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Localizing Resilience: Fiscal Decentralization and Implication on Disaster Risk
Reduction Outcomes in Kenya

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Localizing Resilience: Fiscal Decentralization and Implication on Disaster Risk
Reduction in Kenya

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Abbreviations and Acronyms

CDF	Constituency Development Fund
CRA	Commission for Revenue Allocation
DRR	Disaster Risk Reduction
EWS	Early Warning System
FGT	First-Generation Fiscal Theory
HMP	Hazard Mitigation Plan
IGC	Intergovernmental Coordination
IGT	Intergovernmental Transfers
NGO	Non-governmental Organization
OSR	Own Source Revenue
PFM	Public Finance Management
SGT	Second-Generation Fiscal Federalism Theory
SNG	Sub-National Government
UNDRR	United Nations Office for Disaster Risk Reduction
UNICEF	United Nations International Children’s Emergency Fund
UNISDR	United Nations International Strategy for Disaster Reduction

Definition of Terms

Fiscal decentralization refers to the transfer of authority from the central government to lower levels, granting them autonomy in revenue and spending decisions (Bahl, 2008)

Fiscal capacity refers to a government's ability to generate tax revenue based on its tax system structure and enforcement powers (Besley et al., 2013)

Disasters are defined as significant disruptions to a community or society caused by hazardous events interacting with exposure, vulnerability, and capacity, resulting in human, material, economic, or environmental losses (UNDRR, 2017).

Disaster Risk Reduction- The conceptual framework that outlines strategies to reduce vulnerabilities and disaster risks through prevention, mitigation, and preparedness, minimizing hazard impacts within sustainable development (UNDRR, 2017)

Early Warning System- The set of capabilities needed to generate and share timely, meaningful alerts, allowing individuals, communities, and organizations to take appropriate action and minimize harm or loss (UNDRR, 2017).

Hydrometeorological hazard is defined as an atmospheric, hydrological, or oceanographic event that can cause harm, property damage, economic disruption, or environmental damage (UNISDR, 2009).

Vertical fiscal gap (VFG) is defined as the share of subnational (SNG) own spending not financed through subnational own revenue (Bahl Jr, 2020).

Abstract

Fiscal decentralization has been widely advocated as a policy reform aimed at improving public service delivery, including Disaster Risk Reduction (DRR), by shifting fiscal decision-making powers to subnational governments. However, there is a paucity of empirical studies that provide conclusive evidence on its implications on disaster risk reduction. This dissertation empirically examines the impact of fiscal decentralization on DRR outcomes in Kenya through a mixed-methods approach, combining survey data and semi-structured interviews with officials from county and national governments, NGOs, and international organizations across five selected counties in Kenya.

Specifically, this dissertation explores how revenue and expenditure assignments, citizen engagement, and intergovernmental coordination influence DRR outcomes. Additionally, it assesses the moderating role of information transparency and investigates whether urbanization acts as a facilitating or constraining factor. The regression results reveal a positive and statistically significant relationship between revenue and expenditure assignments, citizen engagement, and intergovernmental coordination with disaster risk reduction outcomes, and they are consistent with findings from previous country-specific studies. These findings have important theoretical and policy implications and provide insights into how fiscal decentralization can enhance disaster risk reduction efforts in Kenya's fiscally decentralized governance system.

Chapter 1. Fiscal Decentralization and Disaster Risk Reduction: Revisiting the Theoretical Evidence

1.1 Introduction

In recent years, fiscal decentralization has emerged as a key public administration reform in many developing countries, granting subnational governments greater autonomy over expenditure functions and revenue sources (Bahl & Bird, 2018; Martinez-Vazquez et al., 2017a). However, a crucial policy challenge among the policy makers lies in designing fiscal decentralization frameworks that effectively address disaster risk reduction measures (Garschagen, 2016; Scott & Tarazona, 2011).

While natural hazards are exogenous to policy actions (Birkland, 2016; Nohrstedt et al., 2021), they serve as focusing events that spur public consciousness towards the redistribution of resources to build resilience. The outcomes depend on how fiscal decentralization mechanisms are structured through expenditure and revenue assignments to enable the subnational governments to implement effective preparation, mitigation, and recovery measures (Kitchen et al., 2019; Martinez-Vazquez, 2021)

Scholars widely agree that decentralized governments are more effective than centralized ones in disaster management (Miao et al., 2021; Ter-Minassian, 1997) for several reasons. First, hazard distributions are often geographically localized and due physical proximity to the citizens, they have better informational advantage on risk profiles and management responses in an emergency (Rumbach, 2016).Fiscal

decentralization also increases the likelihood of enhanced disaster mitigation budgets and cost-effectiveness (Fahlevi et al., 2019) and leads to fewer disaster-related deaths (Iqbal & Ahmed, 2015; Skidmore & Toya, 2013) with the effect being more robust in developing nations (Escaleras & Register, 2012).

Public administration scholars have also framed Disaster Risk Reduction (DRR) as a "wicked problem" due to its complexity and evolving nature (Rittel & Webber, 1973) which transcends jurisdictions and disrupt multiple systems (Hicklin et al., 2009) and thus requires strong intergovernmental coordination to align objectives, enable timely decisions (Agranoff & McGuire, 2003). Beyond hierarchical vertical structures it also necessitates multi-sectoral collaboration for optimal resource utilization (Comfort et al., 2020; Emerson & Nabatchi, 2015)

Building on the foundational principles of fiscal federalism, this dissertation draws on existing literature, which advocates for the allocation of fiscal powers to the lowest level of government, provided there are no significant inequalities, inter-territorial spill-over, or diseconomies of scale ((Lago-Peñas et al., 2020; Martinez-Vazquez & McNab, 2003). The predominant justification for fiscal decentralization, both in theory and practice, is the pursuit of allocative efficiency to reflect the diverse local preferences for public goods (Oates, 1972; Tiebout, 1956). While the theoretical case for allocative efficiency is well-established, the sub-national governments often lacks capacity and incentives to manage disasters (Donahue & Joyce, 2001), and its practical implementation

is fraught with challenges, including corruption and elite capture (Prud'Homme, 1995; Tanzi, 1995). Critics also argue that efficiency-based justifications fail to account for the complexities of natural hazards and vulnerabilities (Escaleras & Register, 2016; Miao et al., 2021). Moreover, the assumption of non-externalities is flawed, as disasters transcend borders and mitigation efforts generate spill-over effects, undermining efficiency argument(Afonso et al.,2023, 2024).

Similarly, disasters, as public goods, are inherently low-probability events and are often perceived as exogenous shocks rather than as socially constructed outcomes of inequitable development practices (Kahneman, 1979; Meyer & Kunreuther, 2017). The extant scholarship also suggests that the perception of the relationship between local weather anomalies and beliefs about climate change is significantly influenced by pre-existing beliefs regarding the occurrence of climate change (Carlson et al., 2023). This has significant implications for DRR in decentralized governance contexts like Kenya, where local governments' responses to climate-related disasters may be constrained by political, economic, and cognitive biases.

Indeed, empirical evidence further reveals that voters reward incumbents for disaster relief spending but not for preparedness investments, reinforcing political incentives that prioritize visible post-disaster aid over long-term risk reduction (Healy & Malhotra, 2009). This short-termism political incentives in fiscal decentralized

governance undermines sustainable disaster resilience resulting in perpetuating cycles of vulnerability and reactive policy-driven policies (Olanubi & Olanubi, 2023).

Moreover, decentralized governance in developing countries often struggles with limited fiscal capacity, which leads to an over-reliance on intergovernmental transfers and vertical imbalance (Masaki, 2018; Yimenu, 2024). Empirical evidence on the crowding-out and crowding-in effects of these transfers on local revenues is largely derived from developed countries with robust fiscal institutions, particularly in urban areas characterized by high population densities and small geographical areas that facilitate tax collection (Lago et al., 2024; Mogues & Benin, 2012).

These intergovernmental transfers in developing countries tend to incentivize expenditure rather than revenue generation, and existing literature contends that the relationship is more complex, particularly when considering the urban-rural divide (Fjeldstad et al., 2014; Lewis & Smoke, 2017). They argue that rural areas, which constitute a significant portion of developing countries, often face high poverty levels and low population densities, conditions that hinder effective revenue collection and result in crowding out of local revenue efforts.

Taken together, theoretical evidence suggests that fiscal decentralization operationalized as -revenue and expenditure assignments, citizen engagement, and intergovernmental coordination—can exert a meaningful influence on Disaster Risk

Reduction (DRR) outcomes. These constructs provide the conceptual foundation for this dissertation, offering a framework through which the relationship between decentralized governance and DRR effectiveness in Kenya is critically examined.

Building on this theoretical grounding, the dissertation advances existing scholarships in two keyways. First, it adopts an exploratory and interdisciplinary perspective, integrating insights from public administration, disaster risk management, public finance, and global frameworks such as the Sendai Framework for Disaster Risk Reduction (2015–2030). This enables the development of a comprehensive and contextually grounded conceptual model. Second, it employs a mixed-methods research design, combining structured surveys of government and NGO officials across five counties with unstructured interviews. This approach enhances the depth of analysis by bridging empirical trends with experiential insights, thereby responding to critiques that prior studies often prioritize statistical generalizability over institutional realities and lived experiences.

Given this theoretical grounding motivating conceptual understanding of the relationships between fiscal decentralization and DRR outcomes in Kenya, this dissertation explores the roles of revenue and expenditure assignments, citizen participation, and intergovernmental coordination in shaping disaster governance at the subnational level. In addition, it examines the moderating influence of information transparency and considers how varying levels of urbanization affect the distribution and

effectiveness of DRR efforts across counties. In doing so, the study contributes to literature by providing a nuanced, context-specific analysis of fiscal decentralization's implications for disaster resilience in a developing country setting.

The central argument advanced is that fiscal decentralization significantly shapes DRR outcomes by influencing the institutional and operational dimensions of disaster governance. While decentralization holds potential to enhance resilience through localized decision-making and resource allocation, its effectiveness is contingent upon the extent of subnational fiscal capacity and autonomy, the quality of citizen engagement, and the coherence of intergovernmental coordination mechanisms. Moreover, information transparency is shown to moderate the effects of decentralization constructs—except in the case of intergovernmental coordination—while urbanization introduces variation in outcomes, often amplifying disparities in DRR performance across counties.

Through its integrated analytical framework, such as Sendai Framework and mixed-methods approach, this dissertation argues that well-designed fiscal decentralization systems can strengthen resilience and promote equitable disaster governance. Conversely, fragmented or weakly coordinated systems may undermine risk reduction efforts. The following section provides contextual background on the research problem within the Kenyan governance and disaster risk landscape.

1.2 Statement of the Problem

Kenya's 2010 constitutional reform established a devolved system, restructuring governance by creating 47 county governments with each county granted authority to generate own revenue and discretionary expenditure autonomy powers (Kanyinga, 2016a; Wanyande, 2021a). While the Constitution established fiscal decentralization, both levels of government face persistent challenges in integrating budget policy statements, ensuring meaningful citizen engagement, and fostering effective intergovernmental coordination in preparedness, mitigation of disasters, and response (Nyandiko, 2020).

Despite over a decade of decentralized governance in Kenya, there is a significant gap in research exploring the relationship between fiscal decentralization and disaster risk reduction. This gap limits theoretical understanding and the development of effective policies, hindering the alignment of fiscal decentralization with DRR objectives (Clark-Ginsberg, 2020a). Addressing this gap is essential for advancing academic knowledge and guiding policy to enhance disaster resilience.

Moreover, existing empirical evidence from industrialized and developing nations presents mixed findings on the relationship between fiscal decentralization and DRR. Some studies report positive relationships (Escaleras & Register, 2016; Skidmore & Toya, 2013), while others suggest a negative one (Miao et al., 2021) and others a non-linear monotonic relationship (Kellenberg & Mobarak, 2008). Additionally, some research

indicates that decentralization can provoke recentralization backlashes (Haase & Antoun, 2015; Hermansson, 2019) complicating governance and DRR effectiveness.

Against this backdrop, this study is motivated by the need to address these critical gaps in understanding how fiscal decentralization- conceptualized as the transfer of financial authority and decision-making from the national government to subnational entities influences DRR outcome which is defined as measures aimed at preparedness, response, recovery and mitigating disasters. The challenges identified—including unclear revenue and expenditure assignments, weak citizen engagement, and fragmented intergovernmental coordination—underscore systemic inefficiencies that hinder effective DRR implementation.

1.3 Research Questions

Kenya's devolved units have been in operation for over a decade, and the full implications of fiscal decentralization on disaster risk reduction remain underexplored. Existing research has yet to comprehensively conceptualize how fiscal decentralization influences disaster preparedness, mitigation, response, and recovery with *hydro-meteorological* disasters in Kenya becoming increasingly severe and costly in recent years driving renewed attention to national disaster risk policies.

Several scholars have highlighted factors contributing to the limited progress in disaster risk reduction (DRR) at the county level in Kenya. These factors include

constrained fiscal capacity due to the crowding-out effect of intergovernmental transfers (Barrett, 2015; Masaki, 2018), inefficient resource utilization resulting from inter-jurisdictional spill-overs and inadequate citizen engagement (Nji et al., 2022), and weak intergovernmental coordination that undermines both vertical policy coherence and horizontal alignment of DRR strategies across counties, ultimately reducing the effectiveness of decentralized disaster governance in Kenya (Nyandiko, 2020).

Consequently, this study is driven by the primary question: "What are the implications of fiscal decentralization on disaster risk reduction (DRR) outcomes in Kenya?" To address this, the dissertation examines threefold objectives. First, it investigates the effect of revenue and expenditure assignments on DRR outcomes, assessing whether urbanization leads to variations in these outcomes. Second, it explores the role of citizen engagement on DRR outcomes, analysing how urban contexts shape its effectiveness. Third, it evaluates the impact of intergovernmental coordination on DRR outcomes and examines whether urbanization contributes to differences in effectiveness.

Moreover, to facilitate a comprehensive understanding of information transparency, this dissertation examines its role as a moderating factor in the relationship between key independent variables and disaster risk reduction (DRR) outcomes. By analysing how transparency influences governance dynamics, the study provides

context-specific insights into pathways for designing inclusive and effective DRR policies.

1.4 Justification and Significance of the Study

The findings of dissertation have both theoretical and practical significance. First, it expands existing research on the antecedent factors of fiscal decentralization and its impact on DRR outcomes. While most empirical studies rely on cross-country analyses, this dissertation focuses on Kenyan counties and thus mitigate on cross-sectional heterogeneity, which arises from variations across different units of analysis—such as countries, regions, or municipalities—that can obscure the true effects of fiscal decentralization on disaster management.

Moreover, the findings will be used to inform policy design and implementation within the counties developing targeted policies and strategic interventions to strengthen devolution and enhance DRR outcomes, thus help in achievement of targets set by both national and global frameworks such as Sendai Framework 2015-2030 goals. In addition, the policy recommendations derived from it can support the government in implementing more effective and responsive governance structures for DRR.

This dissertation also advances existing research by addressing key limitations in previous studies through a mixed-methods approach that integrates both quantitative and qualitative data. By doing so, it provides a more comprehensive analysis of the

intricate relationship between fiscal decentralization and DRR outcomes in Kenya. This methodological approach allows for a deeper exploration of how revenue and expenditure assignments, citizen engagement, and intergovernmental coordination collectively shape DRR effectiveness, while also accounting for contextual variations such as urbanization.

1.5 Dissertation Summary

This chapter revisits the theoretical arguments that form the foundational framework of this dissertation, providing a critical analysis of the key concepts and perspectives that underpin the study. Building on this theoretical grounding, the remainder of the dissertation unfolds as follows.

Chapter 2 offers a comprehensive literature review and theoretical discussion on the relationship between fiscal decentralization and disaster mitigation. It critically engages with relevant empirical research and sets the stage for the subsequent empirical investigations, which are presented across the next three chapters, each aligned with the study's specific objectives.

Chapter 3 initiates the empirical analysis by investigating the impact of fiscal decentralization—specifically revenue and expenditure assignments—on disaster risk reduction (DRR) outcomes. It further explores whether information transparency moderates this relationship, thereby influencing DRR effectiveness. In addition, the

chapter assesses whether significant variations exist between urban and rural counties, providing early insights into how context shapes disaster governance outcomes.

Expanding the inquiry, Chapter 4 turns to the role of citizen engagement in enhancing DRR outcomes. It demonstrates a positive and statistically significant link between key determinants—such as engagement mechanisms, process design inputs, household mitigation program (HMP) awareness, and the mainstreaming of DRR into County Integrated Development Plans (CIDPs) and DRR effectiveness. Moreover, the analysis reveals that information transparency strengthens these relationships, while uncovering notable differences in revenue and expenditure assignments across urban and rural counties.

Further advancing the empirical narrative, Chapter 5 examines the influence of intergovernmental coordination on DRR outcomes. It confirms a positive and statistically significant relationship, yet, unlike previous findings, it shows that information transparency does not moderate this dynamic. Additionally, it finds no substantial differences in intergovernmental coordination practices between urban and rural contexts, suggesting a more uniform pattern in this domain.

Finally, Chapter 6 draws together the dissertation's main findings and discusses their theoretical and practical implications. It emphasizes how the study contributes to advancing knowledge on the intersections between fiscal decentralization and disaster

risk reduction, while also offering policy recommendations aimed at strengthening governance structures for resilience. The chapter concludes by acknowledging the study's limitations and proposing future research directions to deepen understanding of decentralization's role in building disaster resilience.

Taken as a whole, the central contribution of this dissertation lies in its mixed-methods approach, which skillfully integrates quantitative analysis with rich qualitative insights. This approach provides a nuanced understanding of the complex and context-dependent relationship between fiscal decentralization and disaster risk reduction (DRR) outcomes in Kenya.

Chapter 2. Literature Review and Conceptual Framework

2.1 Introduction

This chapter provides a comprehensive reviews existing theoretical and empirical research relevant to the study. It explores the background context of fiscal decentralization in Kenya, as well as theoretical frameworks, models, and previous empirical research. It also highlights the gaps and contradictions, and the chapter concludes by presenting a refined conceptual framework that provides a clear and logical structure guideline for the empirical analysis in subsequent chapters.

2.2 Fiscal Decentralization Background Context in Kenya

Kenya's decentralization history traces back to independence in 1963 under the first President, Jomo Kenyatta, when it adopted a quasi-federal system known as *Majimbo*—a Swahili term for regions (Kanyinga, 2016). However, this system was short-lived, as a 1964 constitutional amendment transformed Kenya into a unitary state with regional governments abolished and replaced by the Provincial Administration, a colonial-era structure that marked the beginning of centralized governance and service delivery (Ghai, 2008; Harbeson, 2012).

Under the second President, Daniel Moi, fiscal decentralization efforts began with the 1983 District Focus for Rural Development, aimed at enhancing citizen participation through District Development Committees. However, it failed as power remained centralized (Barkan & Chege, 1989). In 1999, the regime introduced the Local Authority

Transfer Fund (LATF) to improve service delivery and reduce local authority debt. Allocating 5% of income tax revenue to 175 local authorities, LATF remained their primary funding source until devolution replaced it in 2013 (Alila, 1995).

Despite the existence of local authorities, Kenya remained highly centralized, with the national government exerting significant control over sub-national entities (Kramon & Posner, 2011). This began to change in 2003 with the election of President Kibaki under the NARC party. His tenure saw two key developments: the introduction of the Constituency Development Fund (CDF), which gave Members of Parliament greater fiscal and development roles (Wanyande, 2021).

The 2010 Constitution established devolution, creating two distinct but interdependent levels of government—national and county—operating through consultation and cooperation (Kanyinga, 2016). Authority over public finance shifted from the executive to elected leaders in the National Assembly and county legislatures. Counties receive at least 15% of national revenue annually, with 5% allocated to an equalization fund¹ for marginalized groups (Boex & Smoke, 2020; Ngigi & Busolo, 2019).

This dissertation argues that fiscal design, as aforementioned, directly impacts DRR outcomes by shaping counties' capacity to finance preparedness, response, and mitigation efforts. While Article 202 of Kenya's Constitution guarantees 15% of nationally

¹ Article 204, The Constitution of Kenya 2010. This Fund aims to provide essential services—water, roads, health facilities, and electricity—to marginalized areas, ensuring parity with the national standard.

raised revenue between national and county governments to be shared equitably as unconditional transfers. This dependency can limit county governments' fiscal autonomy, especially when locally generated revenue is insufficient or unstable (Barrett, 2015; Wanyande, 2021). Furthermore, the equalization fund of 0.05 %, intended to support marginalized areas, often faces challenges in effective distribution and utilization, potentially exacerbating vulnerabilities in disaster-prone regions (Cheeseman et al., 2020; Nyandiko, 2020).

Consequently, counties may lack the flexibility to tailor DRR investments to localized risk profiles, often having to prioritize national directives or broad service delivery mandates over context-specific resilience-building strategies. This challenge is compounded by delays or conditionalities in disbursement, which can further constrain timely DRR interventions.

2.3 Theoretical Framework

The theoretical foundations for achieving a well-functioning fiscal decentralized system continue to evolve alongside the ever-changing global fiscal landscape. This study focuses on four key theories that underpin fiscal decentralization and its implications for DRR. This includes Decentralization theorem, Fiscal Federalism Theory, Sequential Theory of Fiscal Decentralization, and the "Flypaper effect" theory.

2.3.1 Decentralization Theorem

Fiscal decentralization is defined as the allocation of responsibilities and resources from central governments to regional or local authorities aimed at enhancing the efficiency and effectiveness of public services, including disaster management (Bahl, 2008; Scott & Tarazona, 2011). Central to this discourse is the assumption that the central government acts as a benevolent interpreter of citizen preferences, assigning functions to different levels of government and selecting appropriate fiscal instruments for these functions (Musgrave, 1959; Oates, 1993; Tiebout, 1956). The theoretical foundation of fiscal decentralization is largely based on Oates *decentralization theorem* which posits that:

“...In the absence of cost savings from centralization and inter-jurisdictional externalities, welfare is maximized when each jurisdiction provides pareto-efficient levels of a public good rather than a uniform level across all jurisdictions” (Oates, 1972:54).

