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Adaptive governance by community based organisations: Community resilience initiatives during Covid-19 in Mathare, Nairobi

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Abstract

Adaptive governance describes the purposeful collective actions to resist, adapt, or transform when faced with shocks. As governments are reluctant to intervene in informal settlements, community based organisations (CBOs) self-organize and take the lead. This study explores under what conditions CBOs in Mathare informal settlement, Nairobi initiate and sustain resilience activities during Covid-19. Study findings show that CBOs engage in multiple resilience activities, varying from maladaptive and unsustainable to adaptive, and transformative. Two conditions enable CBOs to initiate resilience activities: bonding within the community and coordination with other actors. To sustain these activities over 2.5 years of Covid-19, CBOs also require leadership, resources, organisational capacity, and network capacity. The same conditions appear to enable CBOs to engage in transformative activities. However, CBOs cannot transform urban systems on their own. An additional condition, not met in Mathare, is that governments, NGOs, and donor agencies facilitate, support, and build community capacities.

KEYWORDS

adaptive governance, community resilience, community-based organisations, Covid-19, Kenya, Nairobi, sustainability

1 | INTRODUCTION

Informal settlements house over 1 billion urban dwellers (Satterthwaite et al., 2020). Their basic characteristics, being unplanned and illegal, with poor housing, infrastructure and/or services, render informal settlements vulnerable to shocks (Satterthwaite et al., 2020; Seeliger & Turok, 2014). Muchiri and Opiyo (2022) even dub them hotspots of vulnerability. This is more so in dense informal settlements, where illnesses such as Covid-19 spread more easily (Kenny, 2020). The vulnerability is indicated by the following story:

Hanna [pseudonym], her son and two grandchildren live in a shack in Mathare, an informal settlement in Nairobi. Hanna and her son both had casual work before the Covid-19 pandemic. During the government-instituted lock-down, her son lost his job and left Nairobi. A year later, Hanna caught arthritis and lost her job as well. By the end of 2022, Hanna has been unemployed for over a year and her grandchildren had dropped out of school.

Dobson et al. (2015) define community resilience in informal settlements as the ability of a vulnerable community to withstand shocks

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and stresses and sustain itself by adapting and occasionally transforming to enhance future capacities. Resilience of communities is not static. It manifests in the continual processes of coping and adjusting at multiple levels; a dynamic 'state of being' (Barua & Rahman, 2019; Masnavi et al., 2019). It is a desired attribute of informal dwellers and of systems within and beyond the informal settlement. Community resilience thus requires coordination across levels, actors, and systems, which develop at different speeds and possibly in different directions (Folke et al., 2005).

Folke et al. (2005) recommend a polycentric system of adaptive governance for urban communities to initiate and coordinate resilience initiatives. Adaptive governance hereby describes the purposeful collective actions to adjust to shock by either sustaining and improving a certain regime or triggering a transformation towards a more preferred regime (Ernstson et al., 2010). Most literature focuses on governments as initiators, with communities participating at varying levels. In informal settlements, however, where governments are often reluctant to intervene, community based organisations (CBOs) are likely to take the lead (Arana & Wittek, 2016; Dobson et al., 2015; Haokip, 2018) and have developed a range of approaches to do so (Watson, 2014). Hereby we define CBOs as organised collective actions within a community, whose main role is to engage in public service delivery and/or advocacy (Arana & Wittek, 2016; Carrero et al., 2019; Dias et al., 2021). The underlying assumption is that the coordination among CBOs enables systems and people within informal settlements to resist, adapt and transform in the face of uncertainty and disasters. Adaptive governance by CBOs turns community participation upside down: 'The government participates in community initiatives that are predominantly led by citizens and other non-state actors, who independently develop their own solutions and projects to a policy problem' (Mees et al., 2019, p. 200).

However, adaptive governance by CBOs also has limitation and uncertainties. First, CBOs may find it hard to adjust and sustain resilience activities over a prolonged period, as urgencies reduce, resources dwindle, and new priorities kick in. Like the environments within which they operate, CBOs too are vulnerable, and shocks may affect their capacity to remain functional (Rao & Greve, 2018). Furthermore, resilience activities of CBOs compromise sustainable development, if they harm the environment, increase inequality, reduce resilience of the wider community, or if they have long-term negative effects (Elmqvist et al., 2019; Rivero-Villar & Medrano, 2021). Research in informal settlements in Kenya offers ample examples of such 'negative resilience' (Elmqvist et al., 2019), such as pouring oil on still water to prevent mosquitoes, dumping collected waste in the river, or informal suppliers offering low quality basic services at inflated prices during shocks, the so-called poverty penalty (Fransen et al., 2023). Third, Adger et al. (2009) argue that activities of CBOs are likely to be adaptive but not transformative.

In the context of the above, we raise the following research question: what adaptive governance conditions explain the ability of CBOs to initiate and sustain adaptive or transformative activities when faced with uncertainty, shocks, and disasters? We study CBOs during the first 2.5 years of Covid-19 as a concrete and prolonged shock. Considering

the above-mentioned limitations and uncertainties about adaptive governance by CBOs, we specifically question what adaptive governance conditions explain how CBOs engage in and sustain positive adaptation and transformation and if and how governments support and/or hinder these activities. We offer three contributions to theory on adaptive governance by CBOs in informal settlements (Alonge et al., 2019; Arana & Wittek, 2016; Dobson et al., 2015; Dodman & Mitlin, 2011; Haokip, 2018; Rivero-Villar & Medrano, 2021; Satterthwaite et al., 2020; Seeliger & Turok, 2014; Watson, 2014): (1) We question the notion that CBOs are likely to be adaptive (Adger et al., 2009; Schaer, 2015), noting a nuanced and multilevel interplay between adapting and transformative activities; (2) We identify conditions under which CBOs adapt, sustain, and transform during shocks; and (3) We identify and discuss coordination roles of CBOs and facilitation roles of governments and other actors.

