



Policy Formulation, Implementation, and Assessment: A Critical and Integrative Review

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ABSTRACT: Public policy is a foundational mechanism through which governments address societal challenges, allocate resources, and pursue collective goals. This review critically synthesizes contemporary theoretical and empirical literature (2018–2025) on three interconnected stages of the policy process: formulation, implementation, and assessment. Unlike prior reviews that treat these stages separately or draw predominantly on health and environmental policy, this review integrates all three stages within a single conceptual framework linking contextual factors, actor behavior, and feedback mechanisms to policy outcomes, and it extends the evidentiary base to education, social welfare, and digital governance. We compare major theoretical frameworks, including the multiple streams model, advocacy coalition framework, punctuated equilibrium theory, street-level bureaucracy theory, and the Consolidated Framework for Implementation Research, not merely by describing them but by critically appraising their respective strengths, limitations, and contextual applicability. Policy formulation involves agenda setting, problem definition, and the structured design of interventions, increasingly shaped by stakeholder participation and evidence integration. Implementation translates policy intent into action through top-down, bottom-up, and hybrid governance mechanisms, with organizational capacity, bureaucratic discretion, and intergovernmental coordination playing decisive roles across sectors. Assessment encompasses process, outcome, impact, and economic evaluation methods that determine whether policies achieve intended effects, generate unintended consequences, or require redesign. We give particular attention to equity, moving beyond a general call for inclusion to describe practical indicators and tools including equity-focused impact assessments and disaggregated outcome monitoring, that can be embedded at each stage of the cycle. Tables and figures synthesize comparative data on evaluation frameworks, implementation determinants, and outcome metrics, alongside a new integrative conceptual model linking formulation, implementation, assessment, feedback loops, and contextual moderators. This review concludes by identifying specific priorities for future research, including artificial intelligence and real-time policy analytics, adaptive governance architectures, and policy evaluation capacity in low- and middle-income countries.

KEYWORDS: Public policy; policy formulation; policy implementation; policy assessment; evidence-based policymaking; adaptive governance

1. Introduction

Public administration constitutes the institutional backbone through which state authority is translated into tangible outcomes for citizens [1]. In developing countries across South Asia, the quality of administrative systems has been identified as a critical determinant of socioeconomic development, poverty reduction, and democratic consolidation [2, 3]. Bangladesh, despite recording one of the world's most remarkable economic transformation stories, averaging 6.5% annual GDP growth for over a decade, continues to grapple with chronic governance deficiencies that constrain the developmental aspirations of its 170 million citizens [4, 5]. The post-independence administrative architecture inherited by Bangladesh in 1971 was characterised by an entrenched Weberian bureaucracy that privileged procedural compliance over service delivery responsiveness [6]. Successive governments have sought to reform this apparatus through decentralisation policies, digitalisation agendas, anti-corruption legislation, and civil service restructuring, yet independent evaluations suggest that outcomes have been inconsistent and often below stated targets [7, 8].

The academic literature on Bangladeshi public administration has evolved considerably since the seminal works of the 1980s and 1990s, yet significant lacunae remain. Most extant studies concentrate either on macro-level institutional analysis [9, 10] or on narrow sector-specific assessments [11, 12], leaving a gap in comprehensive, empirically grounded evaluations that integrate citizen experience with expert institutional appraisal. Furthermore, the rapid digital transformation underway through the Digital Bangladesh initiative, now succeeded by Smart Bangladesh Vision 2041, has introduced new variables into the governance equation that have not been systematically studied across administrative divisions [13, 14]. The intersection of e-governance adoption, citizen satisfaction, and bureaucratic reform outcomes remains underexplored in the context of Bangladesh's administrative divisions, particularly with respect to rural-urban disparities and the differential capacities of district and upazila-level administrations [15].

Anti-corruption governance constitutes another dimension that has attracted scholarly attention but demands updated empirical scrutiny. The Anti-Corruption Commission (ACC), established under the ACC Act 2004 and strengthened by subsequent legislative amendments, has recorded notable enforcement actions; however, perceptual indicators of corruption in public service delivery continue to rank Bangladesh in the lower quartiles of global transparency indices [16, 17]. The interplay between formal institutional reforms and informal governance norms including patronage networks, political clientelism, and cadre-based bureaucratic loyalties, shapes the effective implementation of anti-corruption measures in ways that aggregate indices fail to capture [18]. Understanding these dynamics requires qualitative depth alongside quantitative breadth, a methodological combination that this study uniquely provides.

The Right to Information (RTI) Act 2009 represents Bangladesh's commitment to transparency and participatory governance, yet utilisation rates remain disappointingly low, particularly among rural citizens who lack awareness or face structural barriers to information access [19]. Decentralisation, intended to bring governance closer to the citizenry through empowered local government bodies, union parishads, upazila parishads, and city corporations, has been impeded by fiscal centralisation, staffing deficits, and the limited devolution of decision-making authority [20, 21]. These structural constraints produce service delivery

outcomes that diverge substantially across regions and population groups, generating inequalities that aggregate national statistics tend to obscure [22].

The aim of this study was to comprehensively evaluate the effectiveness of public administration and governance in Bangladesh by examining citizens' perceptions of public service quality, identifying key governance challenges across administrative divisions, assessing the effectiveness of major public sector reform initiatives including e-governance, decentralization, and anti-corruption measures, and developing evidence-based reform strategies to strengthen governance performance and public service delivery. Using a mixed-methods design, the study provides a multidimensional assessment of Bangladeshi public administration during a critical period of institutional transition. The findings are situated within the broader comparative public administration literature on developing democracies, contributing theoretical insights into the relationships among institutional reform, governance quality, and public service delivery effectiveness [23, 24].