The main justification for fiscal decentralization has been centred around principle of allocative efficiency, which is rooted in Musgrave (1959) seminal work that outlines government functions as resource allocation, distribution, and economic stability with local governments touted as better suited for resource allocation due to their superior knowledge of residents’ and response to preference needs (Lago et al., 2024; Martinez-Vazquez & McNab, 2003).

While fiscal decentralization is conceptualized outside the domain of disaster risk reduction many of the arguments in favour of fiscal decentralization when extended to disaster risk reduction efforts suggests that it leads to better outcomes in terms fatalities and economic losses using cross-country data (de Mello & Jalles, 2024; Escaleras & Register, 2012; Skidmore & Toya, 2013). Revenue and expenditure responsibilities increase with greater local fiscal autonomy and policymaking authority in disaster prevention, mitigation, and recovery. However, attempts to "green tag" spending to each of the disaster cycles have yet to yield comprehensive, comparable databases. (Mello & Ter-Minassian, 2024).

The merits of fiscal decentralization have been discussed and supported in several strands of literature. First, because most disasters are geographically specific, local governments have a superior understanding of hazard risks, enabling more informed decision-making (Miao et al., 2021). Second, they are better positioned to implement effective pre- and post-disaster strategies such as risk assessment and land zoning (Iqbal & Ahmed, 2015; Putra & Matsuyuki, 2019). Third, fiscally decentralized governance creates incentives for strong citizen engagement and coordination due to proximity to decision makers (Hermansson, 2019; Irvin & Stansbury, 2004).

While the theoretical arguments in favor of fiscal decentralization—such as improved allocative efficiency, enhanced governance, and greater macroeconomic stability—may appear straightforward, their practical application is often more complex. Critics contend

that in contexts where citizen preferences are weakly reflected in budgeting processes and subnational institutions lack adequate capacity, it can lead to increased costs, diminished service delivery, and heightened macroeconomic instability (Prud'Homme, 1995; Tanzi, 1995). Moreover, in developing countries, the expected gains in allocative efficiency may be undermined by corruption, further compromising the quality and effectiveness of public service delivery (Treisman, 2000).

Furthermore, while the theoretical argument that fiscal decentralization enhances disaster risk reduction outcomes may seem straightforward, its underlying assumptions are conceptually contested. First, the non-externality assumption is violated in disaster risk reduction due to inter-jurisdictional spill-over effects (Epple & Nechyba, 2004; Lockwood, 2008). This challenge arises from the decentralization theorem's *principle of perfect correspondence*, which assumes a precise match between government jurisdiction and the beneficiaries of public goods (Martinez-Vazquez, 2021; Oates, 1972).

Interestingly, the commonly held view that local governments are better positioned to align public services with local preferences is increasingly subject to debate among scholars—particularly in the context of disaster management. In such cases, the benefits of decentralization are often outweighed by spill-over effects and economies of scale as SNG lack incentives to internalize costs, leading to underinvestment in disaster risk reduction (de Mello & Jalles, 2024; Miao et al., 2021).

Moreover, disasters are often characterized as low-probability, high-impact events, which complicates citizens' ability to accurately assess and respond to their associated risks. (Kahneman, 1979) expound on this phenomenon in their seminal work on "*prospect theory*," which highlights the limitations of human cognition in risky decision-making, describing how individuals may misjudge extreme probabilities, either dismissing them or exaggerating their likelihood. Consequently, rare events may be overestimated or altogether ignored in governmental policy decision-making processes, influencing how resources are allocated and rationale why specific initiatives seems to "bubble to the top" (Thurmaier & Willoughby, 2014).

In summary, this section argues that allocative efficiency is achieved when local governments have the autonomy to tailor their revenue and expenditure plans to align with citizens' preferences, while also streamlining decision-making by reducing the information overload seen in centralized systems. However, the inter-jurisdictional spillover effect, cognitive biases in risk assessment, and competition for limited resources—such as emergency response equipment and funding—lead to inefficiencies.

2.3.2 Fiscal Federalism Theory

Traditional Fiscal Federalism theory distinguishes between First-Generation Fiscal Theory (FGT) and Second-Generation Fiscal Federalism Theory (SGT), providing insights into government benevolence in disaster risk reduction and the vertical and horizontal distribution of functions (Martinez-Vazquez et al., 2017). FGT, a normative approach,

advocates devolving revenue and expenditure responsibilities. It assumes local governments, with better information on hazard distribution, are more capable of reflecting citizen preferences and acting as benevolent agents, maximizing societal welfare (Weingast, 2014; Yilmaz & Zahir, 2020).

On the other hand, SGT challenges the benevolent assumptions of FGT and argues government as self-interested agents with imperfect information, rather than an entity maximizing societal welfare (Oates, 2008; Weingast, 2014). Scholars argue that SGT explains why decentralization favours politically salient issues such as disaster response, often neglecting disaster prevention due to its low visibility and delayed benefits, as local officials prioritize short-term electoral gains (Burby, 2006; Healy & Malhotra, 2009).

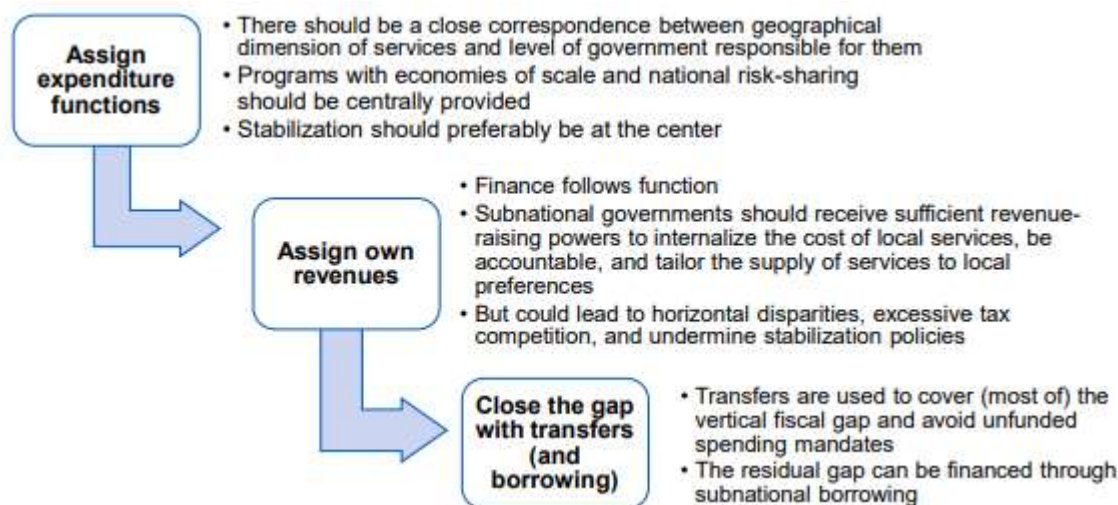
In summary, the scholarly debate between the two strands of theory provides valuable insights for assessing the optimality on fiscal decentralization to achieve desired DRR outcomes. While scholars argue that FGT and SGT often align on core aspects, they divert in their arguments (Lago-Peñas et al., 2025; Miao et al., 2021). FGT is criticized for encouraging perverse behaviours through intergovernmental grants like bailouts whereas SGFF is often praised for their role in highlighting rent-seeking behaviour that hinders DRR investments (Chandra Jha, 2015; Weingast, 2014).

2.3.3 The Sequential Theory of Decentralization

The Sequential Theory of Decentralization, as articulated by Falleti (2004), provides a framework for understanding how decentralization unfolds in stages and the implications these stages have on governance outcomes, particularly in relation to policy implementation (Bahl & Martinez-Vazquez, 2013). This theory suggests that decentralization is not a monolithic process; instead, policy design requires a well-structured sequencing of its key stylized facts—expenditure assignments, revenue assignments, intergovernmental transfers, and subnational borrowing regulations—to ensure effective implementation and avoid fiscal imbalances (McLure & Martinez-Vazquez, 2000) which can significantly influence how local governments manage DRR policies (Surianto et al., 2019).

The theory is important in understanding how the pillars of decentralization is sequenced. Bahl & Martinez-Vazquez (2013) proposed an institutionalized standard model for structuring fiscal decentralization (see Figure 2-1). According to this model, expenditure assignment should precede revenue assignment, following the conventional "*finance follows functions*" principle. The process of assigning expenditures requires a careful unbundling of each function, along with identifying the appropriate regulatory, financing, and implementation responsibilities. That said, thorough analysis is needed to determine the viability of each function at the central, state, or local government level (Ahmad & Tanzi, 2002).

Figure 2-1: A Standard Model of Sequencing Fiscal Decentralization



Source: Bahl and Martinez, 2013 on Sequencing Fiscal decentralization

Importantly, the sequential theory of decentralization outlines policy design as a three-step process. First, it defines decentralization as a continuous process rather than a one-time event. Second, it considers the territorial interests of bargaining actors involved in the decentralization process. Third, it incorporates policy feedback effects to analyse how past decisions influence future bargaining dynamics (Falleti, 2005).

In Kenyan context, first, the strong argument on configuration of expenditure assignment hinges on delineation of DRR functions while considering interplay between functional competencies, behavioural incentives, and policy realities (Kaburu, 2013; Nyandiko, 2020). The unbundling and costing of these functions ensures that each level of government has a clear role and the determination of service level gaps of each

competency to avoid *unfunded mandates* while considering policy realities such as economies of scales and spill-over effect and externalities (Mwangi et al., 2022; Nyandiko, 2020).

Secondly, effective revenue assignment for DRR hinges on aligning financial resources with functional responsibilities. Alm & Banzhaf (2012) note that financing DRR activities—such as early warning systems and resilient infrastructure—may require stable revenue mechanisms like user fees or levies to avoid reliance on distortionary taxes. Martinez-Vazquez (2021) further highlights the need for subnational autonomy to set tax rates and tap into buoyant bases like consumption taxes for sustainable funding. However, in Kenya, the complexity and frequent revisions of the tax code undermine effective DRR financing by creating fiscal uncertainty and discouraging long-term investment (Kemboi, 2024).

Third, closing the gap in DRR financing requires well-structured intergovernmental transfers and regulated subnational borrowing. Given the uneven distribution of disaster risks across regions, national fiscal transfers should prioritize high-risk areas. Conditional grants and performance-based transfers can incentivize local governments to invest in DRR initiatives (Mwangi et al., 2022). Clear regulations on subnational borrowing can facilitate investments in resilient infrastructure and emergency preparedness. However, safeguards must be in place to prevent unsustainable debt accumulation while ensuring timely access to funds for urgent DRR needs (Kemboi, 2024).

2.3.4 The “Flypaper Effect” Theory

The Flypaper Effect elucidates how the reliance on these external transfers can disincentivise local revenue generation due to a crowding-out effect, where funds received from transfers act as substitutes for locally raised revenues (Hines Jr & Thaler, 1995). This reliance can adversely affect fiscal autonomy and hinder the ability of local governments to implement robust DRR measures (Besley et al., 2013; Lago et al., 2024).

The Flypaper Effect theory is useful in explaining implications for fiscal decentralization and DRR strategies in Kenya. Effective fiscal decentralization requires balancing autonomy and control in financing shared responsibilities, thereby ensuring that subnational governments possess the flexibility and resources necessary to effectively manage functions while adhering to fiscal accountability (Marshall et al., 2021).

Public finance literature consistently identifies own-source revenues(OSR) and intergovernmental transfers as the two primary financial instruments available to subnational governments for delivering public services and fulfilling their mandates (Mello & Ter-Minassian, 2024). However, in several African nations, including Kenya, institutional weaknesses often limit local governments’ ability to generate their own-source revenue, resulting in an overwhelming dependence on intergovernmental transfers(Kaburu, 2013; Muthomi & Ndunda, 2024). The timing and design of these transfers can further exacerbate the challenges faced by local governments by inducing

pro-cyclical behaviours—where spending increases and taxes are reduced during economic upswings, while cuts occur during downturns—ultimately exacerbating the volatility of local government expenditures (Calderón & Nguyen, 2016).

In developed nations, similar patterns have been observed, where reliance on supplemental appropriations for disaster management generates fiscal incentives that prioritize reactive measures over proactive investments in DRR (Donahue & Joyce, 2001; Lindsay, 2011). Such funds typically come with fewer restrictions compared to standard appropriations, which encourages immediate post-disaster spending, yet discourages necessary long-term investments in pre-disaster risk reduction. This cyclical behaviour reinforces a strategy focused on response rather than prevention, creating a detrimental effect on the overall resilience of local communities (Bevan & Cook, 2015).

In summary, the literature identifies that the trade-offs between fiscal autonomy and central control significantly undermine local-level investments in DRR. The disincentives for generating own-source revenues, a hallmark of the Flypaper Effect, weaken local fiscal capacities. Furthermore, the pro-cyclical nature of intergovernmental transfers leads to inconsistent funding for DRR efforts, aligning funding more closely with economic cycles than with sustainable long-term resilience strategies

2.3.5 The Nexus between Citizen Engagement and Disaster Risk Reduction in Kenya

Citizen engagement has emerged as a pivotal component in enhancing the effectiveness of disaster risk reduction (DRR) strategies globally. Citizen engagement is

broadly defined in public administration literature as the active participation of citizens in administrative decision-making and management processes (Cooper et al., 2006; Yang & Callahan, 2005). Scholars emphasize its role in collaborative governance, positioning it as a remedy for democratic legitimacy deficits while enhancing transparency, accountability, and responsiveness (Irvin & Stansbury, 2004; King et al., 2018; Ryan, 2021).

This conceptualization is particularly applicable to Kenya's context, where citizens hold valuable local knowledge essential for risk mapping and response. This is evident in the current institutionalization of Participatory Climate Risk Assessment (PCRA) under the Financially Local-Led Climate Adaptation program (Flloca) at the county level (Jalango et al., 2024; Odongo, 2023). Furthermore, Citizen engagement is particularly important given historical distrust in government institutions, which hinders effective collaboration by helping in rebuilding public trust (Muthomi & Ndunda, 2024).

Since Arnstein, (1969) seminal work on the *Ladder of Participation*, extensive literature has explored citizen engagement in participatory governance, particularly in disaster management. Kweit & Kweit (2004) identify three critical determinants of effective participation: (1) participation structures, (2) organizational characteristics, including resource availability and member attitudes, and (3) environmental factors, such as political stability, governance structures, and community size. In Kenya, these determinants are especially relevant in informal settlements, where disaster risks are

exacerbated by inadequate infrastructure, weak institutional capacity, and governance challenges.

Fung (2006) *Democracy Cube* categorizes participation mechanisms based on elaborate mechanisms of how participants are recruited for participation, and how they communicate and inform decision-making power. This framework is pertinent in evaluating participatory governance practices in Kenya, including their legitimacy, justice, and effectiveness in shaping public policy and governance. In practice, successful citizen engagement can lead to stronger community networks, as seen in studies linking social capital with enhanced disaster preparedness.

Ebdon & Franklin (2006) *Impact Model of Citizen Participation in Budgeting* analyse four key aspects of U.S. participatory budgeting: goals and outcomes, process design, participation mechanisms, and the institutional, social, and economic contexts shaping these efforts. They argue that the impact of citizen input depends on factors such as government structure, participation design, and intended goals and outcomes, which range from informing decisions and educating participants to building trust, gaining support, and fostering community cohesion.

In summary, the existing literature collectively underscores the vital role of citizen engagement in enhancing disaster risk reduction outcomes in Kenya. The collaboration

between government agencies and local communities fosters an environment conducive to resilience through shared knowledge, transparency, and active participation.

2.3.6 Beyond Bureaucratic Silos: Intergovernmental Coordination and DRR Outcomes

Literature on intergovernmental coordination spans multiple disciplines, offering diverse insights into the mechanisms and processes that facilitate collaborative governance. Public administration scholars often considers coordination as a descriptor of several concepts- collaborative public management (Hicklin et al., 2009; O’Leary, 2015), network management (Agranoff & McGuire, 2003a; Klijn & Koppenjan, 2012), and collaborative governance (Emerson & Nabatchi, 2015) to provide a lens of studying extreme weather events.

Comfort (2007) defines *Intergovernmental coordination* as the process of aligning resources, tasks, and timelines across different levels of government to achieve a shared goal. The term coordination is often used interchangeably with collaboration (Boin & Bynander, 2015; Valecha, 2020) and describes strategic efforts to bring together various agencies to carry out a task and achieve a purpose and does not necessarily involve high level of mutual dependencies (Nolte et al., 2012). The need for intergovernmental coordination in disaster risk reduction (DRR) is universally recognized, as no single organization possesses all the necessary resources, information, or expertise to address complex, unforeseen events (Beck & Plowman, 2014; Yeo & K. Comfort, 2017).

Existing literature has proposed several frameworks for Intergovernmental coordination. First, *Classical hierarchical approach* which is rooted in the seminal work of Gullick & Urwick (1937). In this model, hierarchical structures are used to control, allocate responsibilities, and ensure efficiency. Although its strengths lie in when the mandates of different levels of governments are well defined, its major limitation is its inability to adapt in the context of disaster risk reduction characterized by episodic uncertainties, thus impeding communication and resource re-allocation (Comfort, 2007; Kettl, 2003)

Secondly, the *Network approach* offers a modern alternative to the classical model, relying on cooperation and resource sharing among interdependent actors (Agranoff & McGuire, 2003; Kapucu et al., 2010), making it well-suited for disaster risk management. Rooted in Hecla's concept of policy networks, its definition varies among scholars. O'Toole Jr (1997) defines networking as interdependent structures beyond formal hierarchies, while other scholars highlight voluntary collaboration, bargaining, and organizational autonomy (Koppenjan & Klijn, 2004; O'Leary, 2015). However, the main drawback of networking approach is a lack understanding of how coordination network structures form and evolve over time, limiting insights into how their composition and actor inclusion impact long-term disaster management efforts (Robinson, 2006).

Thirdly, the *Contingency approach* is an adaptive model that allows separate government entities, each with its own hierarchical structure, to collaborate when

needed. Scholars argue that the approach blends hierarchical and network-based coordination, emphasizing adaptive cooperation among diverse actors (Morris et al., 2007), and in fiscal decentralized environments, it focuses on legal structures that distribute both political and taxing powers (Comfort et al., 2020).

In sum, this theory offers a lens to evaluate Kenya's disaster risk reduction governance, marked by concurrent mandates as espoused in Schedule 4 of the Constitution 2010, resource asymmetries, and multi-stakeholder involvement. While the classical model underscores the value of structure, it lacks flexibility for dynamic crises. The network model encourages collaboration but requires stronger institutional support. The contingency approach emerges as the most practical, allowing Kenya to adapt coordination structures to local capacities, risk levels, and political contexts.

Moreover, the determinants of effective intergovernmental coordination extend beyond structural elements to encompass resource dependency and communication efficiency (Lee & Jung, 2019). The Kenyan health sector provides a relevant case study, indicating that reinforcing health sector coordination enhances the overall efficiency of the health systems. A structured alignment of intergovernmental mechanisms at the county level is crucial for effective response to health crises, which are often exacerbated during disasters (Aldrich, 2019).

Several scholars have also pointed out significant challenges within Kenya's disaster coordination agencies, National Disaster Operation Centre (NDOC) and National Disaster Management Unit (NDMU), stemming from hierarchical structures and unclear command chains (Menya & K'Akumu, 2016; Nabutola, 2013). This ambiguity has led to jurisdictional conflicts and supremacy battles, hindering disaster response efforts and institutional inefficiencies in communication and coordination further delay interventions, weakening overall disaster risk management effectiveness (Otieno et al., 2023; Otwori & Nyandiko, 2024).

In conclusion, synthesizing diverse insights from the literature, it becomes apparent that establishing a clear and robust legal and institutional framework is imperative for effective coordination among agencies involved in DRR in Kenya. Scholars widely argue that the implementation of such frameworks would not only facilitate communication and inter-agency collaboration but also ensure accountability and transparency in the managing of disaster responses (Ansell & Gash, 2008; Emerson & Nabatchi, 2015).

2.4 Previous Empirical Literature

The empirical evidence on fiscal decentralization's impact on disaster risk reduction is mixed, varying by governance, institutional capacity, and context but they are mostly cross-country studies focusing on either loss of human lives or economic losses and employing national level econometric panel regression or generalized models.

Escaleras & Register (2012) examined the relationship between fiscal decentralization and disaster outcomes across 79 countries from 1972 to 2000 and findings indicate a negative relationship as measured by percentage of sub-national expenditure. The study identified two key trends: first, a statistically significant inverse relationship between fiscal decentralization and disaster fatalities, which remained consistent across different measures; second, while both developed and developing countries exhibited this negative correlation, the effect was statistically significant only in developing nations.

Building on Escaleras and Register (2012), Skidmore & Toya, (2013) analysed disaster fatalities across 78 countries over three decades, incorporating additional control variables. Their findings confirm that fiscally decentralized governments experience fewer disaster-related deaths but developing countries with highly centralized systems and low level of education they experience more deaths and highlight the role of human capital, showing that decentralization is more effective in disaster mitigation when accompanied by higher levels of educational attainment.

Iqbal & Ahmed (2015) analysed the impact of fiscal and political decentralization using data between 1974-2004 on disaster fatalities from earthquakes and floods across 46 developing and transitional economies. Their findings indicate that decentralization's effect on disaster outcomes varies by government type and tiers. Fiscal decentralization

alone showed limited impact, but when combined with political decentralization, it significantly reduced disaster-related deaths at the local government level.

Hermansson (2019) examined the decentralization of disaster management using country specific focus in Turkey and found out that the most significant issues was the increased difficulty in achieving coordination and collaboration between national and local governments in implementing disaster risk reduction and mitigation projects. Additionally, the central government's failure to align the expanded roles of local governments in disaster risk reduction with adequate funding further complicated the decentralization process.

