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TOWARDS CLIMATE RESILIENT GOVERNANCE IN BANGLADESH
Investigating climate challenges in informal settlements

EM DIREÇÃO A UMA GOVERNANÇA RESILIENTE AO CLIMA EM BANGLADESH
Investigando os desafios climáticos nos assentamentos informais

HOSSAIN, Md.Maruf[1]
SAMIHA, Maisha[2]

Abstract
Barisal, a coastal city in Bangladesh, faces significant challenges due to rapid urbanization and climate change impacts, particularly in its informal settlements, which are vulnerable to river erosion, flooding, salinity, and extreme weather. These urban regions experience both insufficient infrastructure and crowded living conditions and inadequate service delivery. The research determines how local governance strengthens urban resilience by solving barriers that prevent efficient disaster management and climate adaptation, but focus on local authorities as key players in this process. The research combines both quantitative surveys and qualitative methods that use focus groups and Delphi surveys alongside interview data to determine essential governance barriers. Governance issues include power consolidation, lack of transparency, limited stakeholder input, and political favoritism. However, partnerships between NGOs and local governments still demonstrated some successful outcomes. The research underlines that decentralization, along with data sharing and public involvement, serves as an essential tool for enhancing governance efficiency across climate-sensitive areas. This paper argues that fundamental reform measures are essential to develop better local governance systems and improve stakeholder collaboration and transparency practices. The resilience of Barisal's informal settlements against climate change depends on strengthening local self-governance together with public-private-NGO partnerships.

Keywords: *Climate Change, Good Governance, Transparency, Informal Settlement Dwellers, Stakeholder Engagement.*

Resumo
Barisal, uma cidade costeira em Bangladesh, enfrenta desafios significativos devido à urbanização rápida e aos impactos das mudanças climáticas, particularmente em seus assentamentos informais, que são vulneráveis à erosão fluvial, inundações, salinidade e clima extremo. Essas regiões urbanas experimentam infraestrutura insuficiente, condições de vida superlotadas e uma entrega inadequada de serviços. A pesquisa determina como a governança local fortalece a resiliência urbana ao resolver as barreiras que impedem a gestão eficiente de desastres e a adaptação às mudanças climáticas, mas centra-se nas autoridades locais como protagonistas nesse processo. A pesquisa combina levantamentos quantitativos e métodos qualitativos, como grupos focais e pesquisas Delphi, juntamente com dados de entrevistas para identificar as barreiras essenciais de

1 Md.Maruf Hossain, Doctoral Researcher; Escuela Técnica Superior de Arquitectura de Madrid (ETSAM), Universidad Politécnica de Madrid (UPM); ORCID: https://orcid.org/0000-0001-6710-3459 ; Bangladesh; md.maruf.hossain@alumnos.upm.es.
2 Research Assistant;Archden Consultant; maisha18samiha@gmail.com.

governança. Os problemas de governança incluem concentração de poder, falta de transparência, pouca participação das partes interessadas e favoritismo político. No entanto, as parcerias entre ONGs e governos locais ainda mostraram alguns resultados positivos. A pesquisa destaca que a descentralização, juntamente com o compartilhamento de dados e a participação pública, é uma ferramenta essencial para melhorar a eficiência da governança em áreas sensíveis ao clima.Este artigo argumenta que medidas de reforma fundamentais são essenciais para desenvolver melhores sistemas de governança local e melhorar a colaboração entre as partes interessadas e as práticas de transparência. A resiliência dos assentamentos informais de Barisal contra as mudanças climáticas depende do fortalecimento da governança local, juntamente com parcerias público-privadas-ONG.

Palavras-chave: *Mudança Climática, Boa Governança, Transparência, Moradores de Assentamentos Informais, Engajamento das Partes Interessadas.*

Área temática: *Território.*

Subárea temática: *Território (Sessão online).*

1. Introduction

Urban resilience refers to a community's ability to withstand and recover from extreme events, with strong local governance being key to managing climate change and urbanization challenges (Salvador & Sancho, 2021). Cities must possess strong governance capacity to protect against climate dangers as well as endure multiple severe climate events that strike often (Van der Waldt, 2018). Rapid urbanization, together with high climate change risk, defines Bangladesh as a country facing unique challenges to manage natural disasters, particularly affecting urban poor settlements (Parvin *et al.*, 2013).

Barisal, located in southern Bangladesh, experiences extreme climate change vulnerability stemming from its positioning adjacent to the Bay of Bengal and its low-lying coastal position. Rising sea levels, along with intensified cyclone frequency and flood damage, as well as with increased salinity, pose dangers to local populations and their infrastructure and agriculture, leading to forced population movement and worsening water supply issues.

The government of Bangladesh executes climate adaptation approaches by constructing embankments and developing cyclone warning mechanisms and promoting crops resistant to floods. Despite these efforts, the region’s vulnerability underscores the urgent need for continued adaptation and mitigation measures to protect Barisal’s population and economy from climate disasters. This study focuses on governance gaps and their impact on disaster risk reduction, safety, and inclusion in Barisal’s informal settlements.

2. Objective

The paper outlines governance priorities for managing climate-related risks in Barisal, assessing governance efficiency based on decentralised and centralised principles of transparency, accountability, and citizen involvement. By evaluating the governance indicators of Barisal’s informal settlements, the study aims to provide recommendations for improving governance to better address and adapt to climate change, focusing on the city's most vulnerable populations.

