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Unfolding Process-Based Indicators: Linking Participation, Perceived Ownership, and Stewardship Practices to Public Space Sustainability.

Reflections from Neighbourhood-scale Public Spaces in Surakarta and Banjarmasin, Indonesia

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Abstract
This paper examines how community-centric design processes influence the sustainability of neighbourhood-scale public spaces through the lens of perceived ownership and stewardship practices. While participatory approaches are widely promoted in public space development, their contribution to the long-term maintenance and care that contribute to the sustainability of the space remains insufficiently discussed. Building on insights from 'collective ownership' literature that links perceived ownership to stewardship behaviours in shared environments, the study investigates how these dynamics unfold in practice. Drawing on two neighbourhood-scale public space projects co-designed with local communities in Indonesia, Sungai Jingah (Banjarmasin, 2012) and Mangkubumen (Surakarta, 2022), the paper explores how participatory processes that were designed to facilitate community aspirations and build ownership are translated into patterns of use, social inclusion, and maintenance. The paper adopts qualitative, practice-based research approaches, combining in-depth semi-structured interviews with reflective process, field observations and project archives on impact assessments. The findings show that community-centric design contributes most to the usership and inclusivity of the space, ensuring that the design of spaces reflects the needs of the user. Although the participatory process facilitates the emergence of ownership and stewardship practice, the result is highly context dependent. Ownership and stewardship practice does not automatically emerge from participation but develops through a combination of various factors such as interest, control over the space, attachment and familiarity, and investments, mediated by factors such as tenure stability, social cohesion, governance arrangements, and access to resources. While stewardship practices emerge through community initiative, their continuity often depends on larger institutional support. This paper proposed a process-based evaluation framework that not only focuses on the design process of the space but also covers aspects that nurture the sustainability of the space, particularly by facilitating the ownership building and stewardship practices that contribute to the sustainability of small-scale public spaces.

Keywords: community-centric design, sense of ownership, stewardship practice, sustainability, neighbourhood-scale public space

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1. Introduction

1.1 Background

Public spaces play a very critical role in shaping social interaction, civil life, and urban well-being. They provide spaces for people to gather, interact, and build community ties, while at the same time contributing directly to the health and environmental quality of cities. Many cities around the world increasingly recognise the importance of public space. Many guidelines and tools have been created as guidance in building thriving public spaces, and efforts to evaluate their quality and performance have also grown. However, many public space guidelines and evaluation frameworks for public space often emphasise the measurable physical and functional attributes, such as accessibility, design quality, safety, vibrancy, and intensity of use (Carmona, 2019). These indicators have proven useful for assessing spatial quality and usability, yet they often provide only a partial understanding of what makes public spaces sustainable over time.

While physical conditions and patterns of use are important indicators, they rarely capture the social and institutional processes that enable public spaces to remain active, cared for, and meaningful to local communities. In many cases, public spaces may initially succeed in attracting users but gradually deteriorate due to the absence of local stewardship, unclear governance arrangements, or a lack of community engagement in their management. As a result, questions related to who feels responsible for a space, who cares for it, and how it is collectively maintained remain underexplored within dominant public space evaluation frameworks.

This limitation becomes particularly visible in neighbourhood-scale public spaces, especially in fast-paced developing Asian cities. In this context, small-scale public spaces often emerge in dense urban settlements to respond to the lack of the predominant type of public space like public parks. In such contexts, small-scale public spaces often operate with limited institutional resources and rely heavily on community participation and informal governance structures for their maintenance and activation. Small-scale spaces, such as riverbanks, neighbourhood parks, pocket parks, and shared open areas, frequently depend on the everyday practices of local residents to remain functional and meaningful. Yet, evaluation approaches rarely examine the social dynamics that sustain these spaces beyond their initial design or construction.

Participatory and community-centric design approaches have increasingly been adopted around the world as alternatives to top-down public space development, particularly in contexts where standardised design solutions fail to reflect local needs, context, and culture. This approach positions local communities not merely as the users of the space but also as actors who are actively shaping the spaces. Community-centric design approaches often involve various citizen engagement activities such as co-design workshops, community consultations on various aspects regarding the development of public space, and participatory decision-making processes, which aim to better align design outcomes with local needs and socio-cultural context. This approach is also often linked to broader goals of community empowerment, social inclusion, a greater sense of ownership, and sustainability. However, despite their growing adoption, the connections between the participatory design process and the sustainability of the space are rarely examined in public space evaluations. The long-term social and institutional conditions that shape the use, care, and maintenance of neighbourhood public spaces remain under-theorised or embedded in the design process.

1.2 Research Gap and Justification

Participatory design processes are frequently assumed to foster a stronger sense of ownership among community members, which in turn is expected to lead to greater care, stewardship, and long-term sustainability of public spaces. While this assumption is widely referenced in planning and design practice, empirical evaluations that examine how these relationships unfold over time remain limited. Most studies of participatory design tend to focus on the design process itself, examining methods of engagement, inclusivity of participation, or immediate design outcomes, rather than exploring the longer-term social dynamics that emerge after implementation.

1.3 Research Aim and Objectives

This paper seeks to contribute to the ongoing discussion on rethinking public space evaluation by examining the relationship between community-centric design approach, perceived ownership and stewardship practices in neighbourhood-scale public space. Rather than evaluating public spaces solely through their physical attributes or patterns of use, this study explores how participatory design processes shape the social dynamics that influence the long-term sustainability of public spaces.

Drawing on two neighbourhood-scale public space projects co-designed with local communities in dense urban settlements in Indonesia, Sungai Jingah in Banjarmasin (2012) and Taman Rukun Mangkubumen in Surakarta (2022), the study investigates how participatory design processes are translated into patterns of use, collective care, and stewardship practices over time. By revisiting projects implemented across different time periods and socio-economic contexts, the research offers a longitudinal perspective on how ownership and stewardship unfold in practice.

The paper addresses two main research questions:

1. How does a community-centric design approach influence the sense of ownership and stewardship among local communities in neighbourhood public spaces?
2. Under what conditions do these social process dynamics contribute to the long-term sustainability of neighbourhood-scale public spaces?

By examining these questions, the study aims to contribute to the development of more context-sensitive public space evaluation frameworks that foreground social processes and community agency, while building long-term sustainability.

2. Theoretical and Conceptual Framework

This paper looks into the process of community-centric design and how this participatory approach shapes perceived ownership and stewardship practices that contribute to the sustainability of small-scale public spaces. While participatory approaches are widely promoted in public space development, the mechanisms through which they translate into long-term care and sustainability remain insufficiently theorised. This section develops a conceptual framework that links participation, ownership, and stewardship as interrelated processes in neighbourhood-scale public space.

In this paper, public space is understood as space that is collectively accessible and meaningfully open to community use, regardless of formal ownership or design typology (Carmona et al., 2003; Madanipour, 2015; Varna and Tiesdell, 2010). Following Roy's (2005) challenge to formal-informal dualisms, we extend this definition to include neighbourhood-scale spaces in dense urban settlements that emerge through informal, incremental, or community-led processes. In this context, public space encompasses the shared open areas,

riverbanks, and semi-formal community spaces that constitute the primary public realm for low-income urban communities in Indonesian cities.

