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Sustainable Development Policy Interventions: Stakeholder Engagement and Environmental Policy in Practice

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ABSTRACT

This study critically examines the global landscape of policy interventions for sustainable development by pursuing three interrelated objectives: (1) to map the intellectual terrain and thematic evolution of sustainability-oriented policy research; (2) to analyze the governance and institutional factors that shape the implementation of the Sustainable Development Goals (SDGs); and (3) to propose a coherent research agenda and conceptual framework for integrated, adaptive, and context-sensitive policy design. Using a Bibliometric–Systematic Literature Review (B-SLR), the study synthesizes evidence from 1862 peer-reviewed articles published between 2016 and 2024, identified through a structured, two-track search strategy and PRISMA-guided screening, and interpreted through Governance Theory, Institutional Theory, Systems Thinking, and Circular Economy perspectives. The findings map how SDG-aligned policy interventions are framed within holistic governance models, robust institutional arrangements, and collaborative stakeholder platforms, including public–private partnerships. However, some gaps remain in adaptive governance, institutional innovation, and cross-sectoral policy coherence, particularly in underrepresented contexts. To address these challenges, the study develops an Integrated Theoretical Framework that links governance mechanisms, institutional capacity, and systems-based design to guide transformative policy action. The research presents a future research agenda targeting the following four domains: environmental–economic policy integration, public health and social equity, resource governance, and institutional coordination for SDG implementation. By advancing theoretical synthesis and highlighting practical implications for policymakers, development practitioners, and managers, the study provides a conceptual roadmap for designing inclusive, responsive, and sustainable policy interventions in a complex global environment. Limitations relate to database and language scope, which should be considered when interpreting coverage and generalizability.

1 | Introduction

Achieving sustainable development is not just a simple goal within modern global governance; it is also an inherently complex, contested, and paradoxical endeavor. The United Nations Sustainable Development Goals (SDGs), established in 2015, aimed to go beyond the fragmented methods of earlier development efforts by offering a comprehensive and integrated framework that represents environmental sustainability, economic progress, and social equity (Belmonte-Ureña et al. 2021; Van Zanten and Van Tulder 2021; Martín-de Castro et al. 2023). However, nearly a decade into their implementation, the global experience has shown that the SDGs serve as both an ambitious framework and a source of systemic tension, where trade-offs, policy conflicts, and institutional fragmentation continually impede progress (Pham-Truffert et al. 2020; UNEP 2015).

The operationalization of the SDGs requires governance mechanisms able to handle cross-sectoral interconnections and to navigate trade-offs among economic growth, environmental protection, and social justice (ODI 2017; Glass and Newig 2019). Policies promoting industrialization or energy access often contribute to environmental degradation, whereas conservation planning can exacerbate poverty or restrict access to resources for marginalized groups (Wang et al. 2024; UNEP 2015). Such dilemmas are especially severe in settings where governance capacity is weak, institutional quality is low, and policy processes are fragmented, conditions common across many developing economies (Effiom and Uche 2022; UNCTAD 2012). Research on governance emphasizes that sustainable development increasingly requires multilevel structures, adaptive governance, and participatory approaches (Eriksen et al. 2021; Breuer et al. 2023). Authority in the SDG context is not exercised solely by the state but also by international organizations, businesses, civil society, and local communities whose cooperation determines how policies are designed and implemented (Sparviero and Ragnedda 2021; Van Driel et al. 2022). However, global SDG governance remains highly fragmented, with overlapping mandates, contested custodianship of indicators, and inadequate coordination across policy domains (Van Driel et al. 2022; Wang et al. 2024).

Moreover, the activities of international organizations as custodians of SDG indicators raise concerns about power asymmetries, concentration of knowledge, and the marginalization of local governance models (Van Driel et al. 2022). In response, the Global Sustainable Development Report (UN 2016) stresses the importance of enhancing policy coherence, integrated planning, and governance as strategies to overcome fragmentation. Relatedly, global policy dialogues increasingly advocate for embedding circular economy strategies, resource efficiency, and sustainable consumption and production into policy interventions (Reyers et al. 2022; UNEP 2015). Frameworks such as UNCTAD's Investment Policy Framework for Sustainable Development emphasize aligning investment with sustainability goals, encouraging responsible practices, and addressing trade-offs through participatory governance (UNCTAD 2012). Collectively, these approaches underline that policy effectiveness depends not only on institutional arrangements but also on governance systems that promote learning, reflexivity, and flexibility in the face of evolving social, economic, and environmental challenges (Glass and Newig 2019; Allen et al. 2016).

Despite the growth of sustainability-oriented policy interventions, the scholarly literature remains fragmented. Existing reviews are often sector-specific, descriptive, or based on isolated case studies, which do not capture the systemic and cross-cutting nature of sustainable development challenges (Bechtsis et al. 2022; Pham-Truffert et al. 2020). Several recent reviews (Chowdhury and Chowdhury 2024; Kluza et al. 2021; Breuer et al. 2023; Lüdeke-Freund et al. 2024; Omar and El-Bastawissi 2024) remain limited in scope, overlooking key tensions, policy trade-offs, and localized barriers to SDG implementation. Moreover, most past studies have not systematically connected bibliometric trends with specific SDG targets, nor have they integrated conceptual frameworks such as governance theory, institutional theory, systems thinking, and circular economy perspectives. This gap leaves little guidance on how to design globally adaptable yet context-sensitive policy architectures capable of mediating SDG synergies and trade-offs (Heim and Mergaliyeva 2024).

To address these gaps, this study applies a Bibliometric–Systematic Literature Review that combines quantitative bibliometric mapping with qualitative thematic analysis to synthesize dispersed literature. The review follows a structured PRISMA-guided screening process and a two-track search strategy across multidisciplinary and business subject areas, using Title Abstract Keywords field queries and predefined inclusion criteria that focus on peer-reviewed journal articles in English. This approach enables a transparent mapping of the intellectual structure of SDG policy intervention research, while identifying thematic clusters and conceptual blind spots that warrant further investigation (Donthu et al. 2021; Paul et al. 2021). Unlike previous reviews, this study explicitly links bibliometric clusters to SDG targets and governance challenges, integrates multiple theoretical perspectives, and places particular emphasis on understudied Global South contexts.

The study analyzes 1862 peer-reviewed journal articles published between 2016 and 2024, a period chosen because it corresponds to the implementation phase of the SDGs. Its objectives are threefold: (1) to map the intellectual terrain and thematic evolution of SDG policy intervention research; (2) to critically examine the governance and institutional factors shaping SDG policy outcomes; and (3) to develop a future research agenda and propose an integrated conceptual framework for adaptive, coherent, and inclusive policy interventions.

By synthesizing diverse and fragmented literature, this review advances theoretical understanding by integrating governance theory, institutional theory, systems thinking, and circular economy perspectives. It also provides practical insights for policymakers, international organizations, and business actors, highlighting how both public and private stakeholders can coproduce resilient, context-sensitive policies that navigate the complexity of sustainable development governance in an increasingly volatile global environment. The scope and language decisions inherent in the database strategy are acknowledged as limitations that inform the interpretation of coverage and generalizability.

2 | Methodology

Because of the complexity of policy interventions in sustainable development, the methodological process should not only include the widest possible range of relevant literature but also lead to a critical, comprehensive, and integrated synthesis of knowledge. In accordance with this imperative, the current study adheres to the Bibliometric–Systematic Literature Review (B-SLR) methodology, a rigorous approach increasingly applied in sustainability and governance research (Donthu et al. 2021; Paul et al. 2021; Marzi et al. 2025; Farrukh et al. 2020). The B-SLR method combines quantitative

bibliometric mapping with systematic qualitative synthesis to capture the intellectual foundations, thematic evolution, and knowledge fragmentation of the policy intervention literature on the SDGs.

The use of B-SLR in the present research reflects a purposeful methodological choice designed to overcome the constraints of traditional literature reviews, which often remain fragmented or limited to isolated case studies (Bechtsis et al. 2022; Pham-Truffert et al. 2020). This approach ensures transparency, replicability, and theory-based analysis of governance mechanisms, institutional dynamics, stakeholder engagement, and the management of policy trade-offs in SDG implementation.

2.1 | Defining Research Objectives

Grounded in governance theory, institutional theory, systems thinking, and circular economy perspectives, this review pursues the unifying goal of investigating, examining, and integrating research developments on evidence-based policy interventions for sustainable development. Specifically, it seeks to determine how governance structures, institutional capacities, multistakeholder partnerships, and policy coherence mechanisms have been conceptualized and operationalized, with the aim of identifying research gaps, emerging trends, and evolving concepts that inform both future research and practice.