3. Context of Case Study Areas

The research uses a case-based approach to investigate Barisal city's urban governance by studying Tirish Godown, Bangabandhu Colony, and Palashpur (Fig. 1). The settlement selection was based on predetermined factors, with the initial analysis using secondary data, followed by desk research and interviews with local community members.

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Table 1. *Criteria for selecting Case Study Areas in Barisal City Corporation.* Source: Author's Elaboration

Pre-defined criteria	Criteria Significance
Slum Age ≥ 30 years	Indicates stability of slums
Area ≥ 450 m²	Ensures settlements are persistent
Residents are climate migrants	Highlights climate challenges faced
Involvement of public/private sector	Shows governance and development efforts

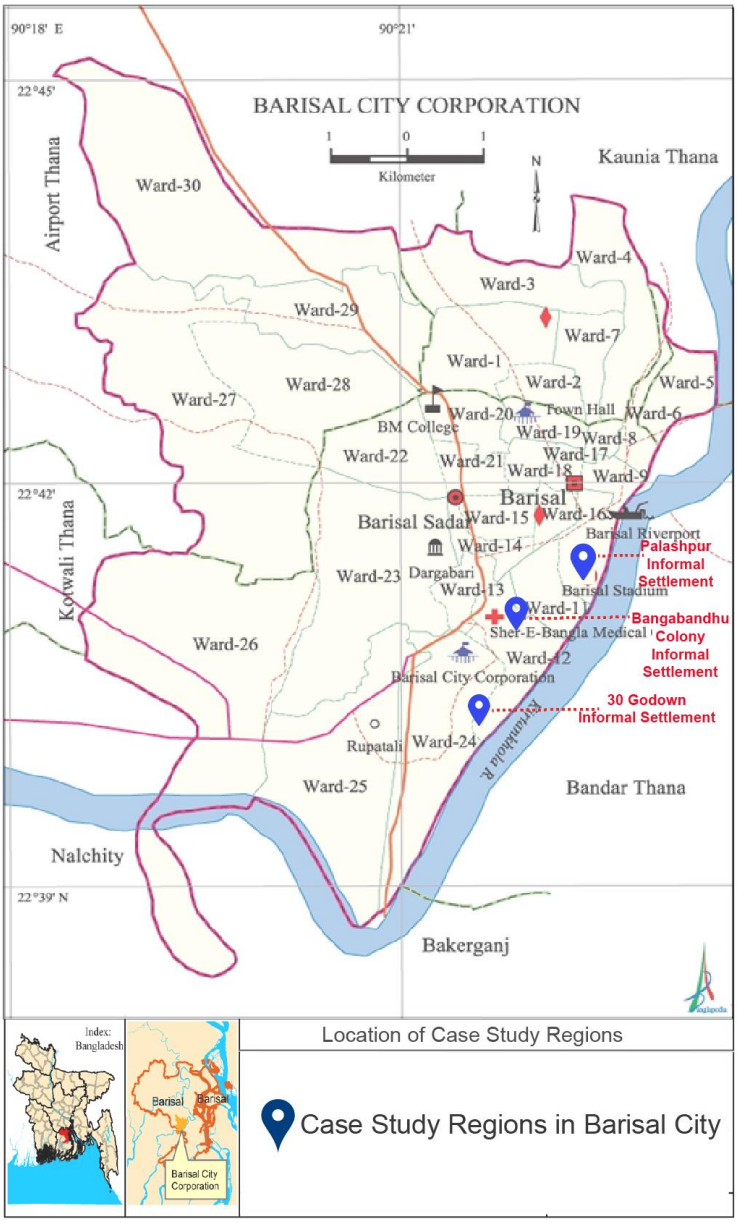

Fig. 1 *Case Study Areas in Barisal City Corporation*. Source: Author's Modification of Banglapedia. "Barisal City Corporation" Banglapedia: The National Encyclopedia of Bangladesh

4. Research Methodology

The study used a mixed-methods approach, combining qualitative and quantitative research for data triangulation, as recommended by Yin (2018). The research analyzed documents regarding sustainability governance and resilience while conducting case studies about Barisal's informal settlements. A total of 47 informal settlement dwellers participated in Focus Group Discussions, while local officials and NGO representatives completed Key Informant Interviews in addition to the Delphi Survey involving two rounds for a total of 10 and 7 experts. The analysis utilizing Likert scale methods within the survey exposed major governance obstacles in the Barisal district, which mostly relate to stakeholder management.

