

Leveraging Participatory Mapping to Manage Urban Dynamics in Rapidly Urbanizing Dar es Salaam: A Case Study of Sinza D, Dar es Salaam, Tanzania

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ABSTRACT

This study explores the use of participatory mapping to address urbanisation challenges in Sub-Saharan Africa, focusing on the rapidly growing city of Dar es Salaam. Traditional urban planning often excludes community perspectives, leading to mismatches between formal plans and local realities. Through participatory mapping, including interviews and workshops, this research highlights unplanned housing expansion, green space depletion, and governance gaps. The findings demonstrate that participatory mapping integrates local knowledge with professional tools, fostering inclusivity and sustainable urban development. This study offers actionable insights for resolving land use conflicts and promoting inclusive urban governance in rapidly urbanising contexts.

1. INTRODUCTION

Rapid urbanisation poses significant challenges in developing regions, where urban growth frequently exceeds infrastructure and governance capacities. In Sub-Saharan Africa, cities like Dar es Salaam, Tanzania, exemplify this trend, experiencing unprecedented population growth and urban sprawl (ibid). With over 70% of its population residing in informal settlements (Magina et al., 2020), Dar es Salaam faces significant challenges in managing urban dynamics (Vedasto & Mrema, 2013), including inadequate spatial data, limited public participation in planning, and inefficient resource allocation. These issues underscore the urgent need for innovative approaches to urban management that integrate local knowledge and community engagement.

Participatory mapping enables communities to contribute spatial knowledge, addressing urban planning challenges (Denwood et al., 2022; Harby, 2021; Pfeiffer et al., 2013). These approaches empower citizens, promote social learning, and enhance governance in addressing urban sustainability and resilience challenges

(Denwood et al., 2022; Roosen, 2020; Sletto, 2009). Rooted in participatory Geographical Information systems (PGIS) (Denwood et al., 2022), this approach empowers marginalised groups and fosters more inclusive decision-making (Harby, 2021; Rongerude & Sandoval, 2016). Despite its potential, participatory mapping's application in rapidly urbanising contexts like Dar es Salaam remains underexplored, particularly in empowering grassroots leaders.

This study builds upon these foundational insights to explore the role of participatory mapping in capturing the dynamic complexities of urban systems, with a specific focus on its applicability among extended planners. Extended planners, including grassroots leaders, community organisers, and local stakeholders, play a critical role in bridging the gap between formal planning institutions and marginalised communities (Majogoro et al., 2025). By examining how these actors engage with participatory mapping (Sletto, 2009), this study seeks to uncover its potential as a

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transformative tool for inclusive urban management.

The study investigates key research questions: How do extended planners engage with participatory mapping as a tool in urban planning processes? To what extent can participatory mapping overcome the limitations inherent in professional or legal maps (Roosen et al., 2020), particularly in amplifying the voices of marginalised groups within the community? Using a participatory qualitative approach, this research employs a series of participatory mapping sessions, including grassroots leaders' workshops, household interviews, block interviews, and a public meeting where citizens discuss progress and share suggestions using canvas materials and visual maps. These methods ensure that the study is participatory to an acceptable standard, allowing for the co-creation of knowledge between researchers, grassroots leaders, and community members. The findings are expected to contribute to the growing body of literature on participatory urban planning and offer practical recommendations for leveraging participatory mapping to address the challenges of rapid urbanisation in Dar es Salaam and similar contexts.

2. Evolving Land Use and Urban Planning Frameworks

Since independence in 1961, Tanzania's land use and urban planning policies have evolved, influencing governance and citizen engagement (Nnkya, 1999). Initially, the government adopted a socialist framework that prioritised collective land ownership through village councils, which, while aiming to empower local communities, often marginalised individual land rights and led to inefficiencies in urban infrastructure investment (Lugalla, 1989; Mabogunje, 1990; Peter & Yang, 2019). A significant shift occurred with the Local Government (Urban) Authorities Act of 1982, which reinstated local governance but maintained central government authority, thereby limiting local autonomy and citizen

participation (Kessy, 2023; Kombe & Namangaya, 2016). The 1995 National Land Policy and subsequent legislation aimed to decentralise land management through centralisation persisted. However, centralisation persisted, rendering participatory processes largely procedural (Kombe & Namangaya, 2016; Lupala, 2015).