2.1 Community-Centric Design & Participatory Planning

Community-centric design builds on long-standing traditions in participatory planning, which advocate for the inclusion of citizens in decision-making processes that shape their environments. Foundational work by Sherry Arnstein (1969) through the "ladder of participation" conceptualises participation as a spectrum ranging from tokenistic consultation to meaningful citizen control.

While Arnstein's participation ladder remains important for foregrounding power, later critiques caution against understanding participation as a linear progression. Many argued that participation should be better understood as a situated and relational process, shaped by institutional arrangements, social relations, and uneven capacities to influence outcomes (Tritter and McCallum, 2006; Collins and Ison, 2009). Cornwall (2002) argues that participation is not only a matter of inclusion but is shaped by the spaces in which it occurs, including who creates these spaces, who is invited, and whose knowledge is recognised. This emphasises the role of planners in mediating power and enabling more equitable participation (Davidoff, 1965; Forester, 1989).

Building on these debates, community-centric design repositions local communities from passive users to active co-authors of space, centring their knowledge, aspirations, and lived experiences. Fals-Borda and Rahman (1991) highlight that communities are not merely sources of local inputs, but co-producers of knowledge and action. Recent urban planning practices involve participatory methods that position communities as active contributors to spatial design, and the collaborative role of residents and planners in jointly producing spatial knowledge, design alternatives, and governance strategies (Sanoff, 2000; Sendra and Fitzpatrick, 2020; Sendra, 2024). This is particularly relevant in neighbourhood-scale public spaces, where formal planning processes often overlook everyday needs, informal spatial practices, and the experiences of marginalised users.

Recent literature also suggests that participation should be assessed not only by whether communities are included, but by whether participation enables agency, empowerment, and longer-term transformation (Hickey and Mohan, 2004). This aligns with Miraftab's (2004) "invented space", which highlights long-term transformation requiring community agencies that extend beyond formal "invited" participatory spaces into more informal "invented" spaces of collective actions and care.

In this paper, community-centric design is therefore understood not simply as the inclusion of residents in design activities, but as a process of co-producing spatial knowledge, negotiated power, and creating conditions for collective agency. By embedding participation into design processes, community-centric approaches aim to produce spaces that are more socially relevant and inclusive.

However, participation alone does not ensure that public spaces are sustained over time. Principles such as those set out in UN-Habitat's Global Public Space Toolkit (2015) emphasise participation as a key component of inclusive public space development, yet public space conversations commonly remain framed around design outcomes with less attention given to how participatory processes contribute to long-term maintenance, care, and governance. This raises a critical question: to what extent does participation translate into ownership and sustained stewardship of public space?

2.2 Sense of Ownership as a Social-Spatial Process

Sense of ownership in public space is often conceptualised as psychological ownership, defined as a subjective feeling that a place belongs to oneself or one's community (Pierce et al., 2001; Chung, 2025), particularly in the absence of legal rights (Her et al., 2022). Empirical studies show that community engagement in planning processes is positively associated with perceived ownership and the perception of public space as part of the social fabric (Mullenbach et al., 2019). The increase of psychological ownership is also observed in cases where consumers or users customise or cocreate, in which they feel like they own the product after investing themselves in the process (Peck et al., 2021) through time, money, thoughts, skills, and physical, psychological, or intellectual energy (Her et al., 2022).

Psychological ownership is understood to emerge through three key pathways: control, knowledge, and self-investment (Pierce et al., 2001). These dimensions provide a useful lens for analysing ownership in public space contexts. Control refers to the degree to which individuals are able to influence decisions related to the space, often through participation in design or planning processes. Knowledge is developed through everyday use and familiarity, reflecting lived experience and ongoing interaction with the space. Self-investment involves the contribution of time, labour, ideas, or other forms of personal input into the creation or maintenance of the space. Together, these pathways explain how individuals internalise a sense of connection and responsibility toward public space.

While psychological ownership is a useful analytical lens, it was developed largely in individualistic Western contexts and may not fully capture the collective and relational dimensions of spatial belonging in Global South communities. Decolonial urban scholars argue that dominant notions of spatial ownership in postcolonial contexts are shaped by colonial-liberal property logics that privilege individual legal rights and marginalise collective forms of attachment (Blomley, 2004; Roy, 2005). In many non-Western settings, including dense urban settlements in Indonesia, relationships with shared spaces are better understood as collective custodianship: socially embedded responsibilities sustained through relationships rather than individual appropriation (Tuck and Yang, 2012). Roy's (2005) conception of informality as a legitimate mode of spatial production governed by social norms is particularly relevant where communities maintain public spaces they do not legally own. This collective and relational understanding of belonging complements psychological ownership theory and helps explain why ownership emerges unevenly and through practice rather than as a direct outcome of participatory design.

2.3 Stewardship Practice and Sustainability

Psychological ownership is closely linked to stewardship behaviour in shared environments. Peck et al. (2021) hypothesise that increasing psychological ownership facilitates stewardship of public goods. When individuals perceive a public space as "theirs", they are more likely to develop a sense of responsibility that motivates actions to care for and maintain the space (Mullenbach et al., 2019). This relationship operates through perceived responsibility, which mediates the transition from ownership to active behaviour. In everyday practices, stewardship behaviours as an outcome of psychological ownership over public spaces can include effortful behaviours such as picking up trash, changing the light bulb, or organising activities, and financial behaviours like donating money for the upkeep of the resource. These actions contribute to the long-term sustainability of public spaces beyond the initial design phase.

However, stewardship in shared spaces is often undermined by unclear ownership and decentralised responsibility, which weaken individual initiative, resulting in a gap between positive attitudes and actual pro-environmental behaviour (She et al., 2022). Individuals sometimes assume that others will take care of the space, reducing their own willingness to act, a phenomenon Peck et al. (2021) refer to as the diffusion of responsibility. Strengthening psychological ownership through meaningful participation, therefore, becomes critical in sustaining community-led care in public spaces. In this sense, stewardship can be understood as the behavioural outcome of psychological ownership, linking community-centric design processes with the long-term sustainability of public spaces.

2.4 Public Space Evaluation Indicators

Existing frameworks for evaluating public space have mainly focused on physical, functional, and behavioural attributes, including accessibility, comfort, safety, activity, and patterns of social interactions (Whyte, 1980; Gehl, 2011). These approaches have contributed significantly to understanding how public spaces function and how they support social interaction.

More recent frameworks expand this perspective by incorporating broader dimensions of public space quality. For example, Mehta (2014) evaluates public space through inclusiveness, meaningfulness, safety, comfort, and pleasurability, while UN-Habitat's Global Public Space Toolkit (2015) emphasises availability, accessibility, quality, and participatory planning processes. While these frameworks recognise the importance of participation, it is primarily discussed in relation to participation's beneficial impact on design outcomes. Other approaches further emphasise the importance of publicness, ownership, control, governance, flourishing cultures, and management as key dimensions of evaluation (Varna and Tiesdell, 2010; Carmona, 2008; Carmona, 2019; Village Well, 2025). These more holistic approaches move public space evaluation beyond design or performance indicators by recognising that public space quality is shaped by social meaning, governance arrangement, management capacity, and quality of participation. Recent literature on ethical co-design further suggests that participation should be evaluated by whether communities are meaningfully involved in collective decision-making and the post-design process (Sendra, 2024).

