

Human Resources as Strategic Drivers of Sustainability: A Systematic Review in Property and Real Estate

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ABSTRACT

Sustainability has become a critical organizational priority, yet the strategic role of human resources in supporting sustainability, particularly within the property and real estate sector, remains underexplored. This study employs a systematic literature review (SLR) guided by the Resource-Based View (RBV) to synthesize studies on Green Human Resource Management (GHRM), workforce sustainability capabilities, and sustainability outcomes published between 2016 and 2026. A total of 433 articles were initially identified, of which 21 studies met the inclusion criteria and were included in the final review. The findings indicate that sustainability-oriented HR practices, including green training, recruitment, employee participation, and performance management, significantly contribute to pro-environmental behavior, green innovation, and sustainability awareness. The review further reveals that sustainability outcomes are primarily achieved through workforce capability development rather than through HR practices alone. Although studies on Green HRM and sustainability have expanded across manufacturing and service industries, research within the property and real estate sector remains comparatively limited and fragmented, particularly regarding workforce-centered sustainability mechanisms. This review contributes by providing a more integrated understanding of HR-driven sustainability mechanisms and highlighting future research opportunities for workforce sustainability within the built environment sector.

INTRODUCTION

Sustainability has emerged as a critical global imperative driven by escalating environmental challenges, including climate change, resource depletion, and ecological degradation. These pressures have compelled organizations to integrate sustainability into their core strategies to enhance long-term competitiveness, resilience, and corporate accountability (Gaybullaev & Strode, 2026). In this context, Environmental, Social, and Governance (ESG) criteria have become a dominant framework for evaluating organizational sustainability performance and responding to growing stakeholder expectations for transparency and responsible business conduct (Chopra et al., 2024). Within this broader sustainability agenda, the property and real estate sector plays a significant role due to its substantial contribution to global carbon emissions, energy consumption, and natural resource use. However, sustainability efforts in the built environment have largely focused on technological solutions such as green buildings and energy-efficient systems, while organizational and workforce-related dimensions remain comparatively underexplored (Lozano & Garcia, 2020).

Despite the growing emphasis on sustainability within the built environment, existing studies have predominantly focused on technical solutions such as green buildings, energy-efficient systems, and sustainable construction technologies (Darko & Chan, 2016). While these approaches are important, they often overlook organizational and human dimensions that are equally critical for achieving sustainability outcomes. Sustainability performance is influenced not only by infrastructure, but also by employee behavior, organizational capabilities, and managerial commitment. In response, Green Human Resource Management (GHRM) has emerged as a strategic mechanism for promoting sustainability through green training, employee engagement, and environmentally responsible workplace behavior. Consequently, sustainability is increasingly recognized as a human- and organization-driven process rather than solely a technology-centered initiative (Renwick et al., 2013).

In recent years, Green Human Resource Management (GHRM) and Sustainable HRM have emerged as important approaches for supporting organizational sustainability by aligning HR practices with environmental, social, and economic objectives (Järlström et al., 2018; Tahir et al., 2024). These approaches position HR as a strategic partner capable of fostering green competencies, employee engagement, and environmentally responsible behavior to improve sustainability performance (Jabbour & Sousa Jabbour, 2016). However, existing GHRM studies remain heavily concentrated in manufacturing, energy, and general corporate sectors, where environmental impacts are more directly observable (Jabbour & Sousa Jabbour, 2016; Masri & Jaaron, 2017). In contrast, the property and real estate sector remains relatively underexplored despite its significant environmental footprint and unique workforce characteristics, highlighting the need for more sustainability-oriented HR research within the built environment context.

To address these limitations, the Resource-Based View (RBV) provides a relevant perspective for understanding how human resources contribute to organizational sustainability. RBV argues that organizations achieve sustained competitive advantage through valuable and difficult-to-imitate resources, including employee knowledge, skills, and capabilities (Barney, 1991; Wright et al., 1994). Within sustainability contexts, HR is increasingly recognized as a strategic enabler that shapes workforce capabilities and environmentally responsible behavior. However, despite the growing relevance of RBV, its application within the property and real estate sector remains limited.

The existing literature on HRM and sustainability remains fragmented, with limited integration between HRM, sustainability, and real estate research. While HRM studies often focus on internal organizational practices, built environment research largely emphasizes technological and environmental solutions with limited attention to workforce-related factors (Darko & Chan, 2016; Lozano, 2015). Prior GHRM literature has also been mostly developed in manufacturing, energy, and general organizational contexts, where sustainability practices are more directly observable (Jabbour & Sousa Jabbour, 2016; Masri & Jaaron, 2017). In contrast, the property and real estate sector remains underdeveloped despite its environmental footprint and workforce-intensive operations. Therefore, this study reviews how HR practices shape workforce capabilities and sustainability outcomes across industries, particularly within property and built environment contexts.

Accordingly, this systematic literature review aims to synthesize existing research on the role of human resources in enabling sustainability, particularly within the property and real estate context, by examining: (RQ1) how human resources have been conceptualized as strategic resources in enabling sustainability within organizations; (RQ2) what human resource practices are employed to leverage workforce capabilities for sustainability outcomes; (RQ3) how HR-driven workforce capabilities translate into employee-level outcomes such as pro-environmental behavior and green innovation; (RQ4) to what extent these HR–sustainability mechanisms have been explored and applied in the property and real estate sector; and (RQ5) how HR–sustainability relationships differ across industries, particularly between property/real estate sectors and other industries. By addressing these questions, this study contributes to the literature by providing an integrated understanding of HR-driven sustainability mechanisms while identifying contextual gaps and future research opportunities within the property and real estate sector.