The Urban Planning Act No. 8 of 2007 sought to enhance public participation in planning but faced challenges in implementation due to resource constraints and limited technical capacity, particularly in rapidly urbanising areas like Sinza (Yuan et al., 2023). Originally developed under the Sites and Services Scheme in the 1970s to provide affordable housing, Sinza has since transformed into a mixed-use zone, illustrating the need for more adaptive planning strategies that address planned and informal urban dynamics (Kironde, 1992; Lupala, 2002; Vedasto & Mrema, 2013). While Tanzania's planning framework has evolved from collectivist to participatory models, centralisation and resource limitations remain key barriers. Strengthening local governance and technical capacity is essential for ensuring meaningful citizen engagement in urban planning processes (Kombe & Namangaya, 2016; Lupala, 2015).

According to Majogoro et al. (2025), the lowest operational governance framework is the Mtaa office, where extended planners serve as local leaders. These extended planners function similarly to municipal planners at their respective levels; however, many responsibilities remain unrecognised within formal governance structures (Manara & Pani, 2023). Consequently, even municipal planners, whom Majogoro et al. (2025) describe as operating within the "nucleus" of planning, engage only minimally with these crucial actors. Extended planners serve as a vital bridge between local communities and higher authorities. Trusted by residents, they have become a key point of contact for many,

reinforcing social cohesion and community resilience (ibid).

2.1 Marginalised Groups in Urban Planning

Marginalised groups, including low-income communities, women, and indigenous populations, are frequently excluded from urban planning decisions (Hooper & Cadstedt, 2014; Nnkya, 2007; Rongerude & Sandoval, 2016; Upali, 2015). Hooper and Cadstedt (2014) highlight that renters dominate settlements in many rapidly growing urban areas but are excluded from the planning processes, often dismissed as non-indigenous in public meetings despite their significant impact. Nnkya (2007) identifies such groups as influential actors who prioritise their interests, emphasising transparency and accountability as essential strategies for sustainable planning.

This exclusion stems from historical, social, and economic structures, leading to planning frameworks that neglect their lived realities (Forester, 2006; Ollivierre et al., 2021). Lugalla (2010) argues that the weak participatory approach fails to align with the principle of egalitarianism despite Tanzania's strong identification with socialist ideals. Traditionally, these groups are positioned as passive recipients rather than active contributors, reinforcing systemic disparities. From this perspective on marginalised groups, Majogoro et al. (2025) assert that grassroots leaders, referred to as "extended planners," along with the Mtaa government as an institution, are also marginalised, as their contributions to urban planning processes remain largely unacknowledged. Integrating their voices into urban planning fosters equity, justice, and more sustainable urban policies (ibid). Structural, technical, and technological barriers hinder their participation, necessitating robust approaches like participatory planning and mapping to enhance community engagement and empower marginalised voices (Gattupalli,

2023; Majogoro et al., 2025; Ollivierre et al., 2021).

2.2 Participatory Planning

To address the exclusion of marginalised groups, participatory planning has emerged as a transformative approach to urban development, gaining global recognition for its potential to empower communities (Gattupalli, 2023; Kırmızı & Karaman, 2021; Unagaeva, 2023). Traditional planning methods often marginalised communities, compelling them to conform to imposed frameworks or reinterpret them unintendedly (Horlings et al., 2021). This misalignment can hinder sustainable urban development (Palmia, 2023). Scholars frequently reference Arnstein's Ladder of Citizen Participation as a foundational model for categorising levels of public involvement (Harby, 2021; Willness et al., 2023). Meaningful participation allows citizens to influence decision-making, fostering societal transformation (Harby, 2021; Pfeffer et al., 2013; Wong, 2023). Participation facilitates communication, prioritises negotiation and dialogue, and effectively aligns diverse urban interests (Gattupalli, 2023; Hooper & Cadstedt, 2014; Kırmızı & Karaman, 2021). While the responsibility for participation traditionally falls on Town planners serving at the planning authority, Majogoro et al. (2025) argue that extended planners play a more effective role in fostering community engagement, a perspective also supported by Manara & Pani (2023) and Ngowi et al. (2022).

