

## **URBAN GROWTH MANAGEMENT IN AN URBANIZED REGENCY: SPATIAL EXPANSION, SETTLEMENT STRUCTURE, AND PLANNING IMPLICATIONS FROM KUDUS REGENCY, INDONESIA**

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*Urbanization in Indonesia increasingly unfolds outside formally designated cities, creating fast-growing urban territories that remain governed as regencies. This article examines Kudus Regency, Central Java, as a planning and management case of sustained non-city urbanization. Using longitudinal census and village-classification evidence for 1971–2020, district-level urbanization data for 1990, 2000, 2010, and 2020, and published qualitative evidence on infrastructure, industrial activity, and housing provision, the study develops a triangulated descriptive account of how demographic growth, village reclassification, and networked spatial expansion have produced a city-scale urban system within a regency framework. The results show a long-run increase in the urban population from 87,767 in 1971 to 788,240 in 2020, while the urbanization level rose from 19.53% to 92.82%. Between 1990 and 2020, the number of urbanized villages increased from 68 of 130 to 116 of 132. The main urban concentration grew from 233,017 to 375,495 inhabitants, while scattered urban concentrations expanded more sharply from 110,807 to 412,745 inhabitants, indicating that urban growth is no longer confined to the historic core. District evidence shows especially strong increases in Kaliwungu, Gebog, Jati, and Undaan, while Kecamatan Kota Kudus remained fully urbanized throughout the study period. Formal housing development remained spatially concentrated, with 38 housing complexes identified in total and 29 located in bordering districts, suggesting that informal and incremental settlement processes continue to absorb much of the regency’s urban growth. The findings position Kudus as a clear case of urban growth management under institutional lag: the territory functions as a city-scale urban system, yet it is still administered through a regency framework. The article contributes to management and planning research by documenting this administrative-spatial mismatch, clarifying the territorial pattern of growth, and showing why infrastructure sequencing, cross-district land-use coordination, and differentiated service planning are essential for urbanized regencies.*

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## INTRODUCTION

Urbanization has traditionally been analyzed through the growth of formally recognized cities. In practice, however, a substantial share of contemporary urban growth in developing countries now takes place outside established city boundaries, where population density, economic activity, and settlement expansion intensify in territories that are still institutionally treated as non-city space [5, 7, 10]. This mismatch has immediate consequences for planning and management. When a territory becomes functionally urban but continues to be governed through an administrative structure associated with predominantly rural space, infrastructure provision, land-use regulation, housing policy, and service allocation become harder to coordinate, slower to adapt, and more uneven across space.

Indonesia provides a particularly important setting for this issue. The country's administrative distinction between *kota* (city) and *kabupaten* (regency) often fails to capture the full extent of urban transformation taking place within regency territories. In many cases, urban populations and built-up activity are concentrated in towns and expanding settlements inside regencies rather than within autonomous cities. This makes urbanized regencies a major but still underexamined unit of planning practice, especially where formal institutions lag behind territorial change.

Kudus Regency in Central Java is an especially strong case. It is the smallest regency in the province by area, contains nine *kecamatan* (districts), and is located about 60 km east of Semarang [11]. By 2020, its urban population reached 788,240 and its urbanization level reached 92.82%, making it functionally comparable to a large urban territory even though it remains a regency [4, 11]. The area's long-established industrial base, high population density, and transport connectivity have supported the outward expansion of urbanized villages beyond Kecamatan Kota Kudus into bordering and then more distant districts.

This article examines Kudus as a problem of urban growth management rather than only as a demographic or spatial phenomenon. The central argument is that the case is directly relevant to the scope of management and planning research because it shows how institutional form can lag behind spatial transformation. The paper asks three related questions: (1) how has the urban transition unfolded across time and space within the regency, (2) which districts have absorbed the largest shares of urban growth, and (3) what kinds of planning and management responses are required when a regency begins to function as a city-scale urban system?

The contribution is twofold. Empirically, the paper assembles a longitudinal account of Kudus' urban transition using exact census and district-level evidence that is cross-checked across time, place, and settlement classification. Analytically, it reframes the case around planning relevance by linking urban population growth, village reclassification, transport infrastructure, and housing provision to the practical challenges of governing an urbanized regency. The paper does not claim causal identification; rather, it offers a carefully bounded, evidence-based interpretation of a planning problem that is common in rapidly urbanizing territories.