This exploratory study is conducted in Mathare, a dense informal settlement of approximately 200,000 residents in Nairobi, Kenya. Mathare houses over 3000 CBOs which offer public services and occasionally engage in protests and advocacy. While CBOs have informally coordinated among themselves, residents and other actors for a long time, several CBOs recently established a formal network called the Mathare Special Planning Area Research Collective (MSPARC). We first map the role of CBOs and their networks in Mathare, identifying four groups of CBOs with different abilities to adapt, sustain and transform. A comparative qualitative analysis subsequently assesses the underlying conditions. By working with community researchers, the study builds on and guides discussions among practitioners and researchers on how to transform community resilience in Mathare in a bottom-up process.

The subsequent section develops a conceptual framework based on theory on CBOs, community resilience and adaptive governance in informal settlements. The methods section describes the case study, sample, research methods and operationalization. The finding section outlines the roles of CBOs and MSPARC, describes four illustrative CBOs, and compares these. The debate subsequently compares findings to literature on adaptive governance by CBOs in informal settlements, followed by conclusions and recommendations.

2 | THEORY

2.1 | Community resilience in informal settlements: The role of CBOs

While urban informal settlements are highly vulnerable, capacities to cope tend to be constrained. In this confined context, CBOs craft local adaptations to enable survival of informal settlers during crises (Satterthwaite et al., 2020). They are considered informal resilience champions (Rivero-Villar & Medrano, 2021), addressing immediate needs during disruptions and in some cases reorganising community systems to reach higher levels of adaptation (Arana & Wittek, 2016; Carrero et al., 2019; Dias et al., 2021). Agency by CBOs thereby represents snippets of highly complex resilience building processes 'from the bottom' in informal settlements (Dodman & Mitlin, 2011).

Initiatives borne from CBOs are perceived as a public good since individuals cooperate to bridge the residual demand in service delivery created by government's ambivalence to invest in informal settlements. Beyond service provision, CBOs act as advocacy movements and points of contact between the community, governments, and other stakeholders. They table the needs of hard-to-reach disenfranchised groups (Rivero-Villar & Medrano, 2021). CBOs largely operate on a normative frame, upholding value systems which the sub-community subscribes to and may as such progressively gain local legitimacy (Haokip, 2018). They are motivated to improve both the community capacity and their organisational competency in order '...to address the immediate needs of their members and the long-term wish to establish their credibility and legitimise the potential contribution of their members ... through demonstrated capacity' (Mitlin, 2008, p. 349).

The role of CBOs in resilience in informal settlements is widely debated. Miriti (2009) argues that CBOs are inherently limited by resources, competencies, and place-based politics, thus often unable to address underlying compositional and structural drivers of vulnerability. They produce coping strategies which are temporary, insufficiently transformative, and are considered in some cases maladaptive and unsustainable (Elmqvist et al., 2019; Rivero-Villar & Medrano, 2021). However, CBOs may also enable communities to recover through positive adaptability. For example, CBOs providing relief supplies to poor residents suffering losses from an earthquake in Manipur, India (Haokip, 2018) and sand piling in Senegal slums to keep off flood water (Rivero-Villar & Medrano, 2021). Schaer (2015, p. 548) however argues that such agency '... is not a panacea per se, as it may not, by itself, compensate for the lack of basic services and infrastructure that is forcing the urban poor to cope with disproportionate levels of risk'. In a third lens, CBOs may initiate social transformation, empirically evidenced by confrontational politics (Dias et al., 2021) with demands and advocacy, and by dialogical politics, negotiating with policy makers. In this political role, networks and regional alliances enable CBOs to amass influence (Mitlin, 2008). Watson (2014) and Horn (2021) furthermore describe how CBOs in informal settlements combine tools such as community self-enumeration with their political roles to incite transformations. Nonetheless, the existing scholarship lacks convincing evidence on why some CBOs remain stuck with (mal)adaptive emergency initiatives, while others progressively move towards transformation and what role governments play.

2.2 | Adaptive governance

Adaptive governance is increasingly recognised as a 'fitting' approach to risk management in a contemporary dynamic, interlocked and uncertain modern world (Rijke et al., 2012). The approach champions permeable governance systems, replacing centralised approaches with nested processes of collaboration among and self-organisation of multiple actors (VanNijnatten, 2021). Yasmin et al. (2020) however critique that research is fixated on formal institutions in developed economies. Shifting the lens to CBOs in informal settlements may deepen our understanding of the application of adaptive governance in developing contexts. Hereby we consider both the 'exogenous'

ability of CBOs to engage in nested networks across organisations and the 'endogenous' ability of CBOs as organisational systems to be responsive to unexpected changes (Cooper & Wheeler, 2015).