RESEARCH METHODS

This study employs a qualitative approach using a systematic literature review (SLR) to synthesize existing evidence on Green Human Resource Management (GHRM), workforce sustainability capabilities, and sustainability outcomes. An SLR provides a structured and transparent process for identifying, evaluating, and integrating relevant studies to address specific research questions (Dinter et al., 2021; Lame, 2019). This approach is particularly appropriate due to the fragmented nature of prior studies across HRM, sustainability, and

property-related contexts. Furthermore, SLR facilitates the identification of patterns, inconsistencies, and research gaps across different theoretical perspectives and industrial settings (Paul & Barari, 2022; Shaheen et al., 2023). Therefore, this method provides a rigorous foundation for developing an integrated understanding of HR-driven sustainability mechanisms within organizational and built environment contexts.

To ensure methodological rigor, this review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Albhirat et al., 2024). Relevant studies were retrieved from Scopus, Web of Science, and Google Scholar using structured keywords and Boolean operators related to human resource management, sustainability outcomes, and property or built environment contexts. The primary search string used was: (“green human resource management” OR “green HRM” OR “sustainable HRM” OR “human resource management” OR workforce OR employee OR “pro-environmental behavior” OR “green innovation”) AND (“sustainability” OR “environmental sustainability” OR “environmental performance” OR ESG OR “sustainability performance”) AND (“property” OR “real estate” OR “construction” OR “built environment” OR “green building”). The inclusion and exclusion criteria (see Table 1) were designed to ensure the relevance and quality of the selected studies.

Table 1. SLR Inclusion and Exclusion Criteria

Category	Inclusion Criteria	Exclusion Criteria
Language	English	Other languages
Publication Type	Peer-reviewed articles	Conference proceedings, dissertation theses, book chapters, white papers, non-peer-reviewed articles
Date	2016-2026	2015 and below
Research Design	Empirical quantitative, qualitative, or mixed-method studies	Purely theoretical papers or opinion pieces,
Study Topic	Studies examining human resource management (including Green HRM, sustainable HRM, workforce practices) in relation to sustainability outcomes (e.g., environmental performance, ESG), including employee-level outcomes such as pro-environmental behavior and green innovation	Studies focusing solely on technical/engineering aspects of sustainability (e.g., green building design) without HR/workforce perspective; studies not addressing sustainability outcomes
Context	Studies conducted in organizational/workplace settings, including property, real estate, construction, and broader built environment sectors (with allowance for other industries for comparison)	Studies conducted outside organizational contexts (e.g., purely environmental science, policy-only, or non-work settings)

Source: Research Data (Processed), 2026

The study selection process identified 433 initial records, with only 21 studies meeting all inclusion criteria following screening and quality appraisal procedures (see Figure 1). The substantial reduction resulted from the removal of duplicate records, studies lacking an HR or workforce perspective, purely technical or engineering-focused sustainability studies, non-empirical publications, and articles that did not examine sustainability-related employee or organizational outcomes. To analyze the selected studies, this review employed a thematic synthesis approach (Thomas & Harden, 2008), whereby key findings were coded, categorized, and synthesized into higher-order themes. Grounded in the Resource-Based View (RBV), this process enabled the development of an integrated explanation of how human resources contribute to sustainability value creation across organizational and property-related contexts.