2.2 | Database Selection

Scopus was selected as the primary database for this review due to its broad multidisciplinary coverage, robust indexing of leading journals, and compatibility with bibliometric tools such as VOSviewer. Scopus allows full metadata export, enabling advanced bibliometric analysis across governance, policy, and sustainability fields. To enhance robustness, the Web of Science Core Collection was used for cross-validation of highly visible items to reduce the risk of overlooking relevant work. No inclusion decisions were based on citation counts or journal impact factors.

The search was operationalized via a two-track subject-area strategy: a multidisciplinary track (Social Sciences, Humanities, Economics, Econometrics and Finance, Psychology, Environmental Science, Multidisciplinary) and a business-focused track (Business, Management and Accounting). This design surfaces both public policy and managerial strands of the literature.

2.3 | Keyword Identification and Search Query Development

The search strategy was developed through an iterative process informed by prior studies, theoretical frameworks, and expert validation. Keywords were identified from the literature on governance, institutions, policy interventions, and sustainability. Iterative testing balanced sensitivity and specificity. Sensitivity checks confirmed that restricting to Title, Abstract, and Keywords fields captured the relevant corpus while reducing irrelevant results relative to all-fields searching.

2.4 | Final Search Query

Applied to the Title, Abstract, and Keywords fields in Scopus:

("Policy Intervention*" OR "Policy Framework*" OR "Policy Implementation*" OR.

"Governance Mechanisms" OR "Governance Framework*" OR "Institutional Capacity" OR.

"Institutional Governance" OR "Public Policy" OR "Sustainability Policy" OR.

"SDG Policy Intervention*").

AND

("Sustainable Development Goal" OR "Sustainable Development Goals" OR SDG OR SDGs OR.

"United Nations SDGs" OR "Sustainability Agenda" OR "Sustainability Governance").

2.5 | Inclusion and Exclusion Criteria

To ensure thematic focus and conceptual clarity, only peer-reviewed journal articles and reviews published between 2016 and 2024 were included. The starting year corresponds to the first full year of SDG implementation. Inclusion required explicit engagement with policy interventions linked to SDG achievement and at least one of the following: governance mechanisms, institutional capacity, stakeholder engagement, or policy trade-offs. Exclusions comprised non-peer-reviewed sources, book chapters, conference papers, policy reports, and items not directly addressing SDG-related policy interventions. It is acknowledged that using peer-review status and an English-language filter are imperfect proxies for quality and coverage; the implications of these decisions are discussed in the limitations.

2.6 | Data Extraction, Screening, and Validation

The PRISMA-guided workflow proceeded as follows:

Track 1: Business, Management, and Accounting

- Records identified: 607
- Pre-screen exclusions: conferences and trade sources 206; non-English 14
- Records screened by Title, Abstract, and Keywords: 387
- Excluded at Title, Abstract, and Keywords: 71
- Full texts assessed: 316

- Full-text exclusions for irrelevance: 6
- Included from Track 2: 310

Track 2: Multidisciplinary

- Records identified: 3147
- Pre-screen exclusions: conferences and trade sources 554; non-English 90
- Records screened by Title, Abstract, and Keywords: 2503
- Excluded at Title, Abstract, and Keywords: 512
- Full texts assessed: 1991
- Full-text exclusions for irrelevance to SDG policy interventions: 447
- Included from Track 1: 1544

Complementary Identification

- Complementary targeted searches and citation chasing yielded 8 additional articles, which were included.

After deduplication across tracks, the final corpus comprised 1862 peer-reviewed articles. Title and abstract screening was conducted independently by two reviewers using the predefined criteria. Disagreements were resolved through discussion, and inter-rater reliability was calculated (Cohen's $\kappa = 0.81$), indicating strong agreement. Author and country names were disambiguated using Scopus Author IDs and manual checks for ambiguous cases.

2.7 | Bibliometric Analysis

The validated dataset was analyzed using VOSviewer with the following parameters reported for replicability:

- Keyword co-occurrence: full counting, minimum 5 occurrences
- Co-citation (sources): minimum 50 citations per source
- Bibliographic coupling (countries and authors): minimum 3 documents
- Normalization: association strength
- Clustering: Leiden algorithm, resolution 1.0
- Layout: 1000 iterations to convergence

These settings generated maps of co-authorship networks, intellectual foundations, and thematic clusters.

2.8 | Qualitative Thematic Synthesis

To complement quantitative mapping, inductive thematic coding of the 1862 full-text articles identified four recurring research clusters:

1. Governance mechanisms for SDG implementation, including regulatory coherence and multilevel governance
2. Institutional capacity and policy effectiveness, including organizational practices and capability building
3. Stakeholder engagement and multilevel collaboration, including participatory governance and partnerships
4. Managing policy trade-offs and adaptive governance, including SDG synergies, conflicts, and adaptive policy design

These clusters were interpreted through the multitheoretical lens, linking bibliometric structures to conceptual frameworks and, where relevant, to SDG targets and indicators.

2.9 | Data Presentation and Visualization

In line with PRISMA guidelines, a flow diagram (Figure 1) documents each stage of identification, screening, eligibility, and inclusion for both tracks, culminating in 1862 included articles. Exclusion categories focus on SDG-policy relevance and standard document type and language criteria. Annual publication trends are reported with a note on potential indexing lag that may underestimate counts in the most recent year.

2.10 | Reporting, Evaluation, and Interpretation

The final stage integrated bibliometric results with thematic synthesis to generate comprehensive insights into the evolution of SDG policy intervention research. The integrated framework highlights governance effectiveness, institutional capacity, stakeholder collaboration, policy coherence, and adaptive governance as key constructs. This framework underpins the subsequent analysis and discussion, offering a replicable foundation for theory development and practice in SDG governance.

3 | Theoretical Framework

3.1 | Policy Interventions for Sustainable Development: Complexity and Governance Challenges

The SDGs have repositioned sustainable development as a multidimensional and interdependent policy challenge, requiring interventions that navigate systemic trade-offs, policy inter-linkages, and cross-sectoral tensions (Pham-Truffert et al. 2020; Wang et al. 2024). However, current systems of governance often struggle to align policy goals with long-term public value because institutional fragmentation, regulatory misalignment, and sectoral silos persist (UNEP 2015; ODI 2017). Trans-boundary issues like climate change, resource shortage, and inequality require the policy–SDG nexus to be guided by governance mechanisms that support adaptive learning, reflexivity, and coordinated action among multiple actors (Allen et al. 2016).

