



SUSTAINABLE LEADERSHIP FOR SDG-ORIENTED DECISION-MAKING: INTEGRATING TRADE-OFFS, SYNERGIES, AND MULTI-ACTOR GOVERNANCE

KEPEMIMPINAN BERKELANJUTAN DALAM PENGAMBILAN KEPUTUSAN BERORIENTASI SDGs: INTEGRASI TRADE-OFF, SINERGI, DAN TATA KELOLA MULTI-AKTOR

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Abstrack

Sustainable leadership is increasingly important for translating the Sustainable Development Goals (SDGs) into effective decision-making, yet research on sustainable leadership, SDG trade-offs and synergies, and multi-actor governance remains fragmented. This study integrates these perspectives to develop a unified framework for SDG-oriented decision-making. A structured integrative literature review was conducted using Scopus as the primary database, complemented by Google Scholar and backward citation searching, with emphasis on studies published between 2015 and 2026. The synthesis shows that sustainable leadership extends beyond environmental responsibility by combining long-term orientation, stakeholder accountability, multidimensional sustainability objectives, and adaptive learning. Effective SDG-oriented decision-making also requires explicit assessment of trade-offs and synergies and governance mechanisms capable of aligning actors with different interests, resources, knowledge, and authority. Based on these findings, the study proposes the Sustainable Leadership–SDG Decision Framework (SL-SDG Framework), consisting of Leadership Orientation, Stakeholder Alignment, Policy Prioritization, Trade-Off and Synergy Assessment, Collaborative Implementation, SDG Outcomes, and Adaptive Feedback. Illustrative applications across coastal management, fisheries, mangrove restoration, sustainable tourism, urban sustainability, and organizational settings indicate that the framework is context-flexible but process-consistent. The framework contributes by positioning sustainable leadership as an iterative decision process for managing both inter-objective and inter-actor complexity. Future research should empirically validate its components, indicators, and causal relationships across governance and sustainability contexts.



Keywords: *Sustainability Governance, Stakeholder Alignment, Policy Prioritization, Adaptive Learning, Sustainability Transitions.*

Abstrak

Kepemimpinan berkelanjutan semakin penting dalam menerjemahkan Sustainable Development Goals (SDGs) ke dalam pengambilan keputusan yang efektif, namun kajian mengenai kepemimpinan berkelanjutan, trade-off dan sinergi SDGs, serta tata kelola multi-aktor masih berkembang secara terpisah. Penelitian ini mengintegrasikan ketiga perspektif tersebut untuk membangun kerangka terpadu bagi pengambilan keputusan berorientasi SDGs. Kajian dilakukan melalui tinjauan literatur integratif terstruktur dengan Scopus sebagai basis data utama, dilengkapi Google Scholar dan penelusuran sitasi mundur, dengan fokus pada publikasi periode 2015–2026. Hasil sintesis menunjukkan bahwa kepemimpinan berkelanjutan tidak hanya berorientasi pada tanggung jawab lingkungan, tetapi juga mencakup orientasi jangka panjang, akuntabilitas pemangku kepentingan, tujuan keberlanjutan multidimensi, dan pembelajaran adaptif. Pengambilan keputusan berorientasi SDGs juga membutuhkan penilaian eksplisit terhadap trade-off dan sinergi serta tata kelola yang mampu menyelaraskan aktor dengan kepentingan, sumber daya, pengetahuan, dan kewenangan yang berbeda. Berdasarkan sintesis tersebut, penelitian ini mengusulkan Sustainable Leadership–SDG Decision Framework (SL-SDG Framework) yang terdiri atas Leadership Orientation, Stakeholder Alignment, Policy Prioritization, Trade-Off and Synergy Assessment, Collaborative Implementation, SDG Outcomes, dan Adaptive Feedback. Penerapan ilustratif pada pengelolaan pesisir, perikanan, restorasi mangrove, pariwisata berkelanjutan, keberlanjutan perkotaan, dan organisasi menunjukkan bahwa kerangka ini fleksibel terhadap konteks tetapi konsisten secara proses. Kerangka ini memosisikan kepemimpinan berkelanjutan sebagai proses pengambilan keputusan iteratif untuk mengelola kompleksitas antar-tujuan dan antar-aktor.

Kata Kunci: Tata Kelola Keberlanjutan, Penyelarasan Pemangku Kepentingan, Prioritas Kebijakan, Pembelajaran Adaptif, Transisi Keberlanjutan.

1. INTRODUCTION

Sustainable development is increasingly understood as an interconnected decision-making challenge rather than the pursuit of isolated environmental, social, and economic targets. The 2030 Agenda defines the Sustainable Development Goals (SDGs) as integrated and indivisible, requiring simultaneous attention to human well-being, economic prosperity, environmental protection, peace, and partnership (United Nations, 2015). Progress toward one goal can therefore reinforce or constrain progress toward others. Although synergies among SDGs are widespread, persistent trade-offs remain when development priorities compete for resources or generate conflicting outcomes (Kroll et al., 2019; Nilsson et al., 2016; Pradhan et al., 2017). Sustainable development consequently requires decision-making capable of recognizing interdependencies, maximizing co-benefits, and anticipating adverse consequences.

Leadership is central to translating these sustainability aspirations into collective action. Sustainability transformations require actors who can establish long-term direction, set priorities, mobilize resources, coordinate stakeholders, and sustain commitment under uncertainty. Sustainable leadership has therefore emerged as a field concerned with how leadership values, strategies, and organizational practices contribute to long-term sustainability outcomes (Hallinger & Suriyankietkaew, 2018). Different leadership approaches can influence sustainable performance through direct and indirect mechanisms, although these relationships remain fragmented across organizational and disciplinary contexts (Piwowar-Sulej & Iqbal, 2023). Sustainable leadership should therefore extend beyond environmental responsibility toward decision-making that considers social, economic, environmental, and institutional consequences.