Forester (2006) underscores the importance of stakeholder dialogue and negotiation in participatory planning, moving beyond consultation toward collaborative decision-making. However, challenges such as power disparities, conflicting interests, and the influence of historical relationships necessitate skilled facilitation to ensure inclusive participation. While participatory planning aims for equitable decision-making, disparities in stakeholder influence often complicate the

process (Cilliers & Timmermans, 2014). Despite its merits, participatory planning lacks concrete tools to foster mutual learning and practical implementation, particularly for extended planners working at the grassroots level. Participatory mapping has been identified as a potential mechanism for addressing this gap, offering a means of incorporating diverse spatial perspectives into urban planning (Denwood et al., 2022; Roosen et al., 2020; Sletto, 2009).

2.3 Participatory Mapping in Urban Planning

Participatory mapping has gained recognition as a transformative tool for democratising spatial decision-making and addressing the exclusion of marginalised groups in urban planning (Gattupalli, 2023; Ollivierre et al., 2021; Wong, 2023). Unlike conventional top-down mapping approaches, participatory mapping actively involves communities in shaping urban spaces, fostering a sense of ownership and representation in urban governance (Roosen et al., 2020; Sletto, 2009). Scholars have emphasised its dual role as both a dialogic and analytical tool, enabling discussions around identity, land rights, and urban belonging while also addressing socio-economic and political factors that influence urban environments (Cochrane et al., 2014; Gattupalli, 2023). By integrating diverse perspectives, participatory mapping contributes to more equitable and contextually relevant urban development (Peter & Yang, 2019).

In Tanzania, urban redevelopment efforts often balance diverse stakeholder interests while aligning with broader development goals (Agyeman & Evans, 2003; UN-Habitat, 2014). Policy frameworks like the URT (2007) incorporate participatory elements in neighbourhood planning and redevelopment. However, implementation often falls short of ensuring true inclusivity, as many planning processes remain detached from the lived realities of marginalised communities (Namangaya & Mushi, 2019). Public

consultations are often ineffective, as many residents are unaware of them or lack the literacy to participate meaningfully, leading to unmet stakeholder interests (Mabula, 2007). Consequently, redevelopment plans may advance without community engagement, revealing persistent gaps in participatory planning practices.

Maps play a pivotal role in urban planning, enabling spatial analysis, envisioning alternative futures, and addressing the complexities inherent in urban environments (Mattioli, 2014; Sunar Erbek et al., 2005). In urban contexts, land use mapping is a procedural and legal requirement within planning frameworks (URT, 1999; 2007). Urban redevelopment often requires the preparation of updated maps, such as revised town planning drawings or modifications to land use designations, before implementation. Public consultations, typically conducted through public notices for 30 days, are a critical component of this process (URT, 1999). However, the effectiveness of these notices is often limited due to low visibility and a lack of engagement, leading to decisions that do not reflect community needs (Namangaya & Mushi, 2019).

Roosen et al. (2020) categorise urban planning maps into three primary types: Legal Planning Maps, which adhere to regulatory frameworks but often fail to capture the dynamic complexities of urban environments; Analytic and Visionary Maps, which synthesise spatial data to propose alternative urban futures; and Participatory Maps, which engage communities in mapping their spatial realities, challenging power asymmetries and promoting inclusive governance. While legal and analytic maps remain dominant, participatory mapping has gained increasing recognition as a tool for democratising spatial decision-making (Gattupalli, 2023; Ollivierre et al., 2021; Wong, 2023). Roosen et al. (2020) argue that participatory mapping offers a transformative alternative by shifting from rigid, top-down

planning solutions to a dynamic and inclusive mapping process. Beyond serving as a representational tool, participatory mapping is a performative and iterative practice that evolves through dialogue and continuous engagement. In their study, Roosen et al. (2020) employed participatory action research methods—including individual interviews, participatory design sessions, group walks, design charrettes, and public consultations—to promote adaptive and inclusive community involvement.