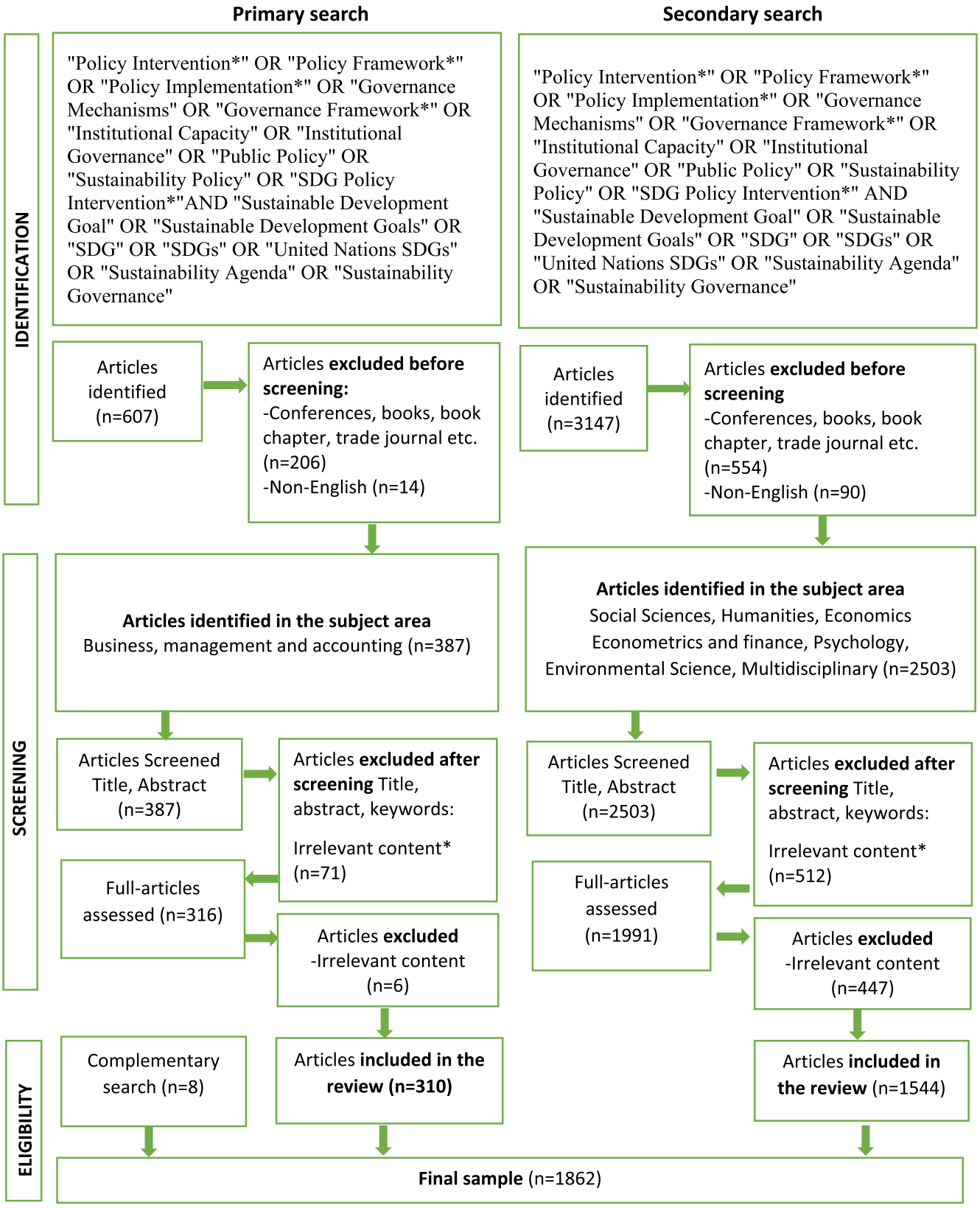

FIGURE 1 | PRISMA flowchart of the article selection process; by author.

3.2 | Why These Lenses and How They Are Used

The framework brings together governance theory, institutional theory, systems thinking, and circular economy because these perspectives are repeatedly foregrounded in SDG policy literature as complementary lenses. Governance theory clarifies coordination across levels and actors. Institutional theory explains how rules, norms, and capacities shape implementation.

Systems thinking addresses feedbacks and interdependencies across targets. Circular economy highlights resource-use logics relevant to SCP and related SDG indicators. The selection is aligned with practices in recent review studies that position conceptual framing alongside empirical mapping to interpret thematic patterns and is consistent with the mapped literature base of 1862 peer-reviewed articles from 2016 to 2024 identified through the PRISMA process (e.g., Alatawi et al., 2023). These lenses are applied to interpret themes emerging from the dataset and to link observed clusters to SDG targets and indicators where relevant.

This framework combines governance and institutional perspectives and draws on systems thinking and circular economy principles to interpret processes involved in SDG-oriented policy interventions, barriers to these processes, and the interactions among them (Reyers et al. 2022). The framework is used as an organizing lens for interpretation and managerial guidance in a descriptive bibliometric context. It is not used to make causal performance claims.

3.3 | Governance Theory: Adaptive, Multilevel, and Collaborative Policy Systems

Governance theory offers a detailed explanation of the relational structures and coordination processes that shape policy interventions (Horan 2022; Breuer et al. 2023). Recent literature emphasizes shifts toward multilevel, participatory, and adaptive arrangements compared with earlier hierarchical state-based approaches (Eriksen et al. 2021). In SDG contexts, effectiveness depends on whether governance mechanisms can manage complexity, bridge differences among stakeholders, and support multisector accountability (Wang et al. 2024; Martinez Hernandez et al. 2021). Flexibility, feedback loops, and continuous learning help address uncertainty and emergent risks (Kaipainen and Aarikka-Stenroos 2022; Allen et al. 2016). At the same time, fragmentation, overlapping mandates, and unclear custodianship remain central challenges for policy coherence (Van Driel et al. 2022). For practice, this perspective clarifies how public agencies, firms, and civil society design and participate in collaborative platforms and public–private partnerships, specify accountability arrangements, and align managerial decision-making with agreed policy objectives.

3.4 | Institutional Theory: Capacity, Norms, and Organizational Transformation

Institutional theory centers on the influence of formal and informal rules, norms, and resources on policy design, delivery, and effectiveness (Joseph et al. 2023). Strong institutional capacity underpins workable SDG policies, enabling agreement-building and legitimacy (UNCTAD 2012). Many developing regions face fragile institutions, including corruption, regulatory capture, fragmented forms, and resource constraints (Effiom and Uche 2022). Institutional entrepreneurship and capability-building can support sustainability transitions in resistant settings (Heim and Mergaliyeva 2024). This perspective also illuminates how corporate actors and industry associations contribute to institutional change through standard-setting, disclosure practices, and investment choices that reinforce or realign policy instruments. Institutional flexibility and transformation help explain how practices become embedded and how policy systems can be reoriented toward long-term SDG goals.

3.5 | Multistakeholder Collaboration and Policy Coherence in SDG Governance

Sustainable development requires collaboration that mobilizes stakeholder knowledge and resources through inclusive governance platforms (Eriksen et al. 2021; Breuer et al. 2023). Where coordination is weak, collaboration may reproduce fragmentation and reduce policy effectiveness (Van Driel et al. 2022). The Policy Coherence for Sustainable Development approach emphasizes alignment of objectives, instruments, and practices across actors and levels (Pham-Truffert et al. 2020; UNEP 2015). Policy coherence reduces contradictions and trade-offs and supports synergies among interdependent SDGs, enabling integrated and inclusive policymaking (ODI 2017; UNCTAD 2012). Within this collaboration space, public–private partnerships and corporate engagement can add resources, innovation capacity, and implementation pathways when appropriate accountability and transparency mechanisms are specified.

3.6 | Social Equity, Justice, and the Just Transition Imperative

The SDG agenda is closely aligned with equity and justice. Leaving no one behind is central to sustainable development governance (Steckermeier and Delhey 2019). The Just Transition perspective stresses that the benefits and burdens of sustainability transitions should be distributed fairly (Pham-Truffert et al. 2020; UNEP 2015). Policies that ignore contextual vulnerabilities risk widening inequalities and undermining legitimacy (Allen et al. 2016). Embedding equity in policy interventions is critical for inclusive governance systems that can respond to diverse needs, particularly in underrepresented Global South contexts.

3.7 | Integrating Systems Thinking and Circular Economy Perspectives

Circular economy perspectives complement systems thinking in addressing interdependence and complexity in SDG policy implementation (Reyers et al. 2022). Systems thinking supports holistic analysis, attention to feedback, and cross-sector reintegration so that governance mechanisms can anticipate unintended consequences and build systemic resilience (Allen et al. 2016). Circular economy emphasizes regenerative resource management, closing loops, and decoupling growth from environmental degradation, which is relevant for sustainable consumption and production and for managing resource trade-offs (UNEP 2015). For managers, these perspectives translate into portfolio choices, supply-chain decisions, and product stewardship that align with policy coherence goals.

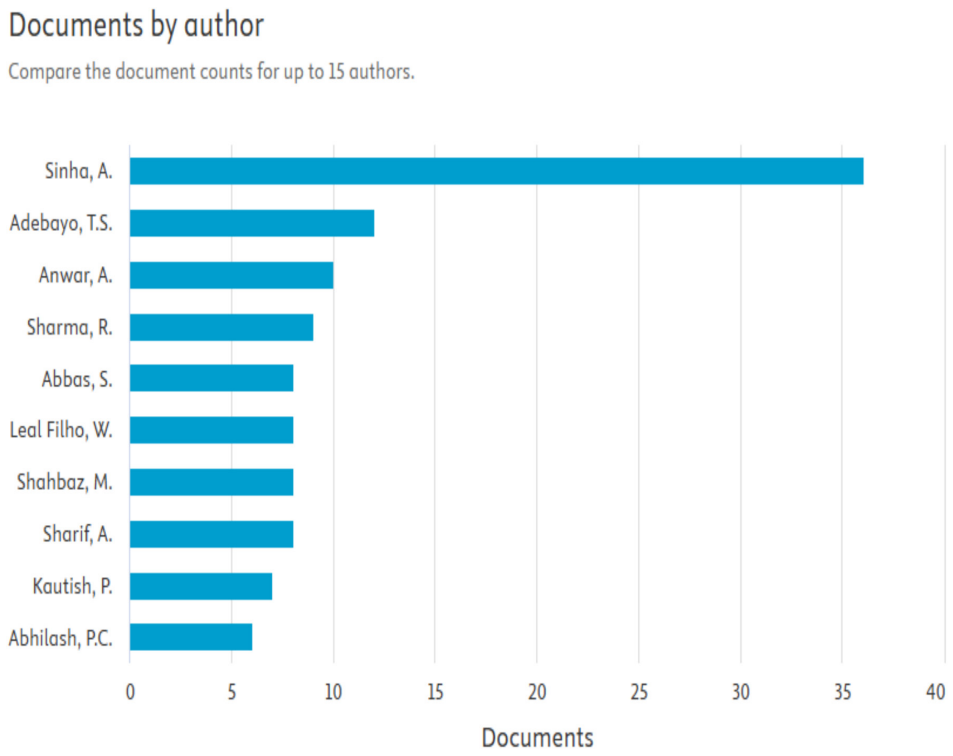

FIGURE 2 | Documents by author (Scopus analysis).