Tselios and Tompkins (2020) sought to evaluate whether disasters outcomes are influenced by socioeconomic and political policy tools using data from 224 countries spanning 1960-2016 using fixed effects logit model and their findings show evidence that Low-income countries are more prone to disasters—especially natural ones—while higher population density raises the risk of technological disasters. Education reduces the likelihood of both disaster types, particularly natural disasters. Political structures like federalism and government composition show no significant effect, though there is weak evidence that governance quality may slightly increase disaster likelihood.

Clark-Ginsberg (2020) conducted a social network analysis to compare Disaster Risk Reduction networks in Kenya, Bangladesh, and Sierra Leone. The study highlights that,

although the number of organizations engaged in DRR varies across these countries, the networks consistently comprise local, national, and international entities. These include governmental agencies, non-governmental organizations (NGOs), and private sector organizations, all of which play a role in DRR efforts.

More recently, Miao et al., (2021) deviated from the common cross-country approach in disaster risk reduction research by conducting a sub-national quantitative analysis of fiscal decentralization and disaster mitigation within the United States. The study focused on state-level data, examining natural resource expenditures and economic losses resulting from floods and storms. Their findings revealed that states with more decentralized spending on natural resources, including flood control measures, experienced higher economic losses from such disasters.

2.5 Research Gaps in Existing Literature

The relationship between fiscal decentralization and DRR outcomes in Kenya remains underexplored despite its critical importance for effective governance, particularly in the context of enhancing local resilience to disasters. Existing literature indicates various dimensions of decentralization that correlate with public service delivery and economy, yet there are gaps in empirical studies specifically addressing the implications of revenue and expenditure on DRR outcomes at the county level in Kenya.

Notably, one significant gap is the tendency for most studies on fiscal decentralization to focus primarily on developed countries or more generalized populations within

developing regions, such as Asia and Latin America but it lacks the examination on moderating effect of information transparency. The insights from these studies cannot be easily generalized to the Kenyan situation due to distinct governance contexts.

While extensive literature exists on citizen participation frameworks, most studies, such as Ebdon & Franklin (2006) focus on Western or developed contexts, particularly in the U.S. and Europe. There is a gap in understanding how these models apply or need adaptation in non-Western or developing countries, such as Kenya, where political, social, and economic dynamics are different. Specifically, the role of citizen participation in disaster recovery and budgeting in developing nations remains underexplored.

Country specific studies such as Muthomi & Thurmaier (2021) case study on participatory transparency in Kenya provides valuable insights into how transparency affects citizen participation in budgeting. However, a deeper investigation is needed to explore the full scope of participatory budgeting models and their outcomes in diverse Kenyan regions and other developing countries. Future studies could look at the long-term effects of transparency on governance outcomes, focusing on variation on citizen engagement between urban and rural counties.

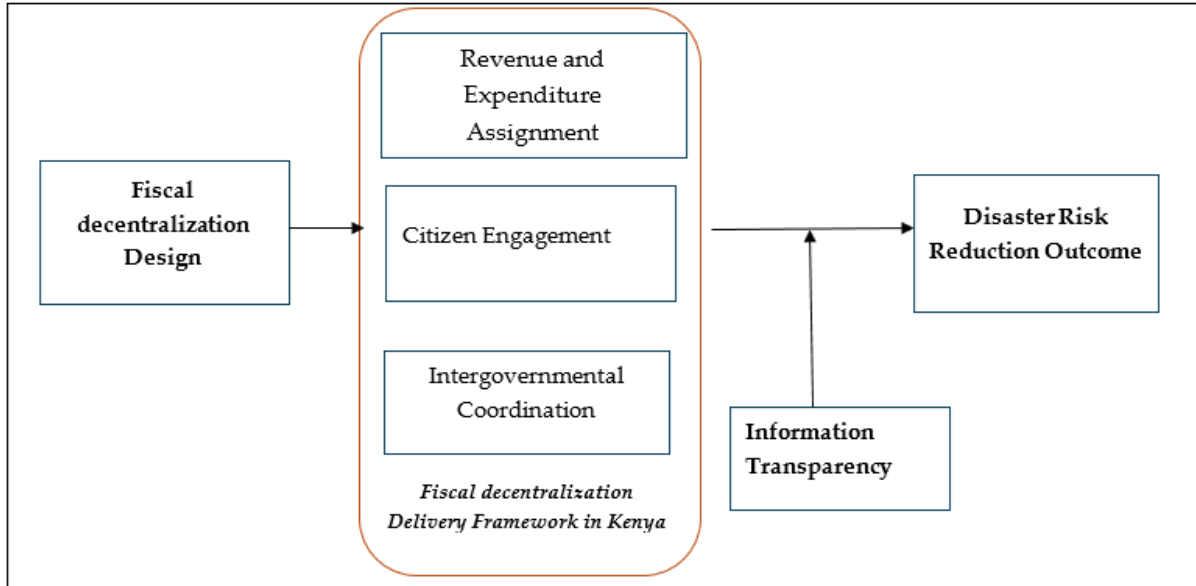
The literature on intergovernmental coordination in disaster risk reduction reveals several research gaps too. First, there is a need for empirical studies on coordination effectiveness across various governance settings. Second, the role of emerging

technologies, like data-sharing platforms and communication tools, in improving coordination remains underexplored. Finally, the impact of fiscal decentralization on disaster management efficiency requires further investigation, as decentralization can both facilitate and hinder coordination. These gaps present key areas for future research in DRR coordination.

2.6 Conceptual Framework and Operationalization of Constructs

Based on theoretical insights, this study conceptualizes fiscal decentralization as comprising three key dimensions: revenue and expenditure assignments, citizen engagement, and intergovernmental coordination as depicted in Figure 2-2. These serve as the independent variables influencing DRR outcomes, the dependent variable. The framework posits that effective fiscal decentralization enhances DRR by ensuring adequate resource allocation, fostering participatory governance, and improving coordination between national and county governments.

Figure 2-2: Conceptual Framework



Source: Author's own construction based on literature

2.6.1 Operationalization of Revenue and Expenditure Assignments Constructs

Building on an extensive review of the literature, this study identifies three key constructs of fiscal decentralization: revenue and expenditure assignments, citizen engagement, and intergovernmental coordination. This framework hypothesizes that Kenya's fiscal decentralization is operationalized through various specific variables as proxy measures. The empirical chapters (3, 4, and 5) will systematically demonstrate how each of these independent variables is theoretically grounded, empirically tested, and operationalized within the study's methodological framework.

2.6.2 Information Transparency as a Moderating Variable

The study posits that transparency acts as a moderating factor in the relationship between fiscal decentralization mechanisms and disaster risk reduction (DRR) outcomes. Information transparency, as a key construct, is defined through several operational indicators including citizens' *access* to DRR budget documents, citizens' *involvement at all levels of participation* in the decision-making process, the effectiveness of *information sharing across sectors and agencies* and *access at various phases* of DRR decision-making. These indicators collectively assess how transparency influences the effectiveness of fiscal decentralization in enhancing DRR outcomes, ensuring that the process remains inclusive, accountable, and responsive to local needs.

Specifically, higher levels of transparency can enhance accountability, facilitate evidence-based decision-making, and promote meaningful public participation, thereby improving DRR planning and implementation which suggest that accessible, reliable, and timely information augments governance outcomes (Cucciniello et al., 2017; Gaventa & McGee, 2013; Porumbescu, 2015).

In the Kenyan context, the Access to Information Act (2016) serves as a legislative framework promoting transparency by mandating county governments to disclose essential budget documents (Kabata & Garaba, 2020). The Act requires counties to provide timely access to key documents, such as annual development plans, budget

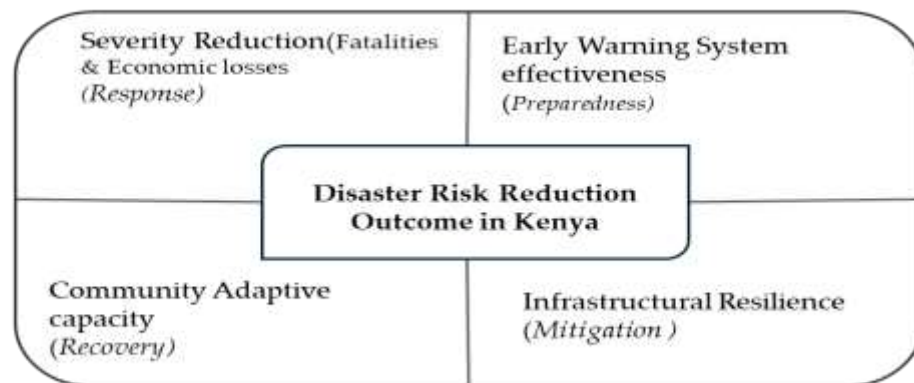
review and outlook papers, fiscal strategy papers, and quarterly budget implementation reports (Muthomi & Thurmaier, 2021) which are vital for fostering citizen engagement in governance related to disaster preparedness.

2.6.3 Disaster Risk Reduction Outcomes

Disaster Risk Reduction is a multi-dimensional construct that involves strategies and actions to mitigate disaster risks through preparedness and response measures. In this study, DRR is operationalized specifically through four selected variables which include disaster severity reduction, early warning system (EWS) effectiveness, community resilience and adaptive capacity, and infrastructure preparedness. These dimensions serve as dependent variables in the following chapters, offering a framework to analyse the impact of fiscal decentralization and citizen engagement on disaster risk management outcomes as illustrated in figure 2-3.

Figure 2-3: Holistic Conceptualization on DDR outcome in Kenya

Figure 2-3 Holistic Conceptualization on DRR Outcomes in Kenya



Source: Author's construction based on conceptual framework

First, *the reduction in disaster severity* is conceptualized as a product of disaster response, measured by the perceived scale of the disaster. This includes the number of fatalities and the socio-economic impact of infrastructure damage, particularly in terms of economic losses (Caldera & Wirasinghe, 2022). For incident management purposes, this dimension focuses on assessing how effectively disaster response efforts mitigate both human and material damage, strength measuring factors may include power and intensity levels in terms of magnitude and population affected (Gad-el-Hak, 2009).

Second, *the effectiveness of early warning systems* is an essential element of public preparedness and involves the integration of scientific monitoring and detection systems with citizen engagement in communication process. This is operationalized through key factors such as the accuracy and timeliness of information, accessibility of warnings, and the system's ability to prompt appropriate response actions (Collins & Kapucu, 2008).

Third, *Community resilience and adaptive capacity* which is a product of post disaster recovery and conceptualized as resiliency of communities in terms of how it is structurally organized to minimize the effects of disasters and capacity to recover quickly by restoring the socioeconomic vitality of the community (Matarrita-Cascante et al., 2022). The focus is on community adaptability in terms of capacity to initiate and sustain effective disaster response (Mendis-Millard & Reed, 2007).

Lastly, *Infrastructural resilience* conceptualizes as systemic design of infrastructure to endure both expected and unexpected disaster shocks (Cariolet et al., 2019; Lee, 2020). This also involves enforcing local regulatory frameworks, including building codes, enhancing critical infrastructure and strengthening asset maintenance through establishing policy and institutional frameworks for emergency and continuity of operations (Chang, 2009).

Chapter 3. Effect of Revenue and Expenditure Assignments on Disaster Risk Reduction Outcomes in Kenya

3.1 Introduction

The conceptual framework presented in Chapter 2 illustrates a multifaceted relationship between fiscal decentralization and disaster risk reduction outcomes. It specifically explores the link between fiscal decentralization and DRR outcomes. Due to wider scope, evaluating it as a whole framework would not be insightful and therefore, the next three empirical chapters would provide a structured approach to assessing each component.

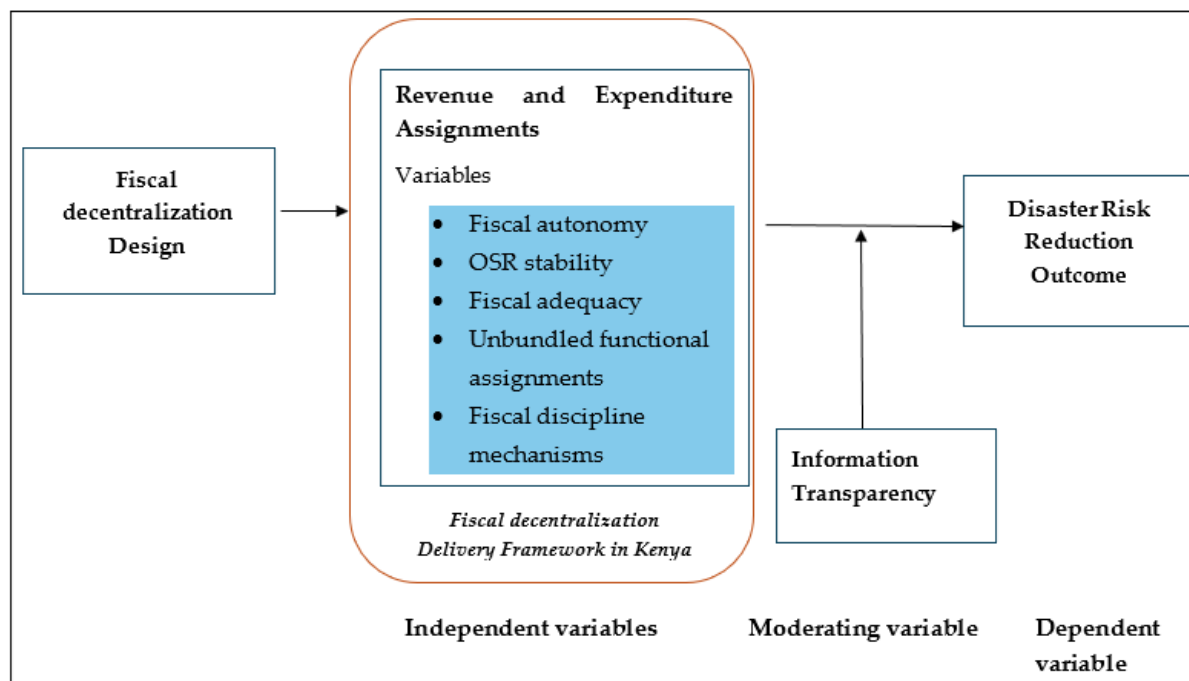
This chapter focused on assessing the effects of revenue and expenditure assignment on DRR Outcomes as outlined in the simplified framework in Figure 3-1 below with variable of interest highlighted in (light blue shading). In and of itself, Kenya's devolved fiscal framework provides a strong basis for a quasi-experimental approach—such as Difference-in-Differences—to estimate the impact of devolution, but the lack of disaggregated longitudinal data for both intervention and control groups limits its application.

Moreover, this chapter adopts a rigorous exploratory approach to analyse the impact of revenue and expenditure assignment on disaster risk reduction (DRR) outcomes across Kenya's counties. Leveraging survey data on self-reported perceptions and semi-structured interviews from key informants—including national and county

government officials, representatives from non-governmental organizations (NGOs), and international agencies—the study examines multiple dimensions of fiscal decentralization.

Specifically, it assesses autonomy in revenue generation, the stability of own-source revenue (OSR), and the effectiveness of fiscal discipline mechanisms. By integrating these dimensions, the analysis aims to establish causal inferences on how revenue and expenditure assignment influences DRR outcome.

Figure 3-1: A Conceptual Model of the Effect of Revenue and Expenditure Assignment on DRR Outcomes: Focus of Chapter 3 Variables of Interests

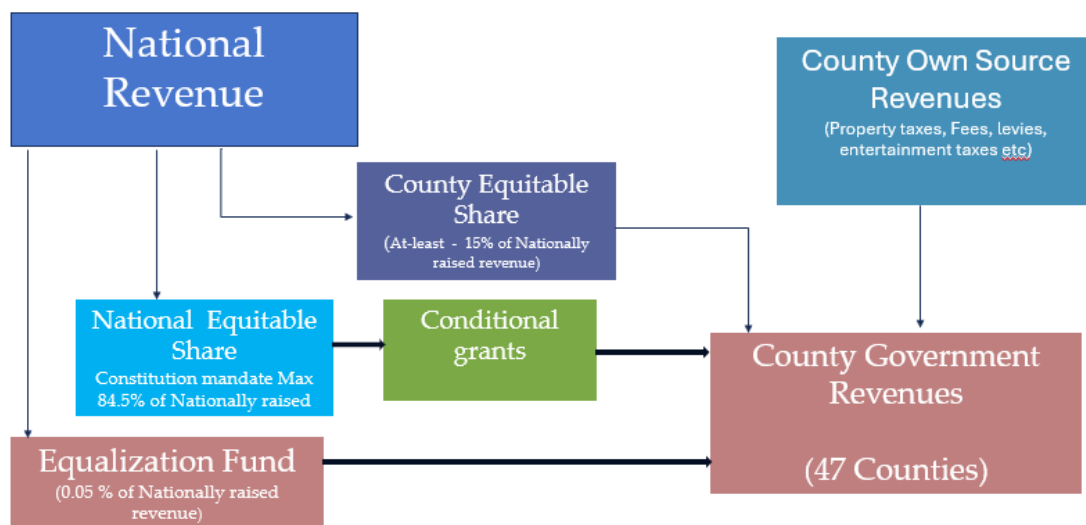


Source: Author's own construction based on literature

3.2 Theoretical Premise for the Variables of Interests

Fiscal decentralization traditionally entails the transfer of authority and responsibilities from central to local governments, encompassing both revenue generation and expenditure assignments. To clarify the flow of county revenue streams in Kenya, Figure 3-2 illustrates the distribution process.

Figure 3-2: Pipeline of Revenues Streams for Counties in Kenya



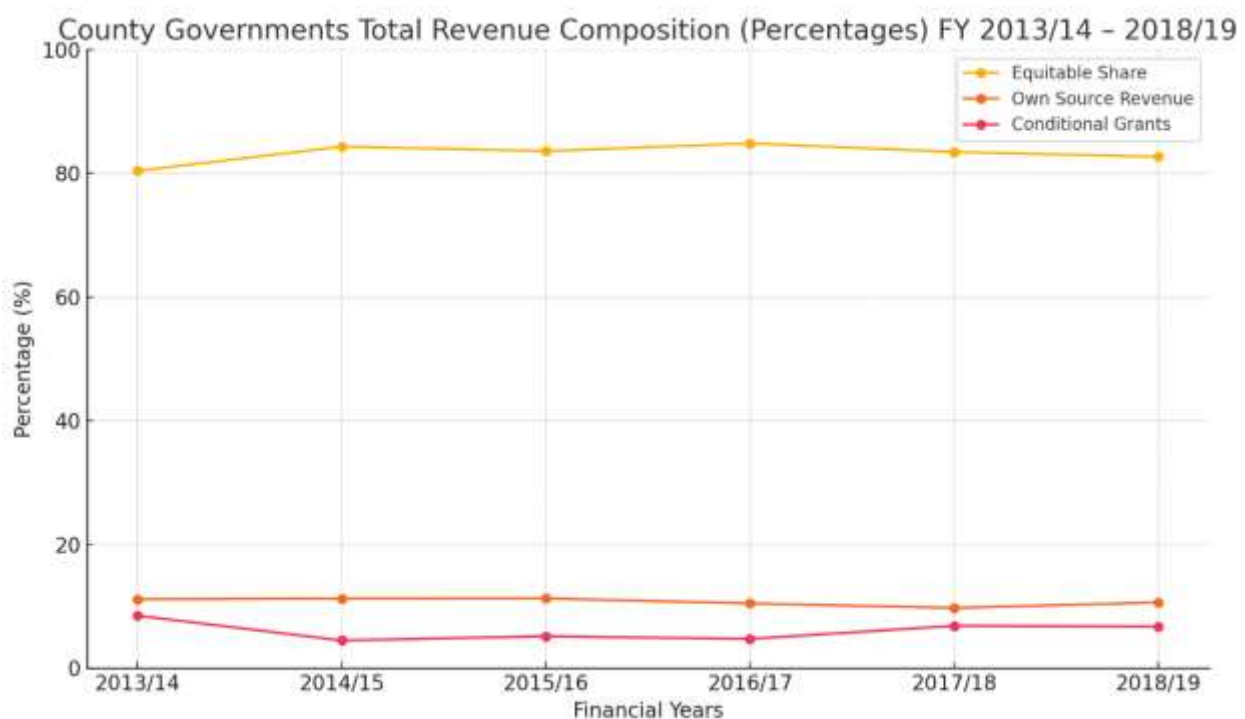
Source: Author based on Literature review

Nationally raised revenue is first shared through the National Equitable Share, with up to 84.5% retained at the national level and at least 15% allocated to counties. Counties also receive Conditional Grants for specific priorities and a share of the Equalization Fund (0.05% of national revenue) to support marginalized areas. In addition, counties generate their own revenues through property taxes, fees, levies, and entertainment taxes. Combined, these sources form the financial base for Kenya's 47

counties, shaping their capacity to deliver services, including disaster risk reduction initiatives.

Article 209 (3) and (4) of the Constitution gives powers County Governments to generate their own revenue through the imposition of taxes and charges for services. However as demonstrated in Figure 3-3 below, according to data from Commission on Revenue Allocation (CRA) the equitable share accounts for more than 80% of total county government revenue across all financial years from 2013/14 to 2018/19.

Figure 3-3: A Comparison of County Revenue Sources



Source: Commission of Revenue Allocation in Kenya

Despite constitutional provisions allowing counties to mobilize own-source revenues, their contribution has remained modest—averaging just 12–14% of total revenues annually. Conditional grants, which are earmarked and often tied to national

priorities, constitute an even smaller share. This pattern demonstrates a heavy over-reliance on intergovernmental transfers, limiting counties' fiscal autonomy and flexibility. The weak growth in own-source revenues suggests underexploited local revenue potential, raising concerns about counties' resilience in financing critical functions like infrastructure development and disaster risk reduction without sustained national support.