2. Methodology

This is a narrative, critically synthesized review rather than a systematic review or meta-analysis; the objective is conceptual integration and critical comparison across the three stages of the policy cycle rather than exhaustive enumeration of every published study. Nonetheless, we adopted a structured and transparent search and selection process to enhance transparency and support reproducibility, consistent with recommendations for rigorous narrative and critical reviews in the social sciences.

2.1. Search Strategy and Sources.

We searched Scopus, Web of Science, PubMed, and Google Scholar for peer-reviewed journal articles, working papers from major international organizations (e.g., the Organisation for Economic Co-operation and Development, the World Bank, and the World Health Organization), and book chapters published between January 2018 and mid-2025. Search terms combined core concepts using Boolean operators, including combinations of “policy formulation,” “policy implementation,” “policy assessment” OR “policy evaluation,” “policy cycle,” “policy process theory,” “street-level bureaucracy,” “advocacy coalition,” “multiple streams,” “implementation science,” “equity” AND “policy,” “artificial intelligence” AND “public policy,” and “adaptive governance.” To capture cross-sectoral evidence, sector-specific terms (“education policy,” “social welfare policy,” “social protection,” “digital governance,” “e-government”) were combined with the process-stage terms above.

2.2. Inclusion and Exclusion Criteria.

Records were included if they (a) addressed at least one stage of the policy cycle (formulation, implementation, or assessment) in a public-sector context; (b) were published in English between 2018 and 2025, with foundational theoretical works predating this window retained where they remain the primary citation for a framework, and (c) reported empirical findings, proposed or critiqued a theoretical framework, or synthesized prior literature. Records were excluded if they addressed exclusively private-sector management, were not available in full text, or did not engage substantively with policy process theory or empirical policy evaluation. Titles and abstracts were first screened for topical relevance; full texts of potentially eligible

records were then reviewed to confirm inclusion. Because this is a critical narrative rather than a systematic review, formal inter-rater reliability statistics and a PRISMA flow diagram are not reported; however, the search terms, databases, and inclusion criteria above are provided so that the search can be replicated and extended.

2.3. Approach to Critical Synthesis.

For each of the three policy stages, we identified the dominant theoretical frameworks in the literature and organized the synthesis around three questions: (i) what does the framework claim about the mechanisms driving policy formulation, implementation, or assessment; (ii) what are its documented strengths and limitations, including the empirical contexts in which it has been supported or challenged; and (iii) in which political, institutional, or sectoral contexts is the framework most and least applicable. This comparative approach is intended to move the review beyond a descriptive inventory of theories toward an appraisal that can guide framework selection in future research and practice. Figure 1 presents the integrative conceptual framework that organizes this review. It situates formulation, implementation, and assessment as interconnected rather than strictly sequential stages, linked by explicit feedback loops through which assessment findings inform subsequent formulation and implementation decisions. Contextual factors, including institutional capacity, political economy, resource availability, and equity considerations, are modeled as cross-cutting moderators that shape processes and outcomes at every stage, rather than as a background condition relevant only to implementation. This framework is used throughout the review to organize the discussion of cross-sectoral evidence and to identify where existing literature has, and has not, addressed the interactions among stages.

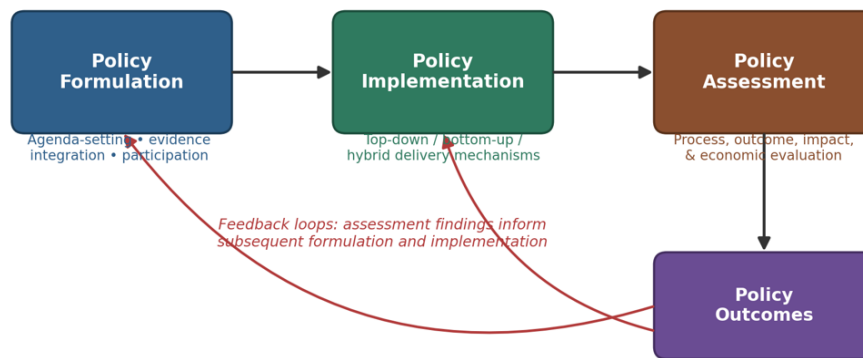


Figure 1. Integrative Conceptual Framework Linking Policy Formulation, Implementation, Assessment, Feedback Mechanisms, Contextual Factors, and Policy Outcomes.

3. Policy Formulation

3.1. Theoretical Frameworks in Policy Formulation.

Policy formulation involves the structured development of proposed courses of action to address identified public problems. Several theoretical frameworks guide our understanding of this stage. Kingdon's multiple streams model posits that policy change occurs when three relatively independent streams, problems, policies, and politics, converge at a "policy window," typically opened by focusing events or political transitions [3]. This framework explains why some well-documented problems receive policy attention while others languish, and why technically sound proposals may fail to advance absent favorable political conditions.

The advocacy coalition framework (ACF), developed by Sabatier and Jenkins-Smith, provides an alternative account emphasizing the role of competing coalitions of actors who share core policy beliefs and mobilize to influence policy design [4]. According to the ACF, policy learning occurs within coalitions and occasionally across them, particularly in the aftermath of external shocks. A third influential perspective, the punctuated equilibrium theory, explains long periods of policy stability punctuated by rapid, dramatic change, attributing these dynamics to the interplay between agenda-setting processes and institutional friction [10]. Table 1 compares these foundational frameworks along key dimensions, including the level of analysis, primary actors, and temporal scope.