CBOs network with other actors at multiple levels, whereby each level represents a diverse but different set of organisations, capacities, and resources (Rao & Greve, 2018). We hereby focus on networks accruing at the level of the informal settlement. Based on a study on South Africa's informal settlements, Seeliger and Turok (2014) argue that these networks should be diverse, flexible, experimental and polycentric with multiple points of power and responsibility. Eshuis and Gerrits (2021) argue that such forms of bottom-up adaptive governance tend to be short-lived and risk lock-in when institutionalised. By contrast, Watson (2014) argues that collaboration between CBOs, governments and other actors may lead to transformative resilience through tools such as community profiling and community saving schemes.

At the level of the CBOs, adaptive governance resonates with debates on organisational resilience. Bains and Durham (2013) study the resilience of CBOs and find their adaptive capacities linked to endogenous capacities to adjust organisational behaviour and exogenous capacity to modify multi-layered interactions. Endogenous factors include adaptive or transformational leadership (Cooper & Wheeler, 2015), institutional capacities, including an organisational structure, division of tasks, transparent processes, and access to resources (Igalla et al., 2019). Exogenous capacity enables CBOs to develop and coordinate nested networks (Yasmin et al., 2020). The capacity of CBOs to bond communities and bridge across sub-communities is seen as one of its main assets (Bains & Durham, 2013; Folke et al., 2005), while linking to more powerful actors would offer access to recognition, support, resources, information, and growth (Arana & Wittek, 2016; Fransen et al., 2022). Alonge et al. (2019) describe how the combination of endogenous and exogenous capacities enable Community Health Volunteers in Liberia to reach out to vulnerable communities during Ebola:

'In communities with strong and trusted local leadership, and close networks among community members, the response to the outbreak was effective when the right information was provided through these trusted leaders, because they were viewed as trusted sources of information'.

(Alonge et al., 2019, p. 5)

Linking to powerful players is however a double-edged sword which may also lead to elite capture, an overactive government taking over, red tape, misuse of CBOs or failure to deliver. In Liberia, communities without trusted networks and organisational resilience experienced more death, mistrust, and trauma (Alonge et al., 2019).

2.3 | Conceptual framework

By combining literature on adaptive governance, CBOs, and resilience in informal settlements, we propose a framework to guide our research (Figure 1). We anticipate that exogenous adaptive capacities embedded in networks and endogenous capacities of CBOs enable

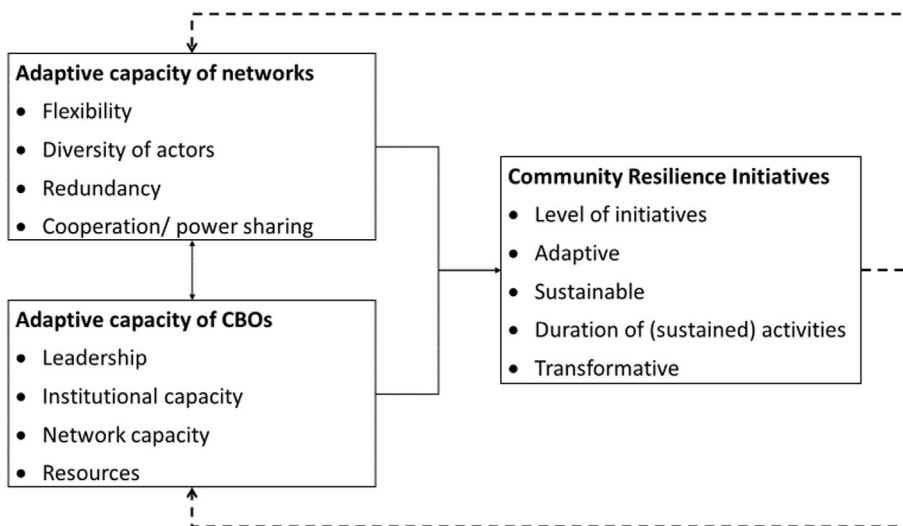


FIGURE 1 Adaptive governance of CBOs. Source: Authors.

CBOs to initiate and sustain activities to resist, adapt and/or transform communities in the face of uncertainty and shocks. These activities may be directed at specific target groups and/or systems. They may also set off feedback mechanisms, as the success or failure of initiatives impacts on adaptive capacities. For each of those variables, Figure 1 draws indicators from theory.

3 | METHODS

We approach the study as a single case study on adaptive governance during Covid-19 in Mathare, Nairobi. Mathare is selected because it is a highly vulnerable informal settlement which houses a large variety of CBOs, while we have good access to information. We applied mixed methods, including focus group discussions (FGD) and secondary data analysis. We conducted semi-structured interviews of CBOs with the chairperson, secretary, treasurer, and on average seven active members. Data was collected in 2020 and in 2022, enabling us to indicate dynamics during the prolonged shock. We also have access to a database of 63 in-depth interviews with community members, leaders, CBOs, and other actors in Mathare, which offers a reference.

Table 1 operationalises the study based on the conceptual framework in Figure 1. Following the operationalisation, we collected data in two steps. First, we discussed the role of CBOs in FGDs with over 20 CBOs in 2020 and 2022, with informal meetings in between. This has led to a description and grouping of CBOs, which we compared to the database of 63 interviews to increase internal validity. We subsequently selected 4 out of 53 active CBOs based on maximum variety, representing differences in the endogenous and exogenous capacity of CBOs. Studying four illustrative CBOs over time enables a deep exploration at the cost of generalisation. The findings were subsequently discussed with CBOs to assess their representativeness, increasing internal validity. We are however aware that the findings are illustrative, enabling theoretical generalisation.