With the chapter's motivation now established, I turn to a brief overview of the key variables explored in this analysis. First, *Fiscal autonomy* directly influences the attainment of disaster risk reduction outcomes in Kenya by shaping how resources are allocated and managed at both national and county levels (Bahl & Bird, 2018). The ability of counties to independently formulate and implement budgets allows them to tailor DRR strategies to local risk profiles, ensuring context-specific intervention (Kaburu, 2013; Kemboi, 2024). However, challenges arise from disparities in fiscal capacity, as counties with weaker revenue bases may struggle to allocate sufficient funds for DRR, leading to uneven preparedness and response across regions (Mwangi et al., 2022).

Second, the *stability of own sourced revenues* (OSR) is another critical aspect that influences expenditure assignments and, consequently, DRR outcomes. (2024) argue that the autonomy granted to local governments for generating revenue does not automatically translate into financial efficiency or sufficient funding for essential services, including DRR. Despite the potential benefits of OSR, local authorities frequently

encounter barriers such as inadequate capacity to mobilize resources, which in turn limits their ability to implement disaster management initiatives effectively.

Third, several authors draw attention to the issue of *revenue adequacy*, asserting that the generation of OSR must not only be autonomous but also sufficient to meet the needs arising from the disaster risks faced by local populations. They advocate for mechanisms that ensure adequate funding for both developmental and disaster-related expenditures (Kellett et al., 2013; Smucker et al., 2020). This call for enhanced fiscal capability aligns with the broader discourse on resource allocation and fiscal responsibility necessary for effective DRR.

Lastly, *fiscal discipline* is a critical aspect of sound financial governance, and it is used to impose hard budget constraints on sub-national governments to operate within their financial means and be accountable (Bahl & Bird, 2018). By imposing hard budget constraints, these mechanisms reduce the risk of misallocation or diversion of DRR funds (Clark-Ginsberg, 2020). Strong fiscal discipline enhances counties' ability to sustainably finance disaster preparedness, response, and recovery efforts, ultimately improving resilience and minimizing disaster-related losses (Hobdari et al., 2018).

Moreover, drawing on an extensive body of literature, information transparency is recognized as a vital enabler of allocative efficiency, accountability, and informed decision-making (Cucciniello et al., 2017; Porumbescu, 2015). This chapter also evaluates the moderating effect of information transparency on revenue and expenditure

assignments in aligning fiscal policies with disaster risk reduction outcomes. Most notably, the study employed the key variables, including access eight documents that the PFM Act 2012 prescribed for access.

Having laid out the motivation of this study, this chapter then proceeds by outlining a detailed description of the data and methodologies used as the foundation for all analyses, followed by empirical analysis and results and then concluded by exploring the implications of the findings within the context of the framework. In doing so this chapter hypothesizes that:

H₁: Revenue and expenditure assignments have a significant effect on disaster risk reduction outcomes.

H₂: Information transparency significantly moderates the relationship between revenue and expenditure assignments and disaster risk reduction outcomes.

H₃: There is a significant difference in revenue and expenditure assignments between counties of varying urbanity.

3.2 Data and Methodology

To investigate the relationship between Fiscal decentralization and DRR outcomes, this chapter adopted a mixed method design by using both descriptive and explanatory design to analyse the relationship between fiscal decentralization and DRR outcome in Kenya. This approach increases inferential leverage and reduces biases

through triangulation which tests consistency of findings using diverse instruments (Cresswell, 2013).

The study constructs were measured using a series of variables as shown that evaluate different aspects of Revenue and Expenditure assignments, information transparency, and disaster risk reduction outcomes, as highlighted with red shade in Table 3-1 above. The constructs descriptions were put in form of survey questions based on the analytical framework as shown in Figure 3-2 then Factor Analysis using Principal Component Analysis (PCA) was used to reduce the complexity of the data by identifying underlying factors that explain the variance in the observed indicators (see Appendix C).

3.3 Aggregation of Variables

To ensure the robustness of the Inferential analysis, the study aggregated the indicators for each of the variables by computing their composite means. This process involved computing an average from the selected indicators of each variable, thereby creating a single, standardized measure that encapsulates the overall effect of the variable in question for regression and correlation purpose.

In this chapter, five variables, as shown in analytical framework (Table3-1) were aggregated to form a composite mean score (X_1) for revenue and expenditure assignments, and subsequently, in the succeeding chapters, four variables were aggregated for Citizen engagement(X_2) and five variables aggregated.

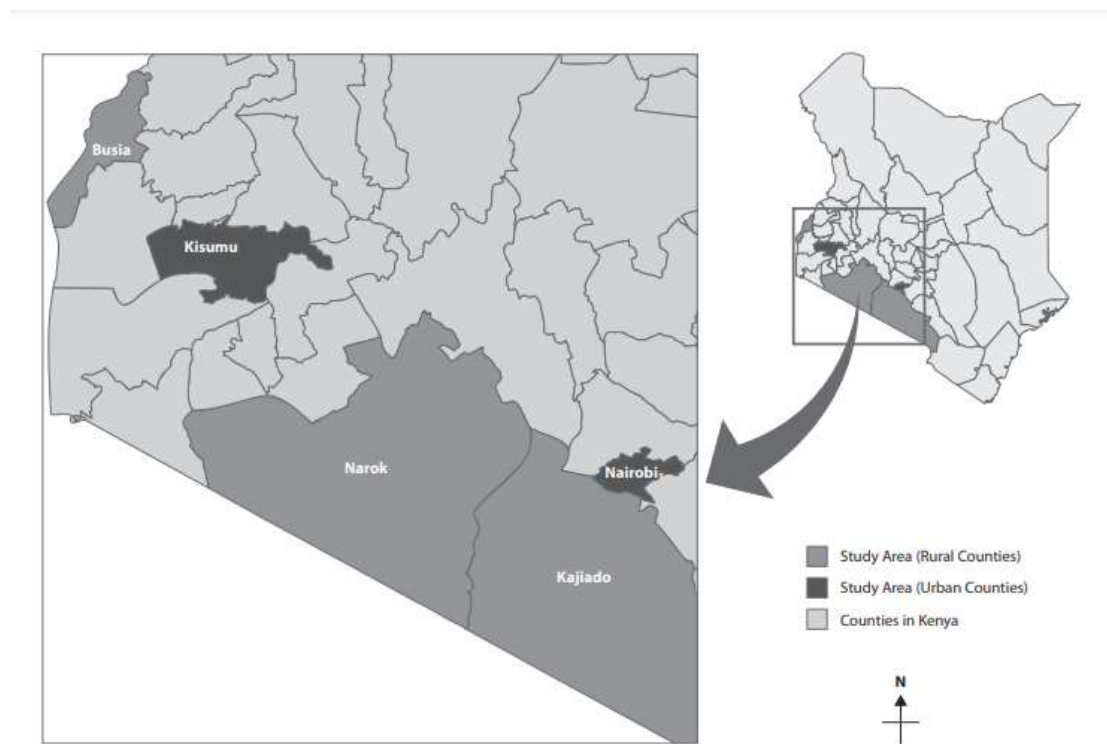
Table 3-1: Analytical Framework for the Constructs

Constructs	Variable/ Survey Measures	Measurement
Revenue and Expenditure	To what extent do counties have revenue-generation autonomy?	On a scale of 1-5, where 1 is the lowest and 5 is the highest of revenue/ expenditure Assignment
	Is the county's OSR stable for long-term planning?	
	Are DRR expenditure responsibilities clearly defined?	
	Does the county adhere to fiscal discipline mechanisms?	
Information Transparency	Do citizens have access to all DRR budget documents?	On a scale of 1-5 where 1 is the lowest and 5 is the highest level of information transparency
	Is citizen participation ensured from village-county level?	
	Is information effectively shared across all sectors?	
	Do citizens have access to all phases of Budgeting decision-making?	
Disaster Risk Reduction Outcomes	Are fatalities and economic losses reducing effectively?	On a scale of 1-5 where 1 is the lowest outcome and 5 is the highest DRR outcome
	Do Counties have an effective and responsive EWS?	
	Do Communities strong resilience adaptive capacity?	
	Is critical Infrastructure resilient to disasters?	

3.3 Methodology and Data

This study collected data through surveys and unstructured interviews (see Appendix 3 and 4 for the instruments). The survey method, recognized for its effectiveness in using standardized questions (King et al., 2021), was employed to capture the perceptions of respondents regarding fiscal decentralization and disaster risk reduction (DRR). Data collection took place between July -September 2024 across five selected counties—Nairobi, Kisumu, Narok, Kajiado, and Busia—identified as having riverine flood-prone areas at both river basin and urban scales (see study area map).

Figure 3-4: Study Area Map of Selected Counties in Kenya



These counties are delineated as flood-prone in the Kenya Water Master Plan (2010) map, which identifies flood hazards based on hydro-meteorological observations

and inundation of events (Kiptum et al., 2022). The classification is informed by factors such as rainfall patterns, river basin dynamics, and past flood occurrences, highlighting areas at high risk of recurrent flooding.

Semi-structured interviews with the question derived from the conceptual framework, were conducted with participants selected through purposive sampling. The interviews were audio-recorded, coded, transcribed, and reviewed to correct any discrepancies. A total of 25 semi-structured interviews were conducted with key informants, including government officials and disaster management professionals, to obtain qualitative insights. Table 3-2 below provides details on the categories and number of key informants interviewed.

Table 3-2: Key Informants and Roles

Key informant Type	Number	Roles and Expertise
National government (Ministry/ Departments)	6	Supervises national policies implementation, budget allocation, and intergovernmental coordination on DRR funding
Coordinating Agencies	4	Facilitates collaboration between government levels and ensure policy alignment.
County governments	10	Implementing DRR initiatives at the county level, managing devolved funds, and engaging citizens
NGO's	2	Technical capacity, funding DRR programs in collaboration with agencies
International Organization	2	Supporting DRR policies through capacity-building, and funding DRR projects
Consultant/ Policy Expert	1	Evaluating policy effectiveness, and propose reforms on DRR policies

3.4 Results

3.4.1 Descriptive Statistics

Descriptive results as shown in Table 3-3 present summary statistics for descriptive results on revenue assignment & expenditure, citizen engagement, intergovernmental coordination mechanisms and outcome of disaster risk reduction. The descriptive results showed that there was no full autonomy in revenue generation in the county governments to help in supporting DRR activities (mode of 2). Results also showed that counties were indifferent on the counties capacity to collect a significant portion of the total national revenue to support their local needs, including DRR as shown by a mode of 3. Participants were also indifferent about whether the counties are adequately funded for activities in Kenya.

Table 3-3: Descriptive Statistics based on respondents' perception

Variables	Mean	Mode	SD	Min	Max
<i>Revenue & Expenditure Assignments</i>					
Autonomy in revenue generation	3.0779	2.00	1.44853	1	5
OSR Stability	3.1602	5.00	1.44624	1	5
Revenue adequacy	3.0390	3.00	1.43353	1	5
Unbundling of DRR responsibilities	3.1126	5.00	1.40971	1	5
Fiscal discipline Mechanisms	3.0563	5.00	1.47482	1	5
<i>Information Transparency</i>					
Access to budget documents	2.6494	3.00	1.53027	1	5
Access to level of participation	2.6710	1.00	1.52229	1	5
Effective cross sector exchanges	2.9264	4.00	1.56281	1	5
Access to DRR Policy documents	2.9221	1.00	1.58882	1	5
<i>Disaster Risk Reduction Outcomes</i>					
Decrease in severity of disasters	2.1688	1.00	1.35521	1	5
Effective Early Warning Systems	3.0216	4.00	1.44597	1	5
Community preparedness	3.1169	4.00	1.34786	1	5
Infrastructure resilience	2.9264	1.00	1.44726	1	5

Note: Strongly Disagree=1, Somewhat Disagree=2, Neither Agree nor Disagree =3, Somewhat Agree =4, Strongly Agree=5.

Based on respondents' perceptions, revenue and expenditure assignments show mixed outcomes across counties. Autonomy in revenue generation averaged 3.08, but a mode of 2.00 and high variability (SD = 1.45) indicate limited autonomy in many counties. OSR stability scored slightly higher (mean = 3.16, mode = 5.00), revealing that while some counties enjoy stable revenues, experiences vary widely while Revenue adequacy (mean = 3.04, mode = 3.00) reflects neutral to slightly positive views with moderate variability.

The unbundling of DRR responsibilities (mean = 3.11, mode = 5.00) shows that some counties have clear mandates, while others face ambiguity. Fiscal discipline

mechanisms (mean = 3.06, mode = 5.00) also show modest ratings overall, with notable variation in effectiveness across counties.

3.4.2 Correlation Analysis

The study employed the correlation technique using the Pearson correlation coefficient (r) to measure the relationship between two variables on a scale from -1 to 1. A positive (r) indicates a direct relationship, while a negative (r) signifies an inverse relationship, where one variable decreases as the other increases. A zero (r) value indicates no association between the variables. While the correlation analysis identifies significant associations between the variables, it does not necessarily imply causation.

Table 3-4: Correlation Matrix

		Disaster Reduction	Risk Revenue Assignment & Expenditure
Disaster Risk Reduction	Pearson Correlation Sig. (2-tailed)	1	
Revenue Assignment & Expenditure	Pearson Correlation Sig. (2-tailed)	.333** .000	1
	N	231	231

** . Correlation is significant at the 0.01 level (2-tailed).

The results, presented in Table 3-4, revealed a moderate and significant positive correlation between Revenue Assignment & Expenditure and Disaster Risk Reduction ($r=$

0.333, $p = 0.000 < 0.05$). This indicates that an increase in revenue assignments and expenditure is associated with a slight improvement in disaster risk reduction outcomes.

3.4.3 Regression Analysis

This chapter employed a regression model to investigate how revenue and expenditure assignments influences DRR outcomes in Kenyan. As previously noted, this dissertation is nuanced by using survey data that examine the perceived effect of fiscal decentralization on disaster risk reduction outcomes, unlike previous studies.

The challenge is distinguishing whether decentralization reflects functional and resource allocation across government levels or merely the scale of sub-national activities as an increase in decentralization may result from a rise in the volume or number of public goods provided by sub-central governments. This chapter argues that the former is a budgetary shift driven by demand changes, while the latter represents true fiscal decentralization, the reassignment of functions for decentralized public goods provision, and hypothesizes that these variables, collectively, significantly contribute to effective DRR. This study estimates using the regression model is specified as:

$$Y_i = \beta_0 + \beta_1 X_i + \varepsilon_i \dots \dots \dots \text{(Equation 3-1)}$$

Where Y_i is the dependent variable Disaster Risks Reduction outcomes within county governments in Kenya, β_0 represents the constant in the model while X_i denotes the independent variable, which includes key fiscal decentralization factors such as

expenditure assignments and revenue assignments. β_1 represents the regression coefficients independent variables (expenditure assignments, revenue assignments) and ε_i is the error term.

Results

This section presents the findings from the bivariate regression analysis assessing the relationship between revenue and expenditure assignments and disaster risk reduction (DRR) outcomes within county governments in Kenya. Table 3-5 summarizes the regression results, including the model fit, ANOVA statistics, and regression coefficients.

Table 3-5: Bivariate Regression on Revenue & Expenditure Assignments and Disaster Risk Reduction Outcomes

Model Summary						
Model	R	R Square	Adjusted R Square		Std. Error of the Estimate	
1	.814 ^a	.663				.78079
ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	274.081	1	274.081	449.587	.000 ^b
	Residual	139.605	229	.610		
	Total	413.686	230			
Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.577	.105		5.503	.000
	Revenue & Expenditure Assignments	.750	.035	.814	21.203	.000

a. Dependent Variable: Disaster Risk Reduction Outcomes

b. Predictors: (Constant), Revenue & Expenditure Assignments

The regression results in Table 3-5 indicate that, based on survey respondents' perceptions, the overall model was statistically significant ($F = 449.587, p < 0.00$). The large F-statistic suggests that the predictor variable plays a substantial role in explaining variance. The adjusted R^2 of 0.661 further implies that approximately 66.1% of the variations in Disaster Risk Reduction Outcomes can be attributed to differences in Revenue and Expenditure Assignments.

Moreover, the key takeaway based on respondents' perception results showed that the beta coefficient of Revenue and Expenditure assignment was significant ($\beta = 0.750, t = 21.203, p = 0.00$). This implies that an increase by 1 unit of revenue and expenditure leads to an increase in disaster risk reduction outcomes by approximately 0.750 units. Existing empirical evidence supports this finding, showing that countries granting fiscal autonomy to subnational jurisdictions experience fewer fatalities (Skidmore & Toya, 2013). The next section examines whether information transparency has a moderating effect on the relationship.

3.4.4 Moderation Effects of Information Transparency

To assess the moderating effect of information transparency on the relationship between revenue and expenditure assignments and disaster risk reduction, mediation analysis using *Process Model 4* in SPSS was conducted. The command is useful in

determining in assessing whether the relationship between independent variable and dependent variable is influenced by a third variable(moderator). Here, it estimates how information transparency alters the impact of fiscal assignments on disaster risk reduction. The results in Table 3-6 show that higher information transparency enhances the positive effect of revenue and expenditure assignments on disaster risk reduction outcomes.

Table 3-6: Results On Moderating Effect of Information Transparency

Statistic	Value
Model Fit	
R	0.6207
R ²	0.3853
F	47.4233
p-value	0.0000
Model Coefficients	
Revenue & Expenditure (Rev& Expend)	0.2810 (p=0.0000)
Information transparency	0.4270 (p=0.0000)
Interaction (Rev & Expend × Information Transparency)	0.1549 (p=0.0023)
Interaction Effect	
R ² Change	0.0258
F	9.5215
p-value	0.0023

Based on respondents' survey data on perception, the results on Table 3-6 reveals that coefficients of both Revenue Assignment & Expenditure (Coeff = 0.2810, p = 0.0000) and Information Transparency (Coeff = 0.4270, p = 0.0000) have a significant direct effect on disaster risk reduction. The interaction term (Coeff = 0.1549, p = 0.0023) is also significant, suggesting that information transparency strengthens the positive effect of

revenue assignment & expenditure on disaster risk reduction. The interaction effect shows an R^2 change of 0.0258 with $F = 9.5215$, $p = 0.0023$, confirming that information transparency contributes significantly to explaining variations in disaster risk reduction when combined with revenue assignment & expenditure.

These results therefore imply that when information transparency is high, the impact of revenue assignment and expenditure on disaster risk reduction improves, highlighting the critical role of fiscal openness in governance. This findings is consistent with previous empirical studies on the moderating effect of information transparency as de Fine Licht (2014) that highlight its influence on public spending decisions, particularly in areas like traffic security in Italy.

3.4.5 Urbanity as A contributing factor in variation of outcomes

To test the hypotheses that there is a significant difference in urbanity among the counties across various variables, a Chi-square test was conducted. While no law explicitly classifies counties as urban or rural, metropolitan areas like Nairobi and Kisumu are generally considered urban due to population density and economic activity. This dissertation designates Nairobi and Kisumu as mostly urban, based on the Urban

Areas and Cities Act, 2011² and the 2019 Kenya Population and Housing Census³. The census classifies Nairobi as fully urban (100%) and Kisumu as 53% urban, while Narok (83% rural), Kajiado (56% rural), and Busia (85% rural) are predominantly rural.

Table 3-7: Descriptive Comparison of Percentages

	Revenue and Expenditure Assignment	
	Urban	Rural
Strongly Disagree	48%	52%
Somewhat Disagree	63%	37%
Neutral	67%	33%
Somewhat agree	57%	43%
Strongly Agree	60%	40%
N	150	81

Note: Columns for each variable total 100% horizontally.

Based on respondents' perception, the results on Table 3-7 highlight the magnitude of urban-rural difference on their sentiments with regards to various variables. Urban counties show stronger disagreement on revenue and expenditure assignment, suggesting fiscal imbalances. Citizen engagement is more polarized in urban areas, with higher strong disagreement (62%) and agreement (71%), while rural counties lean toward neutrality (67%). Similarly, urban counties express greater dissatisfaction with policy alignment (71% strongly disagreeing vs. 29% in rural areas). These patterns

² According to Laws of Kenya- *Urban Areas and Cities Act No. 13 of 2011*, an urban area qualifies for city status if it has at least 500,000 residents per the latest gazetted census, an integrated development plan, and sufficient revenue for sustainability. Source: http://www.parliament.go.ke/sites/default/files/2017-05/UrbanAreasandCitiesAct_No13of2011.pdf

³ Source: <https://www.knbs.or.ke/2019-kenya-population-and-housing-census-results/>

align with the Chi-square test results (Table 3-8), confirming notable fiscal decentralization disparities between urban and rural counties.

Table 3-8: Chi-square Tests Results On Urbanity as Enabling Factor

Variable			Value	df	Asymptotic Significance (2-sided)
Revenue Assignments and Expenditure	Pearson Chi-Square		10.245	4	.036
	Likelihood Ratio		10.298	4	.036
	Linear-by-Linear Association		8.981	1	.003
	N of Valid Cases		231		

The Chi-square test results in Table 3-8 indicate significant differences in revenue assignments and expenditure as well as citizen engagement between urban and rural counties in Kenya. For *revenue assignments and expenditure*, the results ($\chi^2(4,231) = 10.245$, $p = 0.036$) and Likelihood Ratio (10.298, $p = 0.036$) suggest statistically significant variations between urban and rural counties. The Linear-by-Linear Association (8.981, $p = 0.003$) further supports this finding, indicating a strong linear relationship.

Existing literature corroborates this finding Bahl & Bird, (2008) argue that fiscal decentralization in developing nations deepens rural-urban disparities, as wealthier urban governments benefit more from increased taxing authority due to stronger revenue bases and higher population densities. Notably, Masaki (2018) supports this by arguing that in rural SNG's in Africa, where fiscal capacity is weak and enforcement costs are low, intergovernmental transfers boost local revenue by funding tax collection, expanding the

tax base, and improving public goods provision, enhancing voluntary tax compliance and common held belief.

While the potential for rural counties exists in Kenya to enhance their own source revenue, they are constitutionally constrained. Thus, the effectiveness of fiscal decentralization in achieving effective disaster outcomes as explained by Parker (1995) seminal theory on *Souffle theory on decentralization* depends on balancing expenditure responsibilities and revenue elements in the right sequence. Just as a soufflé requires precise ingredients and timing to rise, poorly executed fiscal decentralization—like a half-baked soufflé—will collapse.