## LITERATURE REVIEW AND PLANNING RELEVANCE

The relationship between urbanization and economic transformation is well established in development and urban studies [5, 7]. Yet recent scholarship shows that urban growth is no longer adequately described by city-centered models alone. In many parts of Asia, urbanization has taken place through the densification of settlements, the reclassification of villages, and the spread of economic activity into previously non-city areas, producing extended urban territories that are only partially reflected in formal administrative boundaries [9, 10, 12].

This pattern is especially relevant to spatial planning. Once urbanization spreads through a regency, land-

use management can no longer rely on a simple distinction between an urban core and a rural periphery. Instead, planning must address multiple growth fronts: the densification of the historic center, the conversion of adjacent settlements, and the gradual emergence of secondary concentrations in more distant districts. These processes alter travel demand, increase pressure on infrastructure networks, complicate environmental regulation, and create uneven housing provision across the wider territory.

Kudus illustrates these issues clearly. The case sits at the intersection of urban growth management, territorial governance, and infrastructure planning. It shows how a high-density core can remain stable while adjacent and non-adjacent districts absorb increasing shares of growth. It also shows that transport infrastructure and industrial decentralization are plausibly linked to the geography of that change, even if the present design is descriptive rather than causal. As a result, the case is directly relevant to the concerns of the *Journal of Management and Planning Research*: it addresses spatial restructuring, administrative capacity, infrastructure coordination, and the strategic management of urban transition within a subnational territory.

## STUDY CONTEXT, DATA SOURCES, AND METHOD

### *Study Context*

Kudus Regency is located in Central Java and consists of nine districts: Kecamatan Kota Kudus, Bae, Jati, Kaliwungu, Dawe, Jekulo, Mejobo, Undaan, and Gebog [11]. The regency is historically known for its kretek-based industrial economy and long-standing concentration of non-agricultural activity. Its demographic and economic structure has made it one of the most urbanized regencies in Java.

For spatial interpretation, the case can be read in three broad zones. The first is the core area, consisting of Kecamatan Kota Kudus. The second includes the bordering districts directly adjacent to the core: Bae, Jati, and Kaliwungu. The third includes the surrounding districts that do not directly border the core: Dawe, Jekulo, Mejobo, Undaan, and Gebog [11]. This zonal structure is useful for planning because it distinguishes the historic urban center, the immediate urban expansion belt, and the wider field of secondary growth.

### *Data Sources*

The analysis draws on publicly reported census and village-level statistics for Kudus Regency and the district-level urbanization series compiled from those sources. The principal quantitative sources are *Kudus Dalam Angka* and related village-classification records for 1990, 2000, 2010, and 2020, together with census totals for 1971, 1980, 1990, 2000, 2010, and 2020 [1–4, 11]. The statistical evidence records the number of urbanized villages, the share of urban population, the urban population by district, and district-level population density. To improve evidentiary reliability, values reported across time periods are read comparatively and checked for internal consistency between long-run totals, district aggregates, and the village-classification series.

The paper also uses published qualitative evidence on road development, industrial activity, and housing provision in the regency. That evidence includes field observations and purposive interviews reported for 2022 with relevant public agencies and 15 housing developers [11]. These materials are used here not as a separate primary dataset, but as contextual evidence that helps interpret the timing and direction of the observed spatial changes. They are therefore used to support explanation, not to claim independent causal proof.

### Analytical Approach

The method is a longitudinal descriptive analysis with a planning orientation. First, the paper traces the long-run growth of the urban population and urbanization level from 1971 to 2020. Second, it examines district-level changes between 1990 and 2020 to identify which parts of the regency absorbed the strongest urban growth. Third, it interprets the observed pattern in relation to three planning mechanisms repeatedly documented in the Kudus case: (1) the persistence of a high-density core, (2) the outward spread of urbanized villages into connected districts, and (3) the concentration of formal housing in the core and bordering areas. A final validation step compares the long-run totals with district distributions and the evolution of urbanized villages so that the descriptive claims rest on convergent evidence rather than on a single indicator.

The approach is appropriate for management and planning research because it focuses on the translation of spatial change into governance implications rather than on demographic description alone. It is intentionally descriptive and case-based, which makes it well suited to identifying planning pressures and institutional mismatch, while also requiring careful restraint in causal interpretation.

## FINDINGS

### Long-Run Urban Transition

Table 1 shows the long-term trajectory of urban transition in Kudus Regency. The urban population rose from 87,767 in 1971 to 167,193 in 1980, then more than doubled to 343,824 in 1990. Growth continued thereafter, reaching 377,023 in 2000, 586,568 in 2010, and 788,240 in 2020. Over the same period, the total population increased from 449,432 to 849,184.