This broader perspective is important because sustainability-oriented decisions commonly generate combinations of benefits, costs, risks, and distributional effects. Economic development, infrastructure, tourism, resource utilization, and climate adaptation can simultaneously affect ecosystems, livelihoods, social equity, and institutional legitimacy. Coastal social–ecological systems provide clear examples. Sustainable marine tourism planning requires economic opportunities to be considered alongside environmental suitability, infrastructure, and community engagement (Pratama et al., 2025), while mangrove restoration can combine ecological recovery with climate adaptation and social benefits when supported by community participation and co-management (Rudianto et al., 2022). Such decisions also involve governments, communities, private actors, academics, and civil society, requiring governance arrangements capable of aligning interests, responsibilities, and resources (Kanie & Biermann, 2017; Vazquez-Brust et al., 2020).

Despite these advances, relevant knowledge remains divided among research streams. Sustainable leadership research emphasizes leadership orientations and sustainable performance; SDG–interaction research focuses on synergies and trade-offs; and collaborative governance research concentrates on coordination among multiple actors (Hallinger & Suriyankietkaew, 2018; Nilsson et al., 2016; Vazquez-Brust et al., 2020). These perspectives remain only partially integrated. Greater conceptual integration is therefore needed to explain how leadership orientation shapes priorities and resource allocation, how SDG trade-offs and synergies are assessed, how stakeholders are aligned during implementation, and how resulting outcomes inform subsequent decisions.

Accordingly, this study aims to integrate sustainable leadership, SDG interactions, and multi-actor governance into a unified framework for sustainability-oriented decision-making. Specifically, it seeks to (1) synthesize characteristics of sustainable leadership relevant to SDG-oriented decisions; (2) examine how leadership influences the management of trade-offs and synergies; and (3) develop a Sustainable Leadership–SDG Decision Framework (SL-SDG Framework) linking leadership orientation, stakeholder alignment, policy prioritization, trade-off and synergy assessment, collaborative implementation, SDG outcomes, and adaptive feedback.

2. RESEARCH METHOD

Review Design

This study employed a structured integrative literature review to synthesize research on sustainable leadership, Sustainable Development Goals (SDGs), sustainability-oriented decision-making, and multi-actor governance. This approach was selected because these themes span different theoretical and empirical traditions and require conceptual integration rather than statistical aggregation (Snyder, 2019; Torraco, 2005; Whitemore & Knafl, 2005). The review focused primarily on studies published between 2015 and 2026, following the adoption of the 2030 Agenda. Earlier seminal publications were included when necessary to establish foundational concepts.

Literature Search Strategy

Scopus was used as the primary database, complemented by Google Scholar and backward citation searching. Searches combined terms related to sustainable leadership, SDGs, trade-offs and synergies, governance, and decision-making. The principal combinations were:

- 1) “sustainable leadership” AND (“Sustainable Development Goals” OR SDGs)
- 2) (“sustainable leadership” OR “green leadership”) AND “decision-making”
- 3) (“Sustainable Development Goals” OR SDGs) AND (“trade-offs” OR synergies)
- 4) (“multi-actor governance” OR “collaborative governance”) AND sustainability
- 5) (“sustainable decision-making” OR “sustainability-oriented decision-making”) AND (leadership OR governance)

Where available, searches were applied to titles, abstracts, and keywords.

Eligibility and Literature Selection

Priority was given to peer-reviewed journal articles and scholarly books published in English. Publications were retained when they contributed theoretical or empirical evidence to at least one of



four areas: sustainable leadership, SDG interactions, multi-actor governance, or sustainability-oriented decision-making.

Studies were excluded when these concepts appeared only peripherally, their content did not contribute to the research objectives, or they duplicated evidence already represented in the review. Seminal studies published before 2015 were selectively retained when conceptually necessary. Consistent with an integrative review, selection emphasized conceptual relevance, theoretical contribution, and usefulness for cross-domain synthesis rather than a predefined numerical threshold for inclusion (Torraco, 2005; Whittemore & Knafl, 2005).

Thematic and Conceptual Synthesis

The selected literature was analyzed through thematic and conceptual synthesis. Evidence was organized into four domains: sustainable leadership orientation, SDG trade-offs and synergies, multi-actor governance, and sustainability-oriented decision-making. Recurring concepts were compared across domains, particularly leadership values, stakeholder alignment, policy prioritization, resource allocation, trade-off and synergy assessment, collaborative implementation, sustainability outcomes, and adaptive learning.

Iterative conceptual mapping was then used to identify relationships among these elements and to examine how leadership orientation shapes stakeholder alignment and policy priorities, how SDG interactions influence policy choices, and how implementation outcomes generate feedback for subsequent decisions. This synthesis provided the basis for developing the Sustainable Leadership–SDG Decision Framework (SL-SDG Framework), which is presented and discussed in the Results and Discussion section. Because the reviewed studies were heterogeneous in design and purpose, no statistical meta-analysis was conducted.

3. RESULT AND DISCUSSION

From Green Leadership to Sustainable Leadership

The literature indicates a conceptual broadening from environmentally focused leadership toward a more integrated understanding of leadership for sustainability. Green leadership primarily emphasizes the ability of leaders to articulate environmental values, encourage pro-environmental behavior, and improve environmental performance. Green transformational leadership, for example, has been associated with enhanced green mindfulness, green self-efficacy, and green performance among organizational members (Chen et al., 2014). Environmental stewardship, resource efficiency, pollution reduction, and ecological innovation therefore remain fundamental components of sustainability-oriented leadership. However, green leadership is generally centered on environmental outcomes, whereas contemporary sustainability challenges increasingly require simultaneous consideration of social, economic, environmental, and institutional consequences.