This study extends the discourse on participatory mapping by focusing on extended planners as a marginalised group and exploring how they can leverage spatial data and participatory mapping to enhance community engagement. The exclusion of these groups exacerbates socio-economic inequalities (Denwood et al., 2022), as planning frameworks often overlook the lived experiences and priorities of disadvantaged populations, which are central to sustainability (Harby, 2021). Participatory mapping can offer deeper insights into land use conflicts, revealing development-related information and illustrating the decision-making processes that shape urban management. By contextualising stakeholder interactions, participatory maps can contribute to more effective, inclusive, and sustainable planning outcomes.

Tanzania has substantial experience in utilising participatory mapping in various development projects. For example, Dongus et al. (2011) employed community-based sketch mapping and aerial photographs in malaria vector control. In informal urban settlements, which Magina et al. (2020) estimate to comprise 80% of urban housing, land regularisation projects adopt participatory mapping. In these projects, maps are developed by experts but utilised by land regularisation committees composed of residents who identify boundaries and verify plots (F. Magina & Kyessi, 2024). Despite the involvement of community-selected

committees, local leaders remain the primary overseers of these map-based initiatives (F. B. Magina et al., 2020; F. Magina & Kyessi, 2024; Nuhu et al., 2023).

Building on these examples, this study explores the applicability of participatory mapping in rapidly urbanising planned areas, such as Dar es Salaam. Specifically, the study examines the role of extended planners in adopting participatory approaches to bridge the gap between formal planning systems and the informality prevalent in urban neighbourhoods. Through this, the study aims to make urban communities more inclusive, sustainable, and aligned with the objectives of the Sustainable Development Goal (SDG) 11 (UH-Habitat, 2014; UN-Habitat, 2018).

3. Research Methodology

This study adopted a participatory action research (PAR) approach, structured into four phases to address urban land use challenges through inclusive stakeholder engagement. Grounded in principles of inclusivity, empowerment, and methodological rigour, the research integrated participatory mapping, interviews, and collaborative workshops inspired by Roosen et al. (2020) to co-produce sustainable solutions. The methodological design incorporated participatory mapping, interviews, and workshops to co-produce sustainable solutions (Lareau, 2021; Spradley, 1980) while emphasising inclusivity and the empowerment of marginalised communities (Ollivierre et al., 2021; Upali, 2015) through extended planners (Majogoro et al., 2025). The case study focused on Sinza D, a Dar es Salaam, Tanzania neighbourhood, which evolved from a planned residential area under the 1970s Sites and Services Scheme to a mixed land-use zone. Sinza's transformation highlights the complexities of urbanisation and the need for adaptive planning strategies that address socioeconomic dynamics and historical development patterns.

The study comprised four phases that addressed urban land use challenges. First, a participatory mapping session with 13 local leaders identified primary land use conflicts, such as unregulated wastewater management, waste disposal issues, and noise disturbances, using satellite images and historical town planning drawings to connect past and present realities. Second, interviews with 16 long-term residents explored historical housing trends and their impact on land use challenges, with a shift from timeline canvases to 3D models enhancing engagement and linking personal narratives to broader spatial issues. Third, block interviews with five residents and a Ten-Cell Leader discussed the historical significance and current challenges of public green space by the river, revealing concerns about encroachment and the need to protect communal resources.

The final phase was a public workshop involving 38 participants, including residents and local leaders, who collaboratively developed an

action plan for the green space project. Using the Cultural Historical Activity Theory (CHAT) framework (Engestrom, 2000), they mapped current conditions, envisioned future uses, and assigned follow-up tasks to local leaders, including pursuing a permit application with municipal authorities. This phased approach ensured a comprehensive and inclusive engagement process, fostering community ownership of the outcomes.

4. Findings and Discussion

This section synthesises empirical findings from the four participatory mapping sessions and contextualises them within the framework of existing literature to assess their efficacy in urban planning processes. It examines the effectiveness of participatory mapping in urban planning, the roles of various stakeholders, and the impact of community engagement, providing a comprehensive analysis of these interconnected dimensions. Table 4.1 summarises the sessions, detailing approaches, practices, actors, priorities, and outcomes.