However, limited attention is given to how participatory processes translate into long-term sustainability of public space. Existing indicators rarely capture how perceived ownership is formed, how stewardship practices emerge, and how maintenance is sustained over time. This gap is especially important for neighbourhood-scale public space, where sustainability depends on residents' everyday relationships, informal care practices, and links between community initiatives and institutional support.

2.5 Summary

Community-centric design repositions local communities and their knowledge at the centre of the design process, as formal planning often overlooks everyday needs and informal spatial practices. When engagement enables meaningful contributions, individuals develop psychological ownership that strengthens emotional attachment and perceived responsibility, encouraging communities toward active care of public spaces. Stewardship behaviours emerging from this sense of responsibility contribute to the long-term sustainability of public spaces. However, existing public space evaluation frameworks

primarily focus on physical attributes and design outcomes, with limited attention to these relational and behavioural dynamics. At the neighbourhood level, this gap is particularly significant as sustained care often depends on local residents.
Building on literature, this study examines how community-centric design processes influence the sustainability of neighbourhood-scale public spaces through the lens of perceived ownership and stewardship practices.

Table 1: Synthesis of available public space evaluation indicators

SOURCE / FRAMEWORK	EVALUATION FOCUS	WHAT IT CAPTURES	INDICATORS OR DIMENSIONS COVERED	REVIEW AND RELEVANCE
Whyte (1980); Gehl (2011)	Public life and behaviour in public space	How people use public space in everyday life	Sitting, walking, staying, social interactions, activity patterns, human-scale design	Less attention to ownership, governance of public space, and post-construction care.
Mehta (2014)	Public space quality	Social quality of public space	Inclusiveness, meaningfulness, safety, comfort, pleasurability	Strong highlight on user experience, less highlight on long-term stewardship and maintenance.
UN-Habitat Global Public Space Toolkit (2015)	Inclusive and accessible public space policy	City-level public space provision and policy orientation	Availability, accessibility, safety, inclusivity, quality, participation	Participation is discussed as part of planning and design, but not discussed as a long-term process.
UN-Habitat City-Wide Public Space Assessment Toolkit (2020)	City-wide public space assessment	A systematic and comparable set of public space assessment indicators	Quantity dimension: spatial distribution, network, accessibility, area Quality dimension: Accessibility, use/users, amenities, comfort, safety, green environment	More focused on inventory and quality of public space rather than the design process and ownership/stewardship aspect.
Varna and Tiesdell (2010)	Publicness of public spaces	Publicness of public space, including aspects of ownership, control, and governance	Ownership, control, civility, physical configuration, animation	Ownership is discussed in a more formal setting (contrasting public vs private) than community-based ones. The correlation to the space's sustainability is not discussed.
Carmona et al. (2008); Carmona (2019)	Public space design process and public space management	Connects design quality with governance and management	Planning, regulation, design quality, management, public value	It discusses management of public space, but not necessarily operationalises community stewardship at the neighbourhood scale
Sendra (2024)	Ethical co-design process	Framework for evaluating the quality of the co-design process	Genuine decision-making, partnership, power awareness, transparency, time/resources, continuity	Provide rigorous considerations on ensuring an ethical co-design process.
Village Well Regenerative Placemaking Model (2025)	Holistic, systems-oriented place evaluation	Place performance across social, cultural, economic, ecological, and physical dimensions	Healthy Planet, Flourishing Cultures, Joyful People, Loveable Places, Thriving Economies; 90 evidence-based patterns (Place Code)	Explicitly foreground community engagement process, not just outcomes, as the core mechanism of placemaking transformation.

3. Research Methodology

3.1 Research Approach: Practice-based research and reflective inquiry

This paper presents the cases of neighbourhood-scale public spaces implemented with co-design approaches led by Kota Kota Foundation, in two Indonesian cities, Banjarmasin and Solo. The study utilises a qualitative approach combining systematic reflection with empirical materials, including in-depth interviews with community members, local leaders, and other stakeholders involved in the design, use, and management of the spaces, supported with project documentation, impact narratives, and site observations. Central to the project implementation in both case studies are the strong elements of citizen engagement in the design, use, and maintenance of the public space. By revisiting projects implemented across different time periods, the research allows for reflection on both immediate outcomes and longer-term impacts. This allows an impact evaluation framework that extends beyond short-term indicators, which focuses on the use of the space.

3.2 Research Design

The paper follows a comparative qualitative case study approach, enabling the study to examine how community-centric design processes unfold across different socio-spatial and temporal contexts. Rather than comparing the two cases to produce generalisable claims, the study uses comparison as an analytical strategy to identify patterns, variations, and conditions that shape the relationship between participation, perceived ownership, stewardship practices, and long-term public space sustainability.

The study centred its analysis on two cases of neighbourhood-scale public spaces: (1) Sungai Jingah, Banjarmasin, and (2) Mangkubumen, Surakarta. The two cases were implemented at different points in time and in different neighbourhood contexts, allowing the research to reflect on both immediate and longer-term outcomes of participatory public space development.



Figure 1. The case study sites. (Left) Sungai Jingah, Banjarmasin; (Right) Mangkubumen, Surakarta)

Table 2: Comparison of the case study

Aspect	Sungai Jingah, Banjarmasin	Mangkubumen, Surakarta
Year built	2013	2022
Area (m^2)	105 m^2 (15 m x 7 m)	350 m^2
Location	Banjarmasin	Surakarta
Neighborhood context	Located in riverbank areas in a stilt urban neighbourhood, connected with the river.	Located in a dense urban settlement in a small urban stream, near a social housing complex.
Socio-economic context of the communities	• Strong connection to the river • Low-income communities • Permanent living in stilt housing near the riverbanks	• Dense urban settlement with limited road access • Low-income communities • More temporary living conditions, most of the users live in rented social housing
Involvement of communities	• Co-design workshops (design competition of the space) • Each neighbourhood representative proposes their idea, and the winning neighbourhood gets selected.	• Co-design workshops • Involving children and the elderly in the design process • Accessibility audits with disabled persons organisations (DPOs) are part of the process.

These two public spaces were selected based on the following justifications:
- Both public spaces were designed using a participatory approach, with local communities actively involved throughout the process.
- Both represent similar socio-economic conditions as they are located in low-income neighbourhoods with different socio-economic nuances. While the Banjarmasin space is located in a dense stilt-house neighbourhood, the Surakarta public space is located along a smaller riverbank stream near social housing.

3.3 Research Methods

To address the research objectives, the study employs the following qualitative data collection methods.

3.3.1 Semi-structured interviews

Semi-structured interviews were conducted with community members, local leaders, and other stakeholders involved in the design, use, and management of the public spaces. In total, 12 respondents were interviewed. Five community members were interviewed at each site, including residents who participated in the participatory design process, users, and community representatives involved in the ongoing activation and maintenance of the spaces. In addition, we also interviewed actors who actively participated in designing or activating the space.

The interviews explored several key themes, including participants' experiences during the co-design process, perceptions of ownership toward the public space, patterns of use and community activities, and the mechanisms through which the spaces are maintained and cared for over time. Particular attention was given to understanding how residents perceive their roles and responsibilities in sustaining the space after its construction. This method allowed respondents to share their perspectives and lived experiences in depth while enabling the researchers to probe specific issues related to ownership, stewardship practices, governance arrangements, and the long-term sustainability of the public spaces.