The analysis combined two methods. We first mapped and described the network of CBOs operating in Mathare by grouping

data obtained in FGDs. We subsequently conducted a fuzzy-set analysis, which is a qualitative comparative research method whereby indicators are scored to enable a comparison (Fiss, 2011), to compare four CBOs followed over time. It enabled us to compare how a combination of factors, here endogenous and exogenous CBO capacities, form configurations which are associated with specific outcomes, here community resilience initiatives (Gerrits & Verweij, 2018). The research team scored indicators on a four-value fuzzy-set from 0 (fully out), to 1.0 (fully in). Community resilience initiatives, for instance, were scored at the maximum of 1 if a CBO was able to increase its outreach during Covid-19 (more activities; larger target group) and adopted adaptive, sustainable, and transformative initiatives. These scores were calibrated in fierce discussions within the research team.

The study is conducted by community researchers of Ghetto Foundation (community researchers in Mathare) together with international and other local researchers. This rich combination of researchers enables us to compare, contextualise, contribute to learning within the community, and work towards impact as local researchers are well integrated within the community and linked to policy makers. Internal validity is increased by triangulating data and intensive discussion within the research team.

4 | THE ROLE OF CBOS IN COMMUNITY RESILIENCE IN MATHARE

Mathare presently houses an excess of 3000 CBOs, most of which are inactive given that many CBOs register during political campaigns and stop operating right after. During our research, we mapped and categorised a total of 53 CBOs that according to the FGDs were most active in Mathare since the onset of Covid-19 in March 2020. We have divided these into four groups with different perceived internal and external capacities (Table 2).

The first group entails 11 CBOs that are unregistered and self-organised. Several work in youth development, while a few also double in environmental services, such as water supply and environmental

TABLE 1 Operationalisation.

Variable	Indicator	Values in fuzzy-set analysis
Community Resilience Initiatives (CRIs) by CBOs	Change in number of activities	0 = Reduced by at least 50%
	Change in size of target group	0.3 = Reduced by less than 50%
		0.7 = Stable (sustainable)
		1 = Increase
Organisational capacity of CBOs	Level of initiative	People, system
	Adaptive, transformative, sustainable activities	0 = no adjustments
		0.3 = Maladaptive and/or unsustainable adjustments
		0.7 = Adaptive and sustainable adjustments
Resources of CBOs	Organisational structure	1 = Adaptive, sustainable, and transformative activities
	Registration	0 = No division of tasks
Leadership of CBOs		0.3 = Light division of tasks
		0.7 = Detailed division of tasks
		1 = Division of tasks in departments
Network of CBOs	Financial resources	0 = Not registered
	Active members	1 = Registered
	Physical & natural resources	0 = Very small
Coordination by CBOs		0.3 = Small
		0.7 = Large
		1 = Very large
Network of CBOs	Decision making capacity	
	Ability to bond	
	Ability to inspire	
	Attract new members	
Network of CBOs	Bonding	
	Bridging	Network with CRIs in Mathare
	Linking	Network with government
		Network with external NGOs
Coordination by CBOs		Power balance among actors
		Diverse network of actors
		Cooperation
		Coverage and redundancy

Source: Authors.

cleaning, and one aims explicitly for economic empowerment of its members. Relatively many of these organisations target youth to prevent them from joining gangs, use drugs, or become sex workers. The strategy is, as one of the youth leaders remarked: 'to get to them, before Mathare gets into them'. The organisations targeting youth often offer a range of other services as well including economic activities, water, sanitation, and health.

A second group comprises 23 registered self-organised CBOs. Registration makes an important difference, as it is associated with a stronger internal capacity and enables negotiations and sometimes also collaboration with NGOs and government. Most registered CBOs rely on NGOs but some also work with the government for instance on waste collection or they can apply for small community funds. We find that most registered CBOs work on youth development, followed by economic empowerment and water and sanitation provision.

A third group has six CBOs which are directly linked to external organisations, such as NGOs, on which they depend for funding, organisation, and knowledge. The organisations tend to be more formally

organised than self-organised CBOs and they mostly work in youth development, economic empowerment, and health provision.

The last group includes 13 networked CBOs, which as main strategy link up with other organisations inside and outside Mathare. Contrary to NGO-linked CBOs, they set their own agenda and do not depend on one source of external funding. Most of the networked CBOs work on social justice and youth development and offer a broad and complex spectrum of activities including paralegal aid and educational support. Some of the networked CBOs are community advocates for human rights and social justice and they specifically focussed on the dire effects of Covid-19 regulation by the government. Early in the pandemic, many of the protests were done online, such as a protest to ease lockdown restrictions for informal settlements where people were forced to remain indoors without any survival alternatives, dying of hunger, poverty, and disease. Over the Covid-19 years, these social justice CBOs pushed other on- and offline protests as well to bring attention to community and human right issues such as food insecurity (Njaa Revolution), water and electricity shortages, and the crisis of living costs (Punguza Mzigo). They were also on the

TABLE 2 Active CBOs in Mathare.