Table 4.1: Overview of Participatory Mapping Sessions

| Session | Aim of the session | Approach Used | Actors Involved | Observation 1: identified priority | Observation 2: Participant Behavior |
|----------------------------|--|---|--|--|--|
| Community Leaders Workshop | Identify land use conflicts and explore participatory mapping tools. | Printed maps, satellite images, and 1974 Sinza planning drawings to identify land use conflicts | Chairperson, MEO, Mtaa committee members, Researcher, and Ten Cell leaders | Resolution to address unregulated wastewater, foul odours, and noise from illegal businesses. | Participants initially asked questions, which were answered by the researcher, Mtaa chairperson, and MEO. They later engaged in group discussions and actively participated during the resolution phase, showing a shared understanding of land use conflicts and mapping tools. |
| Household Interviews | Explore historical housing trends and their impact on land use. | Timeline canvas and 3D mapping Model | 16 households, Ten cell leaders, a Chairperson, MEO, and a Researcher | Housing was prioritised over greenery, communal garden space was identified, and public space was managed through parking. | During the household interview, initial participation was minimal, with brief responses. Shifting to the participatory model increased engagement, prompting deeper discussions and recollection of past events. This approach fostered stronger connections, leading to richer insights and participants requesting the researcher's contact for continued dialogue. |
| Block Interviews | Discuss the historical significance and current challenges of public spaces. | Group discussions, satellite images to show trends and 3D mapping models. | 6 residents, 1 Ten Cell leader and a researcher | Green space preservation and securing municipal permits. | Initially, participants hesitated to engage, only asking questions and insisting on permits before proceeding. They later resolved to secure permits and appointed a contact person. After the formal discussion, they independently mapped developments, identified changes, and critiqued land use, demonstrating the participatory model's effectiveness without a facilitator. |

| | | | | | |
|-----------------|---|--|---|---|--|
| Public Workshop | To understand the communal green space area and develop an action plan. | Participatory Maps, Canvas, CHAT framework | 32 Residents, 3 Ten cell leaders, a Mtaa committee member, the Mtaa chairperson and the MEO, and the researcher | Requested municipal approval for a community green space; developed a collective action plan. | After the progress presentation, a few participants hesitated to accept the findings, but only other participants responded to their concerns. However, group discussions saw high engagement, with participants asking questions and seeking clarity from other groups. Extended planners facilitated these discussions, demonstrating their understanding and the canvas's usefulness. |
|-----------------|---|--|---|---|--|

Source: Fieldwork, 2024

4.1. KEY FINDINGS AND THEIR IMPLICATION

4.1.1 The aim vs observed behaviour and priorities

The mapping session was guided by four specific aims, as outlined in Table 4.1: (1) to identify land use conflicts and explore participatory mapping tools, (2) to explore historical housing trends and their impact on land use, (3) to discuss the historical significance and current challenges of public spaces, and (4) to understand the communal green space area and develop an action plan. The findings reveal a strong alignment between these aims and participants' observed behaviours while highlighting areas where priorities diverged or challenges emerged.

Session 1: Identify Land Use Conflicts and Explore Participatory Mapping Tools

The primary aim of identifying land use conflicts was effectively addressed through the use of participatory mapping tools, including satellite imagery, 3D models, and legal maps such as the 1974 Sinza planning drawings. These tools enabled participants to visualise discrepancies between historical and contemporary urban patterns, fostering a deeper understanding of land use conflicts. For instance, one participant noted:

"...Seeing the changes over time on the map made me realise how much green space we've lost to housing..."(Household Interview, Participant 6, 2024).

This observation underscores the effectiveness of participatory mapping in making abstract land use issues tangible and accessible. However, the process also revealed challenges, such as initial hesitancy among participants to engage with the tools. Over time, as participants became more familiar with the models, their engagement increased, leading to more nuanced discussions about land use conflicts. This aligns with findings by Sletto (2009), who emphasised the importance of

intuitive and accessible tools in fostering meaningful participation.

Session 2: Historical Housing Trends and Their Impact on Land Use

Exploring historical housing trends revealed significant insights into the incremental development patterns that have shaped the community. Participants traced the evolution of housing construction over time, noting how individual decisions collectively contributed to the depletion of greenery and increased pressure on public spaces. One resident reflected:

"...We built our houses step by step, but we didn't realise how it would affect the environment around us..."(Household Interview, Participant 7, 2024).