Table 1. Comparison of Major Theoretical Frameworks in Policy Formulation [3, 4, 10].

Framework	Primary Focus	Key Actors	Temporal Scope	Main Mechanism
Multiple Streams Model	Agenda-setting	Entrepreneurs, politicians	Short-term windows	Stream convergence at policy windows
Advocacy Coalition Framework	Belief systems & learning	Coalitions, experts	Long-term (10+ yrs)	Coalition competition & policy-oriented learning
Punctuated Equilibrium Theory	Stability vs. change	Institutions, media	Variable, episodic	Disproportionate information processing
Institutional Analysis and Development	Institutional rules	Rule-users, administrators	Long-term	Rule configuration and collective action

Table 1 catalogues these frameworks along descriptive dimensions, but selecting among them requires an appraisal of their comparative strengths, limitations, and the contexts in which each offers the most analytical leverage. Table 2 provides this critical synthesis. The multiple streams model is most useful for explaining why and when an issue reaches the formal agenda, but it says comparatively little about what happens once a policy window closes, and its emphasis on contingent, entrepreneur-driven convergence limits its predictive power in more routinized or technocratic policy settings.

Table 2. Critical Synthesis of Major Policy Process Frameworks.

Framework/Approach	Key Strength	Main Limitation	Best Application	References
Multiple Streams Model	Explains agenda setting, policy windows, and policy entrepreneurship	Limited for implementation and difficult to predict policy windows	Crisis-driven and rapidly changing policy issues	[3, 21]
Advocacy Coalition Framework	Explains policy learning, coalition dynamics, and long-term policy change	Requires extensive longitudinal data; less suitable for emerging issues	Long-term, politically contested policy domains	[4, 22]
Punctuated Equilibrium Theory	Explains long periods of stability followed by major policy shifts	Focuses on macro-level change with limited implementation guidance	Comparative analysis of policy agendas and budget change	[5]
Institutional Analysis and Development	Examines institutional rules, governance arrangements, and collective action	Less applicable to rapidly changing political environments	Natural resource governance and other collective-action problems	[10]
Street-Level Bureaucracy / CFIR	Explains implementation through frontline discretion and organizational determinants	Street-Level Bureaucracy underemphasizes policy design; CFIR can be complex to operationalize	Public service implementation in health, education, and social services	[3, 21, 22]

The advocacy coalition framework offers stronger purchase on long-term belief change and coalition dynamics in contested policy subsystems, yet its data demands, typically requiring observation across a decade or more, make it difficult to apply to fast-moving or novel policy domains such as digital regulation. Punctuated equilibrium theory usefully explains the disproportionate, bursty pattern of policy change observed across many national budgetary and legislative datasets, but it is a macro-level, pattern-descriptive account that offers limited guidance for designing or managing a specific formulation process. Institutional Analysis and Development is best suited to settings with clearly bounded rule systems and repeated collective-action problems, such as natural resource governance, but travels less well to policy areas driven primarily by electoral or media dynamics. No single framework is adequate across all contexts; the appropriate choice depends on the time horizon of the analysis, the degree of institutional formalization in the policy subsystem, and whether the analytical interest lies in explaining agenda access, belief change, punctuated shifts, or rule-governed collective action.

3.2. Stakeholder Participation and Deliberative Processes.

The quality of policy formulation is substantially shaped by who participates in deliberative processes. Participatory approaches have been increasingly valorized in both democratic theory and governance practice, with the argument that broader inclusion improves both the epistemic quality and the political legitimacy of policy outputs [11]. Empirical evidence from meta-analyses confirms that participation can enhance the quality of governance outputs, particularly when power delegation to participants is substantial; however, effects are heterogeneous and contingent on process design and contextual factors [12]. Research on the European Union's supranational policymaking has examined how public participation in consultations affects stakeholder support for policy proposals formulated in bureaucratic arenas [9]. Findings indicate that procedural characteristics of participation including the diversity of actors consulted and the transparency of the process, significantly moderate whether participation translates into stakeholder buy-in. In health policy specifically, community and stakeholder engagement has been shown to improve the alignment of interventions with local needs and to support universal health coverage goals [13]. Deliberative processes that integrate lay knowledge alongside technical expertise may also surface distributional concerns and unintended consequences that narrowly technocratic formulation processes tend to miss [14].

3.3. Evidence Integration in Policy Design.

The integration of research evidence into policy formulation is widely endorsed as a means of improving policy quality and accountability, yet the translation from evidence to policy design remains consistently partial and contested [15]. Evidence-informed policymaking recognizes that policy decisions should draw on the best available evidence from research, while explicitly accounting for values, feasibility, and political context [16]. This framing, preferring "informed" over "based", acknowledges the irreducibly political character of policy design while sustaining a normative commitment to research utilization. Barriers to evidence use in formulation include cognitive biases among policymakers, the dominance of advocacy coalitions that selectively mobilize evidence, time pressures, and the contested nature of evidence in politically charged domains [17]. Institutional arrangements matter considerably: bureaucracies with dedicated analytical units and strong links to research communities tend to

generate more evidence-informed policies than those without such capacity [18]. A synthesis of organizational factors influencing evidence uptake highlights the importance of relational trust between researchers and policymakers and of bridging organizations that translate research findings into actionable recommendations [15].