3.8 | Toward an Integrated Framework for SDG Policy Effectiveness

This research develops an integrated framework for policy interventions in sustainable development using the above theoretical insights. The framework treats governance mechanisms, institutional capacity, stakeholder co-production, policy coherence, and social justice as core constructs and links them to SDG targets and indicators where relevant. Policy effectiveness is understood as emerging from interactions among levels of governance, institutional settings, and socio-political contexts. Applying systems thinking and circular economy principles provides design guidance for adaptive, resilient, and transformative policy interventions that can address SDG trade-offs. In practical terms, the framework clarifies how policymakers and corporate decision-makers align strategies, disclosure, and investment with multiactor coordination, and how public–private partnerships can be configured to support progress on sustainability outcomes across varied regional and sectoral conditions.

4 | Bibliometric Results

This section presents the findings of the Bibliometric–Systematic Literature Review, offering a comprehensive analysis of the intellectual structure, geographical patterns, temporal trends, and collaboration networks that shape policy intervention research for sustainable development. The analysis is based on a validated corpus of 1862 peer-reviewed journal articles identified through a PRISMA-guided, two-track search strategy in Scopus, cross-checked in Web of Science for coverage, and analyzed in VOSviewer with transparent and replicable parameters. Rooted in Governance Theory and Institutional Theory, the results provide a reflective and critical account of the evolving academic discourse on policy interventions aligned with the SDGs.

4.1 | Intellectual Foundations and Leading Scholarly Contributions

The authorship analysis (Figure 2) and co-author network (Figure 3) show distinct clusters of influential scholars who have shaped the field of SDG-related policy interventions. On Scopus, Sinha, A. is identified as the most prolific author, with 36 publications spanning environmental governance, energy policy, institutional effectiveness, and regulatory frameworks in line with SDGs. Adebayo, T. S. (12 publications) and Anwar, A. (10 publications) also contribute extensively to work on governance mechanisms, policy effectiveness, and sustainability transitions.

Other prominent contributors include Sharma, R., Abbas, S., Leal Filho, W., and Shahbaz, M., who address themes such as adaptive governance, stakeholder engagement, institutional resilience, and multilevel policy coordination. These contributions align closely with Governance Theory and Institutional Theory, highlighting the field's conceptual grounding (Wang et al. 2024; Eriksen et al. 2021).

The co-authorship analysis (Figure 3) produced by VOSviewer reveals a growing tendency toward collaborative, interdisciplinary research. This expanding web of connections demonstrates the intellectual maturation of the field and underscores the necessity of multidisciplinary practices to address complex

sustainability challenges (Kabongo 2020). Cross-institutional and cross-country collaborations are particularly significant in SDG policy research, where joint knowledge production is essential (Breuer et al. 2023). For transparency, figure captions specify the analytic settings used for each map, including counting method, minimum thresholds, normalization, clustering, and layout iterations.

4.2 | Geographical Distribution of Research Output and Global Collaboration Patterns

Analysis by country shows a distinctive concentration of scholarly output. China leads with 265 publications, followed closely by the United Kingdom (261) and the United States (229). Other significant contributors include India (188), Australia (133),

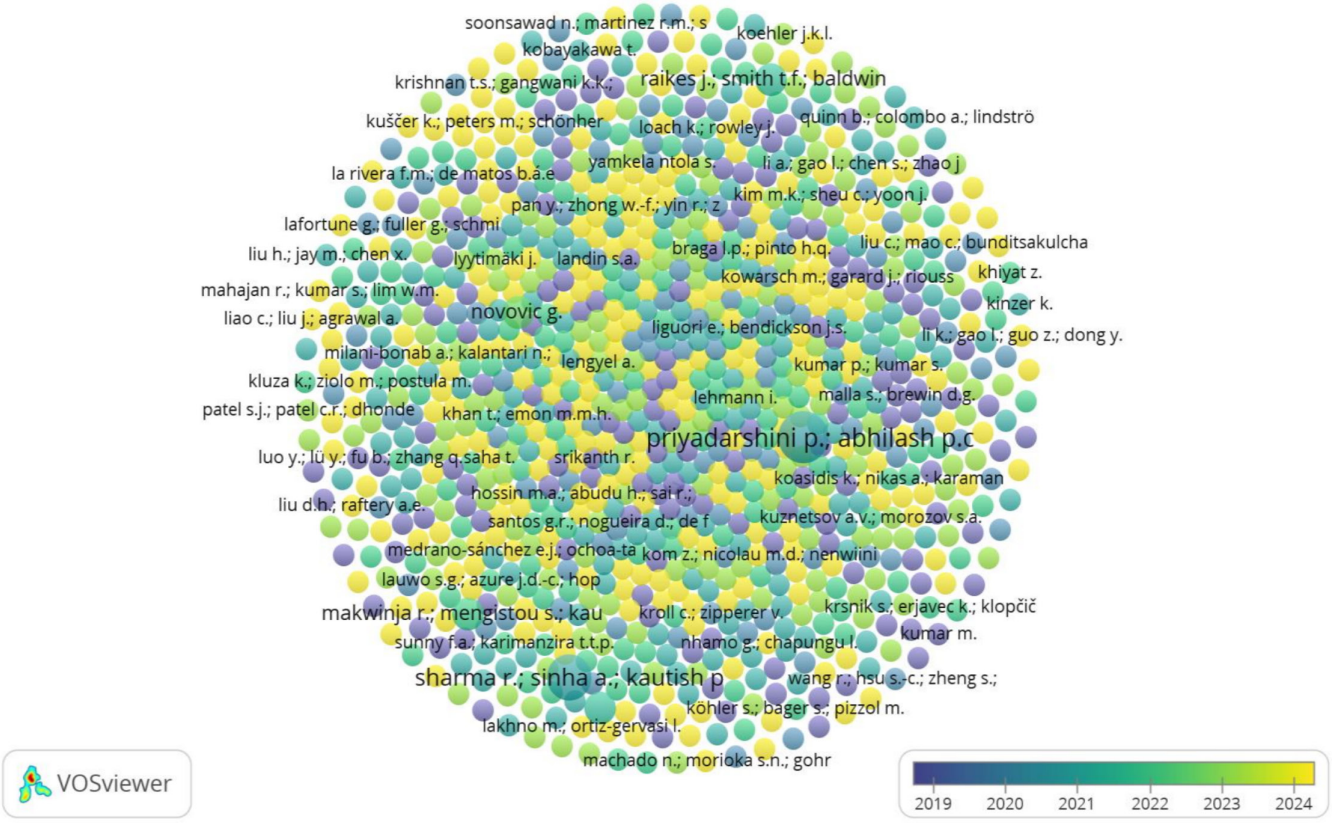

FIGURE 3 | Co-authorship network of authors (VOSviewer analysis).

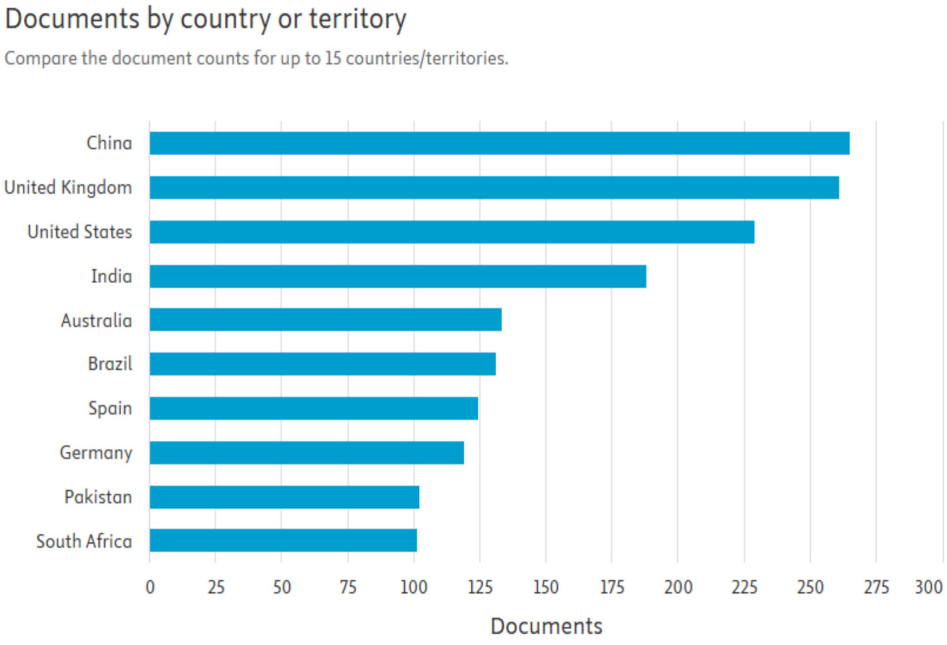

FIGURE 4 | Documents by country (Scopus analysis).