Sustainable leadership broadens this decision space by incorporating long-term value creation, stakeholder responsibility, social well-being, organizational resilience, and economic viability. Hallinger and Suriyankietkaew (2018) identified sustainable leadership as an emerging field concerned with providing vision and direction for sustainability-oriented change, while Liao (2022) emphasizes its role in balancing economic, social, and environmental objectives. Systematic evidence further indicates that sustainable leadership is more frequently associated with overall sustainable performance, whereas environmentally oriented and transformational leadership approaches have more commonly been examined in relation to environmental performance (Piwovar-Sulej & Iqbal, 2023). The distinction therefore involves more than adding additional sustainability indicators; it reflects a broader decision logic in which multiple objectives and long-term consequences are considered simultaneously.

Recent syntheses reinforce this interpretation. Boeske (2023) identifies considerable conceptual overlap among sustainable, sustainability, and environmental leadership while showing differences in their scope and emphasis. Sajjad et al. (2024) conceptualize sustainability leadership as a multilevel phenomenon involving individual, organizational, and societal mechanisms. Algharabli et al. (2026), based on an integrative review of 145 studies, further identify long-term thinking, ethical responsibility, stakeholder accountability, environmental stewardship, social equity, and responsible economic value



creation as recurring characteristics. Thus, the evolution from green to sustainable leadership is better understood as a broadening from environmental optimization toward multidimensional sustainability management, rather than the replacement of one leadership approach by another.

This broader orientation is particularly relevant in social–ecological systems. Sustainable marine tourism planning in South Malang integrates environmental suitability with infrastructure readiness, market potential, community engagement, and regulatory considerations (Pratama et al., 2025). Similarly, coral reef and marine tourism management at Kondang Merak combines ecosystem condition, tourism suitability, carrying capacity, restoration priorities, and sustainable utilization (Isdianto et al., 2025). Although these studies do not directly measure sustainable leadership, they illustrate the multidimensional decision environments in which such leadership is required.

Accordingly, green and sustainable leadership should be viewed as complementary rather than mutually exclusive. Green leadership provides a strong environmental orientation, whereas sustainable leadership extends leadership responsibility across multiple stakeholders, sustainability dimensions, and longer time horizons. This broader perspective provides the conceptual foundation for SDG-oriented decision-making developed in the subsequent analysis.

Table 1. Conceptual distinction between green leadership and sustainable leadership

Dimension	Green Leadership	Sustainable Leadership
Primary orientation	Environmental responsibility	Integrated sustainability
Sustainability scope	Predominantly environmental	Social, economic, environmental, and institutional
Decision logic	Reduce environmental impacts and strengthen ecological performance	Balance multiple objectives and their consequences
Time horizon	Operational to strategic	Explicitly long-term and intergenerational
Stakeholder scope	Primarily organizational and environmentally relevant actors	Multiple internal and external stakeholders
Performance perspective	Green/environmental performance	Multidimensional sustainable performance
Relation to SDGs	Particularly relevant to environmentally oriented SDGs	Applicable across interconnected sustainability objectives

The distinction represents an analytical synthesis rather than a strict separation between the concepts. Green/environmental leadership and sustainable leadership share several behaviors and objectives, while sustainable leadership generally provides a broader multidimensional, stakeholder-oriented, and long-term sustainability perspective.

Sustainable Leadership in SDG-Oriented Decision-Making

The relevance of sustainable leadership to the Sustainable Development Goals lies not only in promoting sustainability values but in translating those values into concrete decisions. Although the SDGs provide an integrated global framework, implementation ultimately depends on how decision-makers establish priorities, allocate resources, select interventions, and evaluate outcomes. Evidence from public-sector decision-making shows that awareness of sustainable development does not automatically result in its systematic incorporation into policy processes. Bolton (2021), for example, found inconsistent understanding and application of sustainable development and the SDGs among public decision-makers in Victoria, while leadership was regarded as an important catalyst for implementation. Sustainability leadership therefore functions as a bridge between normative sustainability commitments and the institutional choices through which they are operationalized. Jayashree et al. (2022) similarly emphasize the need to reconcile short-term economic objectives, long-term sustainability goals, and multiple stakeholder interests.

The translation of leadership orientation into sustainable outcomes also depends on organizational mechanisms. Evidence from Malaysia, Indonesia, and Brunei Darussalam indicates that sustainable leadership can influence sustainable performance through organizational learning and psychological empowerment (Iqbal et al., 2020). Eustachio et al. (2023) likewise characterize



sustainability leadership as a process through which organizations become increasingly sustainability-oriented, while Sajjad et al. (2024) emphasize its operation across individual, organizational, and societal levels. These findings indicate that leadership does not produce sustainability outcomes through values alone; it must shape the organizational capacities, knowledge processes, participation, and coordination through which sustainability priorities become actionable.

A central implication is that SDG-oriented decisions require explicit sustainability criteria. Leaders determine which issues receive priority, where resources are directed, which alternatives are considered acceptable, and how economic, social, environmental, and institutional consequences are incorporated into evaluation. Pelayo-Díaz et al. (2026) demonstrate this mechanism in sustainable investment decision-making, showing that leadership and organizational culture influence interest in the SDGs and the incorporation of environmental, social, and governance considerations into investment choices. This suggests that SDG-oriented leadership should extend beyond regulatory compliance or the symbolic association of programs with SDG labels and instead influence the criteria through which alternatives are evaluated and justified.