This aim was particularly effective in fostering critical self-reflection among participants as they connected their actions with broader urban challenges. However, the discussion also highlighted a tension between immediate economic needs and long-term environmental sustainability. As one participant explained:

"...I needed to build rental units to support my family, but now I see how it has affected our community..."(Household Interview, Participant 6, 2024).

This tension underscores the complexity of balancing individual priorities with collective well-being, a challenge that participatory approaches must address to foster sustainable development.

Session 3: Discuss the Historical Significance and Current Challenges of Public Spaces

The discussion of public spaces revealed a deep appreciation for their historical significance and growing concerns about their current state. Participants shared memories of communal areas lost or degraded due to unplanned development. One participant remarked:

"...We used to gather under the big tree for meetings, but now it's gone, and the space feels

empty...”(Household Interview, Participant 1, 2024)

This aim successfully elicited emotional and reflective responses, highlighting public spaces' cultural and social value. However, it also revealed governance challenges, such as weak enforcement of regulations and delayed municipal responses to encroachments. A community leader noted:

“...We report violations, but nothing happens. The authorities only act when it's too late...”(Household Interview, Participant 4, 2024)

These findings underscore the need for stronger institutional frameworks to protect public spaces and the potential of participatory approaches to amplify community voices in advocating for their preservation.

Session 4: The Communal Green Space Area and Develop an Action Plan

The final aim of understanding communal green spaces and developing an action plan was partially achieved, with participants identifying key areas for intervention and proposing practical solutions. For example, participants suggested organised clean-ups and tree-planting initiatives to restore degraded green spaces. One resident stated:

“...If we work together, we can bring back some of the greenery we've lost...”(Household Interview, Participant 6, 2024)

However, limited resources and a lack of institutional support hindered a comprehensive action plan. Participants expressed frustration with the slow pace of municipal responses, as well as their limited capacity to implement large-scale changes. As one participant noted:

“...We have ideas, but we need help to make them happen...”(Household Interview, Participant 15, 2024)

This highlights the importance of integrating participatory approaches with institutional support and capacity-building initiatives to ensure that community-driven solutions are feasible and sustainable.

4.1.2 The approach vs observed behaviours

The study employed various participatory approaches, as detailed in Table 4.1 (Column 3), to engage marginalised groups in urban planning processes. A key finding was the limited effectiveness of the timeline canvas (Session 1) in fostering substantive community engagement. Both community members and ten-cell leaders demonstrated minimal participation in discussions concerning housing development, suggesting that the timeline canvas failed to resonate with participants or adequately capture their lived experiences. This observation aligns with critiques of overly abstract or linear participatory tools, which can alienate marginalised groups by failing to reflect their spatial and temporal realities (Chambers, 1994; Sletto, 2009).

In contrast, a marked improvement in engagement was observed when transitioning to a model-based approach (Session 2). Extended planners provided detailed accounts of developmental changes in preparation for household visits, collaboratively articulating participants' housing trajectories. For instance, a Ten Cell leader recounted:

“...This woman began constructing her house incrementally. She started with these rooms, as depicted on the model, later expanded to this side, and eventually built a fence...”(Pre-interview conversation, Ten cell leader, 2024)

This narrative underscores the effectiveness of participatory mapping in fostering engagement through visual articulation. It reinforces findings by Sletto (2009), who emphasised the power of visual and tactile tools in enabling marginalised communities to articulate their spatial histories. The model-based approach facilitated a deeper understanding of housing trajectories and empowered participants to contribute to the discussion actively, bridging the gap between abstract planning concepts and lived experiences.

Furthermore, using participatory methods such as satellite imagery and 3D models proved instrumental in enabling participants to connect with spatial histories. During the block interview, initial hesitance among participants was noted; however, engagement progressively increased as the session unfolded. Participants began to discuss the strategic placement of trees and identify essential infrastructure components, such as sewage systems. Notably, a resident who had initially exhibited reluctance to participate became increasingly enthusiastic after recognising familiar landmarks depicted on the model. This shift in behaviour highlights the efficacy of intuitive tools in facilitating the amplification of marginalised voices (Gattupalli, 2023; Ollivierre et al., 2021). As illustrated in Table 4.1 (Column 6), participants demonstrated their capacity to understand land use conflicts, fostering a strong connection through shared experiences. This process validated their knowledge and amplified their voices, including those of extended planners, who played a critical role in mediating between technical planning frameworks and community perspectives.

