HOUSING THE NATION IN A DECENTRALIZED ERA: INSTITUTIONAL LESSONS FROM INDONESIA

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ABSTRACT

Decentralization in Indonesia has expanded local government responsibilities in housing provision, raising questions about institutional capacity and the sustainability of physical outcomes. This study examines the relationship between institutional governance and architectural outcomes through three cases, namely the Kampung Improvement Programme (KIP) in Jakarta, Kota Tanpa Kumuh (KOTAKU) in Pekanbaru, and Rumah Tidak Layak Huni (RTLH) rehabilitation in Ternate. Using a qualitative multiple-case approach, the study analyzes documentary evidence through five institutional capacities, including regulatory, administrative, technical, financial, and coordinative capacities, supplemented by stakeholder participation as a sixth governance component. Physical and spatial outcomes are assessed through four indicators comprising physical implementation, housing adequacy, infrastructure and spatial quality, and sustainability. Findings indicate that regulatory arrangements exist across the programs, although implementation compliance remains unverified. Administrative findings reveal weaknesses in documentation, data integration, and beneficiary verification. KIP demonstrates neighborhood infrastructure improvements alongside maintenance and drainage integration challenges. KOTAKU reports settlement infrastructure improvements, although technical performance and long-term maintenance remain insufficiently verified. RTLH documents visible dwelling-level improvements without sufficient evidence of structural safety, technical compliance, or durability. The study contributes an evidence-based framework distinguishing physical delivery, technical and spatial adequacy, and long-term stewardship across different intervention scales. The findings emphasize that institutional arrangements and completed works do not necessarily demonstrate satisfactory architectural quality or sustainable physical performance.

Keywords: *Decentralization, Institutional Capacity, Housing Governance, Multilevel Governance, Community Participation*

INTRODUCTION

Rapid urbanization and rising population density have intensified Indonesia's challenges in housing access and habitability. According to Statistics Indonesia, the national homeownership backlog was reported at 9.29 million units in 2026, while another 18.01 million households occupied dwellings that did not meet reported building or sanitation criteria (Badan Pusat Statistik, 2026). These figures indicate that housing policy must address architectural and spatial quality as well as the number of units delivered. Dense and informally developed settlements often face inadequate infrastructure and uneven construction quality. Housing programs should therefore be assessed in terms of residents' safety, health, and everyday use, rather than administrative targets alone (Turner, 1976). The quality of dwellings and surrounding spaces is central to whether interventions meet residents' needs (UN HABITAT, 2022).

Indonesia's housing governance shifted from centralization toward greater regional autonomy after the 1998 Reformasi, initially under Undang-Undang Nomor 22 Tahun 1999 and subsequently under Undang-Undang Nomor 23 Tahun 2014. These changes expanded local responsibilities for housing and spatial planning, potentially allowing interventions to respond to local geography, climate, and settlement morphology (Jonkman et al., 2022). Previous studies have nevertheless focused mainly on fiscal, administrative, and regulatory capacities (Paramita et al., 2014; Asy'ari et al., 2014). Research on urban design in Kotabaru, Yogyakarta, highlights the morphological, functional, and social dimensions of the built environment and the importance of development supervision in maintaining spatial quality (Pratama & Sardjono, 2023). The relationship between these institutional arrangements and verifiable architectural outcomes, such as housing adequacy, infrastructure functionality, and spatial quality, requires more explicit analysis.

The study examines how housing policies are translated into physical interventions through three programs. These policy models are the KIP in Jakarta, KOTAKU in Pekanbaru, and the RTLH in Ternate. The cases illustrate different governance periods and architectural scales. KIP provides a historical example of upgrading access routes, drainage, and communal facilities in dense kampungs (World Bank, 1995). KOTAKU addresses settlement infrastructure and spatial improvements that require coordination among multiple actors (Fitriana, 2018). RTLH focuses on rehabilitation or replacement of individual dwelling components, including roofs, walls, and floors, under relevant local housing-assistance arrangements (Wali Kota Ternate Provinsi Maluku Utara, 2023).

State of the Art

Research on housing decentralization in Indonesia highlights the importance of institutional authority, regulatory clarity, financing, and interagency coordination (Asy'ari et al., 2014; Paramita et al., 2014). Studies of KIP and vernacular settlements emphasize community participation in planning, implementation, and maintenance (Sawa, 1994; Cahyadini et al., 2024). Research on Kampung Lawas Maspati further demonstrates that community-led initiatives, supported by

institutional collaboration, contribute to physical settlement transformation and continued spatial maintenance (Perbawanti et al., 2025). KOTAKU research further identifies collaboration and resource coordination as essential to settlement upgrading (Fitriana & Tinov, 2018; Zuhdi et al., 2024). This study integrates these perspectives through an evidence-based framework linking institutional capacity and stakeholder participation to documented architectural and spatial outcomes without assuming direct causation.

Research Questions

The study addresses three research questions arising from the identified gaps:

1. How are the five dimensions of institutional capacity and stakeholder participation associated with the physical form and architectural adequacy of settlements under decentralization?
2. How do governance arrangements in KIP (Jakarta), KOTAKU (Pekanbaru), and RTLH (Ternate) relate to the physical and spatial outcomes documented for each program?
3. What institutional and architectural strategies can be derived from the findings across KIP, KOTAKU, and RTLH?

Research Objectives

1. To examine how regulatory, administrative, technical, financial, and coordinative capacities relate to the physical form and architectural adequacy of settlements under decentralization.
2. To assess documented physical and spatial outcomes across the differing governance arrangements of KIP (Jakarta), KOTAKU (Pekanbaru), and RTLH (Ternate).
3. To derive institutional and architectural strategies from the evidence across the three housing programs.

Scope, Limitations, and Significance

The study employs a qualitative multiple-case design and purposive case selection using a maximum variation strategy. KIP in Jakarta, KOTAKU in Pekanbaru, and RTLH in Ternate were selected to represent different governance periods and architectural intervention scales, rather than programs with identical objectives or implementation conditions. The cases span government-supported neighborhood upgrading, collaborative settlement infrastructure provision, and individual dwelling rehabilitation. The study examines architectural quality, spatial adequacy, and building form as potential outcomes of housing governance. It does not estimate statistical effects; instead, it interprets patterns, constraints, and reported physical changes in documentary evidence. Its significance lies in connecting institutional analysis with questions of housing adequacy, infrastructure functionality, and the sustainability of settlement improvements. Technical compliance and long-term

durability are not assumed where inspections or post-intervention evidence are unavailable.

THEORY / RESEARCH METHODS

The study adopts an institutional perspective to examine how administrative capabilities and stakeholder relationships shape housing governance under decentralization in Indonesia. Its analytical framework links governance arrangements to documented physical interventions and spatial outcomes rather than treating institutional performance and built-environment quality as interchangeable. The indicators guide systematic extraction and qualitative interpretation of available documentary evidence; they are not presented as direct field measurements.

The operationalization matrix defines each indicator, identifies relevant administrative and spatial evidence, including drawings, design guidelines, inspection reports, and documented building conditions and specifies potential documentary and regulatory sources. Each case is assessed using four evidence-based categories that distinguish documented support, partial support, reported constraints, and insufficient evidence. Table 1 presents the institutional governance indicators.

Table 1. Operational Dimensions and Indicators of Institutional Governance

Dimensions/ Components	Indicator Code	Operational Indicators	Relevance to KIP, KOTAKU, and RTLH
Regulatory Capacity	R1.1	Clarity of division of authority	Examines the division of institutional responsibilities.
	R1.2	Regulatory alignment	Assesses regulatory and technical compliance.
	R1.3	Availability of implementation guidelines	Reviews program implementation guidelines.
Administrative Capacity	A2.1	Quality of recipient data collection	Assesses beneficiary and target-area data.
	A2.2	Verification process	Examines beneficiary and site verification.
	A2.3	Reporting mechanism	Reviews implementation and progress reporting.
Technical Capacity	T3.1	Availability of technical personnel	Assesses the availability of technical personnel.
	T3.2	Training and capacity building	Examines technical training and capacity building.