Leadership also remains important during implementation. Liaqat et al. (2024), examining public-sector development projects, found that sustainable leadership strengthened the relationship between sustainable project management and sustainable project success. Similar decision complexity can be observed in coastal sustainability contexts. Marine tourism planning in South Malang combines environmental suitability, infrastructure readiness, socioeconomic opportunities, stakeholder involvement, and spatial considerations when identifying sustainable development pathways (Pratama et al., 2025). Although such research does not directly measure leadership behavior, it illustrates the multi-criteria environments in which sustainable leadership must translate strategic priorities into implementable decisions.

The synthesis therefore identifies sustainable leadership as a continuous decision-enabling process: sustainability values and long-term vision shape priorities; priorities guide resource allocation and intervention choices; implementation generates multidimensional outcomes; and evaluation provides information for subsequent decisions (Sajjad et al., 2024). Effective SDG-oriented leadership must consequently move beyond setting sustainability ambitions toward structuring how decisions are selected, implemented, evaluated, and revised. This decision logic also requires leaders to anticipate whether progress toward one sustainability objective reinforces, constrains, or redistributes progress toward others.

Managing SDG Trade-Offs and Synergies

The indivisible nature of the SDGs means that sustainability decisions rarely affect a single objective in isolation. Progress toward one goal may reinforce another, creating a synergy, or constrain another objective and generate a trade-off. Cross-country analyses show that synergistic interactions are generally more frequent than negative ones, yet persistent trade-offs can substantially obstruct sustainable development when they are not explicitly recognized and managed (Pradhan et al., 2017; Kroll et al., 2019). These interactions are also context-dependent: their direction and intensity vary with institutional settings, development pathways, geographic scale, implementation strategies, and time horizons (Nilsson et al., 2018). Reviews of SDG-interaction research therefore emphasize the need to move beyond isolated goals toward a whole-system perspective capable of capturing interdependencies and unintended consequences (Bennich et al., 2020).

For sustainable leadership, this changes the logic of decision-making. The relevant question is not simply which SDGs an intervention supports, but how its benefits, costs, and risks interact across sustainability objectives. Luttikhuis and Wiebe (2023) show that SDG interlinkages can simultaneously generate social benefits and environmental trade-offs, while Moallemi et al. (2022) identify recurring systemic patterns of synergies and trade-offs whose underlying feedbacks may not be visible through individual indicators. Assubayeva and Marco (2024) further caution that even when synergies numerically dominate, less frequent trade-offs may have disproportionately important consequences. Sustainable leadership should therefore focus not on eliminating all trade-offs, which may be



unrealistic, but on identifying critical interactions early, minimizing unacceptable consequences, and redesigning interventions to strengthen synergies.

Trade-offs also have distributional, temporal, and spatial dimensions. An intervention may generate aggregate benefits while imposing costs on particular communities, ecosystems, sectors, or future generations. Climate mitigation options, for example, can advance climate objectives while producing different land-use, socioeconomic, or equity consequences depending on implementation context (Halsnæs et al., 2024). SDG-oriented decisions should therefore consider who benefits, who bears the costs, when effects occur, and whether negative consequences can be avoided, mitigated, or compensated. This distributional perspective is especially important for sustainable leadership because technically positive outcomes may still lack legitimacy when risks are concentrated among vulnerable groups or displaced across locations and generations.

Coastal and fisheries systems illustrate these interactions clearly. Coastal reclamation can support infrastructure and economic development while simultaneously increasing environmental pressures, requiring regulatory oversight and stronger participation of communities and other actors (Rudianto & Isdianto, 2020). Fisheries reveal similar tensions. Bintoro et al. (2025) reported that skipjack tuna (*Katsuwonus pelamis*) in the Malang south coast showed relatively low fishing vulnerability, yet its exploitation rate exceeded the commonly used sustainable reference level, illustrating how economic utilization can coexist with increasing biological pressure. An IETA study of small-scale purse-seine fisheries in Southern Java likewise found low bycatch, no discards, and skipjack above size at first maturity, indicating strong ecological–socioeconomic synergy; however, substantial sub-mature capture of *Euthynnus affinis* demonstrated that favorable aggregate performance can conceal species-specific trade-offs (Rihmi et al., 2025).

The synthesis therefore identifies trade-off and synergy assessment as a core decision function of sustainable leadership. Such assessment should consider the direction and magnitude of interactions, their distribution across stakeholders and ecosystems, their persistence across time and space, and their potential for mitigation or redesign. Synergies provide opportunities for strategic leverage, whereas trade-offs should be interpreted as signals for policy adjustment rather than unavoidable side effects. This perspective shifts SDG-oriented leadership from simply associating activities with selected SDGs toward actively managing interactions among sustainability objectives.

Stakeholder Alignment and Multi-Actor Governance

Sustainability-oriented decisions are inherently multi-actor governance processes because no single institution possesses all the authority, knowledge, resources, capabilities, and legitimacy required to address interconnected SDG challenges. Governments contribute regulatory authority and public coordination; communities provide local knowledge and social legitimacy; private actors contribute investment, technology, and implementation capacity; academic institutions provide scientific evidence and evaluation; while civil society organizations support representation, advocacy, and accountability. Achieving the SDGs therefore requires governance arrangements that operate across organizational, sectoral, and societal boundaries (Allen et al., 2023). Multi-stakeholder partnerships can complement state-led implementation by combining capacities that are distributed across different sectors (Glass et al., 2023).