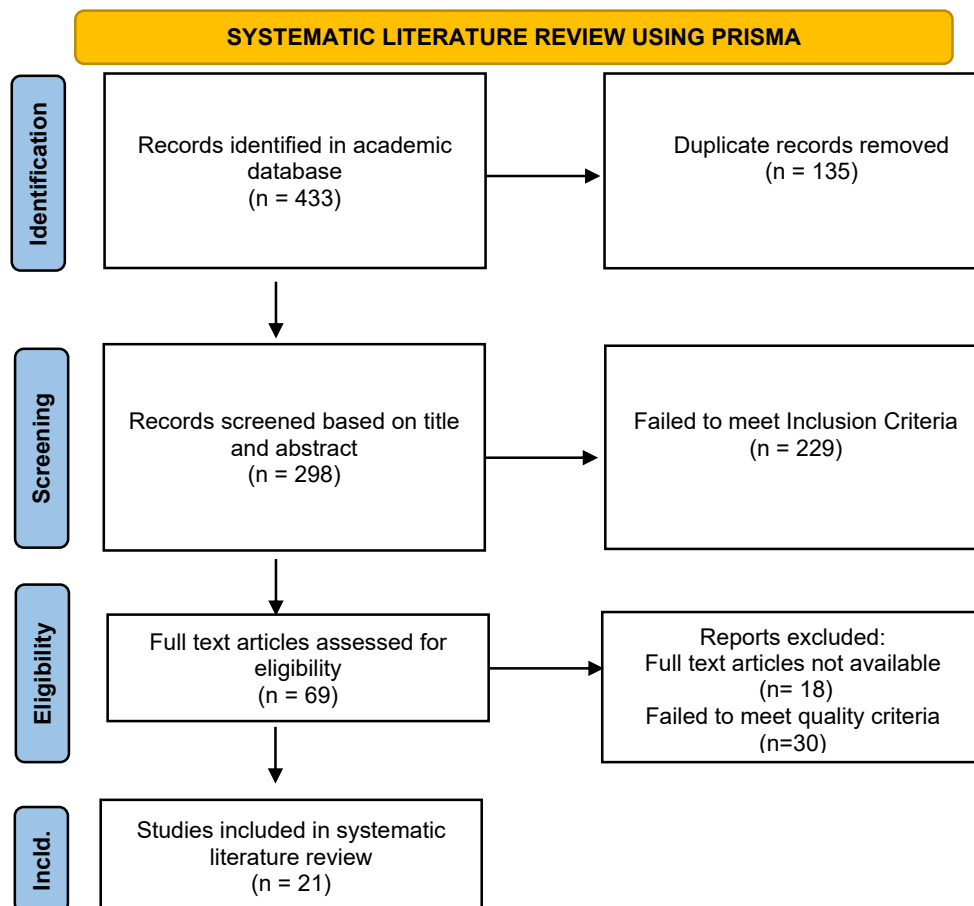


Figure 1. Prisma Flowchart

Source: Research Data (Processed), 2026

RESULTS & DISCUSSION

To provide an overview of the literature included in this review, Table 2 summarizes the characteristics of the selected studies. The table presents information on the authors and publication year, study context, theoretical foundations, research method, and main findings each study.

Table 2. Study Characteristics

Author & Year	Context	Theory	Research Method	Main Findings
Moczydłowska et al. (2024)	Construction Sector	Green Human Resource Management (Green HRM)	Mixed-method study surveyed HR directors from three Polish construction companies on green management practices.	Green management practices were limited, fragmented, and insufficiently integrated into HR processes and sustainability policies.
Aulia & Nawangsari (2023)	Education Sector	- Green Human Resource Management (GHRM) - Green Transformational Leadership	Quantitative survey of 252 Mercu Buana University employees using stratified random sampling and SEM-PLS analysis.	Green HRM (e.g. green training) positively influenced sustainable performance and green behavior, with green behavior acting as a mediator.
Asfahani (2023)	Higher Education	- Resource-Based View (RBV), - Conservation of Resources (COR)	Cross-sectional web survey of 408 faculty and staff from 58 Saudi universities using SEM analysis.	GHRM improved environmental performance and competitive advantage, while ESSL strengthened sustainability-related employee behavior and outcomes.
Ali et al. (2024)	ISO-14001 Certified Green Firms	AMO Theory	Time-lagged dyadic study of 242 Saudi ISO-14001 firms using SEM and confirmatory factor analysis.	GHRM positively affected sustainability performance through green culture and employee green behavior as mediating factors.
Joshi et al. (2023)	Multi-sector	- AMO Theory - Social Identity Theory (SIT) - Resource-Based View (RBV) - Social Exchange Theory (SET) - Stakeholder Theory	Bibliometric and framework-based literature review using Scopus, Web of Science, VOSviewer, and the TCCM framework.	GHRM enhances sustainability, employee outcomes, innovation, and organizational performance, though research mainly emphasizes environmental aspects.
Pham et al. (2019)	Multi-sector	- AMO Theory - Stakeholder theory	Systematic review of 74 GHRM studies from Scopus and	GHRM improves environmental performance, green

Author & Year	Context	Theory	Research Method	Main Findings
			Web of Science using structured coding analysis.	innovation, and employee behavior, while highlighting gaps in green performance research.
Chen & Haron (2024)	Construction Industry	Natural-ResourceBased View (NRBV) theory	PLS-SEM survey of 456 senior managers from Class A construction firms using SmartPLS 4.0.	Green motivation, CSR, and resource commitment significantly enhanced responsible innovation in the Chinese construction industry.
Kumar et al. (2025)	Steel Manufacturing Industry	- Resource-Based View (RBV) - TPB	PLS-SEM survey of 236 employees using structured Likert-scale questionnaires and convenience sampling.	GHRM improved environmental performance through proactive employee green behavior, with behavioral change acting as a mediator.
Legese et al. (2026)	Garment and Textile Sector	- Resource-Based View (RBV), - Natural Resource-Based View (NRBV), - AMO Theory	Quantitative PLS-SEM study of 446 managerial and technical employees in Ethiopia's garment and textile industry.	GHRM enhanced sustainable performance through green innovation, organizational culture, and pro-environmental employee behavior.
Parida et al. (2023)	Green Buildings	- Signaling Theory - AMO Theory	SEM-CFA survey of 460 employees in India's LEED-certified green buildings using five-point Likert questionnaires.	GHRM improved pro-environmental behavior, job performance, and sustainability outcomes through enhanced environmental proactivity.
Farida & Setiawan (2024)	Construction and Real Estate Industry	Resource-Based View (RBV) Theory	Quantitative PLS-SEM study of 200 Indonesian construction and real estate entrepreneurs using random sampling.	Green innovation and management control systems increased property value, though mediation effects remained limited.
Zhao et al. (2021)	Construction Industry	- AMO theory - Stakeholder theory	Cross-sectional SEM study of 305 construction employees using structured questionnaires and	GHRM enhanced sustainable performance through pro-environmental behavior, green innovation, and affective employee