Dimensions/ Components	Indicator Code	Operational Indicators	Relevance to KIP, KOTAKU, and RTLH
	T3.3	Implementation supervision	Assesses construction supervision and quality control.
Financial Capacity	F4.1	Source of financing	Identifies program funding sources.
	F4.2	Budget adequacy	Assesses budget adequacy for planned works.
	F4.3	Sustainability of funding	Examines funding continuity and maintenance.
Coordinative Capacity	C5.1	Coordination mechanism	Assesses interagency and stakeholder coordination.
	C5.2	Division of roles between parties	Examines institutional roles and responsibilities.
	C5.3	Follow-up to the agreement	Reviews follow-up on coordination agreements.
Stakeholder Participation	P6.1	Community involvement in planning	Examines community involvement in planning.
	P6.2	Community participation in implementation	Assesses community participation in implementation.
	P6.3	Community participation in maintenance	Examines community involvement in maintenance.
Physical and Spatial Outcomes	S7.1	Implementation of physical works	Assesses completed physical interventions.
	S7.2	Physical adequacy of housing	Evaluates housing adequacy and physical suitability.
	S7.3	Quality of infrastructure and residential space	Assesses infrastructure functionality and spatial quality.
	S7.4	Sustainability of physical results	Examines maintenance and long-term physical durability.

Table 1 identifies the governance and physical-outcome indicators used to examine institutional arrangements, implementation constraints, and documented

architectural and spatial results. Table 2 outlines the operationalization and evaluation criteria.

Table 2. Operationalization Matrix and Evidence-Based Evaluation Criteria

Codes and Indicators	Operational Definition	Empirical Evidence Sought	Document Source, Year, Period, and Page	Theoretical/ Literature and Regulatory Basis
Regulatory Capacity				
R1.1 Clarity of authority	Clarity of mandates between agencies.	Division of tasks and overlapping authority.	Program regulations, decisions, and guidelines.	(Undang-Undang No. 1 Tahun 2011, 2011)
R1.2 Regulatory compliance	Harmonization of housing, technical and spatial regulations.	Provisions and evidence of compliance with the rules.	Regulations, technical standards, spatial planning documents.	(Kementerian Pekerjaan Umum, 2021; Undang-Undang No. 28 Tahun 2002, 2002)
R1.3 Implementation guidelines	Availability of program procedures and standards.	Guidelines, technical instructions, work standards.	Guidelines, technical instructions, design documents.	(Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Nomor 6 Tahun 2007)
Administrative Capacity				
A2.1 Recipient data collection	Accuracy and currency of recipient or location data.	Database, recipient list, data inconsistency.	Location determination database and documents.	(Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Nomor 14/prt/m/2018, 2018)
A2.2 Verification	Clarity of criteria and inspection of recipients or locations.	Criteria, procedures, minutes, inspection results.	Field verification and reporting guidelines.	(Kementerian Pekerjaan Umum, 2021)
A2.3 Reporting	Documentation of progress, realization, and obstacles.	Progress reports, evaluations, follow-ups.	Program reports, monitoring, and accountability.	Guidelines for program implementation and monitoring.

Codes and Indicators	Operational Definition	Empirical Evidence Sought	Document Source, Year, Period, and Page	Theoretical/ Literature and Regulatory Basis
Technical Capacity				
T3.1 Technical personnel	Availability of personnel according to program needs.	Team structure, assignments, supporting staff.	Organizational documents and monitoring reports.	(Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Nomor 14/prt/m/2018, 2018)
T3.2 Training	Improving the competence of implementers and the community.	Modules, participants, training reports.	Capacity building modules and reports.	PUPR modules and program guidelines.
T3.3 Supervision	Verification of work against applicable standards.	Work drawings, specifications, inspections.	Technical documents and monitoring reports.	PUPR technical standards and related SNI.
Financial Capacity				
F4.1 Sources of financing	Origin and mechanism of funding.	Allocation, actor contribution, funds realization.	Budget documents and financing reports.	(UN HABITAT, 2011), housing finance literature.
F4.2 Budget adequacy	Budget alignment with program needs.	Comparison of needs, targets, and realization.	Budget, cost plan, realization report.	(Smets, 2006)
F4.3 Sustainability of funding	Continuity of implementation and maintenance funds.	Cross-year budget and maintenance plan.	Annual budget and post-program evaluation.	Housing finance literature and PUPR guidelines.
Coordinative Capacity				
C5.1 Coordination mechanisms	Coordination among agencies and stakeholders.	Forums, working groups, minutes, joint activities.	Coordination decisions and reports.	Alexander (1993); Healey (1997); Fitriana and Tinov (2018); Zuhdi et al. (2024).

Codes and Indicators	Operational Definition	Empirical Evidence Sought	Document Source, Year, Period, and Page	Theoretical/ Literature and Regulatory Basis
C5.2 Division of roles	Clarity of responsibili-ties of each party.	Implementation structure and assignments.	Team decisions, work plans, reports.	Alexander (1993); Alexander (1995); UU No. 23 Tahun 2014 tentang Pemerintahan Daerah
C5.3 Follow-up	Implementa-tion of agreements and resolution of obstacles.	Follow-up plans and progress reports.	Minutes, follow-up plans, work reports.	SPM and related guidelines
Stakeholder Participation				
P6.1 Participation in planning	Citizen involvement in determining needs and priorities.	Deliberation, consultation, mapping, citizen input.	Minutes and planning documents.	(Arnstein, 1969; Undang-Undang No. 1 Tahun 2011, 2011)
P6.2 Participation in implementation	Citizen involvement in work and resource contribution.	Manpower, materials, self-management, decision making.	Implementation reports and self-management documents.	(Jon F. C. Turner, 1976; Undang-Undang No. 1 Tahun 2011, 2011)
P6.3 Participation in maintenance	Community involvement in post-program care.	Management group and maintenance activities.	Handover documents and post-program reports.	Self-help housing guidelines and related regulations.
Physical and Spatial Outcomes				
S7.1 Realization of physical output	Work achievements against program targets.	Number of houses/areas and work realization.	Plans, realization reports, photos, and maps.	Technical guidelines and program documents.
S7.2 Physical suitability of housing	Changes in the physical condition of the house in the aspects being handled.	Condition of roof, floor, walls, clean water, sanitation.	Inspection reports, condition data, before–after photos.	PUPR's Livable Housing Criteria and Technical Standards.

Codes and Indicators	Operational Definition	Empirical Evidence Sought	Document Source, Year, Period, and Page	Theoretical/ Literature and Regulatory Basis
S7.3 Quality of infrastructure and residential space	Condition of infrastructure and space being handled.	Roads, drainage, sanitation, accessibility, public spaces.	Planning documents, infrastructure reports, maps, photos.	Settlement infrastructure standards and technical documents.
S7.4 Sustainability of physical results	Sustainability of the function of the intervention results.	Post-program conditions, damage, maintenance.	Post-intervention evaluation and follow-up documentation.	Program maintenance and evaluation guidelines.

Tables 1 and 2 define the indicators, specify the documentary evidence sought for each case, and distinguish reported institutional arrangements from verified physical performance.

Research Design and Data Sources

This study employs a qualitative multiple-case approach to examine institutional governance and architectural outcomes in KIP Jakarta, KOTAKU Pekanbaru, and RTLH Ternate. Documentary evidence is analyzed through five institutional capacities, stakeholder participation, and four physical and spatial indicators: physical implementation, housing adequacy, infrastructure and spatial quality, and sustainability. Cross-case analysis identifies governance constraints and implications for housing and architectural practice.

Analysis Stages and Coding Procedures

The study applied a common set of indicators to the three programs while retaining their distinct objectives, governance contexts, and intervention scales. The analytical procedure is presented as five documented stages. Figure 1 illustrates the five stages of data analysis. Data analysis comprised five stages: source selection, evidence extraction, indicator coding, within-case interpretation, and cross-case synthesis. Evidence was classified as documented support (D), partial support (P), documented constraint (K), or insufficient evidence (TB). These categories guided qualitative interpretation rather than numerical ranking. The analysis linked institutional governance with documented physical and spatial outcomes while acknowledging evidence limitations.