However, participation alone does not guarantee stakeholder alignment. Actors commonly differ in objectives, mandates, resources, incentives, and perceptions of acceptable sustainability outcomes. Alignment should therefore not be interpreted as complete consensus, but as the process through which diverse interests, responsibilities, resources, and actions become sufficiently compatible for coordinated implementation. Wiegant et al. (2024) show that alignment mechanisms are required across interdepartmental, public–private, donor–recipient, and other institutional relationships. Vazquez-Brust et al. (2020) similarly emphasize that collaboration for sustainable development depends on governance arrangements suited to the characteristics of participating actors and their interactions. Sustainable leadership must therefore do more than bring stakeholders together; it must structure how they coordinate, negotiate, and act collectively.



A central challenge is power asymmetry. Stakeholders enter collaborative processes with unequal authority, financial resources, expertise, access to information, and capacity to influence agendas. Such inequalities can turn participation into symbolic inclusion and allow more powerful actors to dominate sustainability priorities. Evidence from collaborative environmental governance in West Kalimantan shows that joint facilitation, knowledge sharing, capacity building, and greater local decision autonomy can reduce imbalances between government and communities (Arai et al., 2021). A systematic review of marine and coastal governance likewise identifies power sharing, legitimacy, bridging actors, and sustained institutional support as important conditions for effective collaboration (Asio et al., 2026). Stakeholder alignment must therefore consider not only who participates, but who can influence decisions.

Power relations are closely linked to legitimacy and accountability. Multi-stakeholder arrangements may lose legitimacy when participation is unbalanced, decision rules are opaque, responsibilities are unclear, or powerful actors cannot be held accountable. Higham et al. (2024) identify effectiveness, legitimacy, and accountability as persistent challenges in partnerships for sustainable development. Accordingly, sustainable governance requires transparent decision rules, meaningful representation of affected groups, clear allocation of responsibility, and mechanisms through which decisions and outcomes can be reviewed.

Coastal social–ecological systems illustrate these governance requirements. Mangrove restoration in Labuhan Village involved communities, government agencies, public figures, NGOs, community groups, and entrepreneurs, demonstrating that ecological restoration depends on collaboration alongside attention to livelihoods, community welfare, and policy implementation (Rudianto et al., 2019). Subsequent research in East Java similarly emphasizes community awareness and co-management within integrated mangrove ecosystem management (Rudianto et al., 2022). Such cases demonstrate that sustainability outcomes depend not only on technically appropriate interventions but also on the institutional capacity to align actors around implementation.

The synthesis therefore positions stakeholder alignment as a governance function of sustainable leadership. Its purpose is not to eliminate differences among actors, but to create conditions in which diverse interests, knowledge, resources, authority, and responsibilities can be coordinated while maintaining legitimacy and accountability. Effective multi-actor governance consequently depends on representation, coordination, power balance, role clarity, accountability, and collaborative learning.

Integrating Leadership, SDG Interactions, and Governance

The preceding synthesis reveals three complementary but only partially connected perspectives on sustainability-oriented decision-making. Sustainable leadership research primarily explains how values, long-term orientation, organizational capacity, and leadership practices influence sustainable performance (Hallinger & Suriyankietkaew, 2018; Sajjad et al., 2024). SDG-interaction research focuses on how progress toward one sustainability objective may reinforce or constrain progress toward others and consequently emphasizes the systematic assessment of synergies and trade-offs (Nilsson et al., 2018; Kroll et al., 2019). Multi-actor governance research, meanwhile, emphasizes coordination, power relations, legitimacy, accountability, and collaboration among actors involved in sustainability implementation (Vazquez-Brust et al., 2020; Allen et al., 2023). Each perspective addresses an important component of sustainability governance, but none alone fully explains how sustainability-oriented decisions move from leadership intention to multidimensional outcomes.

Integrating these perspectives suggests that sustainable leadership operates through a decision pathway rather than a single leadership–outcome relationship. Leadership orientation establishes the values and long-term direction that guide sustainability decisions. These orientations must then be translated into stakeholder alignment and policy priorities because sustainability decisions are implemented through actors with different interests, resources, and authority (Jayashree et al., 2022; Wiegant et al., 2024). Policy priorities subsequently shape resource allocation and intervention choices, which must be examined for potential synergies, trade-offs, and distributional consequences across sustainability objectives.



The pathway continues through collaborative implementation. Even well-designed sustainability priorities may fail when actor roles are fragmented, participation is symbolic, accountability is weak, or implementation capacities are uneven. Multi-actor governance therefore provides the institutional mechanism through which policy choices are translated into collective action. The resulting social, economic, environmental, and institutional outcomes should then be evaluated not only against individual SDGs but also according to their interactions and distribution across stakeholders.

Finally, sustainability outcomes generate information that can modify subsequent decisions. This introduces an adaptive feedback mechanism in which observed outcomes, unintended effects, changing stakeholder conditions, and emerging trade-offs inform future leadership orientation and policy choices. Sustainable leadership can therefore be conceptualized as an iterative process connecting leadership orientation, stakeholder alignment, policy prioritization, trade-off and synergy assessment, collaborative implementation, SDG outcomes, and adaptive feedback. This integrated decision pathway provides the conceptual basis for the SL-SDG Framework presented in the following subsection.

The Sustainable Leadership–SDG Decision Framework (SL-SDG Framework)

The synthesis developed in the preceding subsections provides the basis for a unified conceptual model, referred to here as the Sustainable Leadership–SDG Decision Framework (SL-SDG Framework). The framework integrates three bodies of literature that are often treated separately: sustainable leadership, SDG trade-offs and synergies, and multi-actor governance. Rather than viewing sustainability leadership as a general organizational attribute, the framework conceptualizes it as an iterative decision process through which sustainability values are translated into priorities, implemented through stakeholder coordination, and evaluated in relation to interconnected sustainability outcomes.