Table 2. *Focus group discussion respondents' demographic factors.* Source: Author's Elaboration

Variable	Scale	Total (Percentage)
Gender	Male	44%
	Female	56%
Age Group	20 – 40 years	40%
	41 – 60 years	37%
	60+ years	23%
Migration Duration	20 – 30 years	8%
	30 – 40 years	15%
	40+ years	77%

Table 3. *In-depth interview Experts' & Delphi respondents' demographic factors.* Source: Author's Elaboration

Variable	Scale	In-depth interview respondents'	Delphi respondents'
Gender	Male	100%	77%
	Female	0%	22%
Age Group	25 – 35 yrs	25%	50%
	36 – 45 yrs	75%	50%
Occupation	Government	50%	22%
	Non-government	50%	44%
	Academic	0%	33%
Qualification	Doctorate degree	0%	22%
	Post-graduate degree	75%	77%
	Under-graduate degree	25%	0%

5. Literature Review

5.1. Parameters of Good Governance

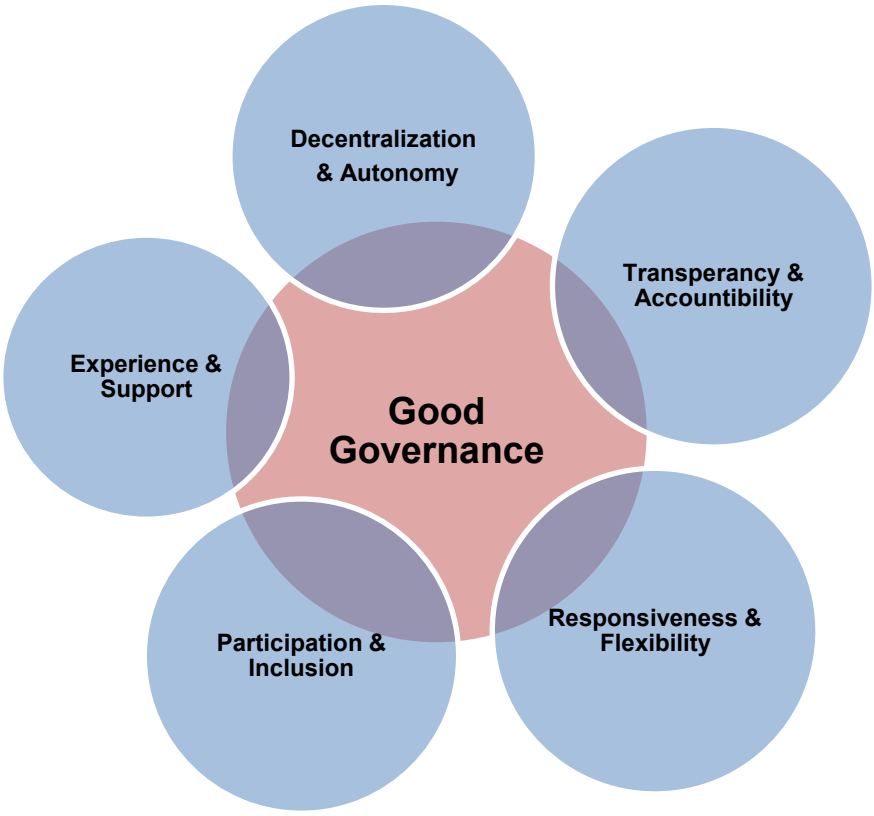

Fig. 2 *Parameters of Good governance.* Source: Mehta, 1998

Governance, initially defined by the World Bank in 1992 as the management of a country's resources for development, has evolved to include broader aspects such as authority, responsibilities, and decisions across society (UNDP, 1997). The term "good governance" emerged with the World Bank's 1989 report on Sub-Saharan Africa (Leftwich, 1993), though Johnson (1997) criticized it for being too focused on economic development rather than sustainability. The UNDP outlines good governance as comprising five key elements (Fig. 2), which integrate participatory mechanisms with the ability to anticipate and plan for the future. According to Mehta (1998), these elements include transparency, accountability, experience, participation, institutional responsiveness and participatory systems.

Indicators of Good Urban Governance have been defined through literature review and field survey as indicated in the following table:

Table 4. *Indicators of Climate Resilient Urban Governance obtained through Literature Review & field survey.* Source: Author's Elaboration

Parameters	Theoretical Framework Indicators	Literature Sources	Stakeholder's opinion-based Indicator	Field Survey Sources
Decentralization and Autonomy	Respect towards diversity	(Bennett *et al.*, 2021)	Regional Systems	Focus Group Discussion
	Sense of ownership	(Movsisyan *et al.*, 2022)	Adaptation to changing circumstances	Focus Group Discussion & In Depth Interview