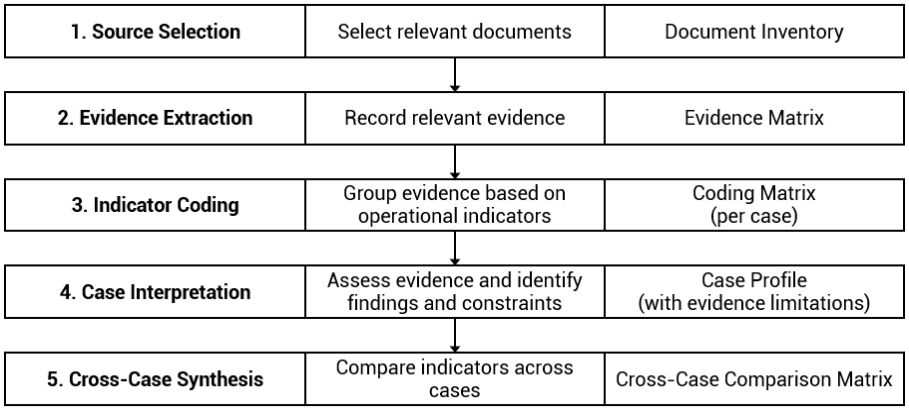


Figure 1. Research Analysis Stages Framework

Institutional Capacity and Built-Environment Governance

Institutional governance in housing encompasses spatial planning regulations and collaboration among government agencies, communities, and private actors (Healey, 1998; OECD, 2021). Related research on smart-city governance identifies data-driven planning and technology-enabled public participation as potential approaches to improving urban service accessibility, while emphasizing the need to address digital inequality (Nursanty & Rusmiatmoko, 2024). Following Indonesia's 1998 decentralization, greater housing responsibilities shifted to local governments without corresponding improvements in institutional capacity (Sururi, 2022). Limited expertise, financing, and coordination remain key challenges (Asy'ari et al., 2014, Paramita et al., 2014). Therefore, housing governance should be assessed through both institutional performance and documented physical outcomes. Figure 2 presents the institutional governance framework.

For this study, institutional capacity refers to the ability of public agencies and their partners to plan, finance, coordinate, and implement housing and settlement interventions. The five operational dimensions are defined as follows:

1. Regulatory capacity: Establishing clear responsibilities, spatial regulations, and building standards (Kementerian Pekerjaan Umum, 2021).
2. Administrative capacity: Managing beneficiary data, technical documentation, and implementation monitoring (Aga Khan Development Network, 2026; Haryati, 2026; Kementrian Pekerjaan Umum dan Perumahan Rakyat, 2020).
3. Technical capacity: Providing qualified personnel, technical planning, and construction supervision (Aga Khan Development Network, 2026; Haryati, 2026; Kementrian Pekerjaan Umum dan Perumahan Rakyat, 2020).
4. Financial capacity: Securing and allocating funds for construction quality and maintenance (Paramita et al., 2014).
5. Coordinative capacity: Ensuring collaboration among institutions and stakeholders in housing and infrastructure development (Makruffi Fitriana, 2018; Zuhdi et al., 2024).

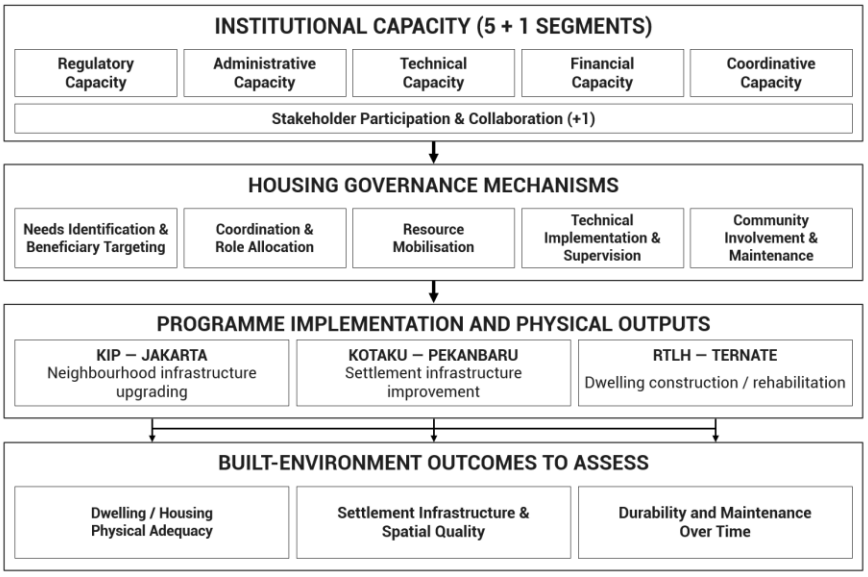


Figure 2. Analytical Framework for Institutional Capacity and Housing Governance

RESULTS AND DISCUSSION

Comparison of Regional Context

The three cases differ in urban context, administrative setting, and housing conditions. These differences provide necessary context for interpreting how governance mechanisms operate across intervention scales. Table 3 compares the three regional contexts.

Table 3. Comparison of Settlement and Housing Character

Aspect	Jakarta	Pekanbaru	Ternate
Settlement character	High density and pressure on land	Horizontal expansion toward peripheral areas	Coastal and hillside settlements
Dominant housing challenge	Housing affordability and limited land availability	Affordable housing and infrastructure provision	Rehabilitation of uninhabitable housing
Development pattern	High-density and increasingly vertical development	Predominantly horizontal expansion	Predominantly self-help housing
Key contextual constraints	Land price, flooding, spatial pressure	Flooding, infrastructure gaps, peripheral expansion	Accessibility, natural hazards, geographic constraints

These contextual characteristics do not, on their own, determine governance effectiveness. They frame the institutional responsibilities, coordination needs, and community participation involved in each program. The following sections examine these factors alongside documented physical and spatial outcomes.

Source Selection and Document Inventory

The reviewed material spans publications from 1969 to 2025, including empirical studies, conceptual literature, regulations, technical guidance, and program documentation. It addresses three principal themes: institutional capacity and housing decentralization; stakeholder participation and interagency coordination; and architectural and spatial outcomes. Table 4 summarizes the reviewed literature and indicators.

Table 4. Evidence Extraction Matrix

Year	Author/Source	Study Purpose	Method	Indicator Codes
2014	(Asy'ari et al., 2014)	Examine housing governance decentralization.	Qualitative study: interviews, documentation, and life history.	R1.1, R1.2, C5.2
2014	(Paramita et al., 2014)	Analyze decentralized housing policies in two cities.	Comparative case study.	R1.1, A2.3, F4.1, F4.3, C5.1, C5.2
2022	(Sururi, 2022)	Assess political, fiscal, and administrative decentralization.	Literature-based policy analysis.	R1.1, A2.1, A2.3, F4.1, F4.2
2011-2021	Government of Indonesia; Ternate Municipality	Define housing and decentralization regulations.	Review of national and local regulations.	R1.1, R1.3, P6.1, P6.2, S7.1, S7.3
2002, 2021	Government of Indonesia	Establish building standards and requirements.	Regulatory review.	R1.2, R1.3, T3.3, S7.2
2007	Ministry of Public Works	Guide building and environmental planning.	Technical guidelines.	R1.3, S7.3
2016, 2018	Ministry of Public Works and Housing	Guide self-help housing assistance.	Program regulations and guidelines.	A2.1, A2.2, T3.3, F4.1, F4.2, P6.2, S7.2

Year	Author/Source	Study Purpose	Method	Indicator Codes
2019	(Setyasa, 2019)	Assess planning transparency in Surabaya.	Scoring-based assessment.	A2.1, A2.3, P6.1
1976	(Jon F. C. Turner, 1976)	Examine resident autonomy and self-help housing.	Conceptual study.	P6.2, P6.3, S7.2, S7.4
2006	Smets	Analyze housing microfinance and incremental development.	Literature-based analysis.	F4.1, F4.3, S7.2
2011	(UN HABITAT, 2011)	Assess low-income housing finance.	Policy guide.	F4.1, F4.3
1994	(Sawa, 1994)	Examine community participation in Jakarta KIP.	Empirical case study.	P6.1, P6.3, S7.1, S7.3
2018	(Fitriana, 2018)	Analyze KOTAKU collaboration in Sukaramai.	Local case study.	C5.1, C5.3, P6.1, P6.2
2024	(Zuhdi et al., 2024)	Assess KOTAKU policy networks and constraints.	Qualitative case study; interviews with 23 informants.	A2.1, F4.1, C5.1, C5.3, P6.1, P6.2, S7.3
2024	(Cahyadini et al., 2024)	Examine community participation and infrastructure in Sentani.	Empirical settlement study.	P6.1, P6.2, S7.3, S7.4
2024	(Puspita & Pamungkas, 2024)	Analyze spatial-control weaknesses in Sidoarjo.	Qualitative content analysis.	R1.2, R1.3, C5.1, C5.2, S7.3
2025	(Pradani & Septanaya, 2025)	Assess housing voucher cost efficiency in Surabaya.	Cost-efficiency analysis with a 30-year projection.	F4.1, F4.3

Institutional Capacity and Architectural Outcomes

Kampung Improvement Programme (KIP) in Jakarta (from 1969)

Institutional arrangements and implementation mechanisms. KIP began in Jakarta in 1969 as a government-supported kampung improvement initiative. The first World

Bank-supported urban project was approved in 1974, followed by a second in 1976 (World Bank, 1995, pp. 13–14). The program improved roads and pedestrian routes, drainage, water supply, sanitation, and other neighborhood facilities through public agencies, technical units, and local organizations. Its scale demonstrates the ability to mobilize implementation resources but does not, on its own, establish regulatory compliance, equal influence over design decisions, or sustained maintenance capacity.