Not registered self-organised CBOs	Registered self-organised CRIs	Hierarchical CRIs	Networked CRIs
1. Sansiro	1. Beavers	1. Mathare Subcounty CHVs	1. Generation Shapers
2. Quickteam	2. Delightful Community Initiative	2. Wonderful Mothers Group	2. Ghetto Foundation
3. Madollar Youth Group	3. Mathare Youth Talent Organisation	3. Canada-Mathare Education	3. Mathare Social Justice Centre
4. Pirates Youth Group	4. Mathare North Youth Organisation	4. Mathare Maji Mazuri	4. Mathare Youth Sports Association
5. Ghetto Shiners	5. Mashimoni Hope Women Group	5. Centre of Hope and Transformation	5. Mathare Environmental Conservation Youth Group
6. Bridgestone Youth Group	6. Oasis Mathare	6. Chee	6. Mathare Roots Initiative
7. Showbeat	7. Mathare Number 10 Youth Group		7. Muungano wa Wanavijiji
8. Ghetto Rangers	8. Twaweza Self Help Group		8. Mwelu Foundation
9. Upcoming Youth Group	9. Slum Children Education and Art Centre		9. White Castle Self Help Group
10. Reformers Youth Group	10. Mathare Empire		10. Tujitegeme
11. Ghetto Girls	11. Vietnam Fraternity		11. Pamoja Initiative
	12. Kambi Safi		12. Muoroto Insiders Youth Group
	13. Bondeni Recovery		13. Pussy Power Women Group
	14. Rise and Shine		
	15. Young Mothers		
	16. Shantit Youth Group		
	17. Riverbank Youth Group		
	18. Lea Mwana		
	19. Showbeat		
	20. Vision Bearers		
	21. Sanaa Centre Art		
	22. Genius Youth Group		

Source: Authors.

forefront to protest mounting police brutality, and organised themselves locally to reduce gender-based violence, domestic violence, child labour and abuse, and violent crimes.

All 53 active CBOs in Mathare were in existence before Covid-19 started and adjusted their activities to the Covid-19 pandemic and/or engaged in new activities such as setting up washing stations. The widespread engagement of CBOs in hygiene measures not only curbed Covid-19 but also managed to stop cholera outbreaks. Furthermore, CBOs were key to food security interventions when income dwindled following lockdowns, economic malaise, and rising food prices. Since the start of the pandemic, they have frequently engaged in the distribution of food among residents. Several of the (a) networked, (b) registered, and (c) unregistered CBOs worked together to source food or financial aid and purchase food items that they distributed collectively to the most needy within the community. In fact, according to the FGDs their collective outreach surpassed that of external NGOs and government attempts, which were riddled with duplications, corruption, and elite capture. Nonetheless, FGDs stressed that CBOs could not reach all informal settlers on all vulnerabilities.

In February 2020, just before the government-induced lockdown, networked CBOs came together to promote people-driven urban planning in Mathare. A network—MSPARC—was founded to convince the government to declare Mathare a special planning area (SPA); a new policy which enables community-based incremental upgrading of informal settlements. MSPARC brought CBOs and researchers together to initiate this process by conducting community enumerations and studying community vulnerabilities, needs and demands. It thereby conducted a public task, filling gaps of government neglect to

push for transformative resilience. During the first months of the pandemic, MSPARC members also coordinated Covid-19 related activities of CBOs. They joined hands in advocating for the rights of community health volunteers (CHVs) to receive protective gear and government payment given that the government relied fully on CHVs in its Covid-19 outreach in informal settlements. MSPARC also enabled frequent food distributions, research, and interventions to curb crime and teenage pregnancies, and health outreach. FGDs noted that these adaptive resilience initiatives enabled MSPARC to showcase its relevance during shocks, which strengthened the network. However, the government and some NGOs stopped engaging with MSPARC after the first meetings, which limited its ability to bring in resources and ideas and to lobby for transformations.

5 | ADAPTIVE CAPACITY OF CBOS IN MATHARE

Among the 53 active CBOs, we now take a closer look at the adaptive capacity of four to illustrate how adaptive capacities influence the ability of CBOs to initiate and sustain adaptive or transformative activities.

5.1 | Sansiro, an informal self-organised CBO

Sansiro is a neighbourhood organisation, which has been in operation since 2015. It operates as a water kiosk, organises neighbourhood

clean-ups, offers community guards and arranges soccer tournaments. Its income is partially shared among its active members and added to an emergency fund. At the start of Covid-19, Sansiro adjusted their activities: clean-ups and community guards were split into smaller groups, and the emergency fund was tailored to Covid-19. They also added a washing station to their water kiosk, while soccer tournaments were postponed. Some activities were maladaptive and harmed the environment, such as dumping collected waste in the river. They were also unable to sustain their activity levels over time. While the water kiosk is still in operation in 2022, the number of other activities and size of the target group more than halved and the emergency fund ran out. These reducing levels of activities and target groups are reflected in the scores given in Table 3.