These findings underscore the importance of selecting participatory tools that align with marginalised groups' lived experiences and cognitive frameworks. While the timeline canvas failed to elicit meaningful engagement, the model-based approach and 3D mapping tools created an inclusive and participatory environment. This aligns with the broader literature on participatory planning, which emphasises the need for tools that are both accessible and empowering, enabling marginalised communities to articulate their needs and aspirations effectively (Cornwall, 2008; Gattupalli, 2023). The observed behaviours in this study highlight the transformative potential of participatory methods when designed to resonate with the

socio-spatial realities of participants, fostering both engagement and empowerment.

4.1.3 Actors vs. approach and observed behaviours

The participatory mapping sessions engaged various actors, each fulfilling distinct roles, as summarised in Table 4.1 (Column 4). Key participants included the Mtaa Chairperson, Mtaa Executive Officer (MEO), Mtaa committee members, Ten Cell leaders, residents, and the researcher. The interplay between these actors and the participatory approach adopted in the sessions revealed significant insights into community engagement and decision-making dynamics in urban planning processes.

The researcher played a central role as a facilitator, supporting the design of the sessions, guiding discussions during household and block interviews, and presenting findings in the public workshop for collective reflection. This facilitation ensured that the sessions remained focused on the aims while creating an inclusive environment for dialogue. On the other hand, Extended planners were instrumental in organising and managing the meetings, encouraging active participation, and bridging the gap between technical planning frameworks and community perspectives. Their role was critical in ensuring the sessions were structured and participatory, enabling residents to contribute meaningfully.

As primary stakeholders, residents brought their lived experiences to the forefront, collectively shaping planning decisions and fostering a sense of ownership. One resident's assertion exemplified this:

"...As far as we plan together and he shares every detail transparently, it is clear that this is about community development, not land grabbing..."(Participant in Public meeting, December 17, 2024)

This statement underscores the importance of transparency and inclusivity in building trust

and ensuring that participatory processes are perceived as genuine efforts toward community development rather than top-down impositions.

The Mtaa Chairperson emerged as a key advocate for the participatory approach, recognising its potential to foster community engagement and ensure the successful execution of the project. His remarks during the session highlighted the transformative impact of participatory mapping:

"...We need to accelerate this project's progress, as it holds tremendous potential and has strong community support. I wish all projects would adopt this methodology instead of relying solely on experts working in offices and expecting us to implement their plans. As Chairperson, I see this project as a key part of my lasting legacy..."(The chairperson in Public meeting, December 17, 2024)

This statement reflects a shift in perspective, as the Chairperson acknowledged the long-term implications of his decisions and the value of community participation in achieving sustainable outcomes. His endorsement of the participatory approach underscores its potential to create lasting legacies by aligning planning processes with community priorities and aspirations.

The active participation of diverse actors facilitated a rich exchange of knowledge, reinforcing the argument by Cochrane and Corbett (2018), Gattupalli (2023), and Ollivierre et al. (2021) that inclusive urban planning processes contribute to informed decision-making. For instance, Ten Cell leaders were crucial in mediating between residents and planners, ensuring that local knowledge was integrated into the planning process. Similarly, Mtaa committee members provided institutional insights, helping to align community priorities with regulatory frameworks.

However, the sessions also revealed challenges in balancing participants' diverse interests and

expectations. While residents were enthusiastic about contributing their lived experiences, some expressed concerns about the feasibility of implementing community-driven solutions without adequate institutional support. As one resident noted:

"...We have great ideas, but we need the authorities to back us up and provide the resources to make them happen..."(Participant in Public meeting, December 17, 2024)

This highlights the need for stronger collaboration between community actors and institutional stakeholders to ensure that participatory processes translate into tangible outcomes.