Figure 3. KIP in Jakarta: Before, During, and After Intervention
Source: Aga Khan Development Network, 2026

Figure 3 illustrates the physical upgrading process of KIP Jakarta. Before, during, and after-intervention photographs illustrate stages of the physical upgrading process. These images should be interpreted alongside evidence on administration, technical support, financing, coordination, and community participation. Improvements to built infrastructure indicate implementation but do not independently establish the quality of consultation or the maintenance of completed facilities. Table 5 presents KIP Jakarta's institutional capacities.

Table 5. Institutional Capacity Dimensions in KIP Jakarta

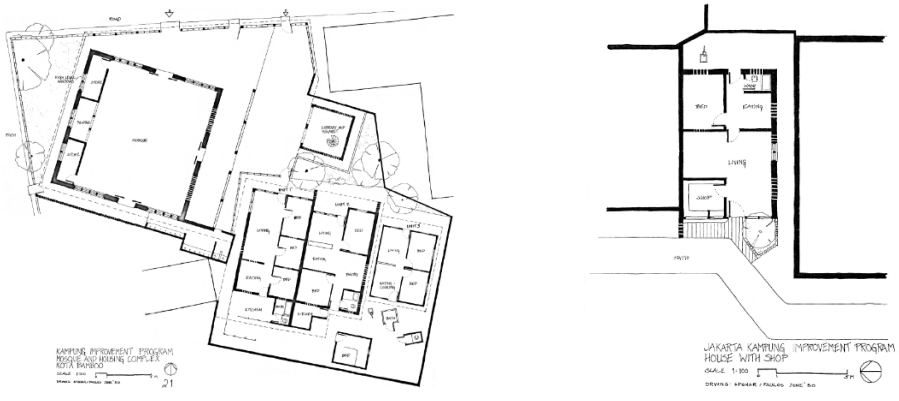
Dimension	Arrangement	Evidence	Constraints and Implications
Regulatory Capacity	Government-led KIP since 1969.	Basic settlement upgrading policies.	Regulatory compliance remains unverified.
Administrative Capacity	City agencies, technical units, and local organizations.	Approximately 45% of residential areas and 70% of residents covered by 1989 (Sawa, 1994).	Limited staffing, resources, and implementation capacity.

Dimension	Arrangement	Evidence	Constraints and Implications
Technical Capacity	Technical support from public works agencies.	Improvements to roads, drainage, water, and sanitation.	Maintenance and drainage integration remain challenges.
Financial Capacity	Government, community, and World Bank funding.	Approximately US$1.26 million in improvements, with 54% community contributions.	Long-term maintenance funding remains uncertain.
Coordinative Capacity	Coordination among government agencies and communities.	Joint planning and infrastructure implementation.	Limited integration with citywide infrastructure.
Stakeholder Participation	Community involvement in settlement upgrading.	Contributions through labor and materials.	Limited influence on planning decisions and maintenance.

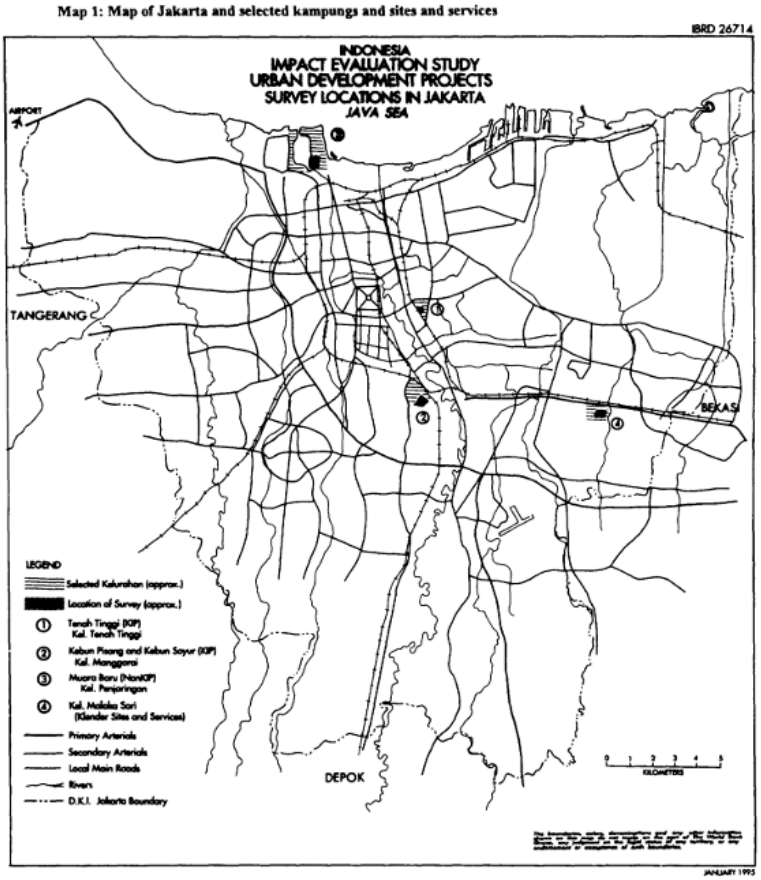
Physical and Spatial Outcomes of Kampung Improvement Programme (KIP) in Jakarta (from 1969)

Architectural documentation of KIP in Kota Bambu and Jati Pulo illustrates settlement layouts, building arrangements, access routes, and communal facilities. These plans highlight the relationship between neighborhood upgrading and building design but do not verify construction quality, housing adequacy, or technical compliance, which require field inspections and implementation records. Figure 4 and Figure 5 presents the site plans and architectural drawings of KIP Jakarta.

KIP involved both neighborhood infrastructure and incremental changes to dwellings. The World Bank (1995, pp. 22–32) reported improvements in accessibility, drainage, sanitation, and housing materials, alongside household investment in repairs; broader economic growth also influenced these changes. Across the cities surveyed, 61% of KIP respondents reported no flooding inside or outside their homes, compared with 32% of respondents in non-KIP areas (World Bank, 1995, p. 30). These figures are pooled survey findings, not estimates for Jakarta alone. The evidence suggests an association between neighborhood upgrading and household improvements, but it does not establish structural compliance or an effect attributable exclusively to KIP. Table 6 summarizes KIP Jakarta's physical and spatial outcomes.

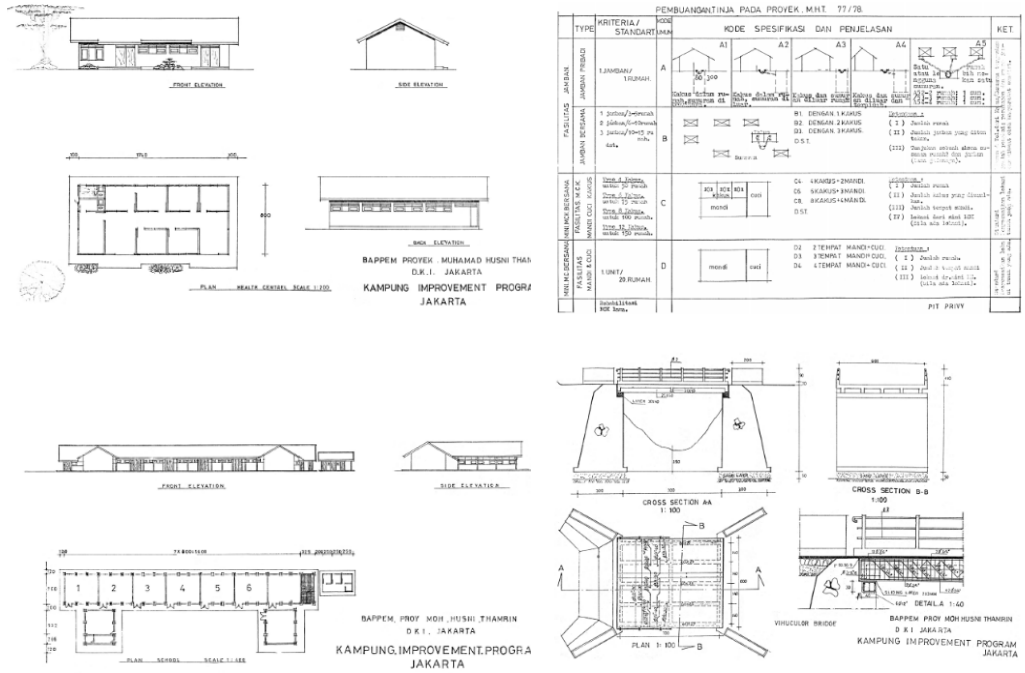


(a) (b)