	Number of local governments, jurisdictions	(Carbonnier, 2013).	Incorporation of innovative approaches	Focus Group Discussion & In Depth Interview
	Transparent flow of information	(Skandylas *et al.*, 2020).	Employ iterative methods	Focus Group Discussion & In Depth Interview
	Presence of autonomous areas	(Mora-Sanguinetti & Spruk, 2022).	Capacity Building	Focus Group Discussion
Transparency and Accountability	Public access to data and records	(Tintswalo *et al.*, 2021).	Support for community-based measures	In-Depth Interview
	Independent monitoring and auditing	(Tintswalo *et al.*, 2021).	Accessibility to services	Focus Group Discussion
	Compliance with legal and ethical standards	(Minkkinen *et al.*, 2022)	Opportunities for involvement	Focus Group Discussion & In-Depth Interview
	Impartial dispute resolution mechanisms	(Mousseau, 2023)	Co-operative partnership	Focus Group Discussion & In-Depth Interview
	Appropriate feedback with respect to performance	(Fairbanks *et al.*, 2007)	Qualified Personnel	Focus Group Discussion
	Availability of information	(Zuiderwijk & Janssen, 2014)	Technical support and advisory assistance	In-Depth Interview
Responsiveness and Flexibility	Regular review and evaluation	(Zhao, 2011)	Regional Systems	Focus Group Discussion
	Resource Flexibility	(Cosens, 2013; Heaton *et al.*, 2022)	Adaptation to changing circumstances	Focus Group Discussion & In Depth Interview
	Integration of citizen/stakeholder feedback	(Schiedek *et al.*, 2021)	Incorporation of innovative approaches	Focus Group Discussion & In Depth Interview
Participation and Inclusion	Capacity-building and empowerment	(Morgan *et al.*, 2022)	Employ iterative methods	Focus Group Discussion & In Depth Interview
	Continuous monitoring and evaluation	(Chauveron *et al.*, 2021)	Capacity Building	Focus Group Discussion
Experience and Support	Utilization of relevant data and analytics	(Puttick *et al.*, 2022)	Support for community-based measures	In-Depth Interview
	Clear Role & Workflow	(Henry, 2023)	Accessibility to services	Focus Group Discussion
	Accessibility of relevant tools and resources	(Voskamp *et al.*, 2021)	Opportunities for involvement	Focus Group Discussion & In Depth Interview
	Evidence-based decision-making	(Wang, 2023)	Co-operative partnership	Focus Group Discussion & In Depth Interview

5.2. Governance of Barisal City

Barisal, located in southern Bangladesh, faces significant local governance challenges, particularly in waste management, disaster preparedness, healthcare access, and informal settlement management. Inefficiencies in waste collection, insufficient manpower, and inadequate local government initiatives contribute to poor waste segregation and disposal practices (Hossain *et al.*, 2024). Natural disasters like cyclones and floods in Barisal underscore the requirement for better governance frameworks to boost community preparedness against risks. A decentralized health system creates obstacles for providing equal healthcare access to people who live in disaster zones (Baffour *et al.*, 2025). Governance mechanisms are also crucial for empowering women and promoting financial inclusion (Mahwish *et al.*, 2024). The poor planning, along with scarce resources and split governance, creates worsening service deficiencies for informal settlements in Barisal (Awad *et al.*, 2021). Local frameworks are essential for managing agriculture under climate change circumstances (Aravindakshan, n.d.). A comprehensive solution consists of building new infrastructure and collaborating with local stakeholders through participatory governance to improve planning efforts (Doni *et al.*, 2022).

6. Research Findings

6.1. Experts' Perception on Local Urban Governance System

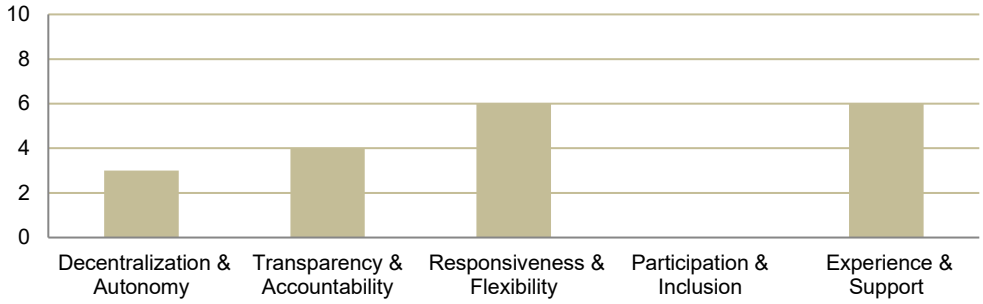

Fig. 3 *Experts' opinion on governance of Barisal governance through in-depth interview.* Source: Author's Elaboration

Experts recognize (Fig. 3) that Barisal faces governance challenges, including exclusion of vulnerable communities and limited local decision-making power. While infrastructure and waste management have improved, favoritism impacts resource allocation, and leadership is strong in protective measures like cyclone shelters.

6.2. Assessing the Indicators of Governance Parameters

The use of the mean ($\overline{x}$) to assess the significance of survey factors aligns with the research methodologies of Platzer (2006) and Geist (2010). Judgment matrices, filled out by experts, are employed to determine the significance of determinants using the formulas provided.

Mean,

$$\bar{x} = \frac{\sum xi}{n} \tag{1}$$

where,

$\bar{x}$ = the mean value of the set of given data

xi = data value

n = total number of data values

Standard Deviation,

$$\sigma = \sqrt{\left\{\frac{\sum(x_i - \bar{x})^2}{N}\right\}} \quad (2)$$

where,

$\bar{x}$ = the mean value of the set of given data

xi = data value

N = total number of data values

σ = Value of Standard Deviation

6.2.1. Decentralization and Autonomy

Likert scale analysis by experts (Fig. 4) highlights that distinct regional systems are crucial for effective local governance, especially in diverse urban areas, by implementing needs-specific policies (Panday & Rabbani, 2011). The UNDP (1997) emphasizes that respect for diversity is essential for inclusiveness and sustainable development. Specialists also note a lack of proper collaboration between different departments in Barisal City's administration, which weakens the city's governance.