The (mal)adaptive and unsustainable resilience initiatives are associated with relatively low adaptive capacities. Sansiro is an unregistered organisation which has a basic organisational structure with a chairperson, deputy, secretary, and treasurer but no departmental structure. It is only financial resource, the emergency fund, ran out over time. Its income generation capacity comprises a water kiosk, waste collection and football tournaments, but these were proven to be insufficient to fully sustain the organisation during Covid-19. Active members reduced from about 50 in 1999 to about 30 in 2022, partially because they lost their jobs and left Mathare or focused on income generation rather than voluntary work. Sansiro makes decisions by consensus in weekly meetings of active members. This way of decision making became problematic during the crisis: if one member was against a voluntary activity due to resource constraints, the activity would be cancelled. With dwindling activities and financial resources and weak decision making, Sansiro lost its appeal and ability to bind and inspire members. It was also unable to attract new active members, indicating reduced bonding networks. It however continued

to work with other CBOs in Mathare and sometimes with governments. This may also be maladaptive: the police for instance supported Sansiro to protect its turf when a gang wanted to take its space. Their unregistered status weakens their power balance vis-a-vis governments, donor agencies and NGOs.

5.2 | Beavers, a formal self-organised CBO

Beavers is a neighbourhood organisation established by drug dealers about 12 years ago. It started offering a wide range of income-generating community activities including water kiosks, public toilets, a community hall, renting houses, garbage collection and recycling, football tournaments and community policing. When Covid-19 hit their sub-community, they quickly adjusted their activities, while refraining from maladaptive practices. When collecting waste, for instance, they arranged for the government to bring it to the landfill. Over time they were able to sustain their activity level and constantly adapt to changing government measures. While the number of people that they service reduced slightly, they also initiated new activities. For instance, in 2022 they started setting up a community library (see Table 4 for the fuzzy-set scores).

The ability to sustain adaptive activities is associated with a strong endogenous capacity as well as exogenous bonding capacity. The Beavers are registered and well-structured with clear procedures but without a departmental structure. They have strong physical assets which they use to offer community services at a charge, leading to healthy financial resources. They were reduced in size during the lock-down. For instance, they had poultry but decided to eat their chickens to save feeding costs. Their active membership reduced sharply from about 50 to 22. They however decided not to attract

TABLE 3 Fuzzy-set scores of Sansiro.

Variable	Indicator	Before	Adapt (2020)	Sustain (2022)
Activities	Change in size of activities		0.7	0.3
	Change in size of target group		0.7	0
	Adaptive, transformative activities		0.7	0
Organise	Structure	0.3	0.3	0.3
	Registration	0	0	0
Resources	Financial resources	0.3	0	0
	Active members	0.7	0.3	0
	Physical assets	0	0	0
Leadership	Decision making capacity	0	0	0
	Ability to bond	0.7	0.3	0.3
	Ability to inspire	0.3	0.3	0
Network	Bonding	0.7	0	0
	Bridging	0.3	0.3	0.3
	Linking with government	0.3	0.3	0.3
	Linking with NGO	0	0	0
	Power balance	0	0	0

Source: Authors.

TABLE 4 Fuzzy-set scores of Beavers.

Variable	Indicator	Before	Adapt (2020)	Sustain (2022)
Activities	Changes in size of activities		0.7	0.7
	Changes in size of target group		0.7	0.3
	Adaptive, transformative activities		0.7	0.7
Organise	Structure	0.7	0.7	0.7
	Registration	1	1	1
Resources	Financial resources	1	0.7	1
	Active members	0.7	0.3	0
	Physical assets	1	0.7	1
Leadership	Decision making capacity	0.7	0.3	0.7
	Ability to bond	1	0.3	0.7
	Ability to inspire	0.7	0.3	0.3
Network	Bonding	0.7	0	0
	Bridging	0.7	0.7	0.7
	Linking with government	0.3	0.3	0.3
	Linking with NGOs	0	0	0
	Power balance	0.3	0.3	0.3

Source: Authors.

new active members, but instead focus on sustaining and initiating activities. The decision-making structure is transparent and efficient but was threatened when meetings were not allowed during the lockdowns. It however bounced back on most accounts, but their ability to bond the community remained lower as indicated by a lower number of active members. While the Beavers sometimes network with the government to conduct activities, they lack capacity to work with donor agencies. Their history in drug dealing also hinders their networks, as other actors question their reliability.

5.3 | Community health volunteers (CHVs), a hierarchical CBO

The Ministry of Health established CHVs to offer basic health services and awareness. CHVs visit people at their homes, visit schools, and organise awareness campaigns. The volunteers are trained, supported, and well organised. When Covid-19 hit Mathare, CHVs could no longer visit people in their homes. They instead established washing stations, around which they offered awareness campaigns and offered basic health services. This way of working enabled a large outreach in a short period of time. FGDs stressed their importance in reducing health risks during Covid-19. By 2022, CHVs bounced back to their way of working before the crisis, while maintaining Covid-19 awareness to their health services.

CHVs are formally organised and registered. A management team, capacitated and supported by the Ministry of Health, supports volunteers on a daily basis. It sets clearly defined targets, target groups and work plans. Their financial resources and assets are mainly drawn from the ministry, though they also implement health activities for donor agencies. Their number of volunteers temporarily reduced

during lockdowns. The vision of the CHVs, organisation, leadership and resources inspire and bond active members, although this was harder when face-to-face meetings were not possible during lockdowns. CHVs have strong networks with community members, CBOs, donors, and NGOs, but their agenda is bounded by the cadres and mission of the Ministry of Health. The related fuzzy-set scores are in Table 5.