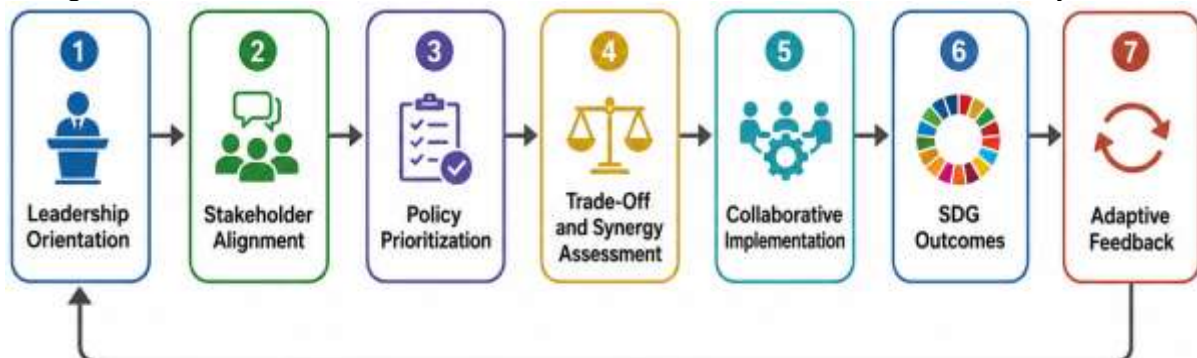


Figure 1. Sustainable Leadership–SDG Decision Framework (SL-SDG Framework)

As shown in Figure 1, the framework consists of seven interconnected components: Leadership Orientation, Stakeholder Alignment, Policy Prioritization, Trade-Off and Synergy Assessment, Collaborative Implementation, SDG Outcomes, and Adaptive Feedback. The process begins with leadership orientation, which provides the long-term vision, ethical direction, and sustainability values that shape decision-making. This component reflects the broader understanding of sustainable leadership as a multidimensional and long-term approach that extends beyond environmental performance alone (Hallinger & Suriyankietkaew, 2018; Sajjad et al., 2024).

The second component, stakeholder alignment, recognizes that sustainability decisions are inherently multi-actor processes. Governments, communities, private actors, academia, and civil society possess different interests, resources, and forms of authority. Sustainable leadership therefore requires the capacity to align these differences sufficiently to enable coordinated action while maintaining legitimacy and accountability (Vazquez-Brust et al., 2020; Wiegant et al., 2024). Once this institutional basis is established, leadership can move toward policy prioritization, where sustainability values are translated into strategic choices, resource allocation, and intervention preferences.

The fourth component, trade-off and synergy assessment, represents a central analytical contribution of the framework. Decisions are not evaluated solely by whether they support one SDG, but by how they affect multiple sustainability objectives simultaneously. This stage requires leaders to identify reinforcing relationships, anticipate constraining effects, and assess the distributional, temporal,



and spatial implications of alternative choices (Nilsson et al., 2018; Kroll et al., 2019). The selected priorities are then translated into collaborative implementation, through which multiple actors contribute to execution, monitoring, and adjustment.

These processes generate SDG outcomes, understood as multidimensional social, economic, environmental, and institutional consequences rather than single-goal achievements. The final component, adaptive feedback, closes the framework by returning observed outcomes to leadership orientation and future decisions. In this way, the framework treats sustainable leadership not as a linear action but as a recursive learning process in which outcomes, stakeholder responses, and emerging trade-offs inform subsequent priorities and interventions.

The SL-SDG Framework therefore provides a transferable analytical structure for examining sustainability-oriented decisions across organizational, public-policy, and social-ecological contexts. It is particularly relevant in contexts such as coastal tourism planning, coral reef management, and mangrove restoration, where sustainability outcomes depend on the interaction of ecological conditions, community interests, policy choices, and institutional coordination (Pratama et al., 2025; Isdianto et al., 2025; Rudianto et al., 2022). By integrating these elements into one pathway, the framework constitutes the core conceptual contribution of this study.

Application Across Sustainability Contexts

The usefulness of the SL-SDG Framework depends on whether its decision logic can be applied across different sustainability settings. The framework is not intended as a sector-specific model; rather, its components provide a common structure for examining how leadership orientation is translated into stakeholder alignment, policy priorities, assessment of trade-offs and synergies, collaborative implementation, sustainability outcomes, and adaptive feedback. The following applications are therefore illustrative rather than empirical validations, demonstrating how the framework may organize sustainability-oriented decisions across different contexts.

In coastal management, leadership decisions frequently involve competing development and environmental objectives. Coastal reclamation, for example, can generate infrastructure and economic benefits while increasing ecological pressures and creating distributional consequences for coastal communities. Such settings require stakeholder alignment among government, communities, private actors, and regulators, followed by explicit assessment of development-environment trade-offs and subsequent monitoring of ecological and social outcomes (Rudianto & Isdianto, 2020). The SL-SDG Framework therefore provides a structure for moving from development priorities toward negotiated implementation and adaptive management.

In fisheries, the framework can connect resource sustainability with livelihood objectives. Skipjack fisheries on the Malang south coast illustrate how relatively low fishing vulnerability can coexist with exploitation rates above sustainable reference levels, requiring decisions that reconcile harvesting benefits with long-term stock sustainability (Bintoro et al., 2025). Similarly, small-scale fisheries in Southern Java demonstrate that low bycatch and mature skipjack catches may coexist with species-specific risks for other target species (Rihmi et al., 2025). These conditions require leadership to interpret biological evidence, align fishers and regulators, manage trade-offs, and adjust harvest strategies as new evidence emerges.