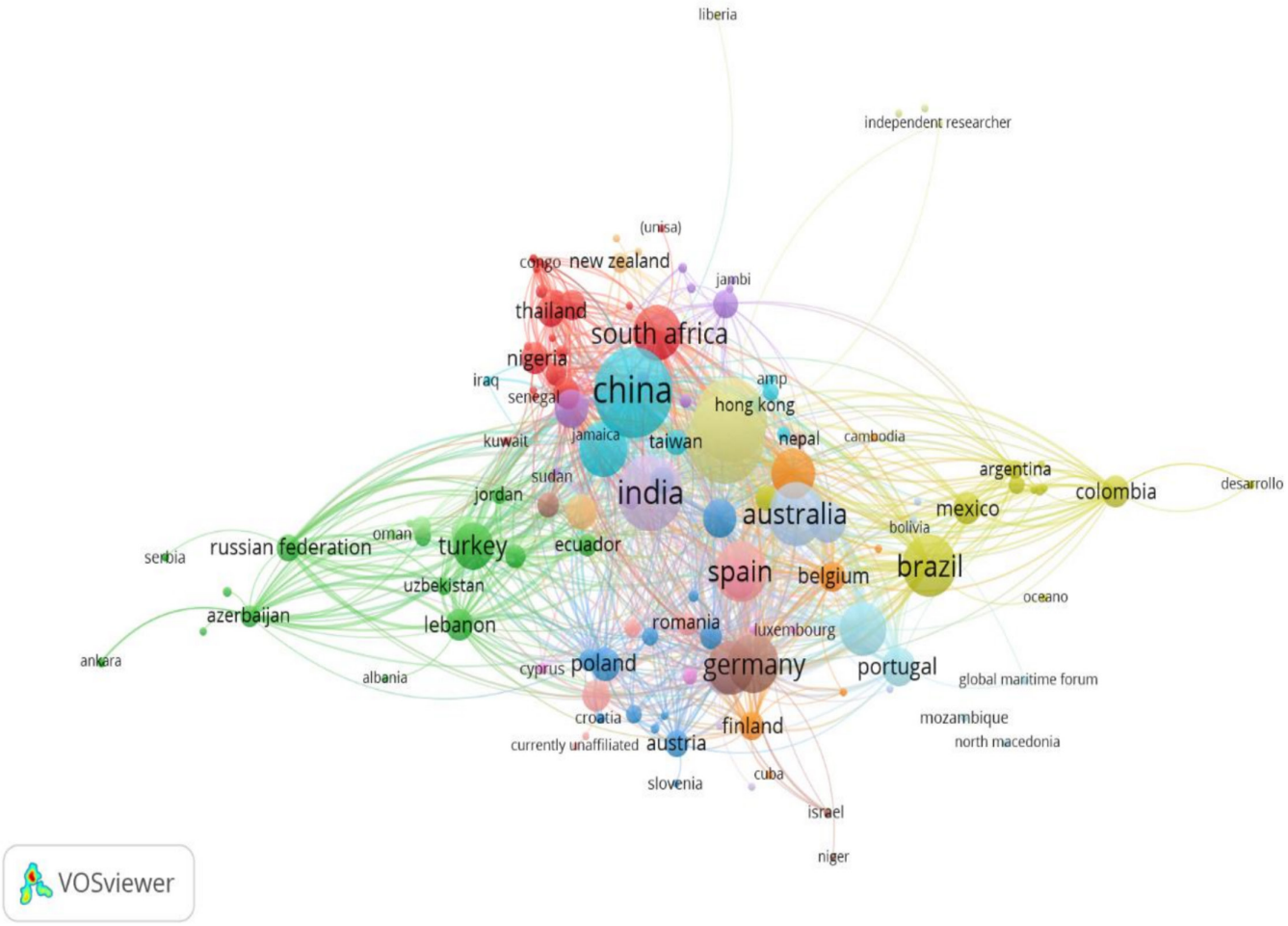

FIGURE 5 | Country-wise collaboration network (VOSviewer analysis).

Brazil (131), Spain (124), Germany (119), Pakistan (102), and South Africa (101), demonstrating wide global engagement with SDG-oriented policy interventions (Figure 4). Country attributions reflect authors' affiliations as recorded in Scopus at the time of publication and were checked for common disambiguation issues.

China's prominence reflects national strategies promoting green development and environmental protection, an institutional response consistent with Institutional Theory (Effiom and Uche 2022). The United Kingdom's contribution emphasizes multilevel governance and climate policy, hallmarks of Governance Theory (Van Driel et al. 2022). Similarly, the United States, Australia, and European countries such as Germany and Spain benefit from strong research infrastructure, while rising contributions from India, Brazil, Pakistan, and South Africa reflect growing interest in policy coherence and sustainability challenges in underinstitutionalized contexts (UNCTAD 2012; ODI 2017).

The international co-authorship network (Figure 5) highlights dense collaborations among leading countries. These transnational partnerships reflect the networked governance models emphasized in the literature (Allen et al. 2016; UNEP 2015), reinforcing the importance of knowledge exchange for SDG-related policy learning and innovation. Figure captions specify VOSviewer thresholds and normalization choices used to generate these maps.

4.3 | Temporal Trends and Evolution of Policy Intervention Research

The temporal analysis shows steady growth in publications from 2016 to 2024. Research output rose from 27 articles in 2016 to 52 in 2017, marking the early descriptive phase. After 2018, the field expanded rapidly, with a major increase after 2020, culminating in a peak of 481 publications in 2024 (Figure 6). Annual values for the latest year may be slightly underestimated because of indexing lag, a limitation that is noted in the figure caption and throughout the text where relevant.

This trajectory reflects global developments such as the mid-term SDG progress review, intensifying climate impacts, and the COVID-19 crisis, each of which prompted scholarly debates on governance effectiveness, institutional resilience, and adaptive policymaking (Breuer et al. 2023; Allen et al. 2016). The post-2020 period also shows a turn toward more theory-informed and systematic approaches, rather than purely descriptive analyses (Pham-Truffert et al. 2020; Wang et al. 2024). Results are reported for the validated corpus of 1862 articles derived from

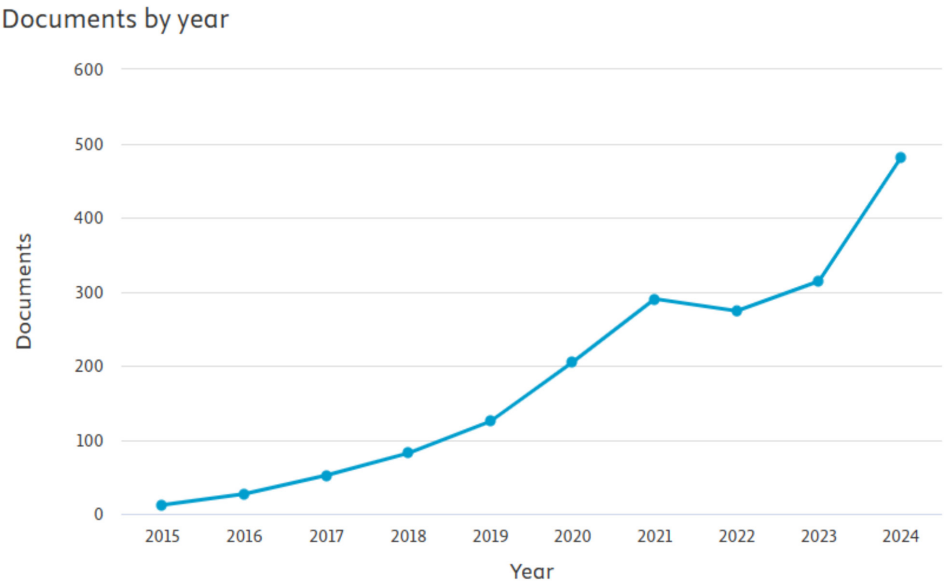

FIGURE 6 | Annual research output on policy interventions (Scopus analysis).

the PRISMA-guided, two-track search and screening process that included complementary identification of additional relevant items.