Author & Year	Context	Theory	Research Method	Main Findings
			AMOS analysis.	commitment.
Schouteten et al. (2021)	Public Sector Organizations	AMO Theory	fsQCA study of 30 Dutch public sector organizations using aggregated employee survey data.	HR practice combinations, transformational leadership, and low work pressure improved employee commitment and job satisfaction.
Malik et al. (2020)	Manufacturing Industry	- Resource-Based View (RBV), - Intellectual Capital-Based View - Knowledge-Based View	Cross-sectional PLS-SEM study of 510 Pakistani manufacturing SMEs using questionnaires distributed to HR managers.	Green recruitment, rewards, and intellectual capital positively influenced sustainability, while training and performance evaluation showed no significant effects.
Pinzone et al. (2016)	Healthcare Industry	AMO Theory	Survey and path analysis study of 82 NHS England organizations examining Green HRM and environmental commitment.	Green HRM practices increased collective pro-environmental behavior through employee involvement and affective environmental commitment.
Kampilong et al. (2025)	Construction Industry	- Resource-Based View (RBV) - Stakeholder Theory - Technology Acceptance Model (TAM)	Mixed-method PLS-SEM study of 262 professionals from medium-sized contractors in Eastern Indonesia.	Green HR practices strengthened sustainable leadership innovation, improving environmental performance, economic outcomes, and pro-environmental behavior.
Pauziah & Rufaidah (2026)	Housing Development	- Resource-Based View, - Natural-Resource-Based View - Dynamic Capabilities Theory	Quantitative PLS-SEM study of 144 strategic managers from West Java housing development companies using purposive sampling.	Innovation capability and competitive advantage improved business performance, while green innovation showed limited direct effects.

Author & Year	Context	Theory	Research Method	Main Findings
Nugraha et al. (2024)	Major manufacturing companies	Resource-Based View (RBV) Theory	PLS study of 347 HR directors from Indonesian manufacturing companies using seven-point Likert-scale surveys.	Green recruitment, training, and performance assessment improved sustainability performance and promoted employee green innovation.
Zhang et al. (2023)	Power Construction Industry	- Resource Based View (RBV) Theory - Institutional Theory	Two-stage survey of 449 electric power construction practitioners using AMOS and SPSS for sustainability analysis.	BIM application improved project sustainability through green innovation, strengthened by institutional pressures.
Huo et al. (2022)	Manufacturing SMEs	AMO Theory	Cross-sectional PLS-SEM study of 390 employees from Pakistani manufacturing SMEs using structured questionnaires.	GHRM improved green performance through green climate, work engagement, and employee behavior, moderated by green values.
Aboramadan (2022)	Higher Education	- Social Exchange Theory (SET) - Job Demands-Resources (JD-R) Theory	PLS-SEM study of 208 employees from Palestinian higher education organizations using self-administered questionnaires.	GHRM enhanced employee green behavior and innovation, with green work engagement acting as a key mediator.

Source: Research Data (Processed), 2026

The results of this systematic literature review (Table 2) indicate that human resources have increasingly been positioned as strategic resources in supporting organizational sustainability, particularly through Green Human Resource Management (GHRM) and sustainable HRM practices. The reviewed studies consistently highlight the importance of green recruitment, sustainability-oriented training, employee participation, and performance management in developing workforce capabilities that foster pro-environmental behavior, green innovation, and sustainability awareness. Furthermore, the findings reveal that sustainability outcomes are often achieved indirectly through employee-level mechanisms rather than through HR practices alone. Although the literature on HR-driven sustainability has grown significantly across manufacturing, hospitality, healthcare, and construction industries, studies specifically focusing on the property and real estate sector remain relatively limited, indicating substantial opportunities for future research within the built environment context.

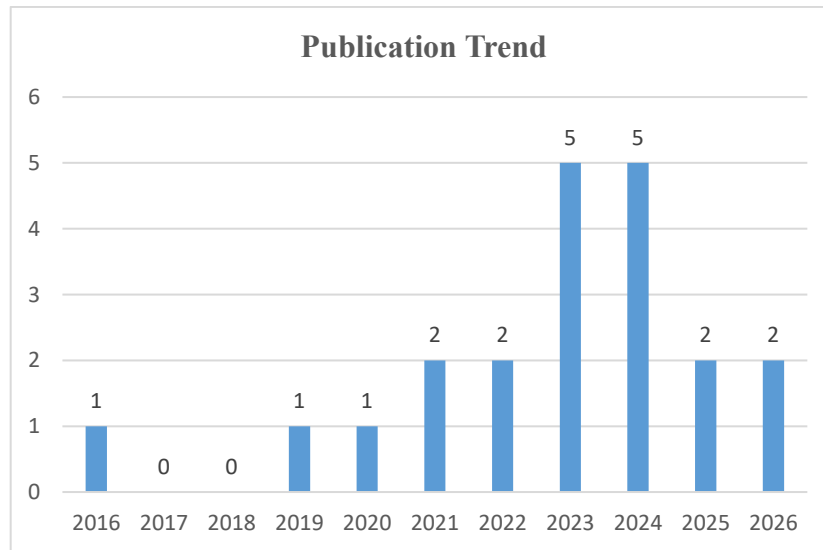


Figure 2. Publication Trend

Source: Research Data (Processed), 2026

Figure 2 illustrates the publication trend of studies related to Green HRM, workforce sustainability, and sustainability outcomes from 2016 to 2026. The findings indicate a relatively limited number of publications during the early period between 2016 and 2020, followed by a noticeable increase beginning in 2021. Research activity reached its peak in 2023 and 2024, with five studies published in each year, suggesting a growing academic interest in the strategic role of human resources in supporting organizational sustainability. This upward trend reflects the increasing recognition of sustainability-oriented HR practices as important organizational capabilities, particularly in response to global sustainability challenges and ESG-related pressures. Nevertheless, despite the growing volume of studies, research specifically focusing on the property and real estate sector remains comparatively scarce, indicating a significant opportunity for further investigation within the built environment context.