3.3.2 Field observation & documentation

Field observations were conducted in both sites to examine the current conditions and patterns of use of the public space. Observations focused on how the spaces are used in everyday activities, the presence of community-initiated events or activities, and visible practices of maintenance or care. These observations also documented the condition of facilities and infrastructure, and the presence of informal governance arrangements, or community-led initiatives that contribute to the activation of the space.

3.3.3 Project archives & impact narratives

In addition to interviews and observations, the study draws on project documentation and impact narratives collected by Kota Kita Foundation during and after the implementation of the public space projects. These materials include project reports, documentation of participatory workshops, community feedback records, and previously collected impact stories from residents and local stakeholders.

These archival materials provide insights into the original objectives and processes of the participatory initiatives and allow the researchers to trace how the spaces have evolved over time. When combined with interview data and site observations, they offer a

comprehensive understanding of how community-centric design processes contribute to ownership and stewardship dynamics in neighbourhood public spaces.

4. Case Study

4.1 Overview of the case studies

This paper draws on two case studies of neighbourhood-scale public spaces developed through participatory processes in Surakarta (Solo) and Banjarmasin, Indonesia. In both cities, public space development has traditionally been dominated by formal typologies, such as enclosed parks and ceremonial spaces, which are often designed and implemented through top-down approaches. In contrast, smaller, informal or semi-formal public spaces within neighbourhoods, despite their importance in supporting everyday social interaction, tend to receive less attention in planning and investment. The selected case studies, therefore, offer an opportunity to examine how community-centric design approaches can be applied to neighbourhood-scale spaces and how such approaches unfold across different socio-spatial contexts.

4.1.1 Sungai Jingah, Banjarmasin (2012)

The Sungai Jingah neighbourhood is predominantly inhabited by low-income communities living in dense stilt housing along the Martapura River. The population in 2012 was 10,403 residents, who are socially diverse, consisting of youth, working-age adults, and elderly residents, many of whom rely on river-based or informal livelihoods. Despite the strong relationship between the community and the river, the neighbourhood faces spatial and environmental constraints.

Many households use river water for daily needs. However, the river is also used for dumping household waste and sewage due to the 'back-of-house areas' concept, where kitchens, bathrooms, and laundry rooms are considered less clean and often face the river. This practice has led to the river's ecological degradation and risk to public health. At the same time, residents experience a lack of accessible communal spaces for social interaction and limited connectivity between river-based transport and the neighbourhood due to the absence of adequate docking points.

These conditions present opportunities for spatial intervention. The riverfront location offers the potential to create an accessible neighbourhood-scale public space that not only serves as a community gathering area but also strengthens the positive relationship between residents and the river. The development of a river-oriented public space was focused on neighbourhood unit 14, which has the potential to improve environmental conditions, enhance accessibility, and support economic activities such as handicrafts, blade making, and wood carving. Given that local livelihoods are closely tied to river-based activities, the introduction of a river-facing public space, including docking access, was intended to support both social interaction and small-scale economic activities, while also enhancing public understanding of the importance of caring for the river as part of a healthy environment.

The public space was built in 2013, involving local communities along the riverbank and collaborating with various stakeholders including the government, local communities, local slum upgrading committee (PNPM). The public space was funded by multiple sources, combining grants, government and community contributions, and crowdsourced funding.

4.1.2 Taman Rukun Mangkubumen, Kali Pepe, Surakarta (2022)
The second case study is Taman Rukun Mangkubumen, located in Mangkubumen, a dense urban neighbourhood in central Surakarta (Solo). The site occupies a vacant plot adjacent to *Rusunawa Mangkubumen*, a government-built social housing complex, and is situated along the banks of the Pepe River, one of the main rivers in the city. While the river has historical significance in the development of Surakarta, it has experienced environmental degradation, including declining water quality and encroachment by informal settlements.



Figure 2. The site context in Mangkubumen. (Left) Site condition before the intervention; (Right) The site is located along the Kali Pepe River, next to a social housing compound.

The surrounding area is characterised by high-density urban development with limited access to open space. The social housing complex accommodates approximately 77 low-income households, with the public space intended to serve not only these residents but also an estimated 320 people living within a 100-meter radius. The housing is designed for low-income residents registered with the government, with priority given to elderly residents and persons with disabilities on the ground floor. Many residents rely on informal economic activities, and the area has a high proportion of children without access to safe, accessible play spaces. In addition, the site is located near a school for visually impaired children, further emphasising the need for inclusive and accessible public space.
The neighbourhood faces multiple challenges related to both environmental conditions and social infrastructure. The deteriorating quality of the river and its surrounding environment, combined with inadequate public space, limits opportunities for social interaction and community activities. Residents also reported limited involvement in formal planning processes, contributing to a sense of detachment from spatial development in their area. Furthermore, the lack of safe play areas raises concerns for children, who often have limited options for outdoor activities in dense urban environments.
Despite these constraints, the site presents significant opportunities for intervention. As the land is owned by the government, it provides a feasible entry point for developing a neighbourhood-scale public space through collaboration between local authorities, community members, and supporting organisations. The strategic location within a dense settlement and near key community facilities also allows the space to serve as a multi-purpose community hub, fostering interaction among different groups while addressing the lack of accessible open space in the area.

The public space was developed in 2022 in collaboration with the local government of Surakarta, which granted permission to utilise government land, funding from UN-Habitat, facilitated by civil society organisations (including Kota Kita, Ayo ke Taman, and Urban+ Institute), with participation of local residents and communities.

4.2 Community-centric design approach

This section outlines how community-centric design was operationalised in the two case studies, highlighting both shared principles and key differences in approach across Sungai Jingah (Banjarmasin) and Kali Pepe (Mangkubumen, Surakarta).

4.2.1 Co-design Process in Sungai Jingah, Banjarmasin: Participation as Collective Learning, Preliminary Design and Awareness Raising

The community-centric design approach in Sungai Jingah combined an intensive participatory workshop process with an earlier phase of embedded, place-based research, thereby grounding the design intervention in everyday community practices. Framed as a "competition as campaign", the approach aimed not only to generate design proposals but also to build awareness and engagement among residents.

Prior to the participatory workshops, the process included a period of live-in research and design, during which a member of the project team resided in the neighbourhood for approximately one month. This phase was critical in building trust, understanding local dynamics, and identifying entry points for engagement. During this period, the researcher conducted transect walks, community mapping, and informal interviews, working closely with neighbourhood leaders (RTs) and residents to document spatial conditions, social networks, and everyday practices.

This embedded approach enabled a nuanced understanding of how residents interact with the river, how informal systems of governance operate, and how existing community initiatives, such as waste management or local economic activities, are organised. It also allowed the project team to establish familiarity and credibility within the community before initiating formal participatory activities.

Building on this foundation, the design phase was organised as a three-day participatory workshop, where residents worked collaboratively to move from problem identification to spatial design. The process followed a structured sequence:

- ✓ Understanding context and problems: Residents collectively identified key environmental and spatial challenges affecting their neighbourhood.
- ✓ Developing ideas and priorities: Participants explored possible interventions and prioritised programs that respond to local needs.
- ✓ Designing spatial solutions. Residents translated ideas into spatial proposals through model-making and visual tools, which were then presented to a jury involving government stakeholders.