4. Policy Implementation

4.1. Theoretical Approaches to Implementation.

Policy implementation—the process of translating formally adopted policy decisions into practice—has been studied through several competing theoretical lenses. Top-down approaches emphasize hierarchical control, unambiguous legal mandates, and clear chains of command as prerequisites for faithful implementation [19]. Influential early work identified factors such as the clarity of statutory objectives, the availability of adequate resources, and the commitment of implementing officials as predictors of implementation success. These models are well-suited to analyzing regulatory policies with high formalization and limited discretion, but they have been criticized for treating implementers as passive agents and underestimating ground-level complexity [20]. Bottom-up approaches, associated with the street-level bureaucracy tradition developed by Lipsky, highlight that effective implementation is ultimately determined by the discretionary decisions of frontline workers who interact directly with policy recipients [21]. Street-level bureaucrats including teachers, social workers, police officers, and health workers, routinely adapt, reinterpret, and sometimes subvert policy mandates in response to resource constraints, competing organizational demands, and professional judgment [22]. This perspective shifts the analytical lens from central authorities to the front lines of public service delivery, revealing that implementation outcomes reflect negotiated settlements between policy design and street-level agency. Hybrid or third-generation implementation frameworks attempt to integrate top-down and bottom-up insights, emphasizing the importance of inter-organizational networks, institutional context, and policy feedback loops [1]. The Consolidated Framework for Implementation Research (CFIR) provides a multi-level synthesis of implementation determinants spanning outer context, inner setting, individual characteristics, and intervention characteristics, offering practical guidance for designing implementation support strategies [6].

4.2. Implementation Determinants and Barriers.

The empirical literature on implementation determinants is extensive and spans multiple policy domains. In health policy, systematic reviews have documented a wide range of factors influencing implementation outcomes, including organizational culture, leadership support, resource adequacy, policy fit with existing workflows, and the clarity of implementation guidance [5]. A systematic review [7] identified that quantitative measures of implementation science most commonly assessed acceptability, feasibility, appropriateness, and compliance, with organizational culture and implementation climate emerging as consistently significant internal-setting determinants. External context factors—including legislative frameworks, funding mechanisms, and inter-governmental relationships—also substantially shape implementation trajectories [19]. Multi-level governance structures, in which implementation authority is distributed across national, subnational, and local tiers, introduce coordination costs and increase the probability of variable compliance and adaptation [20]. In environmental

policy, research has shown that participatory governance approaches can strengthen implementation commitment by cultivating stakeholder ownership of outcomes [12]. Table 3 summarizes key implementation determinants identified across the literature, categorized by level of analysis.

Table 3. Key Implementation Determinants by Level of Analysis.

Level	Key Determinants	Typical Application	References
Macro (System)	Political commitment, legal framework, funding, intergovernmental coordination	National governance, regulatory compliance, and public policy implementation	[7, 20]
Meso (Organization)	Leadership, organizational culture, implementation climate, resources, communication	Organizational change and institutional capacity	[6, 7]
Micro (Individual)	Professional beliefs, discretion, motivation, competence, role clarity	Frontline service delivery and bureaucratic behavior	[21, 22]
Intervention	Policy clarity, design quality, evidence base, compatibility with existing practice	Evidence-informed policy implementation and program adoption	[5, 16]

4.3. Implementation Fidelity, Adaptation, and Sustainability.

A key challenge in policy implementation is balancing implementation fidelity with adaptive flexibility. While fidelity emphasizes adherence to the original policy design, adaptive approaches acknowledge the need to tailor interventions to local contexts [6, 23]. The concept of structured flexibility reconciles these perspectives by preserving core components while allowing adaptation of non-essential elements. Sustainability further depends on leadership, organizational readiness, institutionalization, stable funding, and local capacity [24]. Evidence from a meta-review also identified leadership engagement and organizational readiness as the most consistent determinants of successful implementation across adoption and long-term delivery [25]. These relationships are integrated within the policy cycle presented in Figure 2, highlighting the iterative connections among formulation, implementation, and assessment.

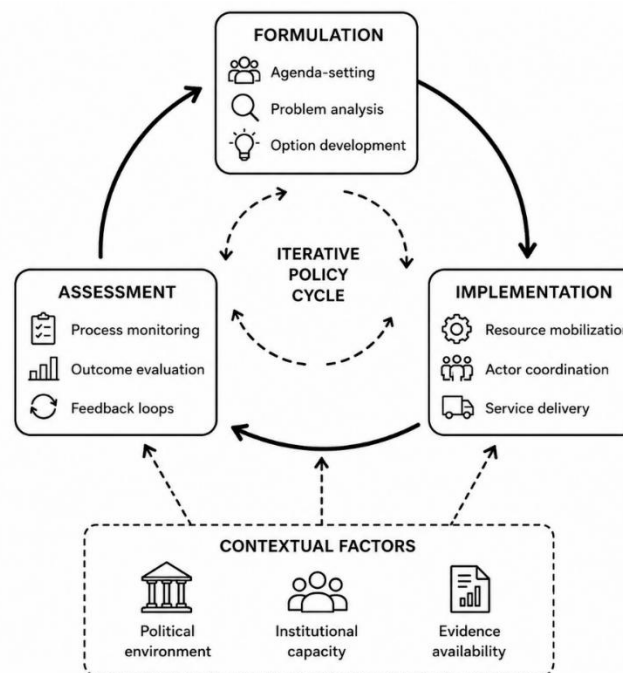


Figure 2. Conceptual Model of the Policy Cycle Linking Formulation, Implementation, and Assessment Stages.