The urbanization level moved from 19.53% in 1971 to 31.20% in 1980, then crossed the majority threshold in 1990 at 55.89%. It remained near that level in 2000 at 55.72%, before accelerating to 76.72% in 2010 and 92.82% in 2020. Population density also increased steadily, from 1,057 persons per km<sup>2</sup> in 1971 to 2,003 persons per km<sup>2</sup> in 2020. Taken together, these measures show that Kudus had already assumed the demographic profile of an urbanized territory by the 1990s and had become overwhelmingly urban by 2020.

Table 1: Long-run urban transition in Kudus Regency, 1971–2020

Indicator	1971	1980	1990	2000	2010	2020
Urban population	87,767	167,193	343,824	377,023	586,568	788,240
Total population	449,432	536,321	615,209	676,591	764,606	849,184
Urbanization level (%)	19.53	31.20	55.89	55.72	76.72	92.82
Population density (per km <sup>2</sup> )	1,057	1,261	1,447	1,587	1,783	2,003

Source: Compiled from census and district statistics reported in *Kudus Dalam Angka* and related village records [1–4, 11].

For planning purposes, two points are especially important. First, the major shift occurred well before 2020: Kudus crossed into majority urban status in 1990. Second, the growth after 2000 was not marginal but structural. By 2020, the territory had become an urbanized regency whose scale and density justified city-like management even though its formal status had not changed.

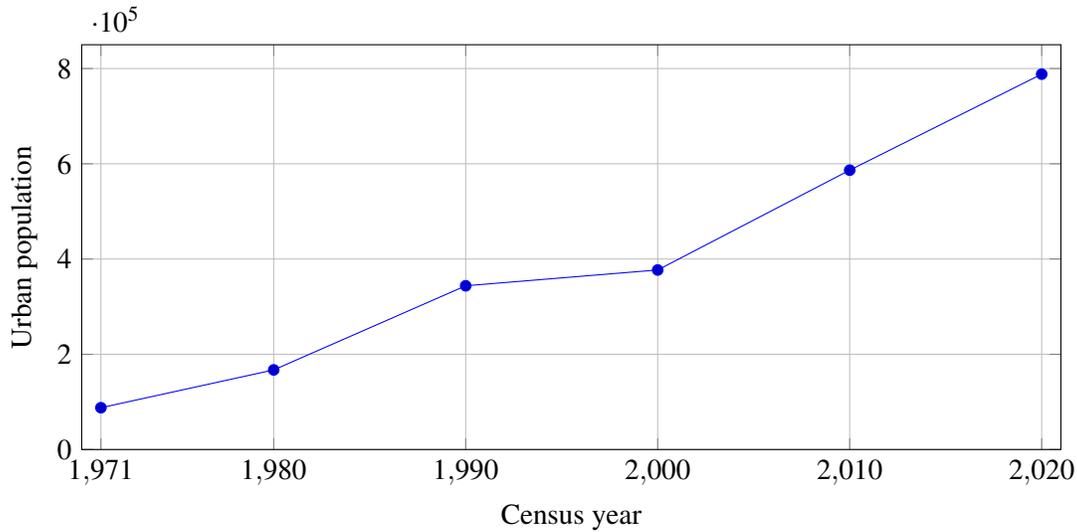


Figure 1: Urban population growth in Kudus Regency, 1971–2020.

### *Spatial Expansion of Urbanized Villages and District Transformation*

The district-level evidence clarifies how urban transition unfolded within the regency. In 1990, Kudus already had 68 urbanized villages out of 130, with 343,824 urban residents in total. By 2020, this had increased to 116 urbanized villages out of 132, with 788,240 urban residents. The number of urbanized villages therefore expanded substantially, and the change was not limited to the core district.

Kecamatan Kota Kudus was fully urbanized throughout the observed period, with 25 of 25 villages classified as urbanized in both 1990 and 2020. Its urban population remained high but relatively stable, moving from 93,562 to 89,480. In contrast, adjacent and more distant districts absorbed large shares of new urban residents. Kaliwungu increased from 28,996 to 103,293 urban residents, Gebog from 37,242 to 99,356, Jati from 61,418 to 108,819, and Undaan from 5,527 to 53,440. Jekulo and Mejobo also grew sharply, reaching 68,228 and 60,022 urban residents respectively by 2020.