The framework is equally applicable to mangrove restoration, where ecological objectives intersect with livelihoods, settlement pressures, climate adaptation, and institutional responsibilities. Restoration initiatives in East Java show that community participation, co-management, ecological recovery, and climate-related benefits cannot be treated separately (Rudianto et al., 2019; Rudianto et al., 2022). Here, stakeholder alignment and collaborative implementation become particularly important because restoration outcomes depend on both ecological interventions and local institutional commitment.

In sustainable tourism, the framework can help organize decisions involving conservation, visitor use, infrastructure, community benefits, and economic development. Marine tourism planning in South Malang integrates environmental suitability, infrastructure, community engagement, and development feasibility (Pratama et al., 2025), while coral reef tourism management at Kondang Merak requires the



simultaneous consideration of ecosystem condition, carrying capacity, restoration needs, and resource utilization (Isdianto et al., 2025). These cases illustrate how policy prioritization and trade-off assessment can be linked to collaborative implementation.

Beyond coastal systems, the same logic can be extended to urban sustainability and organizational decision-making. Urban sustainability decisions commonly involve interactions among infrastructure development, environmental quality, social equity, technological transformation, and long-term resilience. A systematic review of smart cities and the SDGs demonstrates that urban interventions can generate both co-benefits and trade-offs across sustainability objectives and emphasizes the importance of transparent governance and appropriate regulatory frameworks for managing these interactions (Sharifi et al., 2024). At the organizational level, sustainable leadership influences how sustainability priorities are internalized, how resources are allocated, and how environmental, social, and governance considerations are incorporated into investment and management decisions (Iqbal et al., 2020; Pelayo-Díaz et al., 2026). In both contexts, the framework directs attention toward the same central question: how leadership choices generate multidimensional outcomes through stakeholder interaction, prioritization, implementation, and learning.

These applications suggest that the SL-SDG Framework is context-flexible but process-consistent. The specific actors, sustainability objectives, and trade-offs vary across sectors, but the underlying decision pathway remains comparable. This transferability supports the use of the framework as an analytical structure for examining sustainability decisions across environmental, public-policy, and organizational settings.

Table 2. Illustrative application of the SL-SDG Framework across sustainability contexts

Context	Dominant decision challenge	Key trade-off/synergy	Main governance requirement	Illustrative evidence
Coastal management	Development vs. ecosystem protection	Economic/infrastructure gains vs. ecological and community impacts	Government–community–private coordination	Rudianto & Isdianto (2020)
Fisheries	Resource utilization vs. stock sustainability	Livelihood benefits vs. biological pressure	Fishers–regulators–scientists alignment	Bintoro et al. (2025); Rihmi et al. (2025)
Mangrove restoration	Ecological recovery vs. livelihood and land-use pressures	Restoration, adaptation, and social co-benefits	Co-management and community participation	Rudianto et al. (2019, 2022)
Sustainable tourism	Tourism development vs. conservation	Economic opportunity vs. carrying capacity and ecosystem protection	Government–community–tourism actor coordination	Pratama et al. (2025); Isdianto et al. (2025)
Urban sustainability	Development, infrastructure, equity, and environmental quality	Growth and technological benefits vs. environmental and social consequences	Cross-sector, transparent, and adaptive urban governance	Sharifi et al. (2024)
Organizational settings	Short-term performance vs. long-term sustainability	Economic objectives vs. ESG and stakeholder considerations	Leadership, organizational culture, internal alignment	Iqbal et al. (2020); Pelayo-Díaz et al. (2026)



Theoretical and Practical Implications

The SL-SDG Framework offers several theoretical implications for research on sustainable leadership and sustainability-oriented decision-making. First, it shifts the analytical focus from sustainable leadership as a set of values, behaviors, or antecedents of sustainable performance toward a decision-process perspective. Existing sustainable leadership literature has demonstrated the importance of long-term orientation, stakeholder responsibility, organizational learning, and multidimensional performance (Hallinger & Suriyankietkaew, 2018; Iqbal et al., 2020; Sajjad et al., 2024). The present framework extends this literature by specifying how leadership orientation may be translated through stakeholder alignment, policy prioritization, assessment of SDG interactions, collaborative implementation, outcome evaluation, and adaptive feedback.

Second, the framework connects sustainable leadership with two bodies of literature that are often examined separately: SDG interactions and multi-actor governance. Research on SDG interactions has emphasized the need to identify synergies, trade-offs, and unintended effects among sustainability objectives (Nilsson et al., 2018; Kroll et al., 2019), while governance research highlights coordination, legitimacy, accountability, and alignment across actors (Vazquez-Brust et al., 2020; Wiegant et al., 2024). By integrating these perspectives, the SL-SDG Framework positions sustainable leadership as a mechanism for managing both inter-objective complexity and inter-actor complexity within the same decision process. Its theoretical contribution therefore lies less in proposing another leadership style than in explaining how leadership can structure sustainability-oriented decisions under conditions of competing objectives and distributed authority.

The framework also has practical implications for policymakers, public institutions, organizations, and sustainability practitioners. It can be used as a diagnostic and decision-support structure when designing, implementing, or reviewing sustainability interventions. Decision-makers can examine whether long-term sustainability priorities are clearly defined, whether affected stakeholders are meaningfully aligned, whether resource allocation reflects those priorities, whether relevant trade-offs and synergies have been assessed, and whether implementation responsibilities and monitoring arrangements are sufficiently clear.