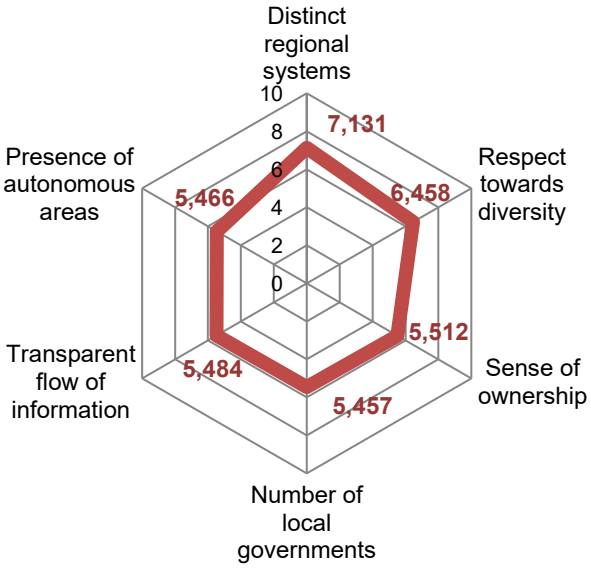

Fig. 4 *Likert Scale Analysis of Decentralization & Autonomy Indicator.* Source: Author's Elaboration

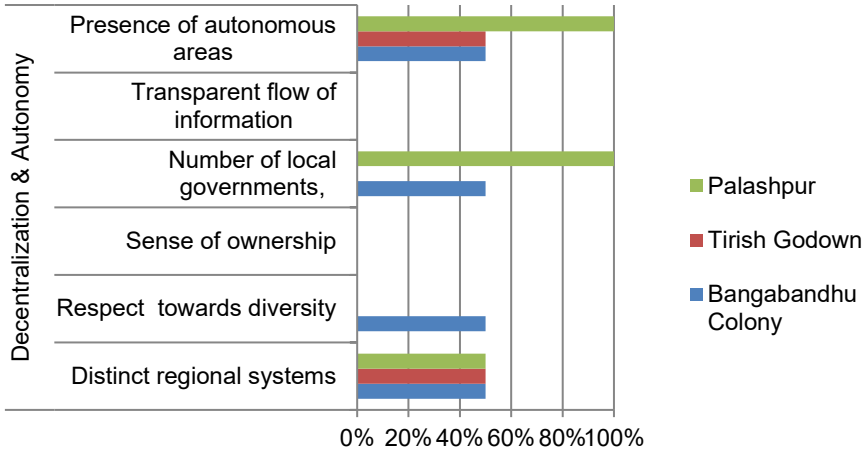

Fig. 5 *Analysis of Decentralization & Autonomy Indicators in case study regions*. Source: Author's Elaboration

The field survey (Fig. 5) reveals limited local governance involvement across Barisal's regions. In Bangabandhu Colony/Stadium Colony, the local government operates under the commissioner, but central government control restricts decision-making. Namarchar Borofkol Colony faces similar challenges, with little local autonomy and decisions made at higher levels. Palashpur Slum sees negligible local government participation, leaving central authorities to control key decisions. The lack of local empowerment hinders addressing critical issues like housing, sanitation, and infrastructure development.

6.2.2. Transparency & Accountability

Transparency and accountability indicators analysis of an expert (Fig. 6) denotes that, while responding to the legal principles, data accessibility, and observation are highly deviated by 8.358; however, it is evidenced that they are highly important for governance stability and fairness (Zahid & Jahan, 2023). In contrast, Availability of Data (3.256) aids in mitigating corruption risks (Sofyani *et al.*, 2021). The field survey (Fig. 7) highlights significant shortcomings in transparency and accountability across the three informal settlements. In Bangabandhu Colony, the local government fails to inform the community of developments or follow through on commitments, leading to a lack of accountability. Tirish Godown faces inefficient distribution of government funds and resources, further reducing accountability in public service delivery. In Palashpur, the allocation of resources is marked by partiality and corruption, undermining transparency and fairness in the distribution of government aid and services.

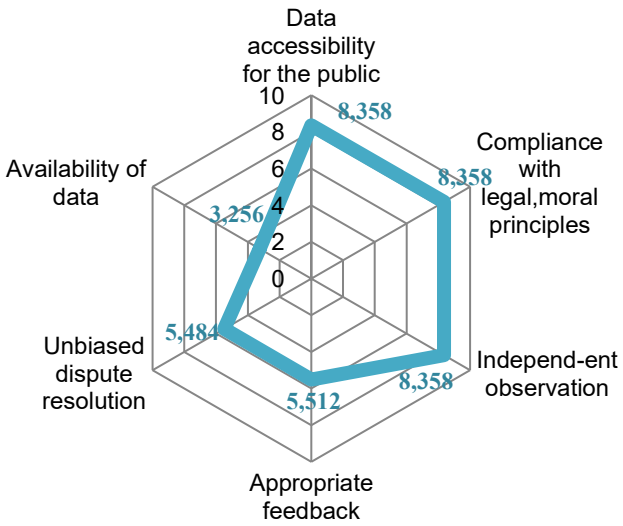

Fig. 6 *Likert Scale Analysis of Transparency & Accountability Indicator.* Source: Author's Elaboration