5 | Thematic Clusters for Policy Interventions and Sustainable Development

The keyword co-occurrence analysis conducted through VOSviewer enabled the identification of four major thematic clusters that reflect the evolving intellectual landscape of policy intervention research for sustainable development. These thematic observations are descriptive interpretations of the mapped corpus and reflect conceptual developments in the governance of sustainability, consistent with contemporary Governance Theory, Institutional Theory, and systems-oriented sustainability frameworks. For transparency, clusters are derived from the PRISMA-validated corpus of 1862 peer-reviewed articles identified through a two-track search restricted to Title, Abstract, and Keywords, using the parameters reported in Methods (keyword co-occurrence, full counting, minimum 5 occurrences, normalization by association strength, Leiden clustering, resolution 1.0). Cluster labels are interpretive and used to aid synthesis. To support replicability, figure captions specify analytic settings.

Each cluster signifies a different area of academic inquiry, stating critical policy tensions, governance mechanisms, and institutional dynamics associated with SDG implementation. The identified clusters (Figure 7) reflect growing convergence toward integrated, adaptive, and participatory governance frameworks capable of navigating sustainability trade-offs and supporting systemic change. To aid interpretability, each stream below is explicitly linked to focal SDGs and related policy domains, as reflected in the mapped terms and co-occurrence structures.

5.1 | Stream 1: Environmental Sustainability and Inclusive Green Economy (Green Cluster)

This thematic cluster examines the relation between environmental sustainability and economic advancement, emphasizing the increasing significance of integrated policy frameworks in enabling green transitions and supporting inclusive growth. Central to this discourse is the acknowledgment that sustainable development is linked with economic systems, industrial transformation, and institutional capability. Consequently, the governance of environmental sustainability necessitates multifaceted policy interventions that reconcile ecological conservation with socio-economic priorities (UNEP 2015; UNCTAD 2012).

Recent literature indicates a shift from reactive environmental regulation to proactive governance that embeds sustainability in economic decision-making (Wiek et al. 2011). The growing attention to sustainability in operations, green finance, renewable energy policy, circular economy models, and sustainable production–consumption signals a policy turn that treats environmental and economic goals as intertwined (Bocken et al. 2014; Elia et al. 2020). In this review, Governance Theory helps explain how multitier governance architectures connecting state, market, and civil society can create enabling environments for sustainable practices (Breuer et al. 2023). Adaptive governance is important for addressing climate risk, biodiversity loss, and resource depletion (Folke et al. 2005), with core elements including collaborative policy design, flexible regulation, and capacity building (Eriksen et al. 2021). Institutional Theory complements this by showing how formal rules, organizational practices, and normative pressures shape adoption (Oliver 1991; North 1990). Credible regulatory settings and enforcement support private sector responses, while institutional weaknesses impede transitions, especially in developing contexts (Effiom and Uche 2022).

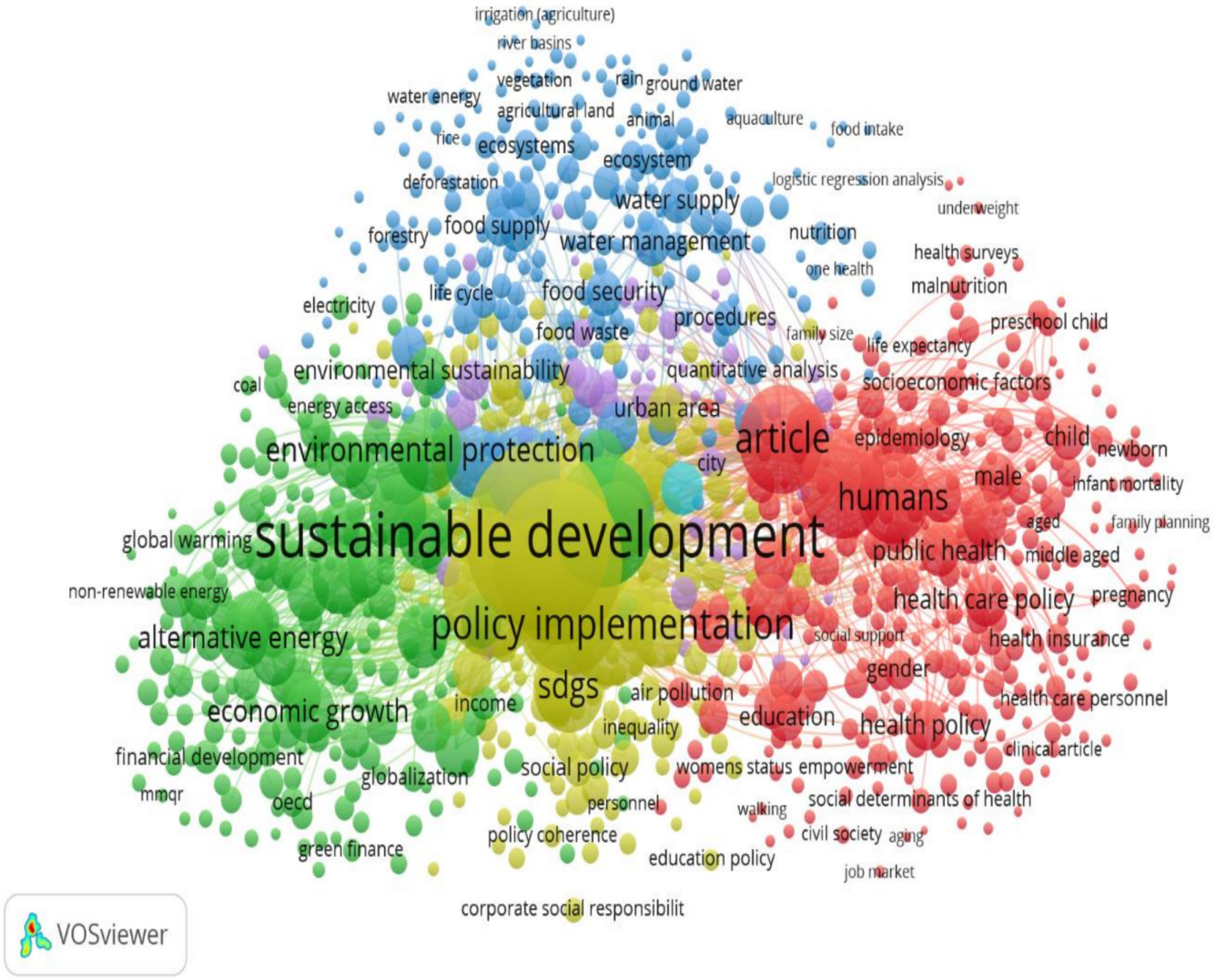

FIGURE 7 | Keyword co-occurrence network (VOSviewer analysis).

Studies in the mapped corpus highlight circular economy strategies for resource efficiency and reduced environmental burdens. Elia et al. (2020) show how eco-design mandates, waste regulations, and recycling incentives guide industrial stakeholders toward resource-efficient production, extending to business model change, supply chain governance, and life-cycle management (Schroeder et al. 2019). Renewable energy diffusion depends on policy incentives and institutional readiness, yet faces grid, regulatory, and investment risks (Bechtsis et al. 2022). Green finance instruments mobilize capital but raise concerns about greenwashing and reporting standards, underscoring the need for consistent oversight (Giamporcaro and Gond 2016).

This cluster connects most clearly with SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action), with land and biodiversity implications for SDG 15. Practical implications include aligning corporate decarbonization roadmaps, circular design, and disclosure practices with policy incentives, and using public-private partnerships to scale clean infrastructure where institutional capacity allows.

Future direction: Examine how global sustainability norms interact with local institutional settings in emerging economies, and assess the role of digital technologies for transparency in green finance and resource management (Reyers et al. 2022).

5.2 | Stream 2: Public Health, Social Equity, and Human Well-Being (Red Cluster)

This cluster concerns policy interventions aimed at improving public health, social equity, and human well-being, which align with SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), SDG 5 (Gender Equality), and SDG 10 (Reduced Inequalities). It emphasizes integrated, inclusive, and governance-based frameworks that respond to social determinants of health and equity (Pham-Truffert et al. 2020; Breuer et al. 2023).

Current literature recognizes that health outcomes are intertwined with governance quality, institutional capacity, and social protection systems (Kickbusch et al. 2016). Governance-centered approaches stress legitimacy, trust, and collaboration (Eriksen et al. 2021). Institutional Theory clarifies how rules

and regulatory arrangements condition social policy design and efficacy (North 1990; Oliver 1991). Weak institutions can undermine trust and widen inequities, whereas transparent and participatory arrangements support resilient health systems (Heim and Mergaliyeva 2024).