Importantly, the framework can also help identify weak points in the decision pathway. Sustainability initiatives may fail not because their objectives are inappropriate, but because stakeholder alignment is weak, trade-offs are overlooked, implementation responsibilities are fragmented, or feedback from outcomes is not incorporated into subsequent decisions. The framework therefore encourages decision-makers to move beyond simply associating programs with selected SDGs toward evaluating how those programs generate multidimensional and potentially interacting consequences.

The SL-SDG Framework should consequently be understood as a flexible analytical guide rather than a rigid prescriptive sequence. Its components can support *ex ante* assessment of proposed interventions, ongoing implementation review, and *ex post* evaluation of sustainability outcomes across different institutional and sectoral settings.

Future Research Agenda

The SL-SDG Framework provides a conceptual foundation that requires further empirical development and testing. A first priority is empirical validation of the proposed decision pathway. Future studies should examine whether leadership orientation influences sustainability outcomes directly or primarily through intermediate mechanisms such as stakeholder alignment, policy prioritization, trade-off assessment, and collaborative implementation. Quantitative designs could test these relationships using structural equation modelling, multilevel analysis, or longitudinal approaches, while qualitative process tracing could examine how the sequence operates in complex policy settings.

A second research priority concerns the development of measurable indicators for each framework component. Sustainable leadership has been examined through leadership values, organizational learning, stakeholder responsibility, and sustainable performance (Iqbal et al., 2020; Sajjad et al., 2024), but the proposed framework requires more specific measures of stakeholder alignment, policy prioritization, trade-off recognition, collaborative implementation, and adaptive



feedback. Developing and validating such indicators would allow the framework to move from conceptual synthesis toward comparative empirical application.

Third, future research should investigate governance variation across institutional and sectoral contexts. Comparative studies could test whether the pathway functions differently in coastal management, fisheries, urban sustainability, public administration, and private organizations. Particular attention should be given to institutional arrangements that strengthen or weaken coordination among actors, as governance mechanisms are highly context-dependent (Wiegant et al., 2024).

A fourth priority is power asymmetry within stakeholder alignment. Participation does not necessarily imply equitable influence, and differences in authority, resources, knowledge, and access to decision-making may shape which sustainability objectives receive priority (Arai et al., 2021; Asio et al., 2026). Future studies could therefore examine whether stakeholder alignment mediates or moderates the relationship between leadership orientation and sustainability outcomes under different distributions of power.

Finally, the framework should be extended toward resilience and climate-adaptation decision-making. Climate responses frequently produce interactions among ecological protection, livelihood security, infrastructure, equity, and long-term adaptation benefits (Halsnæs et al., 2024). Longitudinal research could examine whether adaptive feedback enables leadership systems to revise priorities as environmental conditions, stakeholder vulnerabilities, and sustainability trade-offs change over time.

Table 3. Future research agenda for the SL-SDG Framework

Research direction	Key research question	Possible analytical approach
Empirical validation	Does the proposed decision pathway explain SDG-oriented outcomes?	SEM/PLS-SEM, longitudinal analysis, process tracing
Quantitative indicators	How can each SL-SDG component be operationalized and measured?	Scale development, factor analysis, composite indicators
Comparative governance	Does the framework operate differently across sectors and institutions?	Comparative case studies, multilevel analysis
Power asymmetry	How does unequal influence affect stakeholder alignment and decisions?	Stakeholder/network analysis, governance comparison
Resilience and climate adaptation	How does adaptive feedback alter priorities under changing conditions?	Longitudinal studies, scenario analysis, resilience assessment

Future research should move the SL-SDG Framework from conceptual integration toward measurable, testable, and context-sensitive explanations of sustainability-oriented decision-making.

4. CONCLUSION

This study integrates sustainable leadership, SDG interactions, and multi-actor governance into a unified perspective on sustainability-oriented decision-making. The review shows that sustainable leadership extends beyond environmental orientation by incorporating long-term thinking, multidimensional sustainability objectives, stakeholder responsibility, and adaptive learning. However, leadership alone is insufficient to explain sustainability outcomes. Effective SDG-oriented decision-making also requires explicit consideration of trade-offs and synergies among sustainability objectives and governance arrangements capable of aligning actors with different interests, resources, knowledge, and authority.

Based on this synthesis, the study proposes the Sustainable Leadership–SDG Decision Framework (SL-SDG Framework), consisting of seven interconnected components: Leadership Orientation, Stakeholder Alignment, Policy Prioritization, Trade-Off and Synergy Assessment, Collaborative Implementation, SDG Outcomes, and Adaptive Feedback. The framework conceptualizes sustainable leadership as a recursive decision process rather than a fixed leadership style or a direct antecedent of sustainable performance. Its principal contribution lies in connecting inter-



objective complexity, represented by SDG trade-offs and synergies, with inter-actor complexity, represented by multi-actor governance, within a single decision pathway.

Illustrative applications across coastal management, fisheries, mangrove restoration, sustainable tourism, urban sustainability, and organizational settings indicate that the framework is context-flexible but process-consistent. It can therefore serve as an analytical and decision-support structure for identifying priorities, evaluating competing sustainability consequences, coordinating stakeholders, and incorporating learning from outcomes into subsequent decisions.

The SL-SDG Framework remains a conceptual synthesis rather than an empirically validated model. Future studies should operationalize its components, develop measurable indicators, test the proposed relationships across institutional and sectoral contexts, and examine how power asymmetry, resilience, and climate adaptation influence the decision pathway. Such development can strengthen the framework as a testable and transferable approach to SDG-oriented sustainability decision-making.

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