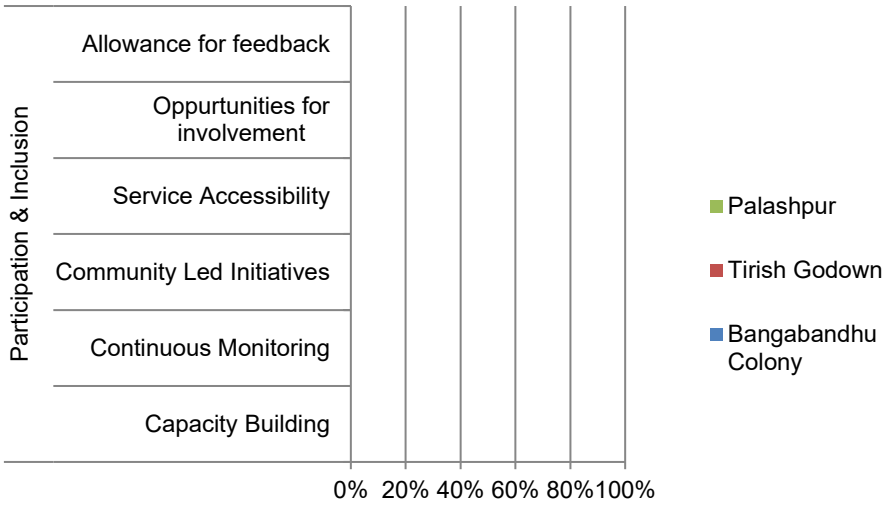

Fig. 7 *Analysis of Transparency & Accountability Indicators in case study regions.* Source: Author's Elaboration

6.2.3. Responsiveness & Flexibility

Stakeholder Integration (10.113) and Flexible Budgeting (10.026) received the highest scores. Regular evaluation serves as a check on development activities, while the bottom-up approach in budgeting ensures community participation. Flexible budgeting is useful during calamities for adapting to changes (Mahmud, 2021). However, factors like flexibility in working conditions and handling iterations were less significant indicators (Fig. 8).

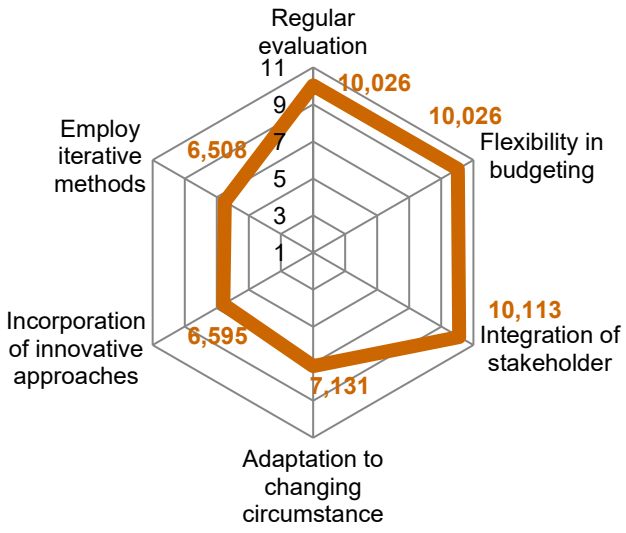

Fig. 8 *Likert Scale Analysis of Responsiveness & Flexibility Indicators.* Source: Author's Elaboration

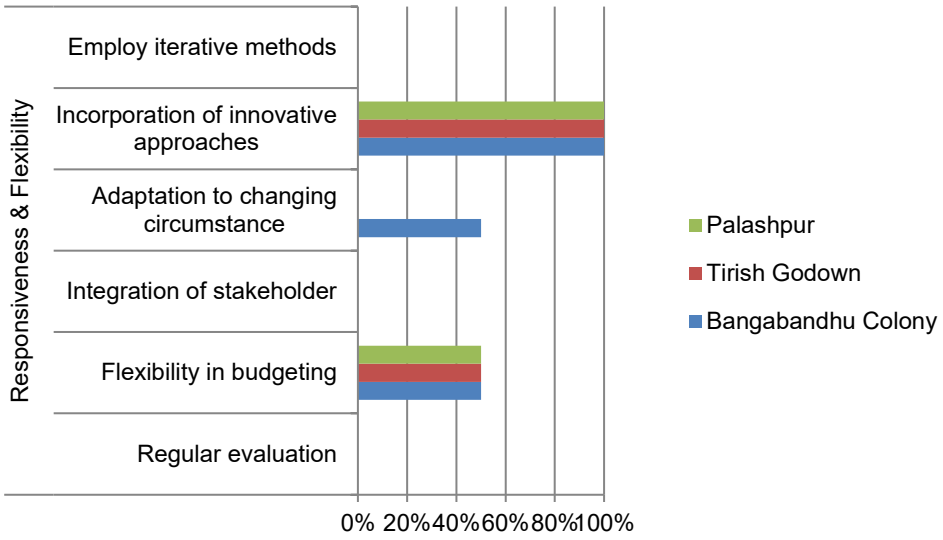

Fig. 9 *Analysis of Responsiveness & Flexibility Indicators in case study regions.* Source: Author's Elaboration

Bangabandhu Colony, Tirish Godown, and Palashpur show inadequate responsiveness and flexibility in addressing climate hazards (Fig. 9). In Bangabandhu Colony, the local authorities' response to floods and river erosion is minimal, and there is little flexibility in adapting to environmental changes. Tirish Godown faces a slow and insufficient response to climate-related issues, with no proactive measures in place. Similarly, Palashpur receives inadequate government support for recurring climate hazards, such as floods and erosion, and lacks flexible systems to help the community adapt to these challenges. Other settlements demonstrate the need for improved planning and adaptation strategies to enhance overall responsiveness.