3.5 Qualitative Results

The focal phenomenon in this chapter was the extent to which revenue and expenditure assignments influence the disaster risk reduction outcomes. Overall, the thematic analysis reveals three main findings: 1. The extent of fiscal autonomy and capacities in the counties reveal both vertical and horizontal imbalance due to intergovernmental transfers crowding out counties' revenue generation 2. Instability of Counties own source due to limited tax base and taxonomy 3. Lack of overarching policy and legal frameworks to unbundle functional assignments on disaster risk reduction.

3.5.1 Fiscal Tug-of-War: Counties Caught Between Transfers and Revenue Shortfall

In broad sense, discussion with interviewees reveal the lack of fiscal capacity of counties to generate sufficient revenue from its own sources. There was a near consensus

in both baseline and follow-up interviews that the constitution restricts the taxonomy to low yielding tax streams such as property, entertainment, trading licenses taxes and cost recovery fees such as hospital, game park and reserve fees. The framers of Kenya's Constitution 2010 in adopting a devolved system intended to give autonomy to counties through the *principle of subsidiarity*- notion that the functions where practical should be devolved to the lowest level – but DRR activities transcend the jurisdictional levels, yet the operational competencies are nested within the counties. This was echoed by Interviewee K-2 who noted:

“Counties function as creatures of national government when it comes to disaster risk reduction activities by essentially implementing policies such as hazard mapping set by national government”

Nonetheless, significant gaps on intergovernmental transfers exist such as unfunded mandates or bureaucratic delays from Controller of Budgets in disbursement of equitable shares to the county government and perceived crowding effect of transfers which undermines the benefit allocative efficiency. Many participants highlighted both vertical and horizontal imbalances, driven by asymmetries not only in local revenue generation but also in expenditure responsibilities. Interviewee K-17 voiced these concerns by pointing out that:

"... the equitable share feels more like a resource curse than a blessing for DRR efforts, especially in rural counties. It creates a substitution effect, where counties rely on transfers instead of generating their own revenue."

While rural counties face similar hazard risks as urban counties, they lack comparable *fiscal capacity*. Majority of the interviewees agree that urban counties benefit from a dense network of institutions, policies, and active civil societies that enhance DRR efforts. Own revenue generation is a daunting task in rural counties due to weak tax administration capacity. At same time the marginal effect of transfers restricts them in applying for donor grants that require matching grants to induce counties' ownership of DRR projects. This over-reliance on grants and transfers restricts the scope of DRR efforts. These sentiments were opined by Interviewee K-5 who noted that "*...our current revenue purse and equitable allocations are insufficient for response and relief, let alone preparation and mitigation. We are technically reliant on grants to finance our DRR activities.*".

3.6.1.2 Fiscal fragility and fatigue: The Limits of a Weak Tax Base

Regarding DRR funding adequacy, interviewees pointed to fiscal fragility driven by high national debt and a struggling economy, worsened by the COVID-19 pandemic. This has led to intertemporal budget constraints, limiting investments in DRR as a significant share of revenue is allocated to debt repayment. As one interviewee highlighted this challenge by stating that:

“The ratio of debt repayment to revenue is high, meaning the national government must prioritize debt payments before allocating funds for DRR programs.” – Interviewee K-5

Participants express guarded optimism on the utility impact of fiscal distress on DRR outcomes, noting that capital-intensive investments like Early Warning Systems (EWS) in counties rely heavily on external donor funding. In recent years, Kenya has reached its debt ceiling, with borrowing shifting from multilateral agencies to external commercial sources, leading to higher interest rates and further straining fiscal space for DRR initiatives. This was highlighted by one interviewee who stated:

“Decentralizing Early Warning Systems require significant capital investment, yet counties rely almost entirely on external donor funding because revenue instruments cannot internalize these costs” Interviewee K-3.

Moreover, participants express varied opinions on *fiscal fatigue* —the diminishing efficiency of taxation due to economic strain and taxpayer resistance because of overlapping taxes. Property tax emerged as a major stream of revenue for the counties, but interviewees pointed out its limitation, notably as calculation based on unimproved site value (USV)- levied on land only instead of capital value of property and the lack of updated valuation rolls remains largely untapped. This sentiment from the Interviewee K-11 reveals this challenge by noting that:

“.... our recent deterministic frontier analysis reveals that property taxes as unrealized revenue potential due to outdated valuation rolls and the continued use of unimproved site value for rate computation, even in urban areas”

This has an implication on DRR financing as capitalization of properties is often fraught by challenges of legal frameworks for assessment of the market values. This gives room for false reporting and undervaluation. As a result, counties continue to struggle to generate sufficient revenue to fund DRR programs. Echoing this sentiment, Interviewee K-1 stated:

“...property valuation process is often marred by inconsistencies in market assessments, creating loopholes for undervaluation which limits counties’ ability to fund DRR programs

3.6.3 Fixing the Fault Lines: Moving from Single to Systemic Policy Interventions

According to several interviewees, the lack of an overarching policy and legal framework to clarify DRR functional assignments has led to siloed interventions that have led to significant budgetary implications. Specifically, Interviewees highlighted challenges in expenditure assignment, noting that disaster response efforts often maintain isolated functions rather than addressing underlying risks through a systemic approach. Effective DRR requires integrating development, resilience, and economic shock mitigation.

The summary Table 3-9 below describes the extent to which each of the fiscal decentralization dimensions’ efficacy determines the DRR outcomes.

Table 3-9: Extent of Efficacy of Revenue and Expenditure Assignments on DRR outcomes in Kenya

Dimension	Extent of Efficacy of Revenue and Expenditure Assignment	Excerpts
Fiscal Autonomy	Institutions are well established but there are a lot of unfunded mandates due to over-reliance on IFT's.	Interviewee K-16: "County governments are granted a substantial level of fiscal decision-making authority for DRR expenditures in theory, but in practice, this autonomy is often constrained by limited funding that hinder their ability to exercise full control"
Own source revenue stability	OSR volatility hinders long-term DRR planning and implementation.	Interviewee- K4: The challenge that I observed is that OSR is volatile especially during hard economic times such as the COVID-19 pandemic. It makes it difficult for economic planners like me to forecast long term for critical DRR incidences.
Revenue adequacy to fund DRR	Funding imbalance across the DRR Phases- preparation and mitigation vs. Response and recovery	Interviewee K-7: Most counties struggle to secure funds for proactive DRR measures like risk mapping and early warning systems. However, when disasters strike, emergency response and recovery efforts receive urgent funding, often through supplementary budgets. This reactive approach strains budgets and leaves counties vulnerable to recurring risks.
Unbundling DRR responsibilities	Effective configurations of functional competencies but hindered by unfunded mandates	Interviewee K-1: Yes, the constitution is clear on concurrent responsibilities but the lack of a clear national disaster risk reduction policy forces counties to develop their own ad hoc approaches, causing inconsistencies, duplication, and inefficient resource use.

3.6 Discussion and Conclusions

The empirical and qualitative findings confirm the hypothesized link between fiscal decentralization and disaster risk reduction (DRR) outcomes that is consistent with previous subnational government specific findings such as Hermansson (2019) for Turkey and Miao et al., (2021) for United States. Regression results indicate a positive and significant relationship between revenue and expenditure assignments, highlighting the impact of fiscal decentralization on DRR. However, over-reliance on IFT's can encourage perverse behaviours, such as overspending and shifting financial burdens to the national government for bailouts.

Moreover, this qualitative analysis reveals the fault lines that also need to be fixed. Notably, volatility of equitable shares and conditional grants, the imbalance of prioritization of response and recovery efforts over proactive measures like risk mapping and early warning systems. The second-generation fiscal federalism theory explains these behaviours as it has challenged the assumption of benevolent public officials and assumes that agents are more driven by their own political interests and agenda (Weingast, 2014).

Taken as a whole, the concurrency of DRR responsibility was intended to leverage the comparative advantages of both levels of government. However, it has often led to role ambiguity, inefficiencies, duplication, and inter-jurisdictional conflicts. A more

effective approach would be to "unbundle" expenditure functions into distinct sub-functions, ensuring clear assignment of responsibilities at each stage of service delivery or investment, thereby improving efficiency and accountability.

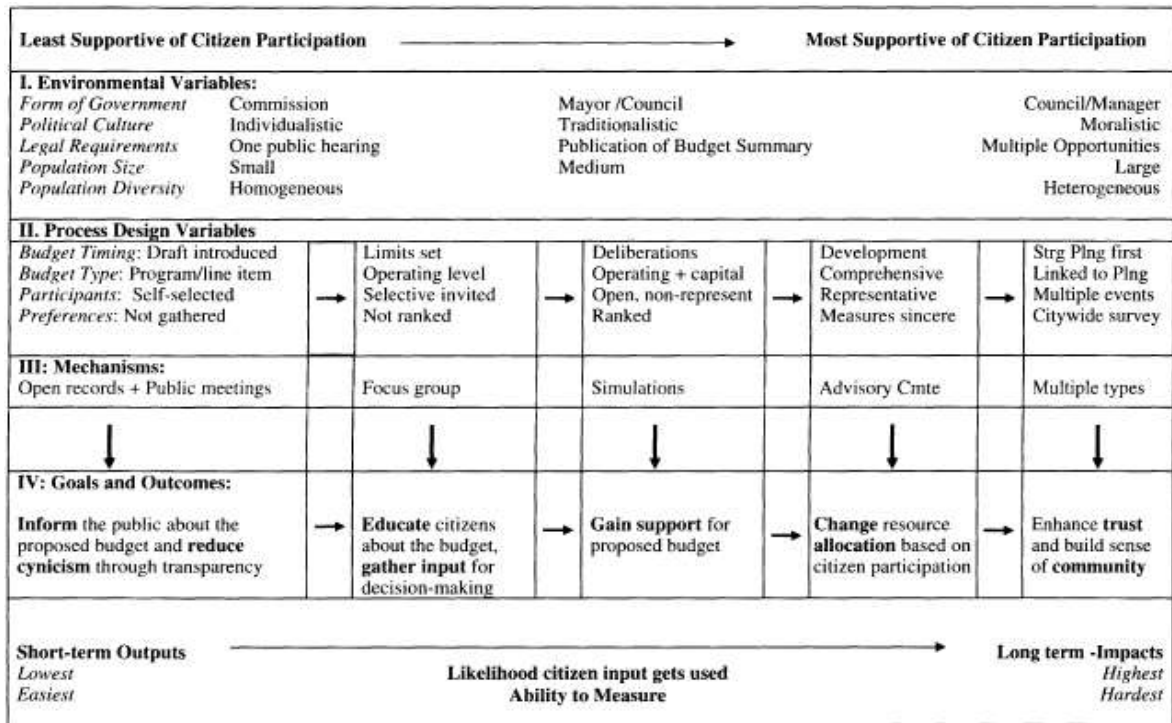
Chapter 4. Effect of Citizen Engagement on Disaster Risk Reduction Outcome in Kenya

4.1 Introduction

The previous chapter provided evidence that stylized facts of revenue and expenditure assignment have a positive and significant effect on DRR outcomes in Kenya. The key focus was on the transfer of resources and functional assignments, but the recent shift towards new public governance implies a mandate for governments to strengthen mechanisms for citizen engagement in fiscal decision making to increase social capital and accountability. This shift is based on the basic Tocquevillian logic that democracy will benefit when more citizens participate (Pollitt & Bouckaert, 2017).

This chapter examines the implications of citizen engagement on Disaster Risk Reduction (DRR) outcomes in Kenya. In this chapter, conceptualization of citizen engagement is situated within the framework proposed by (Ebdon & Franklin, 2006) in their *Impact Model of Citizen Participation in Budgeting* (See Figure 4-1)

Figure 4-1: Impact Model of Citizen Participation in Budgeting

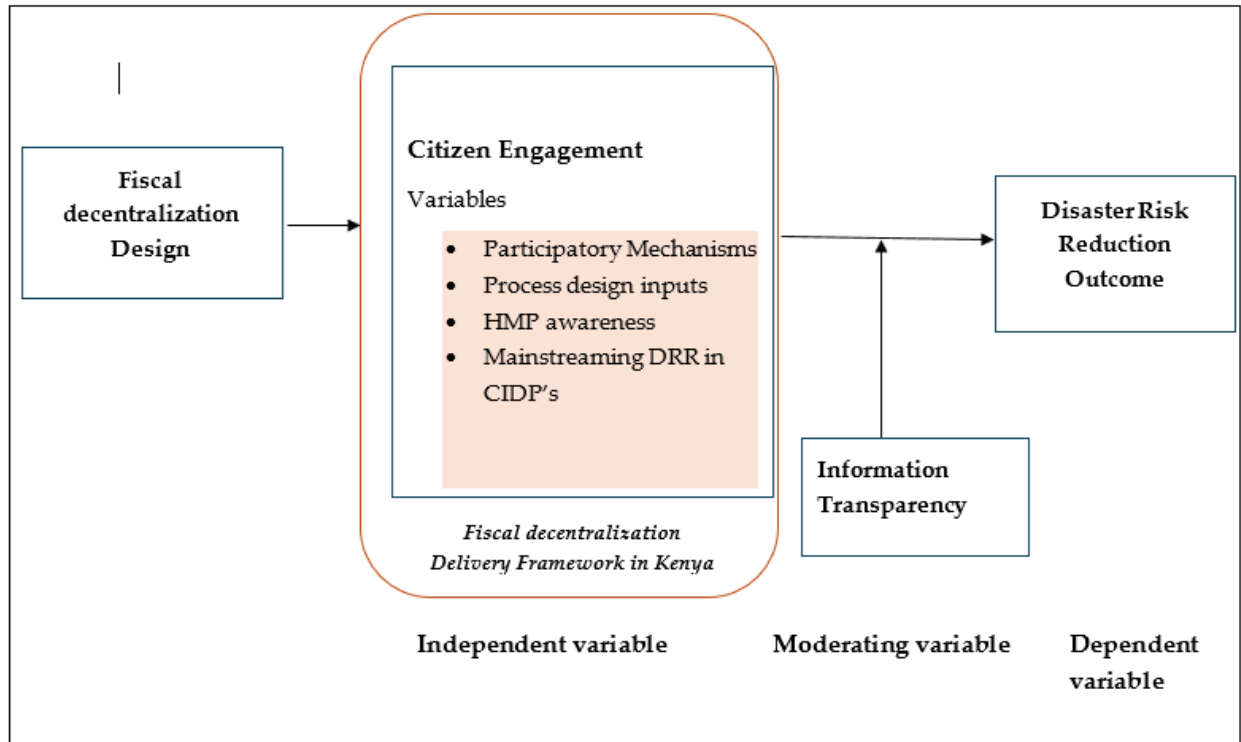


Strg Plng. = strategic planning; Represent = representative.

Source: Ebdon & Franklin (2006:444)

Using this typology, this chapter explores in depth the essential theoretical linkages (see figure 4-1) between fiscal decentralization inputs—such as participatory mechanisms like public meetings and simulation process design elements, sincere preference consideration, timing, and representativeness, and the resulting DRR outcomes, such as increased awareness of hazard mitigation plans and changes in resource allocation through mainstreaming of DRR in CIDP.

Figure 4-2: A Conceptual Model of the Effect of Citizen Engagement on DRR Outcomes: Focus of Chapter 4



Source: Author's own construction based on literature

To set the stage, this chapter conceptualizes citizen engagement as dialogic interaction between the levels of government that ensures that they have a voice in fiscal decision processes with the objective of improving service delivery outcomes and counter the deficits in legitimacy of representative democracy (Bohman, 2006; Fung, 2006). Citizen engagement models have evolved over time with several schemas which seeks to provide a consistent framework for the analysis, such as Arnstein rung of ladder (Arnstein, 1969) and International Association for Public Participation (IAPP 2000), which basically simplify Arnstein's eight rungs five levels, respectively: 1. Inform, 2. Consult, 3. Involve, 4. Collaborate and 5. Empower (Fung & Wright, 2001; Kweit & Kweit, 2004).

In Kenya, citizen engagement is driven by a constitutional mandate requiring its integration into the fiscal decision-making process with explicit provisions in the Public Finance Management Act of 2012 (Muthomi & Thurmaier, 2021). Broadly, it serves as a vital tool for strengthening fiscal decentralization and improving DRR outcomes, as well as enhancing allocative efficiency by aligning resource allocation with citizen priorities. This process, known as "demand revelation," enables governments to better match budgetary allocations to public needs, thereby optimizing the effectiveness of DRR initiatives (Azfar, 2007).

With the study's motivation established, this chapter proceeds by outlining the theoretical frames on key variables that motivate the study, describing the methods for research design and data analysis used to address the research questions. It will conclude by presenting the results and discussing their implications within the conceptual framework, as well as their broader relevance to research and policy.

4.2 Theoretical Premises

This literature review integrates several theoretical frameworks that elucidate the relationship between citizen engagement and disaster risk reduction (DRR) outcomes in the Kenyan context. It builds on Arnold's foundational work, "Ladder of Participation" (Arnstein, 1969) and extends to contemporary models, particularly Fung's (2006) "Democracy Cube," which articulates three salient dimensions of participation—(1)

participant selection, (2) communicative mode, and (3) extent of influence—which collaboratively culminate in outcomes of legitimacy, justice, and enhanced governance. These elements are critically relevant when examining the complexities of DRR initiatives, where effective citizen engagement can significantly influence policy outcomes and community resilience.

Despite theoretical advancements, this chapter applies the Impact Model of Citizen Participation in Budgeting, as proposed by (Ebdon & Franklin, 2006), as a critical evaluative framework within Kenya's decentralized governance context. Given the distinct political and fiscal dynamics of Kenya's post-devolution era, this model offers a structured approach to analysing the link between citizen engagement and tangible disaster risk reduction (DRR) outcomes.

Central to Ebdon and Franklin's (2006) *Impact Model* is the explication of key elements within the fiscal process, which articulates the pathways through which citizen engagement can lead to enhanced disaster resilience. Firstly, the model evaluates whether *participatory mechanisms* are institutionalized and capable of promoting two-way communication. Various methods, from public meetings to more innovative tools such as budget simulations, serve as critical channels for fostering engagement. While traditional public meetings often constrain citizen influence to minimal feedback, more interactive techniques, such as budget simulations, empower communities to visualize

disaster financing scenarios, thereby elevating the discourse surrounding DRR planning and financing.

Secondly, the *Process design inputs* evaluate the efficacy of citizen engagement by examining critical factors encompassing the timing of engagement, the nature of budget allocations, the demographic composition of participants, and the setting of preferences. Research suggests that engaging citizens during the budget preparation phase yields more significant benefits compared to the adoption phase. Furthermore, it is essential for the process design to strike a balance between inclusivity and the need for knowledgeable participants (Barnes, 2015; Franklin & Ebdon, 2015)

Thirdly, the articulation of clear *goals and outcomes* thorough cost-benefit analysis that underpin the impact of citizen engagement on DRR outcomes. The ambiguity surrounding citizen engagement goals often leads to inconsistent expectations among stakeholders and complicates the evaluation of effectiveness (Franklin & Ebdon, 2005; Muthomi & Thurmaier, 2021). The impact model explicates that when goals are not explicitly defined or directly tied to participatory processes, the potential for citizen disenfranchisement increases, undermining the very trust and legitimacy necessary for effective governance in disaster management.

In summary, this chapter highlights the multifaceted dimensions of citizen engagement in the attainment of disaster risk reduction in Kenya, drawing on various

theoretical frameworks whilst prioritizing Ebdon and Franklin's *Impact Model*. This is so particularly with paucity of empirical evidence to either support or negate the normative positive effects attributed to citizen engagement. Thus, it seeks to examine the question: What is the effect of citizen engagement on disaster risk reduction in a fiscally decentralized environment in Kenya and hypothesizes that:

H₄: Citizen engagement has a significant effect on disaster risk reduction outcomes

H₅: Information transparency has a moderating effect on the relationship between Citizen engagement and DRR Outcome

H₆: There is a significant difference between urbanity of the counties and citizen engagement

4.3 Data and Methodology

As previously indicated in Chapter 3, this chapter also employed a mixed method design, combining both quantitative and qualitative data. Quantitative data was collected through surveys from respondents ($n=231$), comprising national and county administrators from five counties—Nairobi, Kajiado, Narok, Kisumu, and Busia. Participants had at least one year of experience in relevant departments, including finance and economic planning, budgeting and revenue administration, public policy analysis, disaster management, and citizen and stakeholder engagement, among others.

The survey was conducted using a questionnaire with Likert scale psychometric constructs, were asked several relevant questions and statements representing the

variable constructs on citizen engagement, and respondents rated each statement on a 1–5 scale: 5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree, and 1 = Strongly Disagree. Based on their practical experiences, respondents provided contextual insights into citizen engagement and expected to ground their responses on the reality of the perceived occurrences.

Furthermore, qualitative data was obtained from key informants ($n=25$) who included the national governments in the Treasury, disaster management departments, Ministry of Interior and government coordination and Environment and Climate Change; County government officials in Economic planning, disaster management, legal counsel, environment among others; NGO officials and International Organizations such as International Red Cross Society, Oxfam International. For distribution on the level of management and equivalence (see Table 3-2).

The qualitative data from the interviews were analysed using the general inductive approach described by Miles and Huberman (2014). All transcripts were carefully reviewed, formatted, and examined to identify emerging themes and key events. The data were systematically coded using *N-vivo*, which facilitated the validation of the coding process and enhanced the reliability of the analysis. Overall, the data collection was guided by the following analytical framework (Table 4-2).

