Energy Agency. (2025). *Energy efficiency 2025*. https://www.iea.org/reports/energy-efficiency-2025

International Finance Corporation. (2025). *Sustainable buildings: Finance reference guide*. https://www.ifc.org/en/insights-reports/2025/sustainable-buildings-finance-reference-guide

Intergovernmental Panel on Climate Change. (2022). *Climate change 2022: Mitigation of climate change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (P. R. Shukla et al., Eds.). Cambridge University Press. https://doi.org/10.1017/9781009157926

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research, 1*(2), 112–133. https://doi.org/10.1177/1558689806298224

Joyram, H., Govindan, K., & Nunkoo, R. (2024). Development of a novel psychological model to predict the eco-block building adoption in Mauritius. *Cleaner and Responsible Consumption, 12*, 100172. https://doi.org/10.1016/j.clrc.2024.100172

Klassen, M., Dobni, C. B., & Sheehan, N. T. (2025). Measure what matters: A blueprint for a sustainability culture diagnostic. *Business Horizons, 68*(6), 793–805. https://doi.org/10.1016/j.bushor.2025.07.004

Madadizadeh, A., Siddiqui, K., & Aliabadi, A. A. (2024). Review: The economics landscape for building decarbonization. *Sustainability, 16*(14), 6214. https://doi.org/10.3390/su16146214

Mankins, J. C. (1995). *Technology readiness levels: A white paper*. NASA Office of Space Access and Technology, Advanced Concepts Office.

Meadows, D. H. (1999). *Leverage points: Places to intervene in a system*. The Sustainability Institute. https://donellameadows.org/archives/leverage-points-places-to-intervene-in-a-system/

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE.

Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education, 15*, 625–632. https://doi.org/10.1007/s10459-010-9222-y

Organisation for Economic Co-operation and Development. (2024). *Global monitoring of policies for decarbonising buildings:A multi-level approach*. OECD Publishing. https://doi.org/10.1787/d662fdcb-en

Organisation for Economic Co-operation and Development, European Union, & European Commission, Joint Research Centre. (2008). *Handbook on constructing composite indicators: Methodology and user guide*. OECD Publishing. https://doi.org/10.1787/9789264043466-en

Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). SAGE.

Poorisat, T., Aigwi, I. E., Doan, D. T., & GhaffarianHoseini, A. (2024). Unlocking the potentials of sustainable building designs and practices: A systematic review. *Building and Environment, 266*, Article 112069. https://doi.org/10.1016/j.buildenv.2024.112069

Rana, J., & Rughooputh, R. (2014). The barriers and recommendations to implementing low carbon emission buildings in Mauritius. *GE-International Journal of Engineering Research, 2*(9), 168–177.

Repenning, N. P., & Sterman, J. D. (2002). Capability traps and self-confirming attribution errors in the dynamics of process improvement. *Administrative Science Quarterly, 47*(2), 265–295. https://doi.org/10.2307/3094806

Robinson, S.-A., & Dornan, M. (2017). International financing for climate change adaptation in small island developing states. *Regional Environmental Change, 17*(4), 1103–1115. https://doi.org/10.1007/s10113-016-1085-1

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.

Sterman, J. D. (2000). *Business dynamics: Systems thinking and modelling for a complex world*. McGraw-Hill.

U.S. Department of Energy, Office of Technology Commercialization. (2025). *Adoption readiness levels (ARL) framework*. https://www.energy.gov/technologycommercialization/adoption-readiness-levels-arl-framework

United Nations. (2024). *The Antigua and Barbuda Agenda for Small Island Developing States: A renewed declaration for resilient prosperity*. https://digitallibrary.un.org/record/4054465

United Nations Environment Programme. (2021). *2021 global status report for buildings and construction: Towards a zero-emission, efficient and resilient buildings and construction sector*. https://www.unep.org/resources/report/2021-global-status-report-buildings-and-construction

United Nations Environment Programme & Global Alliance for Buildings and Construction. (2025). *Global status report for buildings and construction 2024/2025: Not just another brick in the wall*. https://www.unep.org/resources/report/global-status-report-buildings-and-construction-20242025

Vakeva-Baird, S., Tahmasebi, F., Williams, J.-J., & Mumovic, D. (2025). Effective interdisciplinary stakeholder engagement in net zero building design. *Buildings and Cities, 6*(1), 654–673. https://doi.org/10.5334/bc.510

Venkatesh, V., Brown, S. A., & Sullivan, Y. W. (2016). Guidelines for conducting mixed-methods research: An extension and illustration. *Journal of the Association for Information Systems, 17*(7), 435–495. https://doi.org/10.17705/1jais.00433

Venkatesh, V., Brown, S. A., & Sullivan, Y. W. (2024). *Conducting mixed-methods research: From classical social sciences to the age of big data and analytics*. Virginia Tech Publishing. https://doi.org/10.21061/conducting-mixed-methods-research

Vigil-Colet, A., Navarro-González, D., & Morales-Vives, F. (2020). To reverse or to not reverse Likert-type items: That is the question. *Psicothema, 32*(1), 108–114. https://doi.org/10.7334/psicothema2019.286

World Green Building Council. (2019). *Bringing embodied carbon upfront: Coordinated action for the building and construction sector to tackle embodied carbon*. https://worldgbc.org/article/bringing-embodied-carbon-upfront/

World Green Building Council. (2025). *Zero carbon and climate resilience readiness framework*. https://worldgbc.org/zero-carbon-framework/

Xu, J., Gao, Y., & Yang, L. (2025). Climate-adaptive passive design strategies for near-zero-energy office buildings in central and southern Anhui, China. *Sustainability, 17*(14), 6535. https://doi.org/10.3390/su17146535