6.2.4. Participation & Inclusion

Capacity building and continuous monitoring are primary signs as these facilitate the stakeholders, promote partnership, and promote accountability (Muhtar *et al.*, 2021). Accessibility of service and community-based participation approach (6.576) allow participation and involvement at the grassroots level, contributes to making development more pointed and achievable according to the needs of Bangladesh, and supports good governance (Seddiky, 2020). The analysis of the data collected from the field shows (Fig. 11) that participation and inclusion are significantly lacking across the settlements. In Bangabandhu Colony, political engagement is limited to election periods, with minimal community input into governance decisions, resulting in exclusion. Tirish Godown faces similar issues, with limited opportunities for public feedback and participation in governance. In Palashpur, the community feels marginalized, as political agendas overshadow their needs, and there is little public involvement in decision-making processes. Across all settlements, there is a clear absence of ongoing local government participation and feedback mechanisms.

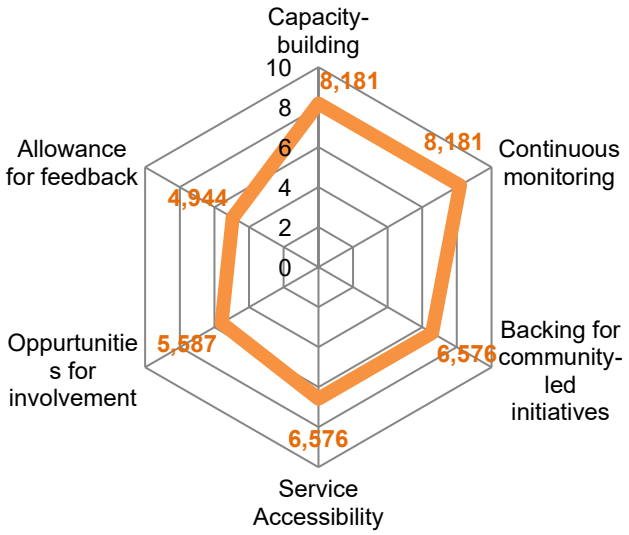

Fig. 10 *Likert Scale Analysis of Participation & Inclusion Indicators.* Source: Author's Elaboration

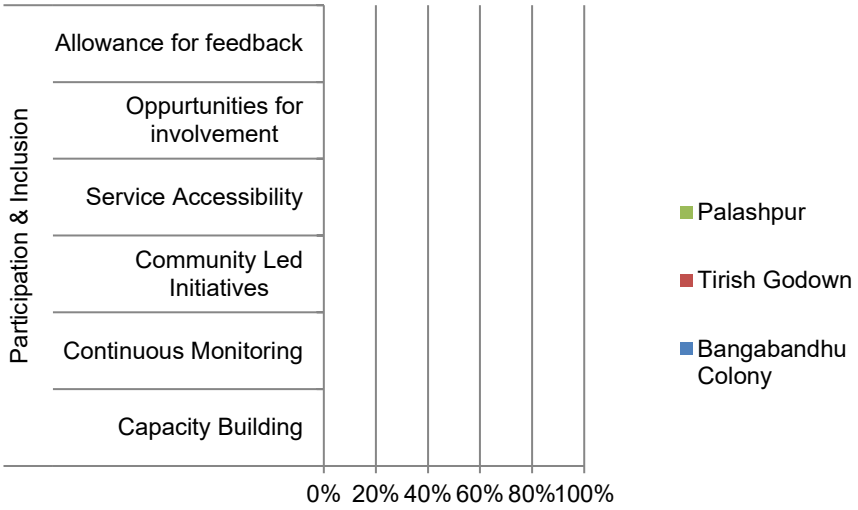

Fig. 11 *Analysis of Participation & Inclusion Indicators in case study regions.* Source: Author's Elaboration

6.2.5. Experience & Support

Cooperative partners and clear roles/workflows(8.358) present high variability, as shown in Fig. 11, suggesting their importance in determining decision-making and resources for handling multifaceted issues (Teisman & Klijn, 2002). Data accessibility and technical assistance display moderate variability, highlighting the significance of data-driven methods for efficient climate adaptation and resource utilization (Austin *et al.*, 2019).

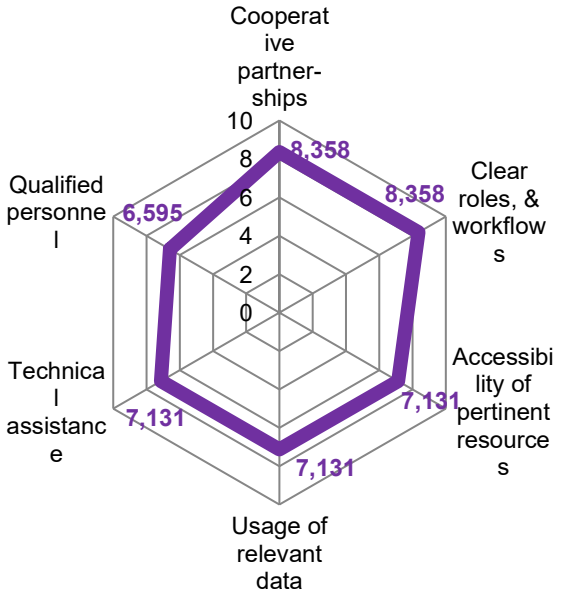

Fig. 12 *Likert Scale Analysis of Experience & Support Indicators*. Source: Author's Elaboration