5.4 | Generation shapers, a networked CBO

Generations Shapers is a relatively new CBO, established in 2019, which emerged out of a well-established networked CBO. It empowers young people, specifically those who are hard to reach and engages in political lobby and protest. Its mission is to harness skills and available resources through creativity and innovation, entrepreneurship, mentorship, leadership, and education initiatives. Generation Shapers key activities include capacity building, youth empowerment, talent development, entrepreneurship development, crime reduction and training programmes. During Covid-19, Generation Shapers was able to adapt and enlarge its active engagement in community support and outreach programmes. New activities, supported by Plan International, saw members taken through training on soap making, safety measures and installation of hand washing stations and a Showers for Girls programme. Generation Shapers also increased information sharing activities with other youth groups and was engaged in protesting against lock-down measures and other government policies.

The expanding adaptive and transformative activities are associated with strong endogenous and exogenous capacities. Its rotating management consists of a team of coaches with a chairperson, secretary, and treasurer. Management develops strategic plans which aim

for transformative change. Each coach mentors youth groups and joins another CBO to create new networks. Coaches are trained in entrepreneurship, sports, life skills, professional and technical skills. New coaches and managers are drawn from youth groups, and every year a new youth group is established. These growth-oriented strategies aim to address a high level of youth mobility in Mathare, which threatens sustainability and creates organisational fluidity. This trend was especially stark during the pandemic. Presently, the group has 27 active coaches, down from 44 before the pandemic. Finances and assets have however been growing during Covid-19 due to funding

from Plan International but is presently at risk as continued donor support is uncertain. Table 6 offers the related fuzzy-set scores.

5.5 | Comparative analysis

This section compares the adaptive capacity and resilience activities of CBOs based on the description of CBOs and its networks. Table 7 compares the findings of the four illustrative CBOs. Both Table 7 and FGDs find that all CBOs were able to adapt activities when Covid-19

TABLE 5 Fuzzy-set scores of CHVs.

Variable	Indicator	Before	Adapt (2020)	Sustain (2022)
Activities	Change in size of activities		0.7	0.7
	Change in size of target group		1	0.7
	# of new activities		1	0.3
Organise	Structure	1	1	1
	Registration	1	1	1
Resources	Financial resources	0.7	0.7	0.7
	Active members	1	0.7	1
	Physical assets	0.7	0.7	0.7
Leadership	Decision making capacity	1	0.7	1
	Ability to bond	1	0.3	1
	Ability to inspire	1	0.7	1
Network	Bonding	1	0.3	1
	Bridging	0.7	0.7	0.7
	Linking with local government	1	1	1
	Linking with donors and NGO	0.7	0.7	0.7
	Power balance	0	0	0

Source: Authors.

TABLE 6 Fuzzy-set analysis of generation shapers.

Variable	Indicator	Before	Emerge (2020)	Sustain (2022)
Activities	Change in size of activities		0.7	0.7
	Change in size of target group		1	1
	New activities		1	0.7
Organise	Structure	1	1	1
	Registration	1	1	1
Resources	Financial resources	0.7	1	0.7
	Active members	1	0.7	1
	Physical assets	0.7	1	1
Leadership	Decision making capacity	1	1	1
	Ability to bond	1	0.7	0.7
	Ability to inspire	1	0.7	0.7
Networks	Bonding	1	0.3	0.7
	Bridging	0.7	0.7	0.7
	Linking with government	0.7	0.7	0.7
	Linking with NGOs	0.7	1	0.7
	Power balance	0.7	0.7	0.7

Source: Authors.

TABLE 7 Adaptability and sustenance of resilience initiatives by CBOs in Mathare.

Variable	Sansiro			Beavers			CHV			Generation shapers		
	Before	Adapt	Sustain	Before	Emerge	Sustain	Before	Emerge	Sustain	Before	Emerge	Sustain
Activities		0.7	0.1		0.7	0.6		0.9	0.6		0.9	0.9
Organise	0.15	0.15	0.15	0.8	0.8	0.8	1	1	1	1	1	1
Resources	0.3	0.1	0	0.8	0.6	0.7	0.9	0.7	0.8	0.8	0.8	0.9
Leadership	0.3	0.2	0.1	0.8	0.3	0.6	1	0.6	1	1	0.8	1
Bonding networks	0.7	0	0	0.7	0	0	1	0.3	1	1	0.3	1
Bridging networks	0.3	0.3	0.3	0.7	0.7	0.7	0.7	0.7	0.7	1	1	1
Linking networks	0.1	0.1	0.1	0.2	0.2	0.2	0.6	0.6	0.6	0.8	0.9	0.7

Note: Red indicates a low score (below 0.3; orange a low to medium score (0.3–0.5), light green medium to high (0.6–0.8) and dark green high (0.9 and 1).
Source: Authors.

hit Mathare (all CBOs score 0.7 or higher). The only condition that should be in place, that is, the only constantly green adaptive governance condition in Table 7, is strong bonding networks when Covid-19 commenced. When we group the four CBOs based on sustainable and transformative resilience initiatives, three groups emerge. FGDs confirm three groups, but also note fluidity, as some CBOs are hard to group and change over time. Unregistered CBOs represent a flexible latent organisational layer within the community, which is not very sustainable during a prolonged shock. This is illustrated by Sansiro, which engaged in adaptive practices, and at times in maladaptive practices which were however unsustainable and were associated with low internal and external capacities (Table 7). A second group comprises adaptive CBOs, which conduct sustainable and adaptive activities. They have strong internal and external adaptive capacities, as represented by the Beavers and CHVs. However, their agendas are not transformative. The agenda of the Beavers is influenced by its implicit income-generating objectives, whereas the agenda of CHVs is set by the Ministry of Health. Finally, we find a third group of networked CBOs which are potentially transformative. This is illustrated by Generation Shapers, which was able to expand its activities and engage in transformative resilience. They combine adaptive capacities to sustain with strong linking networks and strategic visioning (see Table 7 and descriptions). Linking networks enable CBOs to bring in new resources and ideas when existing resources have dwindled.