Table 2: District urbanization profile in 1990 and 2020

District	1990 UV	1990 urban pop.	2020 UV	2020 urban pop.	Change
Kota Kudus	25/25	93,562	25/25	89,480	-4,082
Bae	10/10	49,041	10/10	73,903	24,862
Jati	11/14	61,418	14/14	108,819	47,401
Kaliwungu	5/15	28,996	15/15	103,293	74,297
Dawe	3/18	18,469	9/18	40,329	21,860
Jekulo	4/12	27,385	12/12	68,228	40,843
Mejobo	4/11	22,184	11/11	60,022	37,838
Undaan	1/14	5,527	10/16	53,440	47,913
Gebog	5/11	37,242	10/11	99,356	62,114
Urban areas in Kudus Regency	68/130	343,824	116/132	788,240	444,416

Notes: UV = urbanized villages compared with total villages in each district. Change = 2020 urban population minus 1990 urban population.

Source: District values reported in the Kudus district urbanization table [11].

The spatial structure of this change is equally important. In 1990, the core area of Kecamatan Kota Kudus contained all 25 of its villages as urbanized and housed 93,562 urban residents in about 10.5 km<sup>2</sup>. Together with 26 urbanized villages in bordering districts, it formed a main urban concentration of 51 urbanized villages over about 64.4 km<sup>2</sup>, with a combined population of 233,017 [11]. This already meant that Kudus possessed a substantial urban concentration despite not being designated as a city.

By 2020, the main urban concentration had grown to 64 urbanized villages and 375,495 inhabitants. More strikingly, the scattered urban concentrations outside that main cluster increased from 110,807 inhabitants in 1990 to 412,745 in 2020. The comparative increase across these two spatial groupings strengthens the conclusion that urban growth was increasingly distributed across the wider regency rather than remaining concentrated solely in the historic core and its immediate fringe.

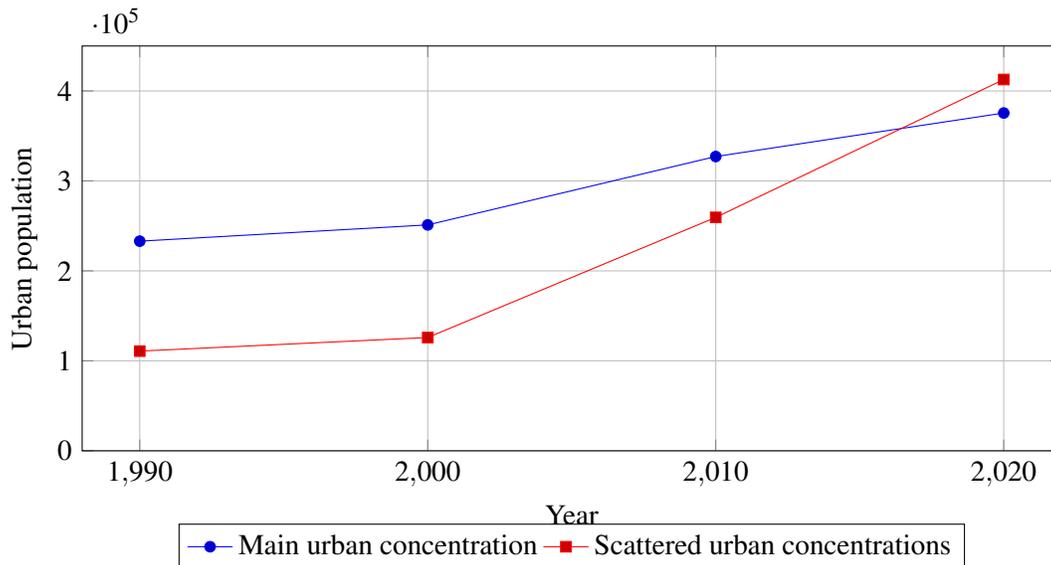


Figure 2: Urban population in the main and scattered urban concentrations, 1990–2020.

District density figures further support this reading. The core remained the densest part of the regency, rising from 8,933 persons per km<sup>2</sup> in 1990 to 9,450 in 2020. Bordering districts generally increased in density as well, with Jati moving from 2,966 to 4,138 and Bae from 2,103 to 3,169. Surrounding districts remained less dense overall, but several still experienced significant urbanization, especially Jekulo, Mejobo, and Gebog. This pattern suggests a layered urban structure: a persistent high-density core, a stronger adjacent urban belt, and a growing system of lower-density but increasingly urbanized secondary districts. Read together with the district totals and concentration trends reported above, the density pattern also reinforces the interpretation that territorial expansion, rather than simple core intensification, became the dominant form of urban growth.