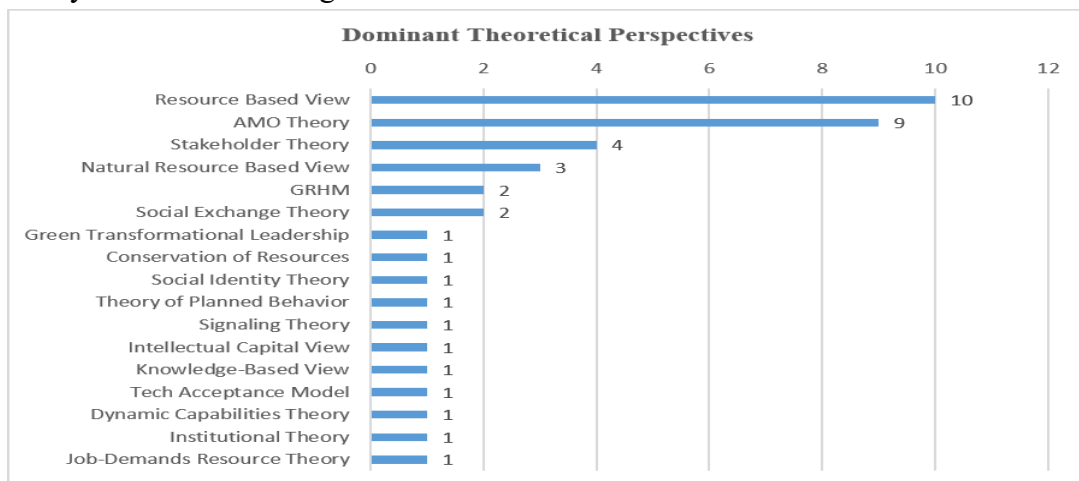


Figure 3. Dominant Theoretical Perspectives

Source: Research Data (Processed), 2026

Figure 3 demonstrates the dominant theoretical perspectives employed in the reviewed studies concerning Green HRM, workforce sustainability, and sustainability outcomes. The findings reveal that the Resource-Based View (RBV) is the most frequently adopted theoretical foundation, appearing in ten studies, followed closely by AMO Theory with nine studies. This dominance indicates that the existing literature largely conceptualizes human resources as valuable organizational assets and strategic capabilities that contribute to sustainability performance. In addition, the relatively frequent use of the Natural Resource-Based View and Stakeholder Theory further reflects the growing integration of environmental and sustainability considerations into strategic human resource management research.

Meanwhile, several other theories, such as Social Exchange Theory, Dynamic Capabilities Theory, Institutional Theory, and the Job Demands–Resources Theory, appeared less frequently, suggesting that the theoretical development of sustainability-oriented HRM research remains somewhat fragmented. The diversity of theoretical perspectives also indicates that sustainability-related HR practices are being examined from multiple analytical lenses, ranging from employee behavior and organizational capability to institutional and environmental pressures. Nevertheless, the strong dominance of RBV and AMO Theory suggests that most studies primarily emphasize internal organizational resources, workforce competencies, and capability development as the main mechanisms for achieving sustainability outcomes. Despite these theoretical advancements, the application of such perspectives within the property and real estate sector remains relatively underexplored compared to manufacturing and other industries

HR as Strategic Sustainability Resources. The findings of this review indicate that the contemporary Green HRM literature increasingly positions human resources as strategic organizational resources that contribute directly to sustainability capability development. This perspective is strongly reflected in studies grounded in the Resource-Based View (RBV), where employees are conceptualized as carriers of green knowledge, environmental competencies, and innovation capabilities that are difficult for competitors to replicate. For example, Malik et al. (2020) emphasized that green intellectual capital, supported by green recruitment and reward systems, significantly enhances organizational sustainability performance in manufacturing SMEs. Similarly, Kumar et al. (2025) demonstrated that proactive employee green behavior mediates the relationship between GHRM and environmental performance, suggesting that workforce capability rather than HR practices alone becomes the true source of sustainability advantage. However, while RBV-oriented studies consistently frame HR as a strategic sustainability asset, many studies remain heavily performance-oriented and place greater emphasis on organizational outcomes than on the dynamic process through which workforce capabilities are developed over time. Consequently, the strategic role of HR is frequently treated as an organizational resource stock rather than as an evolving sustainability capability embedded within workforce systems and organizational culture.

This limited understanding of capability development processes is also reflected in the theoretical perspectives used to explain sustainability outcomes. Studies adopting AMO

Theory, such as Zhao et al. (2021), Pinzone et al. (2016), and Huo et al. (2022), argued that sustainability performance is largely driven by employees' abilities, motivation, and opportunities to engage in environmentally responsible behavior. In these studies, HR practices become effective only when they successfully stimulate employee-level engagement, green commitment, and pro-environmental behavior. In contrast, studies such as Asfahani (2023) and Legese et al. (2026), which adopted RBV and Natural Resource-Based View perspectives, emphasized organizational capability accumulation through green culture, innovation capability, and sustainability-oriented knowledge resources. Although both perspectives acknowledge the importance of human resources, they differ substantially in their underlying assumptions. AMO-oriented studies focus more strongly on behavioral activation mechanisms at the employee level, whereas RBV-oriented studies prioritize strategic capability development and long-term sustainability competitiveness. This theoretical divergence indicates that the existing literature remains fragmented, as relatively few studies attempt to integrate micro-level behavioral mechanisms with macro-level strategic sustainability capability frameworks simultaneously.