Table 4-1: Analytical Framework for Citizen Engagement Construct

Construct	Variable/ Survey Measures	Measurement
Citizen engagement	To what extent are citizen engagement mechanisms effective in Disaster Risk Reduction (DRR)?	On a scale of 1-5 where 1 is the lowest and 5 is the highest of revenue/ expenditure re assignment
	How effective are process design inputs in capturing citizens' preferences?	
	What is the level of citizen awareness regarding existing HMP plans?	
	To what extent do citizens trust the integration of DRR into the County Integrated Development Plan (CIDP)?	
Information Transparency	Do citizens have access to all DRR budget documents	On a scale of 1-5 where 1 is the lowest and 5 is the highest level of information transparency
	Is citizen participation ensured from village-county level?	
	Is information effectively shared across all sectors?	
	Do citizens have access to all phases of DRR Budgeting decision-making?	
Disaster Risk Reduction Outcomes	Are fatalities and economic losses reducing effectively?	On a scale of 1-5 where 1 is the lowest outcome and 5 is the highest DRR outcome
	Do Counties have an effective and responsive EWS?	
	Do Communities strong resilience adaptive capacity?	
	Is critical Infrastructure resilient to disasters?	

In the same vein, analysing the quantitative data, the study used a bivariate regression model to examine the relationship between constructs citizen engagement and the Disaster Risk Reduction, with information transparency as a moderator. To test the two hypotheses, the two models as shown below – direct relationship between citizen engagement and disaster risk reduction outcomes (Equation 4-1) and the moderating effect of information transparency (Equation 4-2) were fitted to determine the significance and strength of these relationships.

$$Y_1 = \beta_0 + \beta_1 X_1 + \varepsilon \dots\dots\dots (Equation 4-1)$$

$$Y_2 = \beta_0 + \beta_1 X_i + \beta_i M + \beta X_i M + \varepsilon \dots\dots\dots (Equation 4-2)$$

Where in the above first model shown, Y_i will be the dependent variable for Disaster Risks Reduction within county governments in Kenya. β_0 represents the constant in the model, while β_1 represents the regression of citizen engagement and X_1 independent variables. While ε_i represents the error term, capturing the unobserved factors or randomness affecting Y that are not accounted for by the independent variable in the model.

4.4 Results and Analysis

4.4.1 Descriptive Statistics for Citizen Engagement

Descriptive analysis results, shown in Table 4-2 below showed descriptive results on citizen engagement and outcome of disaster risk reduction.

Table 4-2: Descriptive Statistics of the Study Constructs

Variables	Mean	Mode	SD	Cronbach alpha
<i>Citizen Engagement</i>				
Participatory mechanisms	2.7013	1.00	1.54130	0.934
Process design inputs	2.5887	2.00	1.51791	
Hazard Mitigation Plan awareness	2.5584	1.00	1.51652	
Mainstreaming of DRR in CIDP	2.5671	2.00	1.52759	
<i>Information Transparency</i>				
Access to budget documents	2.6494	3.00	1.53027	0.931
Access to level of participation	2.6710	1.00	1.52229	
Effective cross sector exchanges	2.9264	4.00	1.56281	
Access to DRR Policy documents	2.9221	1.00	1.58882	
<i>Disaster Risk Reduction Outcomes</i>				
Decrease in severity of disasters	2.1688	1.00	1.35521	0.916
Effective Early Warning Systems	3.0216	4.00	1.44597	
Community preparedness	3.1169	4.00	1.34786	
Infrastructure resilience	2.9264	1.00	1.44726	

Note: *Strongly Disagree*=1, *Somewhat Disagree*=2, *Neither Agree nor Disagree* =3, *Somewhat Agree* =4, *Strongly Agree*=5.

Based on a survey of respondent's perception, the results in Table 4-2 indicate moderate mean scores, with Process Design Inputs (M = 2.754, SD = 1.567) and Participatory Budgeting Mechanisms (M = 2.703, SD = 1.541) indicating neutral to slightly positive engagement. On the other hand, Hazard Mitigation Plan Awareness (M= 2.5584, SD= 1.516) which reflects a similar level of response dispersion as other variables, and lastly, Mainstreaming of DRR in CIDP (M= 2.567, SD= 1.527) indicating moderate variability.

Moreover, Information transparency is moderate, with relatively effective cross-sector exchanges ($M = 2.926$, $SD = 1.563$). Access to DRR Policy Documents ($M = 2.922$, $SD = 1.589$) is perceived more positively. However, limited access to Budget Documents ($M = 2.649$, $SD = 1.530$) and restricted participation levels ($M = 2.671$, $SD = 1.522$) raise concerns about citizen engagement and public access to crucial financial and policy information. Overall, Cronbach's alpha values are high and fall within acceptable reliability thresholds ($\alpha > .60$).

4.4.2 Correlation Analysis

Table 4-3: Correlation Matrix

		DRR Outcomes	Citizen Engagement
Disaster Risk Reduction	Pearson Correlation	1	
	Sig. (2-tailed)		
Citizen Engagement	Pearson Correlation	.852**	1
	Sig. (2-tailed)	.000	
N			231

The results also showed a very strong, positive and significant correlation between ($r = 0.852$, $p = 0.000 < 0.01$) Citizen Engagement and Disaster Risk Reduction outcomes. This suggests that with greater citizen engagement significantly enhances disaster risk reduction outcomes in Kenya. Although correlation is significant, however, it does not necessarily imply any causal effects but generally associative effect of Citizen engagement on positive DRR outcomes.

4.4.3 Results on Bivariate Regression between Citizen Engagement and DRR Outcomes

The study employed a bivariate linear regression model to investigate how citizen engagement influence DRR outcomes in Kenyan. The hypothesis posits that these variables, collectively, significantly contribute to effective DRR. The regression model is specified as shown in equation 4-1 above. The regression results in Table 4-4 show that the findings indicate that overall regression was statistically significant ($F = 608.703$, $p < 0.00$) and consequently. An adjusted R^2 of 0.725 indicates that approximately 72.5% of variations in DRR Outcomes can be explained by variation in Citizen Engagement.

Table 4-4: Bivariate Regression Based On Respondents' Perception

					Std. Error of the Estimate	
Model	R	R Square	Adjusted R Square			
1	.852 ^a	.727			.725	.70273
ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	300.598	1	300.598	608.703	.000 ^b
	Residual	113.088	229	.494		
	Total	413.686	230			
Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.405	.097		4.164	.000
	Citizen Engagement	.808	.033	.852	24.672	.000

a. Dependent Variable: Disaster Risk Reduction

b. Predictors: (Constant), Citizen Engagement

Overall, survey-based perceptions indicate that the regression results in Table 4-4 demonstrate a statistically significant relationship. Table 4-4 shows that the relationship was statistically significant ($F=608.703$, $p<0.00$) and large F-Statistic is a good indicator that as the predictor variable, it plays a greater role in explaining a good portion of the variance. An adjusted R^2 of 0.725 indicating that approximately 72.5% of variations in Disaster Risk Reduction can be explained by variation in Citizen engagement. The beta coefficient of *Citizen Engagement* ($\beta= 0.808$, $t= 24.672$, $p=0.00$). The result suggests that Citizen Engagement significantly and positively influenced disaster risk reduction outcomes. This implies that citizen engagement significantly leads to an increase in disaster risk reduction outcomes. The relationship between the two variables can be expressed as follows.

$$Y_i = 0.405 + 0.808X_1 \dots\dots\dots (Equation 4-3)$$

4.4.4 Moderation Effects of Information Transparency on Relationship between Citizen Engagement and DRR

Building on the previous literature that emphasizes that citizens when they access accurate, and quality information are likely to indicate a more favourable assessment on achievement of service delivery outcomes (Kim and Lee 2019; Sabatier 1988). This chapter therefore, predicts that the effect of citizen engagement on DRR outcomes will be moderated by information transparency. Specifically, it fosters greater trust in

government, thus amplifying the impact of integrated participatory approaches on DRR outcomes. The following hypothesis was formulated and tested to test this.

H₅: Information transparency moderates the relationship between citizen engagement and disaster risk reduction.

Table 4-5: Moderation on Citizen Engagement & Information Transparency

Statistic	Value
Model Fit	
R	0.6874
R ²	0.4725
F	67.7674
p-value	0.0000
Model Coefficients	
Citizen engagement (CE)	0.5398 (p=0.0000)
Information transparency (IT)	0.2972 (p=0.0000)
Interaction (CExIT)	0.0965 (p=0.0306)
Interaction Effect	
R ² Change	0.0110
F	4.7354
p-value	0.0306

From the perspective of respondents, the results suggest that the model is statistically significant ($F = 67.7674$, $p = 0.0000$) with an R^2 of 0.4725, indicating that 47.3% of the variance in disaster risk reduction is explained by the predictors in the model. The coefficients show that Citizen Engagement (Coeff = 0.5398, $p = 0.0000$) and Information Transparency (Coeff = 0.2972, $p = 0.0000$) both have a significant direct effect on disaster risk reduction. The interaction term (Coeff = 0.0965, $p = 0.0306$) is also statistically

significant, though with a smaller effect size than in the revenue and expenditure assignments (See chapter 3).

The interaction effect results (R^2 change = 0.0110, $F = 4.7354$, $p = 0.0306$) suggest that information transparency as an interaction term adds significant explanatory power to the relationship between citizen engagement and disaster risk reduction. This indicates that when governance systems promote open access to information, citizens can engage more effectively in disaster risk reduction efforts, fostering community resilience and preparedness.

4.4.5 Urbanity as contributing factor in variation of outcomes

Much of the urban governance literature suggests that urban local governments play a central role in decision-making where citizen participation is concern (Barber, 2013) however, empirical evidence on their actual impact remains limited. Studies suggest that urban local governments, particularly in developing countries, often operate under constraints imposed by multilevel governance structures, limiting their ability to effectively manage and deliver services (Boex & Simatupang, 2015). This section seeks to assess the contribution of urbanity to the variation of outcomes.

While no law explicitly classifies counties as urban or rural in Kenya, metropolitan areas like Nairobi and Kisumu are generally considered urban due to population density and economic activity. This chapter designates Nairobi and Kisumu as mostly urban,

based on the Urban Areas and Cities Act, 2011⁴, and the 2019 Kenya Population and Housing Census⁵. The census classifies Nairobi as fully urban (100%) and Kisumu as 53% urban, while Narok (83% rural), Kajiado (56% rural), and Busia (85% rural) are predominantly rural.

Table 4-6: Descriptive Comparison between Urban and Rural

	Citizen Engagement	
	Urban	Rural
Strongly Disagree	62%	38%
Somewhat Disagree	46%	54%
Neutral	33%	67%
Somewhat agree	69%	31%
Strongly Agree	71%	29%
N	150	81

Note: Columns for each variable total 100% horizontally.

The results in Table 4-6 highlight the magnitude of urban-rural differences on their sentiments with regards to various variables. Citizen engagement is more polarized in urban areas, with higher strong disagreement (62%) and agreement (71%), while rural counties lean toward neutrality (67%). Similarly, urban counties express greater dissatisfaction with policy alignment (71% strongly disagreeing vs. 29% in rural areas).

⁴ According to Laws of Kenya- *Urban Areas and Cities Act No. 13 of 2011*, an urban area qualifies for city status if it has at least 500,000 residents per the latest gazetted census, an integrated development plan, and sufficient revenue for sustainability. Source: http://www.parliament.go.ke/sites/default/files/2017-05/UrbanAreasandCitiesAct_No13of2011.pdf

⁵ Source: <https://www.knbs.or.ke/2019-kenya-population-and-housing-census-results/>

Table 4-7: Chi-square Tests Results on Urbanity as an Enabling Factor

Variable		Value	df	Asymptotic Significance (2-sided)
Citizen Engagement	Pearson Chi-Square	9.649	4	.047
	Likelihood Ratio	9.392	4	.042
	Linear-by-Linear Association	.016	1	.0389
	N of Valid Cases	231		

The Chi-square test results in Table 4-7 above indicate significant differences in revenue assignments and expenditure as well as citizen engagement between urban and rural counties in Kenya. The Pearson Chi-Square results in the results ($\chi^2(4,231) = 9.649$, $p = 0.047$) indicates a statistically significant association between categorical variables and Likelihood ratio ($\chi^2 = 9.392$, $df = 4$, $p = 0.042$) reinforces the robustness of the significant relationship. The Linear-by-Linear Association ($\chi^2 = 0.016$, $df = 1$, $p = 0.0389$) indicates a significant linear association showing that as one variable changes, citizen engagement may follow a systematic trend.

4.5 Qualitative Analysis

The qualitative findings highlight three key challenges in citizen engagement design and implementation. First, while citizen participation mechanisms are institutionalized, these mechanisms often function *tokenistically*, limiting meaningful participation. Second, there is a lack of standardized guidelines and lastly, citizen engagement competes with other development priorities, reducing its effectiveness.

4.5.1 Tokenistic Participation and Lack of Feedback Mechanisms

Most interviewees indicated that citizen engagement, as enshrined in the 2010 Constitution Article 35 and 174, has been institutionalized in most of the counties. For example, Kisumu and Narok Counties is implementing the County Government Framework on Public Participation Act of 2015 and a Participatory Climate Risk Assessment (PCRA), which applies principles of multi-input mechanisms in DRR decision-making while aligning with Kenya's fiscal decentralization efforts.

However, the main challenge is that these mechanisms operate mainly as one-way channels for collecting citizen input, rather than fostering meaningful dialogue that evaluates policy trade-offs and incorporates citizen views. Instead of facilitating meaningful participation, they often serve as a mere formality to validate pre-made decisions characterized by clientelist dependencies often characterize by the exchange of political support for money. Participants also raised the issue on lack of timely information, and the technical language used in budgets, which further limits attendance and engagement. As Interviewee K-6 noted:

"Most county governments call for meetings without providing timely information. As a result, turnout is low, and attendees struggle to contribute meaningfully since they are encountering information for the first time."

Moreover, inequalities in urban and rural counties with citizen engagement mirror disparities in access to technology and resources. For example, metropolitan counties like Kisumu utilize digital platforms and action groups to integrate citizen feedback into development plans, resulting in initiatives such as integrated flood prevention methods. In contrast, rural counties like Busia rely on more traditional methods, such as mounted public address systems advertising, which primarily reach specific vulnerable populations like women and youth.

4.5.2 Lack of Standardized Policy Guidelines

Interviewees highlighted that despite the presence of various participatory mechanisms, the absence of standardized policy guidelines undermines their effective implementation across counties. Non-state actors play a significant role in coordinating citizen engagement. however, their efforts are often fragmented, resulting in duplication of initiatives and missed opportunities for synergy. Without a coherent framework to align these efforts, citizen participation remains uneven, limiting its impact on policy formulation and disaster risk reduction planning as one interview argued:

“Kenya’s counties are flooded with NGOs claiming to champion DRR, yet they often duplicate efforts and prioritize ticking donor check boxes over creating impact”- Interview K-17.

Public meetings are preferred at the end of budget formulation, while surveys and neighbourhood meetings are used for Annual Development Plans and the County Fiscal

Strategy Paper (CFSP). However, clear participation guidelines have not been operationalized into laws in most of the counties. Additionally, no effective channels exist for citizens to seek redress when their participation is ignored as one interviewee noted:

“Citizen feels that the forums are mere legalistic rituals, as there are no mechanisms of ensuring that inputs are reflected in budget statements.” Interviewee K-21

Respondents also raised discontinuity between citizen demands for DRR and willingness to pay any additional taxes. Most of them attributed this resistance to failure of both governments due to trust issues and failure to articulate rational linkages of service to the cost recovery thus limiting resource envelopes. This was echoed by interviewee K-4 who noted:

“...Many citizens expressed concerns over the proposed eco-tax in 2024 financial bill to fund DRR initiatives. If government linked it to tangible benefits such as drainage and Early warning systems, trust deficit will be reduced”

4.5.3 Competing Priorities with Development Planning

Most interviewees expressed concerns about the lack of citizen engagement in the mainstreaming of disaster risk reduction (DRR) within county development projects. DRR is often side-lined in favor of more immediate priorities, such as infrastructure development and service delivery. Consequently, it receives minimal consideration in

budget allocations and planning decisions, limiting its integration into long-term resilience strategies.

According to the interviewees, the success of citizen engagement in mainstreaming DRR in county development plans is incremental but it depends heavily on civic awareness regarding the extent of hazards and vulnerabilities. This awareness is key to creating a pull effect that drives community involvement. Efforts such as the creation of hazard atlases for each county have been hindered by resource constraints. As one interviewee observed: *“Unfortunately, this awareness is often lacking due to limited resources. While initiatives like hazard atlases could greatly help, the financial constraints at the county level make it difficult to develop these essential tools”*.

4.5 Discussion and Conclusions

Both Quantitative and qualitative results show evidence that Citizen Engagement in its present form have a positive and significant influence on disaster risk reduction outcomes among the counties in Kenya. Both governments have signalled its commitments to underwrite the institutions such as Participatory Climate Risks Assessment (PCRA) within the counties. However, significant implementation challenges such as clientelist dependencies during the selection of participants for political support by the elites and lack of deliberative two-way communication oriented towards DRR outcomes.

The findings conform with Ebdon and Franklin's (2006) model, which highlights challenges such as low public turnout, a focus on minimal legal requirements, and engagement occurring only at the final stages of the budgetary process. Similarly, Muriu (2014), using cross-regional data, found that citizen engagement in Kenya remained weak, with minimal influence on the country's decentralized governance system. Moreover, the findings support Ter-Mkrtchyan and Franklin's (2023) argument that strengthening stakeholder engagement and institutionalizing collaboration can enhance the resource capacity of vulnerable cities and communities, particularly through cost-sharing in climate change mitigation.

With respect to the moderating role of information transparency in strengthening the relationship between citizen engagement and DRR outcomes the findings corroborate Yang & Pandey (2011) observation that the degree of Citizen engagement is associated with the likelihood that the information gathered will have an influence on public decision-making, so bringing about legitimacy in the representative process between the citizens and the government.

In reference to the chi-square test, the results revealed significant differences in citizen engagement across urban and rural counties. Urban areas demonstrated higher levels of participation due to greater access to digital platforms, better institutional frameworks, and increased awareness of participatory processes.

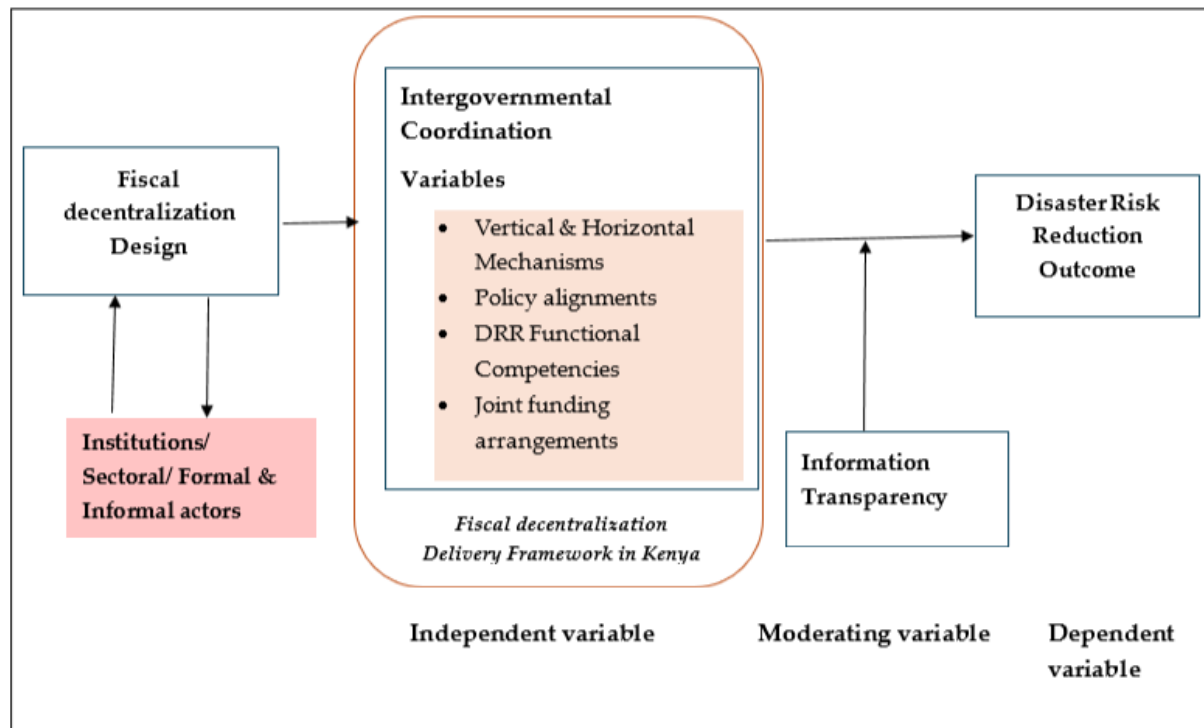
Chapter 5. Effect of Intergovernmental Coordination on Disaster Risk Reduction Outcomes in Kenya

5.1 Introduction

So far, Chapters 3 and 4 has convincingly established evidence that fiscal decentralization—through revenue and expenditure assignments and citizen engagement—have a significant positive impact on disaster risk reduction outcomes in Kenya. Nevertheless, a prevailing concern among public administration scholars is that fiscal decentralization ecosystems potentially diffuse accountability across government levels, often leading to resource mismatches, overlapping authority, and policy conflicts (Comfort, 2007; Otworì & Nyandiko, 2024). This underscores the necessity of robust intergovernmental coordination mechanisms to align priorities, enhance cooperation, and ensure effective DRR outcomes.

This chapter advances this discussion by exploring the effect of intergovernmental coordination on the Disaster Risk Outcome within the fiscally decentralized environment in Kenya. In doing so, it is premised on intergovernmental relations theories and Literature to evaluate the effectiveness of Intergovernmental coordination in Kenya with specific focus on vertical and horizontal mechanisms, policy alignment between the two levels, effectiveness of DRR coordinating structures and joint funding arrangements (see Figure 5-1 for graphical links).