The workshops emphasized learning-by-doing, using visual tools, storytelling, and simplified design methods to communicate planning concepts in accessible ways. Participation extended beyond the design phase into collective construction activities, where residents contributed labour and engaged directly in building the space, reinforcing their connection to the outcome.

Despite these strengths, the approach remained relatively time-bound and project-driven, with limited formal mechanisms for sustained engagement after construction. While the live-in research phase and participatory workshops enabled deep initial engagement, the

continuity of community involvement in the longer term relied largely on informal social structures and community leadership rather than institutionalised governance arrangements.



Figure 3. Co-design process in Sungai Jingah in 2011. (Up) Understanding context and problem; (Bottom-left) Developing public space ideas and priorities; (Bottom-right) Participants present their ideas to a jury involving government stakeholders.

4.2.2 Co-Design Process Kali Pepe (Mangkubumen), Surakarta: An iterative process focusing on the inclusion of various community members

In contrast, the community-centric design approach in Kali Pepe was developed as a more iterative, multi-stage co-design process embedded within a broader program that aims to promote inclusive and resilient riverbank public spaces. The process began with a city-wide and site-specific assessment, including evaluation of public space accessibility, inclusivity, and community needs, and engagement with more than 70 residents across 5 different potential sites to understand local dynamics and identify potential sites.

Once the site in Mangkubumen was selected, the co-design process unfolded through four structured workshops over six months, enabling deeper engagement and iteration. A key feature of this approach was its explicit focus on inclusivity and diversity of participants, including:

- ✓ Separate sessions for children and adults in the beginning to familiarise children with the design process and ensure equal participation at a later stage.
- ✓ Inclusion of elderly residents and persons with disabilities.

- ✓ Utilisation of awareness-raising tools such as *persona* to represent diverse user needs.
- ✓ The design process combined physical and digital participatory tools, including:
- ✓ Community mapping and aspiration exercises using visual prompts (maps, images).
- ✓ Game-based modelling, using Minecraft, enables residents to visualise and test spatial ideas.
- ✓ Using persona as a tool to encourage participants to consider accessibility and inclusivity in design decisions.

These tools were deliberately designed to lower barriers to participation and enable residents with different levels of literacy and technical knowledge to contribute meaningfully. The Kali Pepe process also involved multiple rounds of stakeholder consultation, including local government, particularly about permits, and technical experts on accessibility, ensuring that community-generated ideas could be translated into feasible design proposals, as well as discussions with local communities on maintenance, ensuring the selection of materials that have minimal consequences for maintenance costs. During construction, accessibility audits were conducted with disabled people's organisations (DPOs) to ensure the space was accessible.

The participatory approach extended beyond design into activation and maintenance considerations, with discussions on how the space would be used, managed, and sustained over time. This reflects a shift from participation as a one-time event toward a more integrated and process-oriented model.



Figure 4. Co-design process in Mangkubumen (2022). (Up-left) Separate session with children to identify their challenges; (Up-right) Various tools used to ensure every participant is comfortable to voice their aspirations; (Down-left) Designing spatial solutions using Minecraft; (Below) Prioritisation of design features and maintenance considerations. *Source: Kota Kita Foundation*.

4.2.3 Comparative Participatory Design Process between the Two Sites

While both cases adopted participatory approaches, they differ in several key dimensions. Sungai Jingah utilises an awareness-raising-based, intensive participatory model, effective in mobilising communities and generating immediate engagement outcomes. In contrast, Kali Pepe reflects a longer-term, iterative co-design model that emphasises inclusivity, continuous engagement, and integration with local institutional processes. These differences highlight how community-centric design practices varied, shaped by engagement objectives, available time, and community character and contexts.

5. Findings and Discussions

5.1 Community-centric design: Reflection on process and impacts

The findings show that the primary impact of community-centric design lies in improving the relevance and usability of neighbourhood-scale public spaces. The participatory process enables communities (Hickey and Mohan, 2004), including those often marginalised in planning, to articulate everyday needs and aspirations, which are then translated into spatial features that align with local needs and practices. This supports the argument that participatory design strengthens the "fit" between public space and lived realities, particularly in contexts where formal planning often overlooks neighbourhood-scale needs. In both case studies, respondents emphasised that public spaces continue to be used because they respond to existing gaps in daily life. In Sungai Jingah, the space functions as an extension of everyday activities, used for sitting, weekly exercise, waiting during posyandu, community health-care programs, informal gatherings, and extension for community events such as weddings and community meetings. Despite the participatory process no longer being widely remembered, the space remains active, suggesting that the enduring impact of participation lies more in shaping spatial relevance than in sustaining memory of the process itself.

In Mangkubumen, the participatory process had a more visible influence on design outcomes. Respondents identified specific features, such as playgrounds, seating areas, and elderly-friendly elements, as direct results of community input. The inclusion of children and elderly participants broadened the scope of needs considered, resulting in a multi-functional space aligned with the neighbourhood's diverse demographic profile. This demonstrates how community-centric design can expand whose needs are recognised in public space development.

The community-centric design process in both locations enables awareness-raising of broader social and environmental issues by creating opportunities for collective learning, reflection, and dialogue among community members (Davidoff, 1965; Forester, 1989; Fals-Borda and Rahman, 1991). In Banjarmasin, the participatory design was used to reflect on the lack of waste management issues in the riverbank neighbourhood, while in Mangkubumen, the issue of social inclusion was more deeply discussed and facilitated.

On the other hand, the findings suggest that participation does not automatically lead to a strong sense of ownership. In Mangkubumen, some respondents perceived little difference between participatory and non-participatory development, noting that the space would be used regardless due to its necessity, as there is no such facility in the area. On the other hand, some respondents highlighted their participation in the process to make a difference in the attachment to and use of the space. This highlights an important finding: participation

more consistently produces usership, frequent and diverse use of space, rather than clearly articulated ownership.

> *"At that time, in the meeting room, I was happy to be involved in the design process (of the space) using Minecraft. But now, I'm even happier because it went from just a game to becoming a real-world park. I can now play soccer more freely with my friends in the park, without distractions like motorcycles passing by." (MB-06, youth participants, Impact Evaluation Interview 2023)*

Overall, community-centric design contributes most directly to use, inclusion, and spatial relevance, while its influence on ownership remains contingent. This distinction is critical, as it reframes participation not as an end in itself, but as a process that enables public spaces to better reflect and support everyday community life.