Social protection instruments such as conditional cash transfers, universal health coverage, and unemployment insurance can reduce risk and strengthen resilience (ODI 2017). Integrating health considerations across sectors requires coordination among health, education, environment, and finance ministries (Pham-Truffert et al. 2020). Adaptive capacity in social protection systems has been central in responding to pandemics and climate-related shocks (Breuer et al. 2023; Kaipainen and Aarikka-Stenroos 2022).

Digital governance tools, e-health platforms, and data-informed interventions can improve reach, but also raise concerns about privacy and digital inequality (Sparviero and Ragnedda 2021). Educational equity matters for human capital and inclusion (UNESCO 2020), and gender mainstreaming and legal empowerment are important for translating policy into well-being gains (UN Women 2022).

Managerial and practice implications include employer-supported health benefits, responsible data practices, and partnerships with local providers to extend service access. These align with SDG 16 (Peace, Justice and Strong Institutions) when policies enhance trust and accountability.

Future direction: Study health governance in fragile settings and intersectional inequalities that combine gender, disability, ethnicity, and geography.

5.3 | Stream 3: Resource Governance, Food Security, and Ecosystem Resilience (Blue Cluster)

This cluster focuses on governing key natural resources and the interrelationships of the water-food-energy nexus, ecosystem management, and resilience to environmental shocks. Integrated and participatory responses are necessary for transboundary resources and food security within ecological limits. Actions in one domain can propagate through the others, so policy should be designed with nexus effects in mind.

Ecosystem-based adaptation strategies combine ecological and socioeconomic considerations to build resilience (Reyers and Selig 2020). Cross-sector coordination among public agencies, private actors, and communities can improve inclusiveness and responsiveness (Louder et al. 2021). Traditional ecological knowledge can inform sustainable governance, as seen in indigenous practices that address hydrological and coastal challenges. Nature-based solutions, including green infrastructure and restoration, can support biodiversity and human well-being when designed with local context in view.

This cluster most directly links to SDG 2 (Zero Hunger), SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land). Practical implications include cross-sector governance platforms for water-food-energy planning, resilience metrics tied to ecosystem services, and partnerships for watershed and landscape restoration.

Future direction: Evaluate policy mixes that balance water–food–energy trade-offs under climate uncertainty and examine the governance conditions that enable scalable nature-based solutions.

5.4 | Stream 4: Integrated Governance, Policy Coherence, and Institutional Effectiveness (Yellow Cluster)

This cluster represents the conceptual and operational nucleus of research concerned with policy interventions aligned with the SDGs, focusing on mechanisms that promote integrated governance, assure policy coherence, and enhance institutional effectiveness. Given interdependencies and trade-offs among the 17 goals, cohesive frameworks are needed to connect fragmented sectoral policies, coordinate among levels of government, and adapt to evolving conditions (Van Zanten and Van Tulder 2021; Kaipainen and Aarikka-Stenroos 2022).

Governance here moves beyond administrative coordination toward systems thinking that harmonizes sectors, scales, and stakeholders. Isolated interventions may not scale without coherent governance that reflects implementation complexity (Biermann et al. 2017; Breuer et al. 2023). Multilevel governance models emphasize vertical and horizontal coordination (Gupta et al. 2015). Institutional conditions shape the engagement of business and civil society; institutional voids and misalignments can limit corporate contributions to SDGs, while predictable frameworks can mobilize private capital and enable cross-sector partnerships (Van Zanten and Van Tulder 2021). Institutional Theory highlights that adaptive capacity, learning, and feedback are essential for coherence and implementation (Kaipainen and Aarikka-Stenroos 2022).

Common barriers include governance fragmentation and uncoordinated donor or agency initiatives (UNEP 2015; UN 2016). Coordinated structures such as interministerial committees, national SDG councils, and cross-sector data-sharing platforms can improve coherence (UNCTAD 2012; ODI 2017). Adaptive governance is increasingly important given climate stressors and shocks (Folke et al. 2005; Wang et al. 2024). Interactive governance underscores inclusive participation, capacity building, legal empowerment, and safeguards against tokenism and elite capture (Breuer et al. 2023). Political economy factors such as power imbalances and vested interests influence what is feasible, so technical designs need political support and coalitions (Biermann et al. 2017; Van Driel et al. 2022).

This cluster maps to SDG 16 (Peace, Justice and Strong Institutions) and SDG 17 (Partnerships for the Goals), with cross-cutting relevance to policy coherence across all goals. Practical implications include strengthening mandates for coordination units, embedding monitoring and learning cycles, and structuring public-private partnerships with accountability provisions.

Future direction: Compare coherence mechanisms across countries and sectors, track the diffusion of institutional innovations,

and assess how international organizations shape national coherence through benchmarking, finance, and knowledge exchange (von Wolff et al. 2022).

6 | Discussion

The research uses a Bibliometric–Systematic Literature Review (B-SLR) to synthesize the scholarly discourse on policy interventions aligned with the United Nations SDGs. Using quantitative bibliometric mapping and qualitative thematic analysis, the study identifies the following four main streams: the environmental–economic policy nexus, public health and social policy, resource governance and ecosystem resilience, and integrated governance for SDG policy implementation. These streams are interlinked in the design of policy interventions for sustainability. For interpretive clarity, the streams correspond to core SDGs as follows: Stream 1 links mainly to SDG 7, 8, 9, 12, and 13, Stream 2 to SDG 3, 4, 5, and 10, Stream 3 to SDG 2, 6, 7, 13, 14, and 15, and Stream 4 to SDG 16 and 17. All interpretations are grounded in the PRISMA-validated corpus of 1862 peer-reviewed articles identified through a structured, two-track search and screening process.

6.1 | Theoretical Contributions and Emerging Insights

A key contribution of the study is the emphasis on interconnectivity among governance mechanisms, institutional capacity, and stakeholder collaboration as conditions that shape SDG-oriented policy interventions. The bibliometric patterns indicate a shift from viewing interventions as narrow regulatory instruments to understanding them as governance mechanisms situated in complex institutional contexts. This aligns with Governance Theory, which highlights the roles of multiple actors and institutions in policy design and implementation.

At the same time, theoretical and empirical gaps remain. The integration of Systems Thinking and Circular Economy principles is uneven across the literature. Although the environmental–economic nexus shows growing attention to green finance and renewable energy (Elia et al. 2020; Bechtsis et al. 2022), there is still limited theorization that connects these strategies to regenerative and circular models. Future work can examine how circular principles reconfigure resource governance, value creation, and business models within policy design.

Institutional Theory has often been applied to compliance-oriented behavior but less to institutional logics operating across governance tiers, especially in low-income and emerging contexts (Pham-Truffert et al. 2020; Breuer et al. 2023). The literature remains concentrated in developed settings, with fewer studies on informal governance, indigenous institutions, and local epistemologies that can drive policy innovation in the Global South.

Stakeholder engagement, central to Governance Theory, requires further theorization for multisector and multilevel networks. While policy coherence and cross-sector collaboration recur in SDG implementation frameworks (Van Zanten and Van Tulder 2021), concepts such as accountability ecosystems, stakeholder co-production, and meaningful participation merit deeper analysis.

Digital tools for governance, including data-informed assessment and distributed ledgers for transparency, appear in the literature but need stronger theoretical grounding within Institutional Theory or complementary perspectives. Treating technology as both an operational capability and a source of legitimacy and accountability could refine future analyses.

6.2 | Implications for Theory and Practice

The findings support the value of combining Governance Theory, Institutional Theory, Systems Thinking, and Circular Economy to understand policy interventions for sustainable development. This synthesis enables the analysis of interactions among actors, institutions, and systems that shape formulation and execution.

For practice, the results point to flexible and context-sensitive policy frameworks that support policy coherence, learning, and accountability. Policymakers can strengthen multilayered governance systems that enable stakeholder co-production, build institutional capacity, and use digital tools responsibly. For business and managerial decision-making, the results suggest aligning corporate strategy with policy pathways through transition roadmaps, disclosure and reporting consistency, internal governance for SDG target alignment, and participation in public–private partnerships where accountability and transparency are specified (Kumar et al. 2021). Industry associations can facilitate standard setting, capacity building, and knowledge sharing that complement government capabilities. Place-specific design remains essential. Policies that reflect local governance structures, cultures, norms, and socio-economic conditions are more likely to be legitimate and effective.