Figure 5-1: A Conceptual Model of the Effect of Intergovernmental Coordination on DRR Outcomes: Focus of Chapter 5



Source: Author's own construction based on literature

To provide context, Article 189 of the Constitution of Kenya emphasizes that the relationship between national and county governments should be based on cooperation and coordination through information exchange, policy alignment, and joint committees or authorities (Constitution of Kenya, 2010). The functional assignments, detailed in the Fourth Schedule, are classified into three categories: exclusive (performed by one government level), concurrent (shared by both), and residual (not assigned, remaining with the prior responsible government). Notably, the disaster management function in Kenya is a concurrent assignment between the two levels of government (Nyandiko, 2020).

Thus, this chapter proceeds by outlining the theoretical framing of on coordination variables that motivate this study, then describing the methods for research design and data analysis used to address the research questions. It will conclude by presenting the results and discussing their implications within the conceptual framework, as well as their broader relevance to research and policy.

5.2 Theoretical Premises

The theoretical premise for these chapters draws on the various emerging fields of intergovernmental relations. Before briefly exploring them, it is important to first define what coordination means. Comfort (2007) aptly defines coordination in the context of emergency management as "aligning one's actions with those of other relevant actors and organizations to achieve a shared goal". Scholars argue this definition demonstrates the logic for inter dependency between the wider formal and formal actors demonstrating it as a classical theory for decentralized governance (Comfort et al., 2020; Drabek & McEntire, 2002).

Policy scholars conceptualize intergovernmental coordination as either a process or an outcome, often involving a trade-off with autonomy when perceived individual costs outweigh the benefits. Coordination becomes essential when constitutional frameworks create interdependencies that require joint management (Knill & Tosun, 2020). This chapter reviews various from public administration and policy to come up an

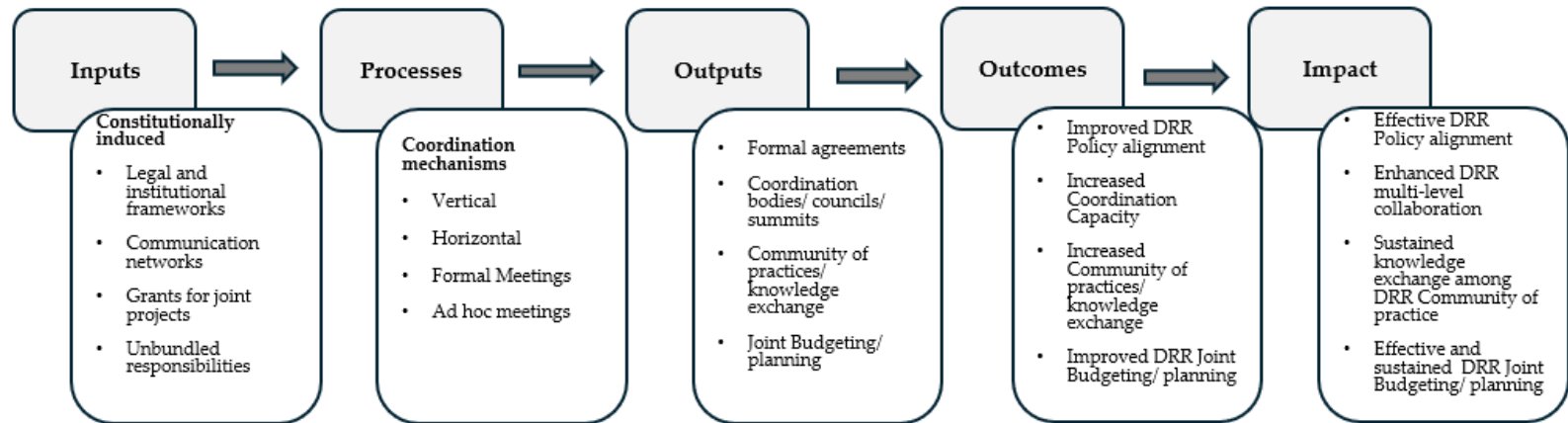
extended logic model used to evaluate efficacy of Intergovernmental coordination in Kenya as shown in Figure 5-2.

This logic model seeks to describe pathways in which this chapter's argument is based on and in essence it illustrates intergovernmental coordination, progressing from inputs to long-term impacts. Coordination as *vertical*-if policies of two levels are consistent and coherent and *horizontal*-if interaction of actors at the same tier leads to uniform or complementary policy outcomes and outside levels of government, *-formal* and *structured* with regular meetings/ summits or *informal / ad hoc* with meetings when deemed necessary.

The logic model is based on literature review (see chapter 2 on Nexus between Intergovernmental Coordination and Disaster Risk Reduction). Moreover, research studies highlight that effective intergovernmental coordination is a main determinant in preventing fragmentation and duplication of roles between various levels of governments that potentially undermines disaster management outcome (Bae et al., 2016; Kapucu et al., 2010). Although Kenya has established an extensive national disaster risk management policy there exist challenges of enabling the decentralization of disaster governance to local levels, stronger and more consolidated multilevel (vertical) and cross-sectoral (horizontal) collaboration are still needed as essential preconditions for effective decentralized disaster management(Nyandiko, 2020).

Figure 5-2: Logic model of Intergovernmental Coordination system in Kenya

Figure 5-2



Source: Author's construction based on reviewed literature

Notably, this chapter used this logic model to draw parallels and cast them back against what this literature has revealed. The objective was to establish the nexus between the findings and the existing literature and assume that the greater concurrency of responsibilities, the greater the need for intergovernmental coordination. I argue that the best motivation for a nascent fiscally decentralized country like Kenya should be grants tied to joint planning process at the two levels of government such as the current Financial Local Led Climate Adaptation (FLLoCA) program.

In sum, both theoretical and empirical evidence on coordination as a key factor in determining the success of service delivery, including Disaster Risk Reduction (DRR) outcomes, remains mixed (Yilmaz & Ebel, 2024). Proponents argue that coordination helps mitigate negative externalities (de Mello Jr, 1999), prevents duplication, inconsistencies, and fragmentation (Bouckaert et al., 2010; Peters, 2015) and enhances economies of scale (Painter, 1998; Bouckaert et al., 2010).

Critics, however, contend that it fosters overdependency (Stoker, 1995), weakens accountability and encourages blame-shifting (Bardhan & Mookherjee, 1998), and leads to overlapping responsibilities and power conflicts (Agranoff & Radin, 2014). Based on this literature, the chapter hypothesizes that.

H₆: Intergovernmental coordination significantly influences disaster risk reduction outcomes in Kenya's decentralized government.

H₇: Information transparency moderates the relationship between intergovernmental coordination and disaster risk reduction outcomes in Kenya's decentralized government

H₈: Urbanity of counties significantly impact Intergovernmental Coordination

5.3 Methods and Data

As outlined in the two previous empirical chapters, this chapter adopted a mixed-method design and data collected data using survey and semi-structured interview (See Appendices A and B). Surveys were conducted with 231 respondents, including national and county administrators from Nairobi, Kajiado, Narok, Kisumu, and Busia. These areas are delineated in the Kenya Water Master Plan (2010) map in which covers flood hazards based on hydro-meteorological observations and inundation of events (Kiptum et al., 2022). Participants selected had at least one year of experience in relevant departments such as finance, economic planning, budgeting, revenue administration, public policy analysis, disaster management, and stakeholder engagement.

The survey was conducted using a questionnaire with Likert scale psychometric constructs, were asked several relevant questions statements representing the variable constructs on citizen engagement and respondents rated each statement on a 1–5 scale: 5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree, and 1 = Strongly Disagree. Based on their practical experiences, respondents provided contextual insights into citizen engagement and expected to ground their responses, on reality of the perceived occurrences

Qualitative data was obtained from key informants ($n=25$) who included the national governments in the Treasury, disaster management departments, Ministry of Interior and government coordination and Environment and Climate Change; County government officials in Economic planning, disaster management, legal counsel, environment among others; NGO officials and International Organizations. For distribution on the level of management and equivalence (see Table 3-2)

Furthermore, the qualitative data from the interviews were analysed using the general inductive approach. All transcripts were carefully reviewed, formatted, and examined to identify emerging themes and key events. The data were systematically coded using *N-vivo*, which facilitated the validation of the coding process and enhanced the reliability of the analysis.

Notably, each ministry, department and agencies have its own mandate and jurisdiction in terms of DRR and this informed the selection of participants and consequently and therefore purposive sampling was used to select the participants. For the interview protocol on various guiding questions (see Appendix A). Overall, the data collection was guided by the following analytical framework (Table 5-2).

Table 5-2: Analytical Framework for Constructs and Measures

Constructs	Variable/ Survey Measures	Measurement
Intergovernmental Coordination	How effective are intergovernmental coordination mechanisms for DRR?	On a scale of 1-5 where 1 is the lowest and 5 is the highest of revenue/ expenditure assignment
	How well are national and county disaster risk reduction policies aligned?	
	How effective are the existing DRR coordinating structures in your county?	
	Does your county participate in joint funding arrangements for DRR initiatives?	
Information Transparency	Do citizens have access to all eight DRR budget documents	On a scale of 1-5 where 1 is the lowest and 5 is the highest level of information transparency
	Is citizen participation ensured from village-county level?	
	Is information effectively shared across all sectors?	
	Do citizens have access to all phases of Budgeting decision-making?	
Disaster Risk Reduction Outcomes	Are fatalities and economic losses reducing effectively?	On a scale of 1-5 where 1 is the lowest outcome and 5 is the highest DRR outcome
	Do Counties have an effective and responsive EWS?	
	Do Communities strong resilience adaptive capacity?	
	Is critical Infrastructure resilient to disasters?	

5.4 Data Analysis

The quantitative data was analysed using descriptive and inferential methods. Descriptive statistics, including mean, mode, and standard deviation, were applied to IGC and DRR variables. Inferential analysis which involved correlation and regression analysis was to examine their relationship. Besides, Cross-tabulation with a chi-square test assessed differences in intergovernmental coordination between urban and rural counties at a 0.05 significance level, with p-values below 0.05 indicating significant differences.

The qualitative data was analysed both inductively and deductively using thematic analysis based on both conceptual frameworks. The personal identifiers were removed from the transcripts and assigned identification protocols. Interviewee demographics, selected quotes, and integration levels were presented using tables and quotes and Analysis was conducted using N-vivo and Excel.

This chapter employed a bivariate regression model with two empirical equations. The first model (Equation 5-1) examined the direct relationship between intergovernmental coordination and disaster risk reduction (DRR) outcomes. The second model (Equation 5-2) introduced information transparency as a moderating variable to assess its influence on this relationship.

$$Y_1 = \beta_0 + \beta_1 X_i + \varepsilon \dots\dots\dots (Equation 5- 1)$$

$$Y_2 = \beta_0 + \beta_1 X_i + \beta_2 M + \beta_3 X_i M + \varepsilon \dots\dots\dots (Equation 5- 2)$$

5.5 Results and Analysis

5.5.1 Descriptive Statistics

Descriptive analysis results, shown in Table 4.3 showed descriptive results on intergovernmental coordination mechanisms and outcome of disaster risk reduction.

Table 5-2: Descriptive Statistics of the Study Constructs

Variables	Mean	Mode	SD	Cronbach alpha
<i>Intergovernmental Coordination</i>				
Vertical and Horizontal mechanisms	2.9048	4.00	1.55186	0.895
Policy alignment	2.8701	1.00	1.53241	
DRR coordinating structures	2.8182	1.00	1.52994	
Joint funding arrangements	2.9048	4.00	1.54062	
<i>Information Transparency</i>				
Access to budget documents	2.6494	3.00	1.53027	0.931
Access to level of participation	2.6710	1.00	1.52229	
Effective cross sector exchanges	2.9264	4.00	1.56281	
Access to DRR Policy documents	2.9221	1.00	1.58882	
<i>Disaster Risk Reduction Outcomes</i>				
Decrease in severity of disasters	2.1688	1.00	1.35521	0.916
Effective Early Warning Systems	3.0216	4.00	1.44597	
Community preparedness	3.1169	4.00	1.34786	
Infrastructure resilience	2.9264	1.00	1.44726	

Note: Strongly Disagree=1, Somewhat Disagree=2, Neither Agree nor Disagree=3, Somewhat Agree=4, Strongly Agree=5.

Based on perception on the survey data, the results indicate a moderate perception of intergovernmental coordination. Effective vertical and horizontal mechanisms (M = 2.905, SD = 1.552) and joint funding arrangements (M = 2.905, SD = 1.541) suggest some collaboration, while lower scores for policy alignment (M = 2.870, SD = 1.532) and effective DRR structures (M = 2.818, SD = 1.530) reveal policy coherence challenges. It further shows mixed DRR outcomes. Community preparedness (M = 3.117, SD = 1.348) and early warning systems (M = 3.022, SD = 1.446)

indicate moderate effectiveness, while infrastructure resilience ($M = 2.926$, $SD = 1.447$) is weaker. The low score for disaster severity reduction ($M = 2.169$, $SD = 1.355$) suggests a limited impact on disaster intensity and lastly, *Cronbach's alpha values* are high and within acceptable limits ($\alpha > .60$).

5.5.2 Correlation Analysis

This chapter employed the correlation technique using the Pearson correlation coefficient (r) to measure the relationship between two variables on a scale from -1 to 1. A positive (r) indicates a direct relationship, while a negative (r) signifies an inverse relationship, where one variable decreases as the other increases. A zero (r) value indicates no association between the variables.

Table 5-3: Correlation Matrix

Disaster Risk Reduction	Pearson Correlation	1	
	Sig. (2-tailed)		
Intergovernmental Coordination Mechanisms	Pearson Correlation	.874**	
	Sig. (2-tailed)	.000	
	N		231

** . Correlation is significant at the 0.01 level (2-tailed).

The results in the Table above revealed a very strong, positive, and significant correlation ($r = 0.874$, $p = 0.000 < 0.01$), emphasizing that effective coordination among different levels of government is essential associated with greater disaster risk reduction outcomes. While this correlation does not suggest a possibility of causation, more empirical support is needed to determine the relationship. Most broadly, the results suggest that intergovernmental coordination should be understood as a tool

kit for both level of governments to avoid gridlock and attainment of lowest common denominator on DRR outcomes.

5.3.3 Bivariate Regression Analysis

This section assesses the relationship between intergovernmental coordination and DRR outcomes and provides insight on the extent to which coordination mechanisms, policy alignments, joint funding and Information transparency influence DRR to inform policy decisions and strengthening the structures. The results from the estimation of the model in Equation 5-1 are detailed in Table 5-5 below.

Table 5-4: Results on Bivariate Regression Analysis

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.874 ^a	.763	.748	.65371		
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	315.825	1	315.825	739.046	.000 ^b
	Residual	97.861	229	.427		
	Total	413.686	230			
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.224	.095		2.363	.019
	intergovernmental coordination	.802	.029	.874	27.185	.000

a. Dependent Variable: Disaster Risk Reduction Outcomes

b. Predictors: (Constant), Intergovernmental Coordination

The results in the model summary indicate that the relationship between intergovernmental coordination and DRR outcome is significant (F=739.046, p<0.001)

with a large F-Statistic a good indicator that the predictor variable plays a bigger role in explaining a good portion of the variance. The adjusted R^2 of 0.763 indicates that approximately 76.3% of variations in Disaster Risk Reduction can be explained by variation in Intergovernmental coordination. The beta coefficient for coordination was significant ($\beta = .802$, $t = 27.185$, $p = 0.000$). This implies that an increase by 1 unit of coordination leads to an increase in disaster risk reduction outcomes by approximately 0.802 units.

5.3.4 Moderation Effects of Information Transparency

Effective coordination between government levels is crucial for disaster preparedness and response. However, scholars debate the extent to which its impact depends on transparent information sharing (Yeo & Kapucu, 2021; Boin & Bynander, 2015). This section, therefore, examines how information transparency moderates the relationship between intergovernmental coordination mechanisms and disaster risk reduction (DRR) outcomes. In doing so, an interaction term (the product of coordination and information transparency) was incorporated to test whether transparency strengthens or weakens the coordination-DRR relationship, and the results are as shown in Table 5-5 below.

Table 5-5: Moderation Results of Information Transparency on Intergovernmental Coordination Mechanisms & DRR Outcomes

Statistic Model Fit	Value
R	0.6658
R ²	0.4433
F	60.2525
p-value	0.0000
Model Coefficients	
Intergovernmental Coordination (IGC)	0.5036 (p=0.0000)
Information transparency (IT)	0.3128 (p=0.0000)
Interaction (IGC × IT)	0.0605 (p=0.2390)
Interaction Effect	
R ² Change	0.0034
F	1.3937
p-value	0.2390

The results indicate that the model remains significant ($F = 60.2525$, $p = 0.0000$) with $R^2 = 0.4433$, meaning that 44.3% of the variance in disaster risk reduction is explained by the predictors. Both Intergovernmental Coordination Mechanisms (Coeff = 0.5036, $p = 0.0000$) and Information Transparency (Coeff = 0.3128, $p = 0.0000$) have strong direct effects on disaster risk reduction. However, the interaction term (Coeff = 0.0605, $p = 0.2390$) is not statistically significant.

In a similar vein, the interaction effect (R^2 change = 0.0034, $F = 1.3937$, $p = 0.2390$) confirms that information transparency does not significantly moderate the effect of intergovernmental coordination mechanisms on disaster risk reduction. These results may be counter-intuitive to the logic behind coordination as conceptualized by Comfort 2007 and Drabek & McEntire 2002. and can be attributed face potential effectiveness constraints because of the bureaucratic structures and fragmentation.

5.3.5 Urbanity contributing factor in variation of outcomes

Extensive literature provides strong evidence that urbanization significantly influences intergovernmental coordination. As subnational governments urbanize, governance structures become more complex, increasing the need for stronger coordination mechanisms between different levels of government. This section explores whether urbanization contributes to variations in disaster risk reduction (DRR) outcomes by examining its impact on intergovernmental coordination.

As previously elucidated in the last two empirical chapters, Nairobi and Kisumu are designated as urban, based on the Urban Areas and Cities Act, 2011 and the 2019 Kenya Population and Housing Census. The census classifies Nairobi as fully urban (100%) and Kisumu as 53% urban, while Narok (83% rural), Kajiado (56% rural), and Busia (85% rural) are predominantly rural.

To begin with, the Table 5-8 below presents a comparative analysis of differences in perceptions of coordination effectiveness based on urbanity. Urban respondents show stronger views, with higher proportions in both strong agreement (69%) and strong disagreement (71%), indicating a more polarized perception. In contrast, rural counties display a more balanced distribution, especially in neutral and somewhat agreeable responses

Table 5-6: Descriptive Percentage Comparison of Rural Vs Urban Counties

	Intergovernmental Coordination	
	Urban	Rural
Strongly Disagree	71%	29%
Somewhat Disagree	64%	36%
Neutral	50%	50%
Somewhat agree	55%	45%
Strongly Agree	69%	31%
N	150	81

Note: Columns for each variable total 100% horizontally.

To examine whether there is a significant variation in Intergovernmental coordination in Kenya based on the urbanity of counties, a Chi-square test was conducted and results shown on Table 5-9 below.

Table 5-7: Chi-square Results

Variable		Value	df	Asymptotic Significance (2-sided)
Intergovernmental coordination	Pearson Chi-Square	5.591	4	.232
	Likelihood Ratio	5.544	4	.236
	Linear-by-Linear Association	.801	1	.371
	N of Valid Cases	231		

The results indicate no statistically significant difference in intergovernmental coordination between urban and rural counties (χ^2 (4,231) = 5.591, $p = 0.232$), suggesting that urbanization does not inherently improve coordination efforts. The likelihood ratio test (5.544, $p = 0.236$) and linear-by-linear association further confirm the absence of a significant trend or association. These findings highlight persistent structural and procedural challenges within Kenya's devolved system, suggesting

that intergovernmental coordination in disaster risk policy implementation remains constrained regardless of urban or rural classification.

5.6 Qualitative Analysis

This section presents findings from semi-structured interviews, drawing comparisons with insights from existing literature. A content analysis of recurring patterns in the interviews led to the identification of four key themes: 1) Hierarchical constraints in both vertical and horizontal coordination; 2) Misalignment in DRR policy and information flows; 3) Fiscal capacity deficits due to over-dependence, and 4) Barriers to joint funding caused by resource dependency.

5.6.1 Structural challenges: From Siloed to collaborative structures

Most respondents recognized the strides made by coordinating agencies within the fiscally devolved government in establishing both formal and informal frameworks for disaster risk reduction coordination. For vertical coordination, most interviewees acknowledged the National and County Government Coordinating Summit serves as the apex platform, with the Intergovernmental Relations Technical Committee (IGRTC) as its operational arm. Horizontal coordination is facilitated through the Council of Governors (CoG) and intersectoral forums, enabling collaboration across counties and sectors. However, their firepower in conflict resolution and mediation is largely untapped.

Furthermore, they highlighted structural challenges in transitioning from a hierarchical, siloed system before devolution to a dualist approach, where counties

are required to implement county and national DRR legislations. The ambiguity has led to overlapping roles and redundancy in expenditures assignments. To illustrate this one respondent noted:

“Tensions between national and county governments arise from concurrent functions. National government prefers discretion, counties prioritize autonomy, leading to unilateral recentralization of DRR functions and weakened vertical coordination” – Interviewee K-11

Similarly, respondents stressed the need to recognize the autonomy of government entities and their functions without reverting to the hierarchical tendencies seen before fiscal decentralization. As one county participant stated, *“Concurrency should not be an excuse for power dominance by the national government.”* – Interviewee K-12. The interdependence of each level requires a cooperative approach. By adopting best practices, fostering collaboration, and harmonizing DRR strategies, Kenya can build a robust system that effectively reduces risks and safeguards communities from disasters.

5.6.2 Misalignment in DRR policy and Information flows

Effective disaster risk reduction (DRR) requires seamless policy alignment and efficient information exchange across all levels of government. However, most interviewees identified gaps in policy coherence, pointing to the absence of unified national legislation on disaster risk management. As a result, counties develop their own policies, often misaligned with key elements of the Sendai Framework. Highlighting these challenges, one participant shared:

“The Disaster Management Bill, designed to provide a legal framework for coordination, has been repeatedly stalled in the National Assembly, worsening the misalignment...” Interviewee K-7.