Table 3: Comparative Participatory Design Process

Elements	Sungai Jingah, Banjarmasin	Mangkubumen, Surakarta
Design process	One month live-in process for behavioral research and a 3-day intensive workshop, group-based design competition with local communities, and model-making.	A series of co-design workshops in six months utilising different tools, such as mapping, persona, Minecraft modelling, and iterative feedback.
Construction	Local communities provide insights on local materials and are involved in the construction process	Construction led by CSO partners, with close consultation with local residents
Hand-over process	Informal transition process to local communities. Approach PNPM as local actors that can connect to funding for maintenance and repair.	More formalised engagement with local communities and a gentle agreement with local government, as it's located in government assets.
Use and Activation	• Organic use by local residents for sitting, and sometimes parking (at night) • Use by other visitors • Community events (focus groups on waste management, etc)	• Designed with intentional programming (play, gathering, inclusivity) • Organic use by local communities for sitting, playing, socialising, and exercising.
Maintenance	• Informal, community-led, voluntary • Maintenance by nearby local communities with voluntary mechanisms for minor repairs (changing bulbs, repairing docks)	• Semi-structured; discussed during design but dependent on community + institutional support • Maintenance by community groups

However, from the case studies, we learned that several preconditions must be considered to ensure that community-centric design processes are meaningful and effective in achieving these outcomes. First, the process must identify communities that are often overlooked in the design process, particularly marginalised groups whose needs are less visible in formal planning. This aligns with Cornwall's (2002) argument that participation is shaped by who creates participatory spaces, who is invited, and whose knowledge is recognised.

Second, engagement tools must be designed to enable the participation of diverse groups. The participatory design literature highlights the importance of visual, interactive, and accessible methods that enable diverse users to express their needs and aspirations without relying on technical language (Sanoff, 2000; Sendra, 2024). Third, the process must acknowledge and address power imbalances, with planners and designers acting as facilitators who translate community input into feasible spatial interventions.



Figure 5. Use of space. (Up-left) The use of space in Sungai Jingah by children (2012); (Up-right) The use of public space for the capacity development activity for women groups organised by a local community-based organisation (2023). (Below) The use of public space in Mangkubumen in 2023.
Source: Kota Kita Foundation, Borneo Urban Lab

5.2 From participation to ownership: Context-dependent outcomes

While community-centric design contributes to the usability and relevance of public space, its translation into perceived ownership is neither automatic nor uniform. Drawing on the concept of psychological ownership, defined as the feeling that a place is "mine" or "ours" (Pierce et al., 2001), the findings suggest that participation creates enabling conditions for ownership, but does not guarantee its emergence. Ownership develops through pathways such as control, knowledge, and self-investment, and is shaped by broader socio-spatial contexts.

In Sungai Jingah, the relationship between participation and ownership is weakly articulated at the level of collective memory. Most current users do not recall the design process, and only a limited number of residents were directly involved. Moreover, some of the residents

have moved to other areas or have passed away. However, elements of ownership are still evident in practice. Residents demonstrate familiarity with the space and engage in small acts of care, such as collectively repairing wooden elements or replacing lighting. These practices reflect forms of self-investment and everyday responsibility (Pierce et al., 2001), suggesting that ownership can persist as an embedded practice even when it is not explicitly expressed.

In Mangkubumen, the relationship is more complex. Although residents were actively involved in the design process, ownership is not uniformly articulated among all users. Field evidence shows that ownership emerges in various forms, even when it is not clearly stated. For instance, an elderly resident described her routine of maintaining the space, some others were able to identify features as a result of their participation, another took pride in the space, while some others practised informal monitoring of the space.

> *"I enjoy exercising here and sweeping the park ground early in the morning to keep it clean and pleasant." (MB-07, elderly participants, Impact Evaluation Interview 2023)*
> *"I am proud that the public space was finally built and that it is being used by the community here. The most memorable part of the process was participating in the planning discussions." (MB-02, local community group)*

This reflects a form of self-investment and care, indicating that ownership can manifest through everyday stewardship practices (Peck et al., 2021; Her et al., 2022), even if not collectively articulated.

Table 4: Elements of Perceived Ownership in Sungai Jingah and Mangkubumen

Elements of Perceived Ownership	Translation to public space	Sungai Jingah, Banjarmasin	Mangkubumen, Surakarta
Control	Participation in design and decision-making	• Most current users do not recall the design process, and only a limited number of residents were directly involved.	• Stronger participation in the design process (co-design workshops, inclusive tools such as Minecraft) • Residents can identify features resulting from their inputs.
Knowledge	Daily use, familiarity with the space, lived experience	• Strong familiarity developed through long-term use • Space embedded in daily routines (gatherings, exercise, waiting area). • Knowledge is built through continuous interaction over time.	• Strong familiarity was developed through the design process • Space has close proximity to where the primary user lives.
Self-investments	Time, labour, ideas (in design and maintenance)	• Evident in everyday maintenance practices (repairing wood, replacing lighting, and small collective actions). • Investment occurs mainly post-construction through informal stewardship.	• Evident both in the design phase (ideas contributed) and in maintenance (cleaning, sweeping, organising activities). • However, investment is uneven and constrained by limited resources and dependency on external support.

A key factor shaping these variations in the perceived ownership is the broader socio-spatial context, including local norms, collective practices, and cultural understanding (Roy, 2005). In Mangkubumen, the public space is located within a social housing environment characterised by more temporary residency and a perception of the space as a government asset. This condition may limit the development of strong, collective ownership, even where individual attachment and care are present. In contrast, the more stable social relations in Sungai Jingah support informal stewardship practices despite weaker recall of the participatory process.

These findings suggest that participation primarily creates conditions for ownership, but its realisation depends on contextual factors such as tenure stability, social cohesion, and governance arrangements. Ownership, therefore, should be understood as a differentiated and context-dependent outcome, emerging unevenly across users and expressed through both perception and practice.

5.3 Community-based stewardship practices: A key element in sustaining small-scale public spaces

The findings show that the sustainability of neighbourhood-scale public spaces is closely linked to the presence of everyday stewardship practices, rather than ownership alone. While perceived ownership may motivate care (Mullenbach et al., 2019), it does not automatically translate into sustained maintenance. Instead, stewardship emerges through a combination of individual initiative, collective arrangements, and access to resources.

In Sungai Jingah, stewardship is largely informal and decentralised. Maintenance activities are carried out through small-scale, voluntary actions by residents, such as repairing damaged wooden elements, replacing lighting, or tending plants. These practices are not coordinated through formal structures or funding mechanisms but rely on personal initiative and mutual awareness among neighbours. For example, residents described how responsibilities such as replacing broken lights are informally rotated, and how repairs are undertaken using locally available materials. This reflects a form of distributed stewardship, where care is embedded in everyday practices rather than institutionalised systems.

> *"Residents who live nearby are the ones taking care of the space. Some people who like plants, voluntarily take care of the greens. When the shade was broken, someone helped repair it; he bought the materials with his own money. Alhamdulillah, there are always community members who are willing to chip in." (SJ-02, local resident)*

However, the stewardship practices extended through collaboration with local organisations, which have programs in the neighbourhood. They help connect with the government to provide support for the clean-up and replanting of the plants.

> *"We asked the government for support for a collective clean-up in the river and public spaces. This was part of a larger program we are running in the community." (SJ-06, community-based organisation)*

In Mangkubumen, stewardship practices are more structured but also reveal clearer limitations. Maintenance is partially organised through community groups (called *paguyuban*), including routine activities such as monthly clean-ups and collective care of plants and paving. At the same time, residents noted that while small-scale repairs can be managed locally, larger infrastructure issues, such as damaged facilities, remain beyond the

community's capacity to address. This creates a dependency on external support, particularly from local government or other institutions.