6.3 | Future Research Agenda

Environmental–economic policy nexus: Future research should examine how circular economy principles can be embedded in national and subnational policy mixes, identifying the institutional arrangements, regulatory alignment, and enforcement capacities that shape low-carbon transitions. This includes the interface between green finance instruments, credible disclosure, and policy incentives to reduce greenwashing risk and improve capital allocation to SDG-relevant projects (Elia et al. 2020; Bechtsis et al. 2022). Studies can assess how ecodesign mandates, waste and recycling regimes, and lifecycle reporting translate into sector-specific investment and innovation pathways under different governance conditions.

Public health, social equity, and human well-being: There is a need to analyze how informal governance and indigenous institutions contribute to health policy innovation in the Global South, including how legitimacy, trust, and community leadership shape implementation. Research should develop models of stakeholder co-production that specify accountability roles across levels of government and service providers, and evaluate

how digital tools can extend equitable access while protecting privacy and reducing digital divides (Pham-Truffert et al. 2020; Breuer et al. 2023). This implies comparative work on the design of social protection instruments and multisector coordination for education and health outcomes.

Resource governance, food security, and ecosystem resilience: Future work should design and evaluate participatory governance for the water–food–energy nexus that anticipates cross-sector spillovers and incorporates resilience metrics linked to ecosystem services. Particular attention is needed for mechanisms that support equitable transboundary cooperation, and for the governance conditions that enable scalable nature-based solutions under climate uncertainty (Reyers and Selig 2020; Louder et al. 2021). Mixed-method designs that connect ecological indicators with institutional diagnostics can clarify which policy mixes are most robust to shocks.

Integrated governance, policy coherence, and institutional effectiveness: Research should conceptualize digital governance tools within Institutional Theory to support monitoring, learning, and coordination. Comparative analyses can assess coherence mechanisms across countries and sectors, focusing on how inter-ministerial structures, coordination units, and cross-sector data platforms evolve over time. Hybrid theoretical models are needed to capture multistakeholder collaboration, including the role of corporate actors and public–private partnerships in SDG implementation (Van Zanten and Van Tulder 2021; Kaipainen and Aarikka-Stenroos 2022). Attention to political economy dynamics will help explain variation in the feasibility and durability of coherence reforms.

6.4 | Comparative Positioning

To contextualize the distinctiveness of this study, a comparative analysis with previous review papers is conducted, as shown in Table 1.

6.5 | Framework Contribution

This study proposes an integrated theoretical framework (Figure 8) that combines Governance Theory, Institutional Theory, Systems Thinking, and Circular Economy perspectives to inform policy interventions for sustainable development. Rather than treating theories in isolation, the framework considers their interdependent roles in shaping policy design, execution, and outcomes across governance levels. Governance Theory provides coordination structures for policy coherence and participation. Institutional Theory explains how formal rules, norms, and organizational capacity enable or constrain implementation across varied contexts. Systems Thinking recognizes interdependencies among SDG challenges and encourages adaptive, cross-sector approaches. Circular Economy emphasizes regenerative resource use and sustainable value creation that can inform policy design and evaluation.

The framework treats policy interventions as nonlinear and cross-sectoral, situated within broader institutional and governance ecosystems. Its value lies in organizing the dynamic

TABLE 1 | Comparative analysis with previous literature review studies.

Study	Focus area	Time frame	Key themes/variables	Methodology	Distinctiveness of current study
Allen et al. (2016)	Scenario modelling tools for SDG implementation	Not specified	National SDG planning, model integration, scenario analysis	Comparative analysis of modelling tools	Highlights the need for integrated models to support national SDG planning
Boar et al. (2020)	Sharing economy and sustainability	2013–2020	Sharing economy, sustainability, SDGs	Systematic literature review	Explores the relationship between the sharing economy and SDGs
Fu et al. (2024)	Government and public engagement in SDGs	Not specified	SDG priorities, stakeholder engagement, China	Data-driven comparative analysis	Assesses the attention given to SDGs by government and public stakeholders
Current Study	Policy interventions for sustainable development	**2016–2024**	Environmental–economic policy nexus, public health and social policy, resource governance, SDG policy implementation frameworks	Bibliometric–Systematic Literature Review (B-SLR)	Provides an integrated perspective linking governance mechanisms, institutional capacity, and stakeholder collaboration in SDG policy interventions

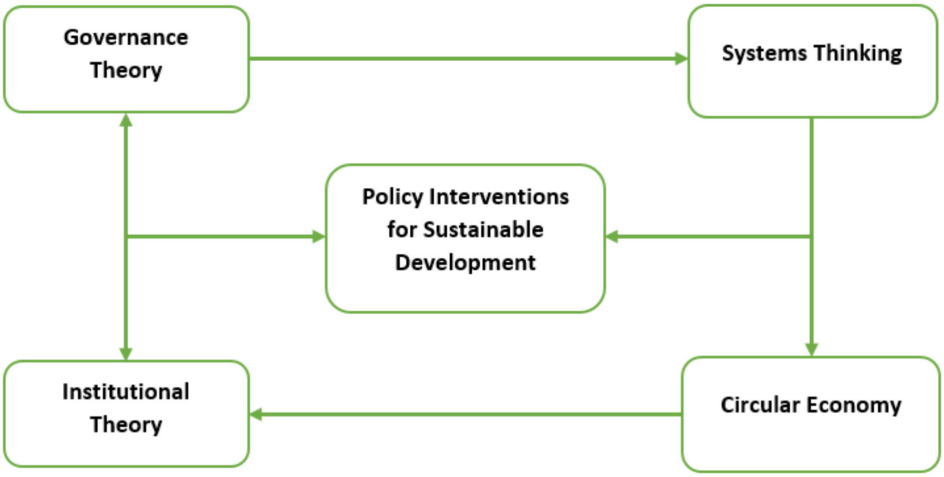

FIGURE 8 | Integrated theoretical framework; by author.

interactions among governance mechanisms, institutional capacity, stakeholder co-production, and policy coherence, offering a way to navigate SDG trade-offs and support transformative change. It also positions corporate actors and public–private partnerships as part of stakeholder co-production where roles, responsibilities, and accountability mechanisms are specified.

7 | Conclusions

This study contributes a structured synthesis of policy interventions for sustainable development using a Bibliometric–Systematic Literature Review methodology. Grounded in a PRISMA-guided, two-track search restricted to Title, Abstract, and Keywords and a validated corpus of 1862 peer-reviewed articles from 2016 to 2024, the analysis integrates insights from Governance Theory, Institutional Theory, Systems Thinking, and the Circular Economy. It shows that policymaking in pursuit of the SDGs requires moving beyond narrow regulatory approaches toward dynamic, multilevel governance ecosystems characterized by institutional capacity, stakeholder co-production, and adaptive policy coherence.

The findings advance literature by framing policy interventions as interrelated processes shaped by governance mechanisms, institutional capabilities, and participatory engagement, rather than as isolated instruments. This framework offers scholars and practitioners an interpretive tool for navigating complex trade-offs and coordination challenges in SDG governance. It also clarifies how public agencies, corporate actors, and civil society can configure public–private partnerships, disclosure practices, and learning-oriented coordination units to align managerial decision-making with policy pathways.

Several limitations warrant attention. Reliance on Scopus as the primary database, even when cross-validated with Web of Science, may bias coverage toward English-language and Global North publications and undercount the most recent year because of indexing lag. Restricting inclusion to peer-reviewed journal articles is an imperfect proxy for quality and may omit relevant practice-oriented or locally produced evidence. Bibliometric mapping captures intellectual structures and thematic trends but cannot fully represent lived practices, political dynamics, and informal governance processes.

Future research can address these constraints through mixed-method designs that connect bibliometric evidence with qualitative case studies, ethnographic inquiry, and comparative policy analysis. Greater attention to informal institutions, indigenous governance systems, and Global South contexts will enrich understanding of policy diversity. Further work on the roles of corporate actors, public–private partnerships, and digital governance tools can clarify how business strategy, institutional frameworks, and accountability interact in practice. Comparative analyses of coherence mechanisms across sectors and countries, and studies that integrate circular economy logics into policy mixes, would extend and refine the proposed framework.

Ultimately, the study underscores that sustainable development policy interventions must remain complex, adaptive, and integrative to support resilient governance responses in an uncertain global environment. For policymakers, this means designing mechanisms that build coherence across fragmented domains and enable learning. For managers and practitioners, it highlights the importance of aligning organizational strategies and reporting practices with policy priorities and strengthening accountability through collaborative platforms. For scholars, it opens pathways for theory building at the intersections of governance, institutions, systems thinking, and circular economy perspectives.

Conflicts of Interest

The authors declare no potential conflicts of interest.

Data Availability Statement

The data will be made available on request.

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