Another respondent highlighted this issue, stating, “There is a perceived mismatch between Climate Change Adaptation (CCA) policies and DRR policies at the county level” (Interviewee K-21). This underscores the need for a comprehensive review to ensure better alignment of funding instruments and expenditure responsibilities. Expanding on this concern, another interviewee elaborated:

“The misalignment between CCA and DRR has resulted in a fragmented response. While CCA policies attract substantial donor funding for addressing long-term climate impacts, DRR focuses on immediate preparedness and mitigation remains significantly underfunded.” (Interviewee K-9).

Regarding the institutionalization of communication flow, several interviewees noted that entities from the previous constitutional framework, such as the National Disaster Operations Centre (NDOC), continue to operate without aligning with the current Constitution, despite disaster risk being a concurrent function. These institutions remain unstructured as joint collaborative entities for counties and non-government actors, leading to weak coordination of early warning systems. As a result, counties are often caught unprepared when disaster strikes.

5.6.3 Fiscal Capacity Deficits from Over-Dependence

Some interviewees perceived intergovernmental coordination as a barrier to effective DRR outcomes, arguing that power dynamics are often exploited. Resource-dependent counties are incentivized to rely on national government transfers, fostering perverse behaviours such as overspending and rent-seeking through clientelism. Interviewees proposed constitutional measures such as shared tax assignments and merger of smaller counties to achieve economies of scale.

Another recurring theme in the interviews is the functional shift of DRR responsibilities to regional economic blocs. While these blocs offer a more coordinated approach by pooling resources and expertise across multiple counties and reduces inefficiencies. However, they lack constitutional recognition, limiting their operational capacity. As one interviewee described: *“Economic Regional blocs provide a stronger coordination framework and resource pool, yet their role in DRR remains unclear within the current constitutional setup”*-Interviewee K-12. Another one noted. *‘A formalized mandate for regional economic blocks would enhance coordination across multiple counties this reducing perennial inefficiencies.’*- Interviewee K-17.

5.6.4 Barriers to Joint Funding Arrangements

Some interviewees highlighted challenges in joint funding arrangements, particularly the restrictive conditions attached to funding mechanisms channelled through the national government, such as matching grants. These conditionalities act

as a "carrot-and-stick", allowing donors to exert control over subnational governments while limiting their fiscal flexibility. As one participant observed,

"Matching conditionalities are a major challenge, as donor micromanagement restricts local flexibility and undermines joint funding arrangements." Interviewee K-15.

The findings also reveal significant challenges in joint funding arrangements, particularly regarding the restrictive conditions of matching grants imposed on funds channeled through the national government. Matching grants, while intended to incentivize subnational investment in disaster risk reduction (DRR), often function as a mechanism of control rather than empowerment. These conditionalities create a dependency dynamic where counties must conform to donor priorities, even when they may not align with local needs.

This funding structure reflects broader power asymmetries in fiscal decentralization. While theoretically designed to enhance local financial capacity, matching grants effectively limit county governments' ability to exercise fiscal autonomy. The "carrot-and-stick" approach, as noted by one interviewee:

"Matching conditionalities are a major challenge because it restricts local flexibility and undermines effective joint funding arrangements." Interviewee K-9.

These constraints further contribute to inefficiencies in DRR financing. Interviewees highlighted the uneven fiscal net benefits between urban and rural counties, largely driven by rural-urban migration in Kenya. Hence, urban counties,

with stronger revenue bases, are better positioned to meet matching grant requirements, while rural counties struggle to do so, resulting in disparities in resource allocation. Consequently, wealthier counties gain a disproportionate advantage from these funding structures, exacerbating gaps in disaster preparedness and resilience.

5.6 Discussion and Conclusions

The overarching purpose for this chapter was to assess the effectiveness of intergovernmental coordination in achieving DRR outcomes within Kenya's fiscally decentralized environment. To achieve this, it provided a comprehensive analysis of the hypothesized dimensions. The findings were insightful and reinforced both the theoretical and empirical foundations of the chapter's conceptual framework and intergovernmental coordination policy more broadly.

Within the conceptual framework, the results demonstrated that intergovernmental coordination is a key determinant of DRR outcomes, showing a significant relationship with their effectiveness. As a predictor, it accounts for a substantial portion of the variance in DRR outcomes, underscoring its critical role in shaping disaster risk reduction efforts. However, the moderating effects of information transparency and urbanity as a contributing factor were not found to be statistically significant, suggesting that these factors do not meaningfully alter the relationship between intergovernmental coordination and DRR outcomes.

The qualitative analysis revealed four key challenges affecting intergovernmental coordination in DRR. First, hierarchical constraints in both vertical and horizontal coordination hinder effective collaboration between government levels. Second, misalignment in DRR policy and information flows creates inconsistencies in decision-making and implementation. Third, fiscal capacity deficits, driven by over-dependence on central funding, limit the financial autonomy of local governments. Lastly, barriers to joint funding arise from resource dependency, restricting the ability of multiple stakeholders to pool resources for DRR initiatives. These challenges collectively highlight structural and financial limitations that impact the effectiveness of DRR efforts.

Taken together, this result corroborates previous literature on conceptualization of coordination as collaborative process in which both governments must align their actions to achieve a common purpose (Comfort, 2007; Martin, Nolte and Vitolo, 2016). This suggests that national and county governments need to structurally provide mechanisms through institutional design (vertical and horizontal Mechanism), information sharing through shared knowledge repertoires. In addition, specification of DRR roles, and ensure joint collaborative programs through grants that encourage antecedents for trust, collaborative attitude, and shared goals.

Moreover, while this analysis provides valuable insights, its generalizability may be limited by the country's specific fiscal and governance context. Further studies should examine the long-term effects of intergovernmental coordination on DRR outcomes and the influence of informal networks in policy implementation, and

comparative studies across different decentralized governance systems. The conceptual model focuses on government-level coordination but overlooks boundary-spanning institutions like the Kenya Red Cross. Previous studies highlight these coordination gaps, calling for further research on their role in DRR outcomes in Kenya (Yeo & K. Comfort, 2017)

Chapter 6. Putting it All Together

6.1 Chapters Overview and Summary

This dissertation examined the impact of fiscal decentralization on DRR outcomes through theoretical and empirical analyses. It explored how revenue and expenditure assignments, citizen engagement, and intergovernmental coordination influence on DRR outcomes. The findings support the widely held view in country-specific studies that fiscal decentralization has a positive and significant relationship with DRR outcomes.

Moreover, the results offer a deeper understanding of the strengths, challenges, and policy implications of decentralized governance in enhancing local disaster resilience in Kenya. As Nyandiko (2020) observes, fiscal decentralization plays a crucial role in disaster risk reduction by improving governance, which in turn fosters meaningful community engagement in planning for those at risk.

The opening chapter revisited existing theoretical and empirical literature on the relationship between fiscal decentralization and disaster risk reduction (DRR) to establish a robust conceptual foundation for the study. Consequently, it examined theoretical and empirical rationale on allocative efficiency through local proximity advantage and scholarly critiques that highlight its limitations in overlooking unique characteristics of disaster risk reduction. Lastly, it articulated the problem statement, justified the study's significance, and identified gaps in existing theories.

Building on the identified gaps in existing literature, Chapter 2 integrates insights from literature review to develop a comprehensive conceptual framework that clarifies the relationship between fiscal decentralization and disaster risk reduction (DRR) outcomes. This framework systematically maps out the key determinants and identifies relevant indicators that serve as the foundation for constructing measurable variables. By synthesizing theoretical perspectives, the chapter establishes a structured approach for analysing how decentralization mechanisms influence DRR outcomes.

Through rigorous analyses, the next three empirical chapters evaluate the relationships between dependent and independent variables to test the conceptual framework developed in Chapter 2. Chapter 3 specifically examines the relationship between Revenue and expenditure and DRR outcomes. The results indicate evidence of a positive and statistically significant relationship with DRR outcomes. It further reveals that information transparency moderates this relationship and that significant differences exist in revenue and expenditure assignments between urban and rural counties.

Moreover, Chapter 4 specifically examines the relationship between Citizen engagement and DRR outcomes. The results indicate evidence that citizen engagement determinants – mechanisms, process design inputs, HMP awareness and Mainstreaming of DRR In CIDP have a positive and statistically significant relationship with DRR outcomes. Additionally, it reveals that information

transparency moderates this relationship and that significant differences exist in revenue and expenditure assignments between urban and rural counties. Thematic analysis revealed that mechanisms lack dialogic inputs, and instead of empowering citizens, they are used to validate pre-made decisions driven by the elites and NGOs.

Finally, Chapter 5 examines the relationship between intergovernmental coordination and DRR outcomes. The findings provide evidence of a positive and statistically significant relationship between the two. However, the results indicate that information transparency does not moderate this relationship, nor are there significant differences in respondent perception on intergovernmental coordination between urban and rural counties.

In my view, the absence of moderating effect of information transparency on Intergovernmental Coordination suggests that while transparency is essential for accountability, there is need for institutionalized collaborative mechanisms to translate it into effective. It could also mean that the challenges and success of intergovernmental coordination are not motivated by geographic and demographic factors but rather systemic and institutional dynamics.

6.2 Recommendations and Policy Implications

This country specific study focused on Kenya expands the theoretical discourse on fiscal decentralization beyond the predominantly studied Western and OECD contexts. Overall the findings aligns with most of theoretical normative perspectives such as espoused in decentralization theorem (Musgrave, 1959; Oates, 1972) and prior

empirical research linking greater decentralization to lower disaster-related fatalities and reduced economic losses (Escaleras & Register, 2012; Skidmore & Toya, 2013). However, it contrasts with previous studies that found that with greater decentralization in natural resources spending, there tends to be increases losses and highlighting potential inefficiencies in disaster management under fiscal decentralization (Miao et al., 2021).

The findings also lend important lessons to researchers and practitioners. It substantiates the theoretical argument that granting subnational governments financial autonomy significantly strengthens their capacity to implement localized, timely, and effective DRR measures. By incentivizing own source revenue, specifying the expenditure responsibilities and adequate funding through innovative tax assignments and unconditional grants enhances the county's ability to implement localized, timely, and effective disaster risk reduction measures.

Moreover, it has also significant policy implications. In Kenya, where fiscal decentralization reforms are still in their early stages, limited fiscal capacity has led to unfunded DRR mandates due to excessive reliance on intergovernmental grants. This reliance discourages revenue collection and promotes inefficient spending behaviour driven by expectations of bailouts (the flypaper effect). To address this, there is a need for policy design on allocation formulas⁶ to consider counties' revenue potential

⁶ CRA has proposed three revenue-sharing formulas. The first basis (2012) applied from FY 2012/13 to 2016/17, the second (2016) from FY 2017/18 to 2019/20, and the third (2020) from FY 2020/21 to 2024/25. Each formula, developed per Article 201(a) of the constitution, follows a structured process with defined parameters to ensure transparency and predictability in county revenue distribution.

rather than actual revenues. This approach would encourage subnational governments to enhance revenue collection without fear of reduced central transfers.

The findings also highlight key urban policy implications for Kenya. As counties urbanize, citizen engagement is expected to improve due to better information access, stronger institutions, and enhanced participation. However, disparities in DRR mainstreaming within County Integrated Development Plans (CIDPs) between urban and rural areas remain a concern. Addressing this requires fiscal decentralization policies that account for population density and rural-urban dynamics, ensuring inclusive and context-specific participatory risk assessments.

The findings on the moderating effect of information transparency highlight the need for further research on how information transparency legitimizes fiscal decision-making. While transparency is intended to improve budget processes, it can also create information overload and confusion (Fung et al., 2007). If perceived as a trade-off between disaster risk reduction outcomes—such as loss of life and financial costs—transparency may have a negative moderating effect and corroborates Tetlock, (2003) *trade-off taboo theory*, which explains reactions to transactions that violate perceived moral boundaries.

Lastly, it has policy implications for intergovernmental coordination, the urgent need is for harmonized disaster risk management (DRM) framework. The current fragmentation, driven by the absence of cohesive legislation, has resulted in counties formulating disparate DRM policies that often diverge from the core

principles of the Sendai Framework. This misalignment not only undermines policy coherence but also weakens the effectiveness of disaster resilience strategies.

6.3 Limitations and Assumptions

This dissertation acknowledges several limitations that future research should address. First, the study's findings are confined to the implications of fiscal decentralization on disaster risk reduction within five selected counties, and the reliance on self-reported data from government officials introduces potential biases, such as overestimating or underestimating the impact of fiscal decentralization. Expanding future studies to include citizen perspectives and additional counties could provide a broader and more nuanced understanding of the relationship between fiscal decentralization and disaster risk reduction outcomes.

The second limitation is the lack of data needed to construct decentralization indicators, including revenue, expenditure, citizen engagement, and DRR outcomes. Additionally, since most data were collected from government officials, there is a potential risk of bias. While post-devolution efforts have emphasized governance indicators such as corruption and economic growth, disaster governance remains underexplored. Addressing this gap will require additional data to mitigate endogeneity issues and provide deeper insight into the relationship between fiscal decentralization and DRR outcomes.

This dissertation is based on key assumptions critical to analysing fiscal decentralization's impact on disaster risk reduction in Kenya. It assumes the existence

of functional local democracies, where county governments are led by democratically elected officials who are accountable and committed to addressing citizens' needs. The effectiveness of fiscal decentralization in improving disaster risk management outcomes hinges on the strength of local democratic institutions and governance structures.

In the same vein, the study assumes that both national and county governments have the political will to prioritize disaster risk reduction, ensuring that it is integrated into development planning and resource allocation processes and that the institutional and legal frameworks governing fiscal decentralization and disaster risk reduction are stable, enforceable, and supportive of long-term planning and investment in DRR initiatives.

6.4 Suggestions and Avenues for Future Research

Based on the study's limitations and assumptions, future research should develop comprehensive longitudinal and panel datasets to improve statistical precision. Additionally, innovative geospatial assessments can help bridge existing data gaps to the degree of urbanization by enabling the collection of harmonized indicators across cities, urban, and rural areas available on open data sources, thus delineating counties along the urban-rural continuum.

Future research can also investigate how boundary-spanning institutions and informal networks facilitate DRR coordination across government levels and sectors could provide insights into effective governance mechanisms. Research should

examine their role in information-sharing, resource mobilization, and fostering adaptive capacity. Lastly, cross-country or regional comparative research on DRR coordination models could offer valuable lessons for policy design. Analysing different decentralization frameworks and their effectiveness in disaster governance would help identify the best practices for improving intergovernmental coordination and resilience-building strategies.

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Appendices

Appendix A: Semi- Structured Interview Protocol

Welcome to this interview that aims to evaluating the impact of fiscal decentralization on disaster risks reduction in Kenya. It will only take about 45 minutes to complete, please take your time to give your honest opinions. All the information obtained will be used for the only purpose of fulfilling this study and not for any other reasons. Also, you do not need to give your data such as names as your participation is anonymous. Please feel free to take part in the study

Thank you very much for your kind participation

Part one: General question

1. How long have worked in the county government and in particular in the department of disaster management?
2. Which county do you work in?
3. What position do you hold in the department?

Part two: Revenue/ Expenditure Assignment

1. Can you describe the existing mechanisms for allocating revenue from the central government to decentralized units in the context of DRR? In your view are these mechanisms fair, transparent, and predictable?
2. To what extent do the county government have the authority to generate their own revenue to support DRR activities?
3. How are the responsibilities for DRR expenditures divided between the central and decentralized governments? Do you believe such responsibilities are clearly defined and adequately funded?
4. What are the current fiscal control mechanisms in place to ensure that decentralized units manage DRR funds effectively and transparently? Are these mechanisms efficient and effective in preventing misuse of funds?
5. From your experience, what is the degree of fiscal decision-making authority granted to county government regarding DRR expenditures?

Part 3: Citizen engagement

1. In your experience, what are the existing mechanisms for involving citizens in the development of DRR policies at the county level? Do you find such mechanisms to be effective?
2. How accessible is information on DRR activities, policies, and plans to the public in your community? Can you describe the channels used to disseminate this information?

3. Based on your interaction with community members, what is the general level of public awareness regarding existing hazard prevention and mitigation plans?
4. Can you provide examples of how citizens participated in the development of the most recent Community Integrated Development Plan (CIDP) and in the context of DRR?

Part 4: Intergovernmental coordination

1. Can you describe the existing mechanisms for collaboration between the national and county governments on DRR activities?
2. In your experience, how effective are collaboration mechanisms in fostering joint planning, implementation, and monitoring?
3. To what extent do national and county governments share information and collaborate on joint initiatives related to DRR?
4. In your opinion, how well-aligned are national and local DRR policies and strategies? Are there any inconsistencies or gaps that create challenges in implementation of DRR strategies at national and local DRR policies and strategies?
5. In your experience, how effective are these collaborative efforts and information sharing in achieving desired outcomes for DRR? Can you elaborate on specific challenges or successes?

Part 5: Disaster Risks Reduction Outcome

1. From your experience what are your observations about the frequency and severity of disasters in your region over the past years?
2. In your view, are there any trends or changes in the patterns of disaster occurrence?
3. In your opinion, how effective are the existing early warning systems in your community?
4. Do you think that your community is adequately prepared and resilient to face potential disasters?

-----The End -----

Appendix B: Survey Instrument- Questionnaire

Consent to Participate in Research University of Oklahoma

You are invited to participate in research about the effects of fiscal decentralization on disaster risk reduction in both Kenya and the United States of America. You will be asked to complete an online survey as part of this research. The organization hosting the data collection platform has its own privacy and security policies for keeping your information confidential. There is a risk that the external organization, which is not part of the research team, may gain access to or retain your data or your IP address which could be used to re-identify you. No assurance can be made as to their use of the data you provide for purposes other than this research. In the event of such an occurrence, there is a risk that your identity and the statements you provided could become accessible to individuals not affiliated with the research team which could be used to re-identify you.

To mitigate this risk, the researchers will transfer and store your data on a secure platform approved by the University's Information Technology Office. Your participation is voluntary, and your de-identified responses might be shared with other researchers or use it for future research without seeking additional consent from you. Even if you choose to participate now, you may stop participating at any time and for any reason. You may be contacted for a one-hour interview as part of further research. This contact will be made based on specific criteria determined by the research team, which may include demographics or survey responses.

Your participation in this interview implies consent for potential future contact for research purposes, and you may opt out of further participation at any time. If you have questions about this research, please contact Denis Cheruiyot at denis.k.cheruiyot-1@ou.edu or Faculty advisor Dr. Deven Carlson at decarlson@ou.edu. You can also contact the University of Oklahoma – Norman Campus Institutional Review Board at 405-325-8110 or irb@ou.edu with questions, concerns, or complaints about your rights as a research participant, or if you don't want to talk to the researcher

Part 1: General questions

1. Which County do you work in?

- ☐ Narok
- ☐ Kajiado
- ☐ Nairobi
- ☐ Busia

☐ Kisumu

2. Have you participated in development and implementation of disaster risk reduction measure at the county?

☐ Yes

☐ No

Part 2: Revenue/ Expenditure Assignment

In a scale of the 1-5 please indicate the extent to which you agree with the following statement whereby 1 is strongly disagree and 5 is strongly agree.

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Counties have sufficient autonomy to generate their own revenue to support DRR activities					
Counties Own Source Revenue (OSR) is adequate to fund DRR expenditures					
DRR expenditure responsibilities assigned to decentralized units in the context of DRR are clearly defined and adequately funded					
The current allocation of national expenditure ensures that county governments receive a reasonable share of resources to manage their DRR responsibilities					
County governments adhere to strict financial discipline mechanisms					

Part 3: Citizen Engagement

In a scale of the 1-5 please indicate the extent to which you agree with the following statement

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Counties largely have effective citizen engagement mechanisms effective in Disaster Risk Reduction					
Are citizen engagement process design inputs effective in capturing DRR citizens' preferences?					
Citizens are aware of the existing hazard prevention and mitigation plans in place					
Citizens mostly trust the integration of DRR into the County Integrated Development Plan (CIDP)?					
Disaster-related policies, plans, and budgets are readily available and transparent to the public					

Part 4: Intergovernmental Coordination

In a scale of the 1-5 please indicate the extent to which you agree with the following statement

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
There are effective intergovernmental coordination mechanisms in place to support DRR activities between the national and county governments.					
National and county disaster risk reduction policies are well aligned, promoting coordinated efforts and clear division of responsibilities.					
The current mechanisms for coordination between different levels of government are effective in addressing DRR challenges					
National and county coordination structures for DRR are effective, promoting joint planning, timely information sharing.					
Counties and National governments are involved in collaborative funding arrangements for disaster risk reduction initiatives?					

Part 5: Information Transparency

In a scale of the 1-5 please indicate the extent to which you agree with the following statement

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Citizens have a fair access to all the DRR budget documents at the county					
Citizen participation is ensured at all levels- from village to county level.					
There is effective sharing of Information across all sectors in governments					
Citizens are involved in all phases of DRR budgeting and decision-making					

Part 6: Disaster Risks Reduction outcome

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The frequency and severity of disasters in my region have decreased in recent years.					
The early warning systems in place to warn communities about potential disasters have been effective					
The community is well-prepared and resilient in the face of disasters					
The infrastructure, such as buildings and roads in the county is adequately resistant to damage from disasters.					

Appendix C: Factor Analysis

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.862	60.345	60.345	10.862	60.345	60.345
2	1.169	6.496	66.841	1.169	6.496	66.841
3	1.087	6.040	72.881	1.087	6.040	72.881
4	1.023	5.685	78.567	1.023	5.685	78.567
5	.975	5.417	83.983			
6	.798	4.436	88.419			
7	.501	2.783	91.202			
8	.333	1.853	93.055			
9	.266	1.480	94.535			
10	.213	1.182	95.717			
11	.170	.942	96.659			
12	.138	.768	97.428			
13	.109	.607	98.035			
14	.101	.559	98.594			
15	.086	.479	99.073			
16	.061	.339	99.412			
17	.060	.335	99.747			
18	.045	.253	100.000			

Extraction Method: Principal Component Analysis.