6 | DEBATE

This study aims to shed light on the role of adaptive governance by CBOs in community resilience in informal settlement and its conditionalities. By coping with Covid-19 for a period of 2.5 years, we find that some CBOs in Mathare have declined, while others adapted or expanded their role in community resilience. We therefore confirm that community resilience is a dynamic process of becoming (Barua & Rahman, 2019; Masnavi et al., 2019). These dynamics are not necessarily reflecting community needs but may instead reflect adaptive capacities of CBOs and their networks. We also confirm the potentially alleviated role of CBOs in adaptive governance in

informal settlements, as governments are reluctant to intervene (Satterthwaite et al., 2020). Within this context, we offer three contributions to the academic debate.

First and foremost, we would like to nuance the perception that CBOs mainly play an adaptive role (Adger et al., 2009; Schaer, 2015). Indeed, underlying systemic vulnerabilities such as poverty and informal land tenure cannot be adequately addressed by CBOs in isolation. However, we find that CBOs in Mathare do transform the lives of informal settlers, for instance by offering youngsters a safe haven and alternatives to criminality and drugs. They also bond communities together, while networked CBOs lobby for systemic change. The formation of MSPARC as a CBO network in February 2020, right before the Covid-19 pandemic started, indicates their ability to transform adaptive governance networks. CBOs may also engage in other transformative actions, such as community profiling (Watson, 2014), a practice also found in Mukuru, Nairobi (Fransen et al., 2023) and recently started in Mathare. The sum of these actions transforms the lives of selected target groups. It may not be sufficient for system change and may not reach all target groups, but it functions as an enabler of system change which is inclusive and context-, place- and time-specific.

Second, the findings draw light on the need to reconsider roles and responsibilities. We confirm that governments are often reluctant to intervene (Satterthwaite et al., 2020; Seeliger & Turok, 2014) and agree that self-organisation by CBOs is not an excuse to forgo responsibilities, but an opportunity to reconsider roles (Kaika, 2017). In MSPARC, we find that networked CBOs have become network managers (Watson, 2014). Their specific roles are to coordinate among CBOs, build governance capacity of CBOs to adapt, sustain CBO services during shocks, support the emergence of new CBOs and link CRIs to the government and donor agencies. Network governance should at the same time remain adaptive to new shocks and societal and organisational dynamics. As CBOs are in the driving seat, governments and donor agencies should become facilitators and supporters (Boutellier & Trommel, 2018), but this is hardly taking place in Mathare.

Third, the study identifies conditions for CBOs to adapt and sustain resilience initiatives during Covid-19. We confirm bonding as the

main condition to adapt during a shock (Folke et al., 2005), whereas a broader set of adaptive governance conditions enables CBOs to sustain these activities (Alonge et al., 2019; Bains & Durham, 2013). We also confirm that linking to donor agencies and other powerful actors may enable CBOs to use a shock as an opportunity to grow (Arana & Wittek, 2016). At the same time, however, many informal settlers are likely to forgo basic public services during prolonged shocks and stresses. Sustainable and scaled adaptive governance by CBOs requires capacitated networks and CBOs, bonds within the community and links to governments and other external actors.

7 | CONCLUSIONS

Adaptive governance describes the purposeful collective actions to resist, adapt and/or transform when faced with shocks. As governments are reluctant to intervene in informal settlements, CBOs are tempted to take the lead. This study explores under what conditions CBOs in Mathare, Nairobi can initiate and sustain resilience activities during Covid-19. Study findings show that CBOs in Mathare engage in multiple resilience activities, which are mostly adaptive, while a few have transformative potential. CBOs reach out to many, but not all informal settlers, as the example of Hanna in the introduction section illustrates. In addition, some of the activities are maladaptive and many unregistered CBOs in Mathare ran out of resources during the 2.5 years of Covid-19, leaving even more informal settlers without basic services.

We conclude that adaptive governance of CBOs requires adaptive network capacity between and organisational capacity within CBOs. Bonding with the community is likely to enable CBOs to initiate adaptive activities. To sustain these activities over time, CBOs are likely to benefit from leadership, resources, organisational capacity, and network capacity. Transformative activities of CBOs can furthermore be initiated by a transformative agenda, transformative activities and linking to the government, NGOs, and donor agencies. A network of CBOs like MSPARC can potentially catalyse transformational change. However, as illustrated in Mathare, without a facilitating and supporting role of governments, NGOs and/or donor agencies, adaptive governance of CBOs is likely to offer adaptive but incomplete and at best partially sustainable and transformative resilience activities (see also Alonge et al., 2019; Watson, 2014).

Our main contribution lies in the conceptual framework which we developed and applied in one informal settlement in Nairobi. We recommend a larger and longer-term study on CBOs and their network in Mathare to explore more deeply how adaptive governance by CBOs evolves. On the other hand, we recommend a multiple case study approach across informal settlements to verify the findings. These studies can also include city-wide adaptive governance by CBOs.

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