4.4. *Cross-Sectoral Evidence: Education, Social Welfare, and Digital Governance.*

Evidence from education policy illustrates both the generalizability and the limits of the determinants identified in Table 3. A widely cited synthesis of education policy implementation found that success depends on four clusters of factors, smart policy design, inclusive stakeholder engagement, a conducive institutional context, and a coherent implementation strategy, that closely parallel the macro-, meso-, and micro-level determinants identified in health-sector implementation research, suggesting meaningful cross-sectoral convergence in the underlying mechanisms of implementation [41]. At the same time, education systems present distinctive challenges: teachers exercise substantial classroom-level discretion in ways that closely mirror street-level bureaucracy dynamics [21], and reforms frequently fail not because of resource constraints alone but because of insufficient attention to how new policies interact with deeply embedded professional norms and existing curricular routines.

Social welfare policy offers a further test of cross-sectoral generalizability, particularly around targeting and conditionality design choices that have no direct analogue in health or environmental policy. A critical review of conditional cash transfer programs—now implemented in dozens of low- and middle-income countries—found that while conditionalities can improve take-up of complementary services such as schooling and health checks, they also risk excluding the most vulnerable households that struggle to meet compliance requirements, illustrating a formulation-stage design trade-off between programmatic ambition and equitable reach that is distinct from the fidelity-versus-adaptation tension emphasized in health implementation science [42]. Targeting mechanisms, benefit levels, and conditionality structures function as formulation-stage design parameters whose implementation consequences are only fully visible once delivery systems interact with local administrative capacity and beneficiary circumstances, reinforcing the case for treating formulation and implementation as interdependent rather than sequential stages.

Digital governance constitutes a third, rapidly growing sector in which policy formulation, implementation, and assessment are being reshaped simultaneously by the technologies they seek to govern. National and supranational efforts to regulate artificial intelligence illustrate a distinctive implementation challenge: because the technology and its applications evolve faster than conventional legislative and rule-making cycles, governments have increasingly turned to principles-based, adaptive, and co-regulatory instruments rather than the prescriptive statutory mandates assumed by classical top-down implementation models [43]. This has direct implications for the frameworks reviewed above: hierarchical, clarity-of-mandate models of implementation travel poorly to a domain in which the object of regulation is a moving target, while frameworks that emphasize learning, discretion, and iterative adjustment such as adaptive governance, offer more promising analytical purchase.

Taken together, this cross-sectoral evidence suggests that the core implementation determinants synthesized in Table 3, political will, organizational capacity, frontline discretion, and design–context fit, generalize reasonably well across health, education, social welfare, and digital governance, but their relative weight and the appropriate implementation model shift with sectoral characteristics. Sectors with high frontline discretion and direct citizen contact (education, social services) place a premium on street-level and hybrid implementation models, whereas fast-evolving technical domains (digital governance, artificial intelligence regulation) increasingly require adaptive, learning-oriented approaches that sit uneasily with classical top-down or even street-level frameworks developed in the 1980s and 1990s. This has direct

implications for policy formulation as well: designers in high-discretion sectors should build in flexibility for local adaptation from the outset, while designers in fast-evolving technical sectors should anticipate the need for iterative revision and build review and sunset mechanisms into the original policy design.

5. Policy Assessment

5.1. Frameworks and Typologies of Policy Evaluation.

Policy assessment, encompassing monitoring, evaluation, and review activities, serves multiple functions: supporting rational policy improvement, ensuring democratic accountability, and facilitating organizational learning [26]. The methodological repertoire for evaluation has expanded substantially, ranging from quasi-experimental impact evaluations and randomized controlled trials to participatory evaluations, theory-based approaches, and realist synthesis [27]. The choice of evaluation method is shaped by the evaluation question, the available data, the stage of policy development, and the intended use of findings. Process evaluations examine how well policies are being implemented according to design—assessing coverage, dosage, fidelity, and reach [28]. Outcome evaluations examine whether policies are achieving intended changes in the target population or system. Impact evaluations go further, attributing observed changes to the policy intervention through counterfactual analysis [8]. Finally, economic evaluations including cost-effectiveness and cost-benefit analysis, assess the efficiency of policy investments relative to alternatives. Table 4 summarizes these evaluation typologies, their primary questions, methods, and typical data sources.

Table 4. Typology of Policy Evaluation Approaches.

Evaluation Type	Primary Purpose	Common Methods	References
Process Evaluation	Assess implementation fidelity and policy delivery	Observation, interviews, fidelity assessment, document review	[8, 26]
Outcome Evaluation	Measure whether intended outcomes are achieved	Surveys, pre–post analysis, administrative data	[8, 27]
Impact Evaluation	Determine whether observed changes are attributable to the policy	Randomized controlled trials (RCT), difference-in-differences (DID), propensity score matching (PSM), interrupted time series (ITS), regression discontinuity design (RDD)	[27, 28]
Economic Evaluation	Assess costs relative to policy benefits and outcomes	Cost–benefit analysis (CBA), cost-effectiveness analysis (CEA), multi-criteria analysis	[8, 26, 28]