The fragmentation identified above becomes even more apparent when examining the industrial contexts in which sustainability-oriented HR research has been conducted. The review reveals that the strategic sustainability role of human resources is still predominantly examined within manufacturing and general organizational settings, while studies situated in the property and real estate sector remain comparatively limited. Although several studies, such as Chen & Haron (2024), Kampilong et al. (2025), and Farida & Setiawan (2024), explored sustainability-related practices within construction and real estate contexts, the primary focus was often directed toward innovation systems, technological capability, or environmental performance rather than workforce sustainability capability itself. Similarly, Zhang et al. (2023) emphasized Building Information Modeling (BIM) and green innovation as drivers of sustainability performance, with relatively limited discussion regarding how HR systems strategically cultivate sustainability-oriented employee competencies. This pattern suggests that sustainability discourse within the property and built environment sector continues to be dominated by technical and project-based perspectives, while organizational and workforce dimensions remain secondary considerations. Such imbalance is problematic given that the property sector is highly dependent on fragmented labor structures, multi-stakeholder coordination, and project-based human interactions, all of which require strong workforce sustainability capability to ensure the successful implementation of sustainability initiatives.

HR Practices for Sustainability Outcomes. The reviewed studies consistently demonstrate that Green HRM practices play a significant role in supporting organizational sustainability outcomes, particularly through the development of environmentally oriented employee capabilities and behaviors. Among the most frequently discussed practices were green training, sustainability-oriented performance management, and employee participation. Studies such as Zhao et al. (2021) and Aulia & Nawangsari (2023) showed that these practices positively

influence pro-environmental behavior, employee commitment, and green organizational performance. Nevertheless, the literature also suggests that the effectiveness of Green HRM practices is highly dependent on the organizational context and the degree to which sustainability values are embedded within broader organizational systems. In several studies, HR practices alone were insufficient to generate sustainability outcomes unless accompanied by supportive leadership, green organizational culture, or employee motivation mechanisms.

The context-dependent nature of Green HRM effectiveness is further reflected in the ongoing debate regarding which practices are most influential in driving sustainability outcomes. Studies grounded in AMO Theory, such as Zhao et al. (2021), emphasized the importance of training and employee participation in shaping environmental behavior and sustainability performance. In contrast, Malik et al. (2020) highlighted green rewards and green intellectual capital as more critical drivers of sustainable organizational performance. Similarly, Schouteten et al. (2021) found that leadership support substantially strengthened the effectiveness of Green HRM practices in achieving environmental performance. These differences indicate that sustainability-oriented HR practices do not operate uniformly across organizations and industries. Instead, their effectiveness appears contingent upon complementary organizational resources, managerial commitment, and the organization's existing sustainability maturity. As a result, the literature increasingly suggests that Green HRM should be viewed as an integrated organizational capability system rather than a collection of isolated HR techniques.

This contextual variation becomes particularly evident when examining the property and real estate sector. Despite the growing recognition of Green HRM practices, empirical studies remain heavily concentrated within manufacturing and general industrial settings, while the property and real estate sector remains relatively underexplored. Existing studies in construction and built environment contexts, such as Farida & Setiawan (2024), Parida et al. (2023), and Kampilong et al. (2025), primarily emphasized technological innovation and green project implementation rather than the strategic role of HR practices themselves. Consequently, the application of sustainability-oriented HR systems within property organizations remains conceptually underdeveloped compared to other industries. This gap is particularly important because the property and real estate sector relies heavily on project-based collaboration, contractor coordination, and workforce adaptability, all of which require strong sustainability-oriented human resource systems. Therefore, the limited integration of Green HRM practices within property and real estate research suggests a significant opportunity for future studies to examine how workforce management can contribute more directly to sustainable built environment outcomes.

HR-Driven Workforce Capabilities and Employee Outcomes. The findings of this review indicate that workforce capabilities function as a critical mechanism linking Green HRM practices to sustainability-related employee outcomes. Across the reviewed studies, sustainability outcomes were rarely generated directly through HR policies alone; instead, they emerged through the development of employee-level capabilities such as environmental awareness, green commitment, and pro-environmental behavior. Zhao et al. (2021)

demonstrated that Green HRM practices positively influence sustainability performance through affective commitment and environmentally responsible employee behavior within the construction sector. Similarly, Aulia & Nawangsari (2023) found that Green HRM significantly improve sustainable employee performance by strengthening environmentally oriented workplace behavior. These findings suggest that employees are not passive recipients of sustainability policies, but rather active organizational agents whose behavioral capabilities determine whether sustainability initiatives can be effectively translated into operational outcomes.

Another important observation is that different studies conceptualize workforce capabilities in substantially different ways. Some studies primarily emphasized behavioral dimensions, such as pro-environmental behavior and green commitment, while others focused more heavily on innovation-oriented capabilities. For example, Kumar et al. (2025) argued that proactive green behavior plays a central role in improving environmental performance and organizational sustainability. In contrast, Farida & Setiawan (2024) highlighted green innovation capability as a key mediator between technological implementation and sustainability performance within construction projects. Likewise, Aboramadan (2022) demonstrated that green innovation capability contributes significantly to sustainability competitiveness in property development firms. These differences indicate that the literature has yet to reach conceptual consensus regarding which workforce capabilities are most strategically important for sustainability outcomes. As a result, existing studies remain fragmented between behavior-oriented and innovation-oriented perspectives, with limited efforts to integrate both dimensions within a comprehensive sustainability capability framework.