(c)

Figure 4. KIP Site Plan (a) Bamboo City, Jakarta. Mosque & Housing Complex, (b) Kampung Improvement Programme Site Plan, Jakarta. House with Shop, (c) Siteplan for the KIP - Kota Bamboo & Jati Pulo, Jakarta
Source: Aga Khan Development Network, 2026; World Bank, 1995



Detailed Drawing of Kampung Improvement Program - Jakarta

Detailed Drawing of Kampung Improvement Program - Jakarta

Figure 5. KIP Technical Drawings in Jakarta
Source: Aga Khan Development Network, 2026; World Bank, 1995

Table 6. Physical and Spatial Outcomes of KIP in Jakarta

Indicator/ Status	Governance and Implementation	Documented Outcomes	Source	Evidence Strength and Limits
S7.1 / D Physical Works	Government funding, technical units, and community contributions supported upgrading.	Improved roads, drainage, water supply, and sanitation.	World Bank (1995), pp. 13–14, 22–32; Sawa (1994).	Delivery documented; site-specific quality remains unverified.
S7.2 / P Housing Adequacy	Infrastructure upgrading accompanied household improvements.	Dwelling repairs and improved building materials.	World Bank (1995), pp. 22–32; Figure 4.	Housing improvements documented; technical compliance unverified.

Indicator/ Status	Governance and Implementation	Documented Outcomes	Source	Evidence Strength and Limits
S7.3 / D Infrastructure and Spatial Quality	Integrated local infrastructure provision, with drainage coordination challenges.	Improved accessibility, drainage, and sanitation.	World Bank (1995), pp. 22–33; Figure 4.	Historical improvements documented; current conditions unverified.
S7.4 / K Physical Sustainability	Limited maintenance capacity and long-term funding evidence.	Maintenance deficiencies and drainage integration problems.	World Bank (1995), pp. 52–55, 65–69.	Documented constraints; long-term physical performance unverified.

The World Bank evaluation identified weaknesses in KIP maintenance, monitoring, drainage integration, and community involvement in design decisions (World Bank, 1995, pp. 33–42, 52–69). In Jakarta, 66% of 50 respondents were consulted and 92% participated in implementation, although participation did not necessarily imply decision-making authority (World Bank, 1995, p. 53). These findings highlight the distinction between program implementation, meaningful participation, and long-term maintenance, while current site conditions remain unverified.

KOTAKU Program in Pekanbaru (2016-2019)

KOTAKU in Pekanbaru (2016–2019) illustrates the role of institutional arrangements and collaborative governance in settlement upgrading under decentralization. The program involved local government, community organizations, academics, media actors, and private-sector participants in interventions targeting slum areas across the city. Figure 6 shows the physical changes associated with KOTAKU Pekanbaru. The identification of approximately 113.56 hectares of slum areas in Pekanbaru indicates the geographical scope of the city's settlement-upgrading challenge. Figure 7 illustrates the distribution of slum areas in Pekanbaru. Visual records show the types and locations of neighborhood-scale KOTAKU interventions in Pekanbaru. Table 7 summarizes the institutional arrangements, supporting evidence, and documented constraints across the six governance dimensions.



Figure 6. KOTAKU in Pekanbaru: Before and After Intervention
Source: Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2020. Dokumen Rencana Penyiapan Lahan (RPL) Program Kota Tanpa Kumuh (KOTAKU)

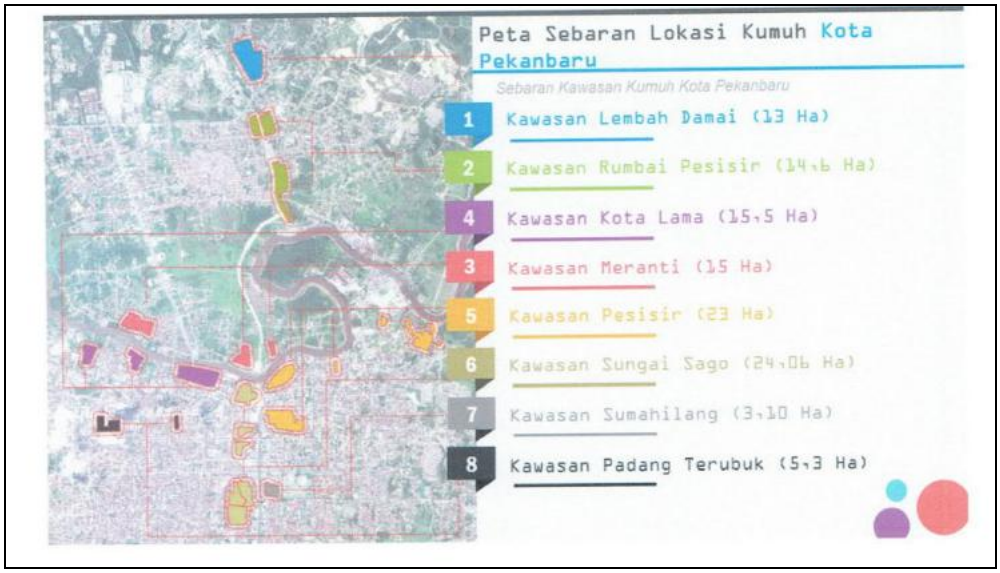
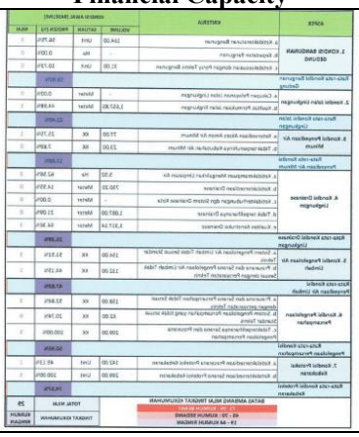
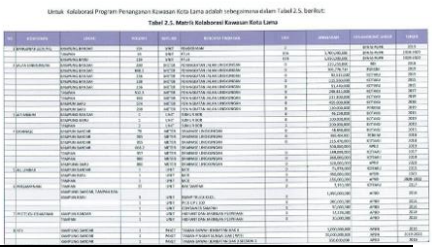


Figure 7. Map of Identified Slum Areas in Pekanbaru
Source: Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2020, KOTAKU planning documentation

Table 7. Dimensions of Institutional Capacity of KOTAKU in Pekanbaru

Regulatory Capacity	**Administrative Capacity**
	
Arrangement: City Regulation No. 13/2016 and Mayor's Decree No. 878/2017. Evidence: Slum-upgrading regulations documented. Constraints and implications: Regulatory alignment remains unverified.	Arrangement: Slum-area identification and prioritization. Evidence: Fragmented interagency data. Constraints and implications: Data integration constrains planning.
Technical Capacity	**Financial Capacity**
	
Arrangement: Settlement infrastructure implementation. Evidence: Reported road, drainage, and water improvements. Constraints and implications: Technical staffing and supervision unverified.	Arrangement: Government and stakeholder funding. Evidence: Multiple funding sources reported. Constraints and implications: Budget adequacy and sustainability unverified.

Coordinative Capacity	Stakeholder Participation
	
Arrangement: PKP Working Group and stakeholder networks. Evidence: Policy-network structure documented. Constraints and implications: Weak interagency coordination.	Arrangement: Community involvement in implementation. Evidence: Participation and maintenance issues documented. Constraints and implications: Low maintenance awareness threatens sustainability

Sources: Synthesis from PUPR Documentation

KOTAKU involved a broad network of institutional and community stakeholders, but sustained collaboration remained a challenge. Its experience suggests that settlement upgrading requires not only local administrative and technical support but also coordination of resources, consistent information systems, and long-term cooperation among implementing actors.

Physical and Spatial Outcomes of KOTAKU Program in Pekanbaru (2016-2019)

Area maps, plans, and implementation records document KOTAKU interventions in neighborhood infrastructure, particularly roads, drainage, and access to clean water. Figure 8 presents the KOTAKU spatial development plan.



Figure 8. Master Plan for KOTAKU Development in Pekanbaru
Source: Kementerian Pekerjaan Umum dan Perumahan Rakyat. (2020). *Dokumen Rencana Penyiapan Lahan* (RPL) Program *Kota Tanpa Kumuh* (KOTAKU)

KOTAKU documented settlement-scale improvements in roads, drainage, and water access. However, infrastructure completion does not verify construction quality, spatial integration, or long-term durability. Architectural assessment should therefore consider both physical implementation and functional performance. Table 8 summarizes KOTAKU Pekanbaru's physical outcomes.