5.2. Measurement of Implementation and Outcome Indicators.

Rigorous policy assessment depends on the availability and quality of measurement instruments for both implementation and outcome constructs. Implementation science has made significant strides in developing and validating quantitative measures of implementation outcomes—including acceptability, adoption, appropriateness, compliance/fidelity, feasibility, penetration, sustainability, and costs [7]. A systematic review of health policy implementation measures found that while pragmatic quality was generally adequate, psychometric validation was frequently incomplete, and measures of outer-context implementation determinants were particularly underdeveloped [7]. Performance measurement frameworks in public administration have similarly evolved to capture multi-dimensional policy outcomes beyond simple output counts [29]. Balanced scorecard approaches, logic model-based indicator systems, and theory-of-change frameworks have been adapted for public-sector contexts to

ensure that measured indicators align with underlying program theories. The proliferation of administrative data including electronic health records, tax data, education registers, and social protection databases, has expanded the empirical basis for evaluation, though it also raises concerns about data quality, coverage, and the risk of measuring only what is administratively convenient [30]. As illustrated in Figure 3, the assessment of policy implementation requires systematic measurement of key implementation outcomes such as acceptability, adoption, fidelity, feasibility, penetration, sustainability, and cost, alongside corresponding outcome indicators to ensure comprehensive evaluation of policy effectiveness.

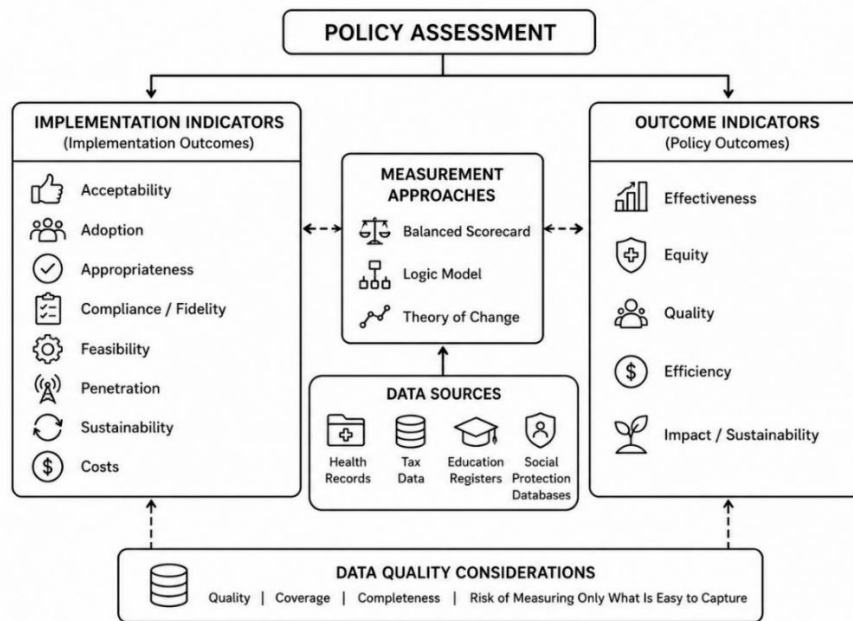


Figure 3. Conceptual framework of measurement domains for implementation and outcome indicators in policy assessment.

5.3. Utilization of Evaluation Findings.

The utilization of evaluation findings remains a central concern in both the academic and practitioner literature [31]. Research distinguishes between instrumental use (direct application of findings to specific decisions), conceptual use (gradual enlightenment of thinking without direct action), and symbolic or legitimating use (citing evaluation results to justify pre-formed conclusions) [26]. Evidence suggests that direct instrumental use of evaluation findings is less common than often assumed, with political dynamics, organizational culture, timing, and stakeholder relationships significantly mediating the pathway from evidence to decision [32]. The institutional design of evaluation systems also shapes utilization. Internal evaluations, conducted by the implementing agency, may suffer from conflicts of interest but benefit from closer proximity to decision-makers; external evaluations may achieve greater methodological rigor and independence but face challenges of relevance and timing [33]. Research on international organizations has found that variation in institutional arrangements particularly the independence of evaluation units and the transparency of reporting, substantially influences whether evaluations produce credible and actionable findings [34]. Commissioners, evaluators, and policymakers thus need to invest in evaluation use as a deliberate strategy, attending to both technical quality and communicative effectiveness.

6. Challenges and Future Directions

6.1. *Persistent Challenges in the Policy Cycle.*

Despite decades of scholarship and institutional investment, several persistent challenges continue to undermine policy cycle effectiveness. The implementation gap—the disparity between policy intentions and on-the-ground realities—remains a defining feature of public governance globally [35]. Studies across diverse contexts consistently document gaps in coverage, fidelity, and equity of implementation, attributable to mismatches between policy design and implementation context, inadequate resources, low bureaucratic capacity, and political interference [19, 20]. The challenge is amplified in multi-level governance systems where policy mandates must be transposed and adapted across multiple jurisdictional tiers. Equity remains an underaddressed dimension of both implementation and assessment. Policies that achieve aggregate target metrics may simultaneously reproduce or deepen inequalities in outcomes across gender, socioeconomic, ethnic, or geographic lines [36]. Evaluation frameworks have been slow to adopt distributional analysis as a standard component, and data systems frequently lack the granularity required to identify differential impacts across population subgroups. Political economy pressures including short electoral cycles, bureaucratic risk aversion, and the interests of organized constituencies, further constrain the scope and independence of policy assessment [26].