Furthermore, the review reveals that employee-level sustainability outcomes are more extensively examined in manufacturing and service industries than in property and real estate contexts. Studies in manufacturing sectors, such as Malik et al. (2020) and Nugraha et al. (2024), consistently linked Green HRM practices with employee green behavior, sustainability awareness, and organizational green performance. Conversely, studies situated within property and built environment settings largely concentrated on green technology adoption, project sustainability, or innovation systems, while workforce behavioral capability received comparatively limited attention. This imbalance suggests that the property and real estate literature still tends to prioritize technical sustainability solutions over human-centered sustainability capability development. Such a tendency is problematic because sustainability implementation within property projects heavily depends on coordination, employee adaptability, and environmentally responsible workplace behavior across multiple project stakeholders. Therefore, strengthening workforce capability perspectives within property sustainability research represents an important direction for future HRM and sustainability scholarship.

HR–Sustainability Mechanisms in Property and Real Estate. The findings of this review reveal that studies examining HR–sustainability mechanisms within the property and real estate sector remain considerably limited compared to manufacturing and other industries. Although sustainability issues in the built environment have received increasing global attention due to the sector’s substantial contribution to carbon emissions and energy consumption, the existing literature continues to focus predominantly on technological innovation, green building systems, and environmental project performance. Studies such as Farida & Setiawan (2024) emphasized the role of Building Information Modeling (BIM) and green innovation capability in improving sustainability performance within construction projects. Similarly, Parida et al. (2024) primarily discussed green building implementation and sustainability engagement within the built environment context. While these studies acknowledge the importance of sustainability-oriented practices, workforce capability development and HR systems are often treated as secondary considerations rather than strategic sustainability mechanisms.

Another important issue is that the property and real estate literature tends to conceptualize sustainability primarily through operational and technological lenses, while organizational and behavioral dimensions remain underdeveloped. For example, Legese et al. (2026) demonstrated that green innovation contributes significantly to sustainability competitiveness within property development firms; however, the study provided limited discussion regarding how employee competencies and HR systems shape such innovation capability. Likewise, Kampilong et al. (2025) highlighted sustainability leadership and innovation performance in construction organizations but paid relatively little attention to the role of Green HRM practices in cultivating workforce sustainability capabilities. This contrasts with studies in manufacturing sectors, such as Malik et al. (2020) where sustainability outcomes are more explicitly linked to employee behavior, green organizational culture, and HR-driven capability development. Such differences indicate that workforce-centered sustainability perspectives remain relatively immature within the property and real estate literature.

The limited integration of HR mechanisms within property sustainability research is particularly problematic given the distinctive characteristics of the sector itself. Property and construction organizations typically operate through project-based structures, temporary workforce arrangements, and extensive contractor coordination, all of which require strong sustainability-oriented workforce capabilities to ensure consistent environmental implementation. Nevertheless, most existing studies continue to prioritize technical sustainability solutions over human resource systems and employee behavioral mechanisms. As a result, the strategic role of human resources in enabling sustainable property development remains insufficiently theorized and empirically examined. This gap suggests that future research should move beyond purely technological sustainability perspectives and investigate how Green HRM, workforce capability development, and sustainability-oriented organizational culture can support long-term sustainability performance within property and real estate organizations.

Cross-Industry Differences. The findings of this review indicate that HR–sustainability relationships vary substantially across industries in terms of strategic focus, implementation mechanisms, and expected sustainability outcomes. Manufacturing industries dominate the existing Green HRM literature and generally demonstrate a stronger integration between HR systems and sustainability performance. Studies such as Malik et al. (2020), Huo et al. (2022), and Nugraha et al. (2024) consistently linked Green HRM practices with employee green behavior, organizational green culture, and environmental performance. In these contexts, sustainability initiatives are often embedded within operational systems and organizational routines, allowing HR practices such as green training, rewards, and performance management to function as formalized sustainability mechanisms. Consequently, manufacturing studies tend to conceptualize sustainability as an organization-wide strategic capability supported directly by workforce development and behavioral alignment.

In contrast, service-oriented sectors such as healthcare, hospitality, and higher education demonstrate a relatively stronger emphasis on employee attitudes, commitment, and behavioral engagement. For instance, Pinzone et al. (2016) highlighted the importance of employee environmental commitment in supporting sustainability transformation within healthcare organizations, while Asfahani (2023) emphasized environmentally friendly workplace behavior in the higher education industry. Similarly, Aulia & Nawangsari (2023) demonstrated that Green HRM and Green Transformational leadership contribute to environmental performance by strengthening employee engagement and organizational support mechanisms. Compared to manufacturing industries, these sectors appear to rely more heavily on interpersonal interaction, organizational culture, and employee motivation in achieving sustainability outcomes. This suggests that the effectiveness of Green HRM practices is highly contingent upon the nature of organizational work systems and the dominant forms of workforce interaction within each industry context.

Meanwhile, the property and real estate sector remains comparatively underdeveloped in integrating HR-centered sustainability mechanisms despite its substantial environmental significance. Existing studies within construction and built environment settings, such as Farida & Setiawan (2024), Parida et al. (2023), and Zhao et al. (2021), focused predominantly on green innovation, project sustainability, and technological implementation rather than employee capability development or workforce behavioral mechanisms. Unlike manufacturing and service sectors, where HR practices are frequently positioned as central sustainability drivers, sustainability research in property-related industries continues to prioritize technical and operational solutions. This imbalance suggests that sustainability within the property sector is still viewed primarily as an engineering or project-management issue rather than as a workforce capability challenge. As a result, the integration of Green HRM into sustainable property and real estate research remains fragmented, indicating substantial opportunities for future studies to examine how workforce systems, organizational culture, and employee sustainability capabilities contribute to sustainable built environment performance.