Table 8. Physical and Spatial Outcomes of KOTAKU in Pekanbaru

Indicator/ Status	Governance and Implementation	Documented Outcomes	Source	Evidence Strength and Limits
S7.1 / D Physical Works	Government funding and multi-actor collaboration supported infrastructure delivery despite coordination constraints.	Reported improvements to roads, drainage, and clean-water facilities.	Zuhdi et al. (2024), p. 3183; Fitriana & Tinov (2018), pp. 9–10.	Outputs reported; site-specific completion and technical quality unverified.
S7.2 / TB Housing Adequacy	The program prioritized settlement infrastructure over individual dwelling rehabilitation.	No systematic assessment of individual housing adequacy.	Zuhdi et al. (2024), pp. 3181–3184; Kota Lama planning documents.	Insufficient evidence of housing adequacy or technical compliance.
S7.3 / P Infrastructure and Spatial Quality	Area planning and stakeholder coordination faced data integration challenges.	Improved access, drainage, and water services were reported.	Zuhdi et al. (2024), p. 3183; Ministry of Public Works and Housing (c. 2021).	Spatial improvements partially supported; technical performance unverified.
S7.4 / K Physical Sustainability	Limited maintenance awareness, coordination, and funding constrained long-term management.	Community maintenance challenges were documented.	Zuhdi et al. (2024), pp. 3183–3184; Fitriana & Tinov (2018), p. 13.	Maintenance constraints documented; long-term deterioration unverified.

KOTAKU's principal architectural evidence concerns settlement-scale systems rather than the technical adequacy of individual houses. Consequently, the presence of roads and drains does not establish network connectivity, drainage performance, accessible routes, reliable water services, or durable public spaces. The available evidence supports reported physical work but leaves important gaps in technical verification and long-term maintenance (Fitriana and Tinov, 2018; Zuhdi et al., 2024).

***Rumah Tidak Layak Huni* (RTLH) Rehabilitation Program in Ternate (2025)**

The 2025 Ternate RTLH reports indicate allocations of 40 provincially supported and 10 municipally supported housing units. However, differences in beneficiaries, funding schemes, and reporting periods prevent these figures from being combined or treated as verified completed dwellings. Provincial RTLH, municipal RTLH, and BSPS records must therefore be assessed separately. Figure 9 illustrates the settlement layout included in the RTLH documentation.

The Ternate case indicates that local housing interventions may depend on coordination across levels of government and other institutions. Their effectiveness cannot be inferred solely from participation by multiple agencies; evidence of implementation roles, resource allocation, technical oversight, and follow-up is also required.

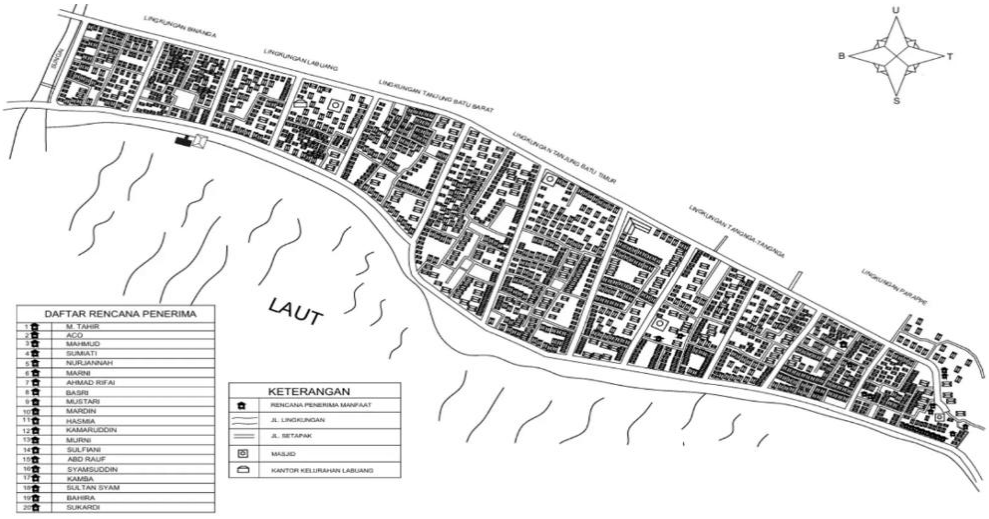


Figure 9. Settlement Layout Illustration Included in the Ternate RTLH Case Materials
Source: Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2025.

Figure 10 shows visible dwelling changes before and after RTLH rehabilitation. Before and after photographs document visible housing improvements but do not verify technical compliance or durability. Evidence of beneficiary verification, construction supervision, funding adequacy, and participation remains limited. Earlier program records and geographical conditions cannot establish the quality of the 2025 RTLH interventions. Table 9 presents RTLH Ternate's institutional arrangements.

Before



After



Figure 10. Before-and-After Dwelling Photographs Referenced in the RTLH Case
Source: Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2025.

Table 9. Institutional Capacity and Participation in RTLH in Ternate

Dimension	Arrangement	Evidence	Constraints and Implications
Regulatory Capacity	Municipal housing rehabilitation guidelines.	Formal RTLH guidelines documented.	Applicability and compliance in 2025 remain unverified.
Administrative Capacity	Beneficiary data collection and verification.	BSPS verification records referenced.	Records are not linked to the assessed 2025 recipients.
Technical Capacity	Housing assessment and construction supervision.	Before-and-after photographs show physical improvements.	Structural safety and technical compliance remain unverified.
Financial Capacity	Provincial, municipal, and institutional funding.	Multiple funding arrangements reported.	Budget adequacy and recipient-level allocations remain unclear.

Dimension	Arrangement	Evidence	Constraints and Implications
Coordinative Capacity	Government and institutional collaboration.	Multiple implementing actors identified.	Coordination effectiveness and follow-up remain unverified.
Stakeholder Participation	Potential recipient involvement in rehabilitation.	General self-help practices described.	Recipient participation and maintenance roles remain unverified.

Physical and Spatial Outcomes of RTLH in Ternate

Available plans and photographs show physical improvements in RTLH dwellings, but the absence of as-built drawings, technical specifications, and inspection records prevents verification of structural safety, ventilation performance, and compliance with housing standards.

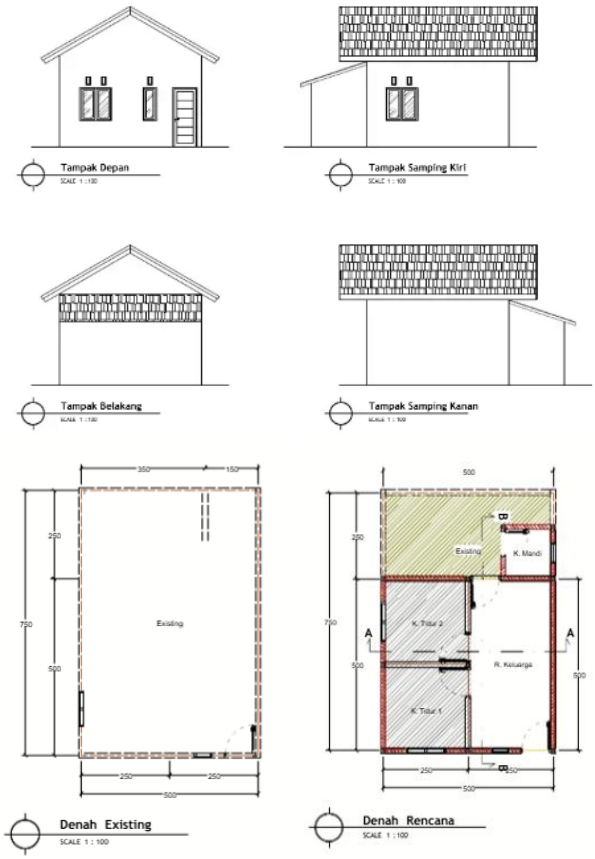


Figure 11. House Elevations and Existing and Proposed Floor Plans in the RTLH Documentation

Source: Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2025.

Figure 10 presents the existing and proposed dwelling plans and elevations. Visual differences alone cannot establish structural safety, technical compliance, or the long-term durability of rehabilitated dwellings. Housing adequacy therefore remains a partially supported outcome rather than a verified program-wide finding. Table 10 summarizes RTLH Ternate's physical outcomes.