#### *Infrastructure, Industrial Activity, and Housing Provision*

The observed spatial pattern is closely tied to the regency’s infrastructure and economic structure. The Kudus case is characterized by a long-standing industrial base, especially linked to its historic cigarette industry, and by a very high concentration of non-agricultural activity [11]. Published evidence on industrial location shows that large-scale industrial activity became less concentrated in the core and expanded into bordering districts, particularly Bae, Jati, and Kaliwungu, while also growing in Jekulo [11]. This is consistent with the interpretation that urban growth in Kudus has been shaped not only by demographic change but also by the spatial redistribution of employment and production.

Road infrastructure also played a strategic role. The ring road around the core was developed to divert traffic from the Pantura corridor and improve movement around the urban center. The southern sections became influential after completion in the early 2000s, while later extensions strengthened access toward the northwest [11]. This sequencing is consistent with the district pattern in Table 2: Jati reached 14 of 14 urbanized villages by 2010, Kaliwungu accelerated strongly after 2000 and reached 15 of 15 by 2020, and Gebog also expanded from 5 of 11 urbanized villages in 1990 to 10 of 11 in 2020. The evidence therefore supports a planning interpretation in which transport investment and urban expansion moved together, even though the present data do not isolate a single causal effect.

Housing provision reveals another important planning issue. Formal housing exists, but it remains a relatively limited component of the broader urbanization process. The published inventory identifies 38 housing complexes in total, with 29 located in bordering districts, only 4 in the core, and 5 in surrounding districts. This means formal housing development is strongly concentrated in the immediate expansion belt, while much of the regency’s urban population is still absorbed through denser, incrementally built settlements rather than through large-scale planned estates.

Table 3: Formal housing complexes in Kudus Regency by area and development era

Area	1980s	1990s	2000s	2010+	No info	Total
Core area	0	1	0	1	2	4
Bordering area	1	6	6	10	6	29
Surrounding area	0	3	0	2	0	5
Total	1	10	6	13	8	38

Notes: Area totals are aggregated from the district-level housing inventory: Kota Kudus (core); Bae, Jati, and Kaliwungu (bordering); Jekulo and Mejobo (surrounding).  
Source: Compiled from the housing-complex table and related field evidence reported for Kudus Regency [11].

The planning meaning of Table 3 is straightforward. Formal housing followed urban concentration, especially in the border districts, but did not dominate the regency’s overall settlement transition. As a result, urban management in Kudus cannot rely only on formal estate development as a policy lever. It must also address the service, infrastructure, and regulatory needs of dense and incrementally transforming settlements that are growing outside the formal developer-led supply channel.

## PLANNING AND MANAGEMENT IMPLICATIONS

The findings point to four practical implications for management and planning research.

First, Kudus should be treated analytically as an urbanized regency rather than as a residual non-city territory. By 2020, the regency had 92.82% of its population living in urban areas, a population density above 2,000 persons per km<sup>2</sup>, and an urban population approaching 800,000. In planning terms, these are not marginal urban characteristics. They indicate a city-scale functional territory managed through a regency framework.

Second, the geography of growth requires cross-district planning. The core remains important, but some of the largest gains occurred outside Kecamatan Kota Kudus, especially in Kaliwungu, Gebog, Jati, and Undaan. This means that transport, drainage, housing services, and public facilities cannot be planned effectively through a core-only lens. The dominant management challenge is no longer urban containment within the center; it is coordinated service provision across a widening urban field.

Third, infrastructure investment should be recognized as a structuring force. In Kudus, road expansion is closely associated with growth in connected districts. For planning practice, this means transport infrastructure should be evaluated not only for congestion relief but also for its likely role in shaping land conversion, housing demand, and industrial decentralization. Ring roads and regional corridors can rapidly reorganize settlement geography when population pressure and economic activity are already high.

Fourth, housing management requires a dual strategy. Because formal housing remains limited relative to total urban growth, planners must address both planned estates and informal or incremental settlement expansion. This calls for a combination of serviced land provision, upgrading strategies, local road access, and utility expansion in districts where urbanization has outpaced formal housing production.

Taken together, these issues show why the case belongs within the domain of management and planning research. The central problem is not simply that Kudus urbanized; it is that urbanization advanced faster than the institutional and planning tools used to govern it. Within the limits of a descriptive design