> *"The Housing Department helps with maintenance through their staff. But we, the residents of the social housing, organise ourselves for monthly clean-ups." (MB-05, community leader)*

Across both cases, a key tension emerges between public use and concentrated responsibility. While the spaces are widely used, including by non-residents, the maintenance burden is often borne by a relatively small group of active residents. This imbalance highlights a critical limitation of community-based stewardship: without sufficient support, responsibility becomes unevenly distributed and potentially unsustainable over time. The two public spaces differ in their features. Sungai Jingah has relatively easy-to-maintain features, such as lamps and wood, and does not have heavy infrastructure components. While the Mangkubumen space has more substantial infrastructure, such as a children's playground, basketball hoops, and seating, this may result in higher maintenance costs. Given that residents live in relatively low-income communities, reliance on a more established governance structure is expected.
These findings suggest that while participation and ownership can enable stewardship, they are insufficient on their own. Sustaining public space requires not only social motivation but also access to resources, institutional linkages, and governance mechanisms that can support ongoing care. In this sense, community-based stewardship should be understood not as a substitute for formal systems, but as a complementary layer that depends on broader enabling conditions.



Figure 6. Stewardship practices in Sungai Jingah. (Left) Care practice by local residents by replanting vegetation; (Right) Collective River clean-up and care for the space in collaboration with community organisations and government actors. Source: Borneo Urban Lab

5.4 Factors shaping the sustainability of neighbourhood-scale public space
The findings indicate that the sustainability of neighbourhood-scale public spaces is shaped by a combination of social, institutional, and contextual factors (Whyte, 1980; Gehl, 2011; Varna and Tiesdell, 2010; Carmona, 2008; Carmona, 2019; Village Well, 2025), rather than by participation or ownership alone. While community-centric design contributes to relevance and use, the long-term sustainability of these spaces depends on the continuity of

use and maintenance and on the conditions that enable or constrain local stewardship practices.

One of the most significant factors is the presence of local leadership, which plays a key role in organising maintenance, mobilising residents, and sustaining collective action over time. In both cases, stewardship practices, whether informal or semi-structured, are often driven by a small number of active individuals who take the initiative to maintain the space. This highlights the importance of leadership in bridging the gap between individual ownership and collective action.

Social cohesion and everyday relationships also shape how stewardship is enacted. In Sungai Jingah, strong neighbourhood ties support informal, distributed forms of maintenance, where responsibilities are shared through mutual awareness rather than through formal systems. In contrast, the more fluid social dynamics in Mangkubumen, influenced by the nature of social housing, contribute to a less consistent sense of collective responsibility.

A key structural factor is tenure condition and perception of space. In more permanent settlements, public space is more likely to be perceived as a shared community asset, supporting long-term attachment and care. In Mangkubumen, however, the perception of the space as a government-provided facility, combined with more temporary residency, limits the development of strong collective ownership, even where participation has occurred.

The findings also reveal a persistent mismatch between users and caretakers. While the spaces are widely used, including by non-residents, the maintenance responsibility remains concentrated among a limited group. This imbalance underscores the limitations of relying solely on community-based stewardship.

Finally, access to resources and institutional support emerges as a critical enabling factor. While communities can manage everyday maintenance, larger repairs and long-term improvements require external support. This suggests that sustainable public space governance must integrate community initiative with institutional backing, rather than treating them as separate or substitutive approaches.

Building on the findings from Sections 5.1–5.4, Figure 7 below synthesises the relationship between community-centric design, usership, perceived ownership, stewardship practices, and public space sustainability. The framework shows that while community-centric design directly contributes to spatial relevance and user adoption, the transition toward ownership, stewardship, and sustainability depends on the contextual social and institutional conditions previously discussed. The framework also identifies process supports that can be incorporated into co-design to strengthen continued use and care over time.

5.5 Recommending "a process" as a public space sustainability indicator

Building on the framework presented in Figure 7, this section proposes process-oriented considerations and indicators for public space sustainability by foregrounding ownership, stewardship, and maintenance as critical dimensions. The findings suggest that the sustainability of neighbourhood-scale public spaces cannot be assessed solely through physical indicators but must also consider the social and institutional processes that enable spaces to remain relevant, used, cared for, and governed over time. In this sense, sustainability is understood not only as an outcome of design but also as a process shaped by inclusive participation, a sense of ownership, stewardship practices, access to

governance, and support for resources. The proposed indicators extend existing public space evaluation frameworks by focusing on the conditions that support the transition from usership to long-term sustainability.

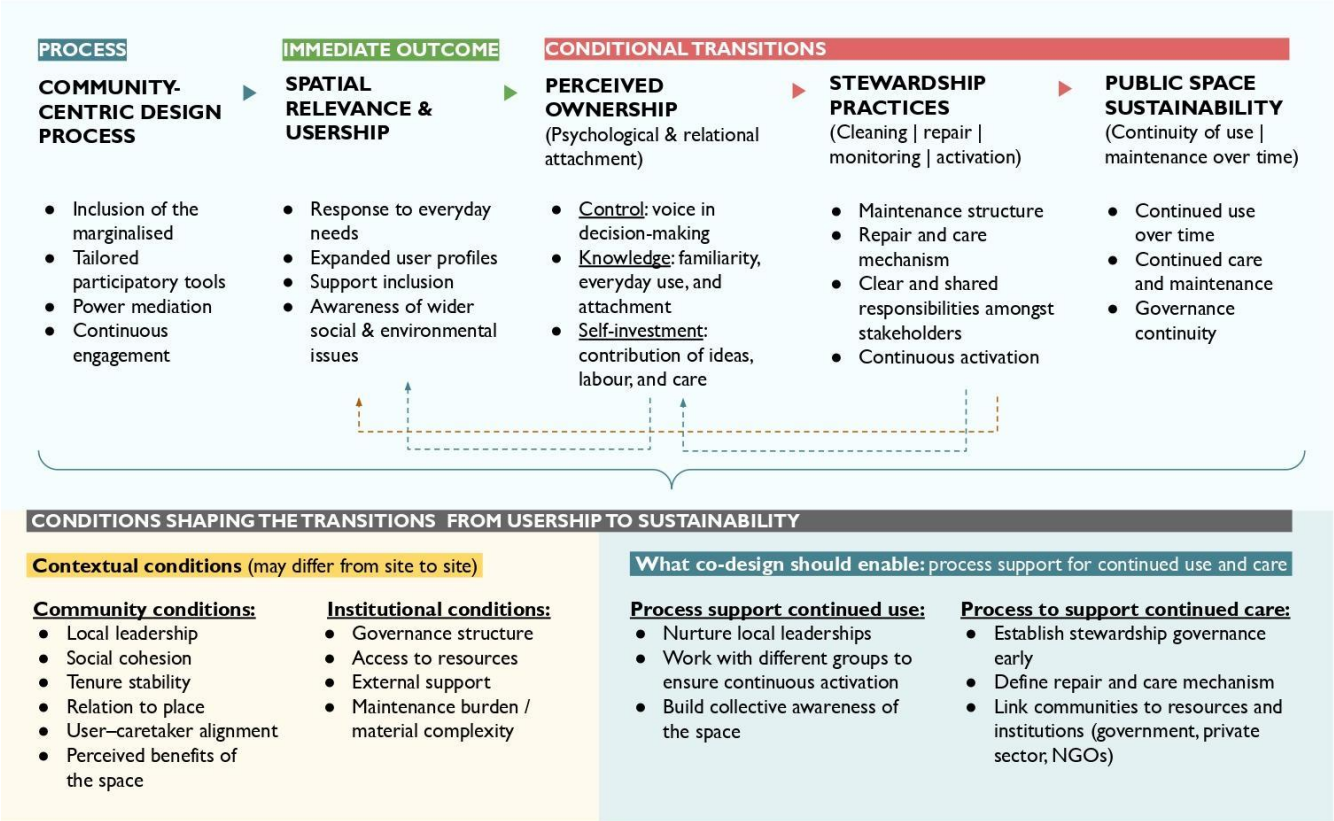


Figure 7. Process-based framework linking community-centric design, perceived ownership, stewardship practices, and public space sustainability.