Table 10. Physical and Spatial Outcomes of RTLH in Ternate

Indicator/ Status	Governance and Implementation	Documented Outcomes	Source	Evidence Strength and Limits
S7.1 / P Physical Works	Provincial funding and interinstitutional collaboration supported rehabilitation.	Rehabilitation in Ngade and a dwelling reported 95% complete in Makassar Barat.	North Maluku Provincial Executive Administration Bureau (2025, Oct. 9); Yahya, RRI (2025, Nov. 21).	Progress documented at separate locations; total completion unverified.
S7.2 / P Housing Adequacy	Dwelling rehabilitation undertaken; technical supervision remains unverified.	Improved enclosure, walls, and finishes in a documented dwelling.	Yahya, RRI (2025, Nov. 21).	Visible improvements; structural safety and technical compliance unverified.
S7.3 / TB Infrastructure and Spatial Quality	Intervention focused on individual dwellings.	No documented neighborhood infrastructure improvements.	North Maluku Provincial Executive Administration Bureau (2025, Oct. 9); Yahya, RRI (2025, Nov. 21).	Insufficient evidence; settlement quality cannot be assessed.
S7.4 / TB Physical Sustainability	Long-term maintenance and financing arrangements remain undocumented.	No post-occupancy monitoring records available.	North Maluku Provincial Executive Administration Bureau (2025, Oct. 9); Yahya, RRI (2025, Nov. 21).	Durability and long-term maintenance remain unverified.

The RTLH case distinguishes reported administrative and financing arrangements from visible dwelling changes and independently verifiable housing adequacy. The first two are partly documented; the third requires case-specific inspections, construction records, and post-occupancy assessment. This distinction is

especially important when comparing household rehabilitation with infrastructure upgrading at neighborhood and settlement scales.

Indicator Coding

Evidence from academic publications, regulations, program records, and other documentation was mapped to the operational indicators in Tables 1 and 2 for all three cases. Each indicator was coded as D (documented support), P (partial support), K (documented constraint), or TB (insufficient evidence). The resulting matrix identifies cross-case patterns and evidence gaps without treating qualitative codes as performance scores. Regulations, design drawings, and photographs are not independently sufficient to verify technical compliance, budget adequacy, or construction durability. Table 11 presents the cross-case indicator coding results.

Table 11. Evidence-based Indicator Coding Matrix for KIP, KOTAKU, and RTLH

Code	Case	Code	Evidence and Rationale	Full Source Name, Year, and Page/Section
R1.1 Clarity of division of authority	KIP Jakarta	P	KIP institutions identified; specific mandates unclear.	World Bank (1995), pp. 13–14, 68–69.
	KOTAKU Pekanbaru	P	Formal roles identified; coordination fragmented.	Zuhdi et al. (2024), pp. 3181, 3183–3184.
	RTLH Ternate	P	Institutions identified; dwelling-level mandates unclear.	North Maluku Provincial Bureau (2025, Oct. 9); Halmaheranesia (2025, Sept. 12).
R1.2 Regulatory compliance	KIP Jakarta	TB	Historical regulatory compliance unverified.	World Bank (1995), pp. 13–14.
	KOTAKU Pekanbaru	TB	Regulations exist; implementation compliance unverified.	Zuhdi et al. (2024), p. 3185; Pekanbaru Regulation No. 13/2016.
	RTLH Ternate	TB	Municipal guidelines exist; provincial compliance unverified.	Ternate Mayoral Regulation No. 7/2025, Art. 16; North Maluku Provincial Bureau (2025).

Code	Case	Code	Evidence and Rationale	Full Source Name, Year, and Page/Section
R1.3 Implementation guidelines	KIP Jakarta	P	Historical guidelines partly documented.	World Bank (1995), pp. 13–14, 29–33.
	KOTAKU Pekanbaru	D	Official KOTAKU guidelines documented; compliance unverified.	KOTAKU Guidelines (2016), Circular No. 40/SE/DC/2016; Zuhdi et al. (2024), p. 3185.
	RTLH Ternate	P	2025 guidelines available; provincial applicability unverified.	Ternate Mayoral Regulation No. 7/2025, Arts. 16–17; Municipal Housing Agency (2025).
A2.1 Quality of beneficiary / area data	KIP Jakarta	TB	Beneficiary data quality unverified.	World Bank (1995), p. 68, methodological appendix.
	KOTAKU Pekanbaru	K	Settlement data integration remains fragmented.	Zuhdi et al. (2024), p. 3181.
	RTLH Ternate	TB	Recipient data accuracy unverified.	Muhammad (2025, Sept. 12); Yahya, RRI (2025, Nov. 21).
A2.2 Verification process	KIP Jakarta	TB	Site verification records unavailable.	World Bank (1995), p. 68, methodological appendix.
	KOTAKU Pekanbaru	P	Area designation documented; field verification unverified.	Ministry of Public Works and Housing (c. 2021), Kota Lama Area Plan, boundary-designation section.
	RTLH Ternate	TB	Beneficiary verification records unavailable.	Ternate Mayoral Regulation No. 7/2025; Yahya, RRI (2025).

Code	Case	Code	Evidence and Rationale	Full Source Name, Year, and Page/Section
A2.3 Reporting mechanism	KIP Jakarta	K	Weak reporting and institutional records documented.	World Bank (1995), p. 68, Appendix A.
	KOTAKU Pekanbaru	K	Budget information inaccessible in Sukaramai.	Fitriana & Tinov (2018), p. 13.
	RTLH Ternate	TB	Beneficiary-level reporting unverified.	North Maluku Provincial Bureau (2025); Yahya, RRI (2025).
T3.1 Availability of technical personnel	KIP Jakarta	P	Technical units identified; qualifications unclear.	World Bank (1995), pp. 13–14, 65–69.
	KOTAKU Pekanbaru	P	Technical actors identified; staffing adequacy unverified.	Zuhdi et al. (2024), pp. 3175, 3181–3183.
	RTLH Ternate	TB	Technical personnel qualifications unverified.	North Maluku Provincial Bureau (2025, Oct. 9); Yahya, RRI (2025).
T3.2 Training / capacity building	KIP Jakarta	TB	Site-specific training records unavailable.	World Bank (1995), KIP evaluation report.
	KOTAKU Pekanbaru	TB	Training recommended but implementation unverified.	Zuhdi et al. (2024), p. 3183.
	RTLH Ternate	TB	Training documentation unavailable.	North Maluku Provincial Bureau (2025); Yahya, RRI (2025).
T3.3 Construction supervision	KIP Jakarta	TB	Construction inspections and compliance unverified.	World Bank (1995), pp. 29–33.
	KOTAKU Pekanbaru	TB	Construction quality-control records unavailable.	Zuhdi et al. (2024), pp. 3182–3183.

Code	Case	Code	Evidence and Rationale	Full Source Name, Year, and Page/Section
	RTLH Ternate	TB	Structural inspections and technical compliance unverified.	North Maluku Provincial Bureau (2025, Oct. 9); Yahya, RRI (2025, Nov. 21).
F4.1 Sources of financing	KIP Jakarta	D	Government and World Bank financing documented.	World Bank (1995), pp. 13–14, 65–69.
	KOTAKU Pekanbaru	D	Multilevel government funding documented; adequacy unverified.	Zuhdi et al. (2024), p. 3182.
	RTLH Ternate	P	Provincial and municipal funding reported separately.	Halmaheranesia (2025, Sept. 12); Yahya, RRI (2025, Nov. 21).
F4.2 Budget adequacy	KIP Jakarta	TB	Construction and maintenance budget adequacy unverified.	World Bank (1995), pp. 13–14.
	KOTAKU Pekanbaru	K	Municipal funding constraints documented.	Zuhdi et al. (2024), p. 3182; Fitriana & Tinov (2018), pp. 13–14.
	RTLH Ternate	TB	Assistance reported; beneficiary-level cost adequacy unverified.	Yahya, RRI (2025); Halmaheranesia (2025).
F4.3 Long-term financial sustainability	KIP Jakarta	TB	Maintenance difficulties documented; funding continuity unverified.	World Bank (1995), pp. 55, 68–69.
	KOTAKU Pekanbaru	TB	Funding dependence documented; maintenance financing unverified.	Zuhdi et al. (2024), pp. 3182–3183.
	RTLH Ternate	TB	Long-term funding continuity unverified.	Halmaheranesia (2025); Yahya, RRI (2025).