6.2. *Operationalizing Equity: Practical Methods and Indicators.*

Equity remains an underaddressed dimension of both implementation and assessment. Moving from diagnosis to practice, a growing set of tools now provides concrete methods for embedding equity considerations at each stage of the policy cycle rather than treating it as a post hoc consideration. At the formulation stage, equity-focused impact assessment tools prompt policy designers to identify, before adoption, which population subgroups are likely to be differentially affected by a proposed policy and to specify mitigating design features in advance; a recent realist evaluation of one such tool used by an Australian local government found that structured equity impact assessments led to concrete design changes, including more diverse decision-making panels and targeted outreach to under-represented communities, when supported by organizational leadership and adequate implementation resources [44]. At the implementation stage, embedding disaggregated monitoring by gender, income, ethnicity, disability status, and geography, into routine administrative data collection allows implementers to detect differential access or uptake while a program is still underway, rather than discovering distributional problems only at the point of final evaluation [36]. At the assessment stage, evaluation terms of reference can explicitly require subgroup-disaggregated outcome analysis and the reporting of equity metrics such as the ratio of outcomes between the most and least advantaged quintiles, alongside aggregate effect sizes, shifting equity from a discretionary addendum to a standard evaluation output.

Table 5 summarizes practical indicators and methods that can be embedded at each stage. These tools share three features that make them more likely to be adopted and sustained: they are structured (offering step-by-step prompts rather than open-ended guidance), they specify accountable ownership (identifying who is responsible for acting on findings), and they are resourced (backed by dedicated staff time or budget rather than treated as an unfunded

mandate). Where these conditions are absent, evidence suggests that equity tools tend to generate documentation without corresponding changes in policy design or delivery [44].

Table 5. Practical Indicators and Methods for Incorporating Equity into Policy Formulation, Implementation, and Evaluation.

Policy Stage	Practical Equity Indicator(s)	Method / Tool
Formulation	Equity impact screening; distributional analysis of proposed beneficiaries and costs	Structured pre-adoption checklist requiring identification of differentially affected subgroups and mitigating design features
Implementation	Disaggregated administrative monitoring (gender, income, ethnicity, disability, geography, locality)	Routine collection and review of subgroup-level uptake, access, and service-quality indicators during delivery
Assessment	Outcome gap ratios; equity-weighted cost-effectiveness analysis; participatory/community-validated indicators	Evaluation terms of reference requiring subgroup-disaggregated outcome reporting alongside aggregate effect sizes
Cross-cutting	Accountable ownership and dedicated resourcing for equity tools	Named responsibility for acting on equity findings and dedicated budget/staff time, rather than an unfunded mandate

Note. Synthesized from [36, 44] and related equity impact assessment literature.

6.3. Digital Governance, AI, and Crisis Resilience.

Digital technologies are reshaping all three stages of the policy cycle. In formulation, big data analytics, machine learning, and behavioral insights have expanded the evidence base available to policymakers and enabled more granular targeting of interventions [37]. Digital consultation platforms have lowered barriers to participation, although concerns about representativeness, data privacy, and the manipulation of online deliberation persist. In implementation, digital infrastructure including e-governance platforms, automated benefit systems, and digital identity frameworks, has transformed service delivery in both high- and middle-income countries, with implications for equity of access and administrative efficiency.

For policy assessment, administrative data linked across systems offer unprecedented opportunities for real-time monitoring and rigorous impact evaluation at scale [38]. Natural experiments exploiting digital policy rollouts, quasi-experimental designs leveraging administrative registries, and machine learning methods for causal inference are expanding the methodological frontier. However, the availability of data does not automatically translate into evaluation capacity; analytical expertise, data governance frameworks, and institutional incentives for evidence use remain critical enablers [15, 18].

Artificial intelligence is increasingly implicated in all three policy stages simultaneously, illustrating why governance of the technology itself has become a pressing policy issue. Governments are experimenting with AI-assisted policy analysis, including automated synthesis of public comments, machine learning-based forecasting of program uptake, and algorithmic triage of service requests, while also developing regulatory frameworks governing the use of these technologies in public agencies and regulated industries [43]. As summarized in Table 6, recent studies have increasingly examined AI and digital governance across both policy formulation and assessment stages, emphasizing that rapidly evolving technologies

require adaptive, principles-based governance rather than conventional top-down regulatory approaches [43]. This dual role, as both a policy tool and a policy object, distinguishes AI from earlier waves of e-government technology and has prompted calls for governance approaches that are iterative and continuously revised rather than fixed at the point of adoption.

Table 6. Summary of Selected Recent Empirical Studies on Policy Formulation, Implementation, and Assessment (2018–2025).

Policy Stage	Domain	Method	Key Finding	Reference
Formulation	Environment	Meta-analysis (SEM)	Participation positively affects governance output quality; power delegation is strongest predictor	[12]
Implementation	Health policy	Systematic review	Acceptability and feasibility are most measured outcomes; outer-context measures underdeveloped	[7]
Implementation	Health/lifestyle	Meta-review (CFIR)	Inner-setting characteristics (leadership, readiness) are most consistent determinants	[25]
Assessment	Health system	Best-fit framework synthesis	EBDM requires integrated framework spanning evidence appraisal, deliberation, and decision uptake	[39]
Assessment	Cross-sectoral	Systematic literature review	Efficiency analysis is widely used in policy evaluation; non-parametric DEA is dominant method	[40]
Implementation	Education	OECD literature review	Four determinant clusters (design, engagement, context, strategy) parallel health-sector implementation determinants	[41]
Formulation / Implementation	Social welfare	Critical review	Conditionality improves service take-up but risks excluding the most vulnerable; formulation-stage design trade-off	[42]
Formulation / Assessment	Digital governance / AI	Conceptual / comparative review	Fast-evolving technology favors adaptive, principles-based regulation over classical top-down mandates	[43]

Real-time policy analytics dashboards and administrative data pipelines, which provide continuous implementation and outcome indicators rather than periodic evaluations, extend this logic by shortening the feedback loop between implementation and policy adjustment illustrated in Figure 1. The COVID-19 pandemic further demonstrated that jurisdictions with established analytical capacity and flexible administrative data infrastructure were better able to revise policies in near real time, underscoring that policy resilience depends not only on crisis-response capability but also on sustained investments in monitoring, evaluation, and analytical infrastructure before crises occur [45].