Implications. This review provides important theoretical implications for sustainability-oriented HRM literature by reinforcing the relevance of the Resource-Based View (RBV) in explaining how sustainability performance is generated through workforce capabilities rather than operational systems alone. The reviewed studies indicate that HR practices influence sustainability indirectly through employee-level mechanisms such as pro-environmental behavior, green commitment, and innovation capability (Aulia & Nawangsari, 2023; Kumar et al., 2025; Zhao et al., 2021). Furthermore, this review highlights the theoretical fragmentation between behavior-oriented perspectives, such as AMO Theory, and capability-oriented perspectives grounded in RBV. While AMO-based studies emphasize employee motivation and engagement (Pinzone et al., 2016; Zhao et al., 2021), RBV-oriented studies focus more strongly on strategic capability accumulation and organizational competitiveness (Kampilong et al., 2025; Malik et al., 2020), indicating the need for more integrated multilevel sustainability frameworks.

From a practical perspective, the findings suggest that organizations should move beyond symbolic sustainability initiatives and integrate Green HRM into core workforce management systems. The reviewed studies consistently demonstrated that green training, employee participation, sustainability-oriented rewards, and leadership support significantly influence employee environmental behavior and organizational sustainability outcomes. Nevertheless, the implications are particularly critical for the property and real estate sector, where sustainability initiatives remain heavily dominated by technological and project-management approaches. Studies such as Zhao et al. (2021), Parida et al. (2023), and Farida & Setiawan (2024) revealed that sustainability performance in the built environment is still primarily approached through innovation systems and green building implementation, with limited integration of workforce capability development. Therefore, property developers and construction organizations should begin positioning workforce sustainability capability as a strategic organizational priority by incorporating sustainability competencies into recruitment systems, project-based training, contractor coordination, and employee performance evaluation. Such integration may strengthen not only environmental performance, but also long-term organizational adaptability in response to increasing ESG and sustainable development pressures within the property industry.

Future Research Agenda. Future research should focus on developing a more integrated understanding of how workforce capabilities contribute to sustainability performance within the property and real estate sector. The findings of this review indicate that existing studies remain heavily concentrated on manufacturing industries and largely emphasize technological sustainability solutions, while HR-driven sustainability mechanisms in property organizations remain underexplored. Future studies should therefore examine how Green HRM practices influence employee sustainability behavior, green innovation capability, and ESG-related performance within project-based and contractor-intensive property environments. In addition, longitudinal and multilevel research designs are needed to better explain the dynamic relationship between HR systems, workforce sustainability capability, and long-term organizational sustainability outcomes. Further investigation is also required to integrate

behavioral perspectives, such as pro-environmental behavior and employee engagement, with strategic capability frameworks such as the Resource-Based View (RBV) and Natural Resource-Based View in order to develop a more comprehensive sustainability-oriented HRM framework for the built environment sector.

Limitations. This review has several limitations that should be acknowledged when interpreting the findings. First, the review included only peer-reviewed articles published in English, which may have excluded relevant studies published in other languages or non-indexed sources, potentially creating language and publication bias. Second, although this study employed a systematic review approach, the included literature was dominated by cross-sectional quantitative studies, limiting the ability to understand the long-term and dynamic nature of HR-driven sustainability capability development. Third, the reviewed studies varied considerably in terms of theoretical perspectives, industry contexts, and sustainability measurements, which may affect the comparability and consistency of findings across studies. In addition, the literature remains heavily concentrated within manufacturing and general organizational contexts, while empirical studies specifically examining Green HRM and workforce sustainability mechanisms within the property and real estate sector remain limited. Consequently, the findings related to the built environment context should be interpreted cautiously due to the relatively small number of sector-specific studies available in the current literature.

CONCLUSION & SUGGESTION

This systematic literature review demonstrates that human resources play an increasingly strategic role in enabling organizational sustainability through the development of workforce capabilities, environmentally oriented behaviors, and sustainability-driven organizational systems. The findings reveal that Green Human Resource Management practices, including green training, recruitment, employee participation, and sustainability-oriented performance management, significantly contribute to employee-level outcomes such as pro-environmental behavior, green innovation, and sustainability awareness. Furthermore, the review highlights that sustainability outcomes are rarely generated directly through HR practices alone, but rather through mediating workforce capabilities that strengthen organizational environmental performance and long-term sustainability competitiveness. The dominance of the Resource-Based View (RBV) within the reviewed studies further confirms that workforce sustainability capability is increasingly viewed as a valuable strategic organizational resource.

However, this review also identifies important theoretical and contextual gaps within the existing literature. Although Green HRM research has expanded significantly across manufacturing, hospitality, healthcare, and general industrial sectors, studies situated within the property and real estate context remain comparatively limited and fragmented. Existing sustainability research in the built environment continues to focus predominantly on technological innovation and project-based environmental performance, while the strategic role

of workforce capability development remains underexplored. This imbalance suggests that sustainability within the property sector should not be understood solely as a technical or operational challenge, but also as a human resource and organizational capability issue. Therefore, this review contributes by proposing a more integrated understanding of HR-driven sustainability mechanisms and highlighting the need for future research that connects workforce capability development, Green HRM systems, and sustainability performance within the property and real estate sector.

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