Code	Case	Code	Evidence and Rationale	Full Source Name, Year, and Page/Section
C5.1 Coordination mechanism	KIP Jakarta	P	Institutional collaboration documented; effectiveness uncertain.	World Bank (1995), pp. 52–55, 65–69.
	KOTAKU Pekanbaru	K	Formal coordination exists; interagency obstacles documented.	Zuhdi et al. (2024), pp. 3181, 3183–3185.
	RTLH Ternate	P	Provincial–military collaboration documented at one site only.	North Maluku Provincial Bureau (2025, Oct. 9); Halmaheranesia (2025, Sept. 12).
C5.2 Division of operational roles	KIP Jakarta	P	Implementing actors identified; detailed responsibilities unclear.	World Bank (1995), pp. 52–55, 65–69.
	KOTAKU Pekanbaru	P	Formal roles defined; overlapping implementation reported.	Zuhdi et al. (2024), pp. 3181, 3183.
	RTLH Ternate	TB	Dwelling-level institutional responsibilities unverified.	North Maluku Provincial Bureau (2025); Halmaheranesia (2025); Yahya, RRI (2025).
C5.3 Follow-up to agreements	KIP Jakarta	TB	Agreement follow-up records unavailable.	World Bank (1995), pp. 52–55.
	KOTAKU Pekanbaru	K	Community proposals inconsistently implemented.	Zuhdi et al. (2024), p. 3184.
	RTLH Ternate	TB	Implementation of coordination agreements unverified.	North Maluku Provincial Bureau (2025); Halmaheranesia (2025).

Code	Case	Code	Evidence and Rationale	Full Source Name, Year, and Page/Section
P6.1 Community input to planning	KIP Jakarta	K	Community participation documented; design influence limited.	World Bank (1995), pp. 53–54; Sawa (1994).
	KOTAKU Pekanbaru	K	Limited deliberation and integration of community proposals.	Fitriana & Tinov (2018), p. 10; Zuhdi et al. (2024), p. 3184.
	RTLH Ternate	TB	Beneficiary involvement in design unverified.	Yahya, RRI (2025); North Maluku Provincial Bureau (2025).
P6.2 Participation in implementation	KIP Jakarta	D	92% of surveyed KIP residents participated in implementation; design influence unclear.	World Bank (1995), Table 5.1, p. 53; Sawa (1994).
	KOTAKU Pekanbaru	P	Community participation documented; local contributions declined.	Fitriana & Tinov (2018), p. 10; Zuhdi et al. (2024), p. 3183.
	RTLH Ternate	TB	Beneficiary involvement in rehabilitation unverified.	Yahya, RRI (2025); North Maluku Provincial Bureau (2025).
P6.3 Participation in maintenance	KIP Jakarta	K	Communal facility maintenance weaknesses documented.	World Bank (1995), p. 55.
	KOTAKU Pekanbaru	K	Low public awareness of infrastructure maintenance.	Zuhdi et al. (2024), p. 3183.
	RTLH Ternate	TB	Post-rehabilitation maintenance practices undocumented.	Yahya, RRI (2025, Nov. 21).

Synthesis Across Cases: Governance Capacity and Built-Environment Outcomes

The cross-case synthesis compares governance arrangements, institutional constraints, and intervention scales across KIP Jakarta, KOTAKU Pekanbaru, and RTLH Ternate. Five institutional capacities and stakeholder participation are assessed against documented physical outcomes, with evidence codes indicating the strength of available evidence rather than program performance. Table 12 summarizes the findings.

Table 12. Cross-case Synthesis of Institutional Capacity and Built-Environment Outcomes

Dimension	KIP Jakarta	KOTAKU Pekanbaru	RTLH Ternate	Cross-case Inference
Regulatory Capacity	P: Institutional arrangements exist; compliance unverified.	P: Regulations exist; implementation alignment unclear.	P: Guidelines exist; provincial applicability unverified.	Regulations do not guarantee implementation compliance.
Administrative Capacity	K/TB: Weak records; beneficiary data unverified.	K: Fragmented data and budget reporting.	TB: Beneficiary verification and reporting unverified.	Reliable records are essential for accountability.
Technical Capacity	P/TB: Technical units exist; supervision unverified.	P/TB: Technical actors involved; quality control unverified.	TB: Technical competence and structural quality unverified.	Physical outputs do not prove technical compliance.
Financial Capacity	D/TB: Funding documented; long-term adequacy unclear.	D/K: Multilevel funding; budget constraints.	P/TB: Funding reported; adequacy unverified.	Funding availability does not ensure financial adequacy.
Coordinative Capacity	P/TB: Multiple actors; follow-up unclear.	K: Interagency coordination remains fragmented.	P/TB: Collaboration reported; responsibilities unclear.	Collaboration does not guarantee effective coordination.
Stakeholder Participation	D/K: Active implementation; limited design influence.	P/K: Uneven participation and maintenance challenges.	TB: Beneficiary participation unverified.	Participation in implementation differs from decision-making authority.

Comparison with Previous Studies

The findings extend previous research on institutional capacity (Sururi, 2022) and coordination constraints in KOTAKU (Zuhdi et al., 2024). This study links governance mechanisms to physical outcomes across three intervention scales: neighborhood infrastructure in KIP, settlement networks in KOTAKU, and dwelling rehabilitation in RTLH. Regulatory, administrative, technical, financial, and coordinative capacities, alongside community participation, support implementation but do not guarantee physical quality or sustainability. Therefore, institutional performance must be evaluated through both governance processes and verified architectural outcomes, including infrastructure functionality, housing adequacy, safety, and long-term durability alone.

CONCLUSIONS

Contribution and Three Evaluative Categories of Built-Environment Outcomes

The cross-case analysis identifies three distinct dimensions of built-environment success: physical delivery (S7.1), technical and spatial adequacy (S7.2–S7.3), and sustainability (S7.4). Completed infrastructure or housing works demonstrate implementation but do not necessarily verify technical compliance, functionality, or durability. These dimensions should therefore be assessed separately across neighborhood, settlement, and dwelling scales. Table 13 distinguishes three categories of built-environment success.

Table 13. Conceptual differentiation of built-environment success

Analytical Dimension	Institutional Question	Required Evidence
Delivery (S7.1)	Were planned works implemented?	Completion reports and verified site documentation.
Technical and Spatial Adequacy (S7.2–S7.3)	Do completed works meet physical and functional requirements?	Technical inspections, as-built records, and performance assessments.
Stewardship and Sustainability (S7.4)	Are physical conditions maintained over time?	Maintenance records, financing continuity, and longitudinal monitoring records

The theoretical contribution lies in linking five institutional capacities regulatory (R1), administrative (A2), technical (T3), financial (F4), and coordinative (C5) and stakeholder participation (P6) with three evaluative functions: delivery, technical assurance, and stewardship. Regulatory and administrative capacities support mandates and accountability; technical and financial capacities support construction and quality assurance; while coordination and participation are relevant to implementation and maintenance. These relationships provide an analytical framework rather than a demonstrated causal model or new performance index.

Cross-case Implications

Regulatory findings (R1) indicate that institutional arrangements and guidelines exist across the three programs, although compliance remains unverified. Administrative findings (A2) reveal documentation weaknesses in KIP, fragmented data in KOTAKU, and insufficient beneficiary verification in RTLH.

The three programs demonstrate different physical outcomes. KIP Jakarta improved infrastructure and accessibility (S7.1: D; S7.3: D), but housing adequacy was partially supported (S7.2: P), with maintenance constraints (S7.4: K) (World Bank, 1995). KOTAKU Pekanbaru reported infrastructure improvements (S7.1: D), while spatial quality remained partially verified (S7.3: P), housing adequacy undocumented (S7.2: TB), and maintenance challenges persisted (S7.4: K) (Zuhdi et al., 2024; Fitriana & Tinov, 2018). RTLH Ternate showed partial dwelling improvements (S7.1: P; S7.2: P), while infrastructure quality and long-term sustainability remained unverified (S7.3: TB; S7.4: TB) (North Maluku Provincial Executive Administration Bureau, 2025; Yahya, 2025).

Overall, physical improvements do not necessarily ensure technical quality or long-term sustainability, emphasizing the need to assess institutional governance alongside architectural outcomes.

Theoretical Proposition and Limits of Inference

The study proposes that institutional arrangements and completed physical works do not necessarily demonstrate technical quality or long-term sustainability. Assessing five institutional capacities and stakeholder participation alongside architectural outcomes helps distinguish implementation, technical assurance, and maintenance across different intervention scales. However, this framework is analytical rather than causal, given differences in documentary evidence. Insufficient evidence (TB) indicates a knowledge gap, while documented constraints (K) do not necessarily imply physical failure. Further verification through site inspections and longitudinal monitoring is therefore required.

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