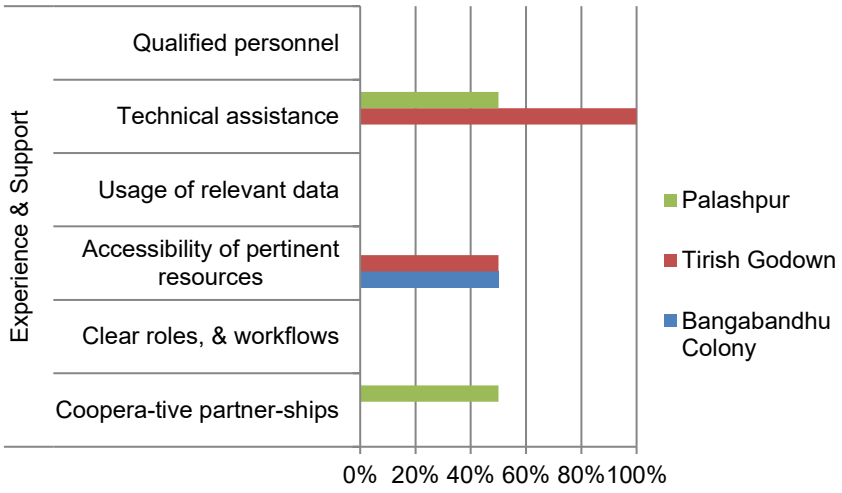

Fig. 13 *Analysis of Experience & Support Indicators in case study regions.*Source: Author's Elaboration

Field surveys (Fig. 13) reveal significant discrepancies in experience and support across the case study areas. In Bangabandhu Colony, support from local authorities and NGOs is minimal, with occasional basic services like water supply and emergency medical care, but no long-term solutions. Tirish Godown receives limited government aid, mostly emergency assistance during flooding, while NGOs provide essential services like medical care and loans, but no sustainable development plans are in place. In Palashpur, NGOs offer microfinance and basic services, but there are no comprehensive strategies to improve living conditions or tackle systemic issues. Across all areas, there are gaps in consistent support and long-term planning for community development.

7. Discussion

The findings highlight substantial governance challenges in the informal settlements of Barisal's, Bangabandhu Colony, Palashpur, and Tirish Godown – which critically undermine climate resilience. Weak institutional capacity, decentralization, and poor coordination among local actors obstruct

essential climate adaptation efforts, such as infrastructural upgrades and disaster preparedness (Hossain *et al.*, 2024). These deficiencies are exacerbated by fragmented waste management systems, which not only contribute to environmental degradation but also intensify public health risks in flood-prone zones.

Transparency and accountability remain central governance deficits. Despite policy provisions and government aid, implementation is frequently inconsistent and marred by inefficiency and corruption. In settlements like Tirish Godown and Palashpur, misuse of resources and inequitable distribution of emergency relief hinder community resilience. Political exploitation – where slum residents are treated as vote banks without genuine investment in their needs – further erodes trust in public institutions (Safarpour *et al.*, 2020). Moreover, as Huque (2007) notes, excessive emphasis on community engagement without adequate infrastructural investment risks long-term stagnation.

Another key issue is the disconnect between policy frameworks and on-ground implementation. Although development plans exist, actual participation is often limited to a small segment of slum dwellers, primarily those with official voter identification. Efforts to engage with ward councilors are frequently undermined by favoritism and rent-seeking behavior, leading to a lack of equitable relief distribution (CPD, 2001; Rahman, 2019).

The governance challenges in Barisal are linked to broader issues of socio-political instability, infrastructural deficiencies, and inadequate stakeholder participation. However, Roy *et al.* (2019) suggest that governance improvements through decentralization, increased accountability, and strengthened partnerships with NGOs and the private sector could significantly enhance local adaptive capacity. Thus, Barisal demonstrates the critical need for integrated governance reforms. Without institutional transparency, participatory frameworks, and infrastructural investment, urban informal settlements in Bangladesh will continue to face disproportionate exposure to climate risks.

8. Conclusion

The research reveals, Barisal city faces significant challenges from climate change, particularly river erosion, which threatens housing stability, livelihoods, and access to essential services in informal settlements. These vulnerabilities are further accentuated by governance constraints as observed by various stakeholders and professionals, citing limited local self-governance, accountability and transparency. However, Barisal City Corporation has tried to address climate-related risks, but it suffered from centralized funding and ineffective decentralization, which does not allow for implementing actions in time and considering the local concerns. To enhance governance and resilience in Barisal, increased focus should be given to the issue of developing local self-governance and decentralization. Engaging in regular public consultations and forming partnerships with NGOs and private stakeholders can address resource limitations, improve infrastructure, and support vulnerable communities. These targeted reforms can foster a more resilient, inclusive urban environment, enhancing security and well-being for Barisal's most at-risk residents.

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