First, the co-design process must be intentionally inclusive and context-specific, ensuring that the needs of marginalised and often overlooked groups are identified and meaningfully incorporated. This requires not only broad participation but also the use of tailored tools and facilitation strategies that enable diverse forms of engagement. Addressing power imbalances is central to this process, with planners and designers acting as intermediaries who translate community knowledge into spatial interventions. These aspects are important because the findings show that participation contributes most directly to spatial relevance and usership when local needs, everyday practices, and diverse aspirations are meaningfully incorporated into the design.

Second, the process needs to support the formation of a sense of ownership and stewardship beyond the design phase. Participation alone does not automatically build ownership and long-term care. Rather, ownership emerges through control, knowledge and familiarity, and self-investment, while stewardship depends on whether communities have the capacity, structure, and resources to maintain the space. This requires post-construction engagements, clear roles and responsibilities, clear repair and care mechanisms, and links to institutional support. Partnerships with local government, private

sectors, non-profits, and other institutions are essential to sustain public space over time. Without these enabling conditions, the burden of maintenance risks falling unevenly on a small group of active residents, limiting long-term sustainability of the space.

Based on these considerations, Table X proposes process-based dimensions that can be used by practitioners to evaluate public space sustainability. The indicators are understood as qualitative, process-based signs that indicate whether the conditions for long-term public space sustainability are present. They are not intended to replace physical and functional measures of space, but rather to complement them by making visible the social and institutional process through which public spaces are co-produced, maintained, and sustained over time.

6. Conclusion

This paper has examined how community-centric design approaches influence the development and sustainability of neighbourhood-scale public spaces, drawing on case studies from Surakarta and Banjarmasin, Indonesia. The findings demonstrate that while participatory processes play a critical role in shaping spaces that are socially relevant and widely used, their impact on ownership and long-term sustainability is more complex and context dependent.

The study highlights that participation contributes most directly to usership and inclusivity, ensuring that public spaces reflect the needs of local communities. However, the emergence of ownership and stewardship depends on additional factors, including tenure stability, social cohesion, governance arrangements, and access to resources. Ownership, therefore, should not be assumed as a direct outcome of participation, but understood as an evolving process.

Across the two case studies, the findings highlight the critical role of local actors in sustaining neighbourhood-scale public spaces through voluntary and semi-formal models of care. At the same time, they reveal the limitations of relying solely on community initiative. While stewardship practices emerge organically, their continuity is constrained in the absence of clear governance structures and access to resources. This suggests that co-design processes must extend beyond the design phase to facilitate not only spatial outcomes but also discussions on roles, responsibilities, and long-term maintenance arrangements involving multiple stakeholders.

To conclude, the paper proposes to add process-oriented frameworks that consider how public spaces are co-produced, maintained, and sustained over time. In doing so, it offers both conceptual and practical insights for advancing more inclusive and resilient approaches to public space development.

Table 5. Proposed Process-Based Indicators for Public Space Sustainability

Process-based dimensions	What it evaluates	Proposed indicators	Supporting Literature
Community-centric design process	Whether the design process **meaningfully engages diverse groups**, especially those marginalised or less visible in the planning process (context specific – could be children, elderly, women, persons with disabilities, ethnic minorities, low-income residents, and other communities at the margin)	**Inclusion** • Diversity of participants involved in the design process. • Presence and active contributions of the marginalised groups, such as children, the elderly, women, persons with disabilities, low-income residents, ethnic minorities or other marginalised groups (context dependent). **Engagement methods** • Use of engagement tools adapted to local literacy, age, culture, ability, and spatial knowledge, allowing diverse community members to express their aspirations meaningfully. **Addressing power imbalance** • Presence of trained planners/designers acting as facilitators. • Clarity of decision-making roles among multi-stakeholders. • Evidence that community input influenced the final design. • Participants report feeling heard or involved.	Cornwall (2002); Sanoff (2000); Hickey and Mohan (2004); Fals-Borda and Rahman (1991); Sendra and Fitzpatrick (2020); Sendra (2024).
Improving spatial relevance and usership	Whether the resulting public space **responds to everyday needs** and is actively used by different groups.	• Space is used for activities identified during the community-centric design process. • Diversity of users observed and involved in the design process. • Frequency of use and range of activities supported. • Users report that the space responds to their needs. • Space is used beyond its original intended function.	Whyte (1980); Gehl (2011); Mehta (2014); UN-Habitat (2015, 2020).
Formation of a sense of ownership	Whether users develop **a sense of ownership** (psychological and relational attachment) to the space	**Control** • Users feel they have influenced the space . **Knowledge** • Users express familiarity with the space. • Users describe the space as reflecting local needs, identity, or community values. **Self-investment** • Users recognise their contribution to the space. • Users express pride or attachment to the space. • Users express a sense that the space is "ours." • Users feel responsible for the space. • Users say they would act if the space were damaged or misused.	Pierce et al. (2001); Mullenbach et al. (2019); Peck et al. (2021); She et al. (2022); Chung (2025).
Preparing & nurturing stewardship practices	Whether there are **structures, responsibilities, partnerships, and resources** that enable stewardship to continue over time.	• Discussion of maintenance and care responsibilities facilitated during the design process • Existence of post-construction engagement to support leadership, activation, and maintenance coordination • Clarity of roles and responsibilities for maintenance and care • Existence of defined repair and care mechanisms • Establishment of links to resources and institutional support, including local government, NGOs, and private sectors.	Carmona (2008, 2019);Varna and Tiesdell (2010); Sendra (2024); UN-Habitat (2015, 2020).
Emergence of everyday stewardship practices	Whether everyday **stewardship practices** of care, maintenance, monitoring, and activation emerge after implementation.	• Existence of care practices: Residents clean the space, water plants, repair minor damage, or maintain facilities. • Users monitor the space informally. • Presence of community groups that organise activities and activate the space. • Existence of reporting mechanism for damage.. • Local communities contribute labour, money, or materials for upkeep.	Peck et al. (2021); Mullenbach et al. (2019); Carmona (2019).

Use of AI Tools

AI-assisted writing tools, including ChatGPT and Grammarly, were used during the preparation of this manuscript to support language editing, rephrasing, proofreading, and improving the clarity and flow of the text. The tools were not used to collect data, generate empirical findings, or make analytical decisions. All interpretations, arguments, case descriptions, and conclusions were developed and reviewed by the authors.

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