4.2. Synthesis and Broader Implications

4.2.1 The Participatory Mapping Process

The findings underscore the transformative role of participatory mapping in fostering engagement among facilitators, extended planners, and residents. Initially, facilitators struggled to elicit in-depth community insights using conventional methods. However, adopting participatory mapping tools significantly enhanced discussions, enabling participants to visualise and critically assess their urban environment. This shift highlights the effectiveness of participatory tools in formalising community knowledge and fostering local ownership of planning processes.

The process transitioned from passive involvement to active collaboration for extended planners. Initially perceiving the project as externally driven, planners gradually assumed greater responsibility, initiating meetings, mobilising resources, and advocating for community-driven solutions. This evolution illustrates how participatory mapping empowers local actors, transforming them from implementers to decision-makers.

Residents initially disengaged but became active participants in identifying urban challenges, such as the loss of greenery and proposing

solutions like establishing communal green spaces. This participatory process fostered a sense of local agency, aligning with findings by Harby (2021) and Hooper and Cadstedt (2014), who argue that well-designed participatory tools empower communities to address their challenges effectively.

4.2.2 Participatory Mapping as a Tool for Empowering Extended Planners

Participatory mapping serves as both a knowledge-building and governance-strengthening tool. It formalises implicit local knowledge, converting experiential insights into structured, actionable data. For instance, residents and extended planners collaboratively developed strategies for managing communal spaces, including securing municipal recognition for green spaces, as illustrated in Table 4.1 (Session 4).

Moreover, participatory mapping redefines the role of extended planners. Traditionally limited to conflict resolution, they now engage in proactive planning, advocating for land-use adjustments rather than merely responding to crises. This shift aligns with broader calls for collaborative and decentralised urban governance, where planning is a shared responsibility rather than a solely municipal function.

Additionally, participatory mapping fosters institutional legitimacy and public trust. Local leaders' engagement in the process strengthened their credibility, with one noting that the project contributed to their leadership legacy. This underscores the potential of participatory approaches to bridge the gap between formal planning institutions and grassroots communities.

4.2.3 Amplification of Marginalised Voices through Participatory Mapping

Participatory mapping emerged as a powerful tool for amplifying the voices of marginalised groups. By enabling residents to visualise and

articulate their lived experiences, the process ensured that their perspectives were integrated into planning decisions. For example, residents who initially hesitated to engage became vocal advocates for preserving green spaces after recognising familiar landmarks on the maps. This aligns with Gattupalli (2023) and Ollivierre et al. (2021), who emphasise the role of participatory tools in empowering marginalised communities to assert their rights and priorities.

The process also highlighted the importance of inclusive dialogue in addressing systemic inequities. Often excluded from formal planning processes, marginalised groups could challenge dominant narratives and propose alternative solutions. This enhanced the legitimacy of the planning process and fostered a sense of empowerment among participants, as evidenced by their active involvement in developing action plans.

4.2.4 Critical Reflections on Challenges and Limitations

Despite its successes, participatory mapping faces challenges. Capacity gaps hindered extended planners from fully utilising the tools, while resource constraints limited the sustainability of initiatives. Institutional integration remains critical, requiring legal mandates and dedicated funding to embed participatory methods into governance frameworks.

5. CONCLUSION AND RECOMMENDATIONS

The participatory mapping sessions successfully achieved their aims, fostering critical engagement and self-reflection. Visual tools like 3D models and satellite imagery effectively highlighted land use conflicts and historical trends, while discussions on public spaces underscored their cultural significance and challenges. However, systemic issues like weak governance and resource constraints were revealed, emphasising the need for more

substantial institutional support and capacity-building.

The involvement of diverse actors created a dynamic space for knowledge exchange and collective decision-making. The Mtaa Chairperson's endorsement highlighted the potential of participatory approaches to enhance community engagement and project success. Yet, challenges like capacity gaps and the informal status of extended planners must be addressed to sustain participatory processes.

Participatory mapping has proven transformative in amplifying marginalised voices, formalising local knowledge, and bridging formal institutions and grassroots communities. However, its long-term success depends on institutionalising participatory methods, securing resources, and addressing power imbalances. Policymakers and practitioners must prioritise inclusivity and community-driven solutions to avoid exclusionary, top-down approaches.

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