6.4. Adaptive Governance and Continuous Learning.

A growing literature advocates for adaptive policy design, an approach that builds learning and adjustment mechanisms into policy architectures from the outset, rather than treating evaluation as a retrospective accountability exercise [10, 35]. Adaptive approaches emphasize iterative cycles of problem diagnosis, intervention, monitoring, and redesign, drawing on insights from complexity theory and organizational learning. This orientation is particularly relevant in rapidly changing contexts including climate adaptation, digital regulation, and

pandemic response, where the evidence base is uncertain and conditions evolve faster than traditional policy cycles can accommodate.

Achieving continuous learning within policy systems requires investment in monitoring infrastructure, analytical capacity, institutional cultures that reward learning from failure, and political arrangements that protect evaluation independence [29, 32]. It also requires more deliberate attention to equity in evaluation design, ensuring that distributional data are routinely collected, disaggregated, and acted upon. Participatory evaluation—involving beneficiaries and marginalized communities in assessment design and interpretation—offers a complementary strategy for improving both the validity and the social legitimacy of evidence generated [36]. As governments increasingly navigate complex, multi-causal challenges, the integration of adaptive evaluation principles into the architecture of governance will be a defining challenge for the field.

Adaptive, learning-oriented governance is especially difficult to sustain where the monitoring infrastructure it depends on is itself under-resourced, a condition that disproportionately affects low- and middle-income countries. Assessments of Sustainable Development Goal monitoring readiness have found that many low- and middle-income health and social systems still lack the routine data quality, workforce capacity, and civil registration coverage needed to support timely, disaggregated monitoring, constraining the feedback loop between assessment and redesign shown in Figure 1 well before questions of analytical sophistication or adaptive design arise [47]. Building adaptive governance capacity in these settings therefore requires parallel investment in foundational data and evaluation infrastructure, not only in the analytical or institutional-learning components emphasized in high-income-country literature; without that foundation, adaptive governance risks becoming an aspiration that only well-resourced systems can realize in practice.

6.5. Future Research Priorities.

Building on the challenges identified above, we highlight five specific priorities where further research would meaningfully advance both scholarship and practice. First, artificial-intelligence-assisted policy analysis warrants systematic study of its accuracy, bias, and legitimacy when used to inform formulation and assessment decisions, rather than only its technical feasibility. Second, real-time policy analytics, the use of continuously updated administrative dashboards to monitor implementation as it unfolds, needs evaluation as a governance practice in its own right, including how it changes bureaucratic behavior and decision timelines, not solely as a data-engineering problem. Third, adaptive governance architectures require comparative empirical research to identify which institutional design features reliably produce adaptive capacity, as opposed to remaining aspirational principles. Fourth, policy evaluation capacity in low- and middle-income countries needs sustained research and investment attention, including comparative study of which capacity-building models produce durable, domestically owned evaluation systems rather than donor-dependent parallel structures. Fifth, equity-integrated evaluation methodologies—including standardized approaches to disaggregated outcome reporting and equity-weighted cost-effectiveness analysis, would benefit from methodological consolidation and testing across the education, social welfare, and digital governance sectors examined in this review, and not only in the health and environmental domains where they are currently most developed.

7. Conclusion

This review critically synthesized contemporary scholarship on the three core stages of the policy cycle, formulation, implementation, and assessment, and demonstrated that these stages operate as an interconnected system shaped by institutional, political, and resource-related factors rather than as isolated processes. By integrating evidence across multiple policy domains, including health, education, environmental management, social welfare, and digital governance, this review provided a broader perspective on policy processes than studies focusing on a single stage or sector. The review identified three major research gaps. First, longitudinal studies that examine policies across the entire policy cycle remain limited, restricting empirical understanding of the dynamic interactions among formulation, implementation, and assessment. Second, although equity-oriented evaluation frameworks have advanced in several sectors, their application across diverse policy contexts remains insufficiently tested. Third, emerging areas such as AI-assisted policy analysis, real-time policy analytics, adaptive governance, and policy evaluation capacity in low- and middle-income countries require greater empirical attention to keep pace with rapid technological and institutional change. The findings also offer important practical implications. Policymakers should integrate monitoring and feedback mechanisms into policy design from the outset rather than treating evaluation as a post-implementation activity. Equity considerations should be supported by clear institutional responsibilities and adequate resources to ensure meaningful implementation. In addition, implementation strategies should be tailored to sector-specific characteristics, with adaptive and flexible governance approaches particularly valuable in rapidly evolving policy environments such as digital governance. Overall, effective public policy depends on the integration of evidence-informed formulation, context-sensitive implementation, and continuous assessment. Strengthening the connections among these stages, embedding equity throughout the policy process, and embracing adaptive governance approaches will be essential for developing policy systems that are more effective, resilient, transparent, and accountable in addressing increasingly complex societal challenges.

Author Contributions

All authors contributed equally to the conception, design, writing, and revision of the manuscript. All authors read and approved the final version of the manuscript.

Competing Interests

The authors declare that there are no competing interests.

Data Availability

All data supporting the findings of this study are included within the article. No additional datasets were generated or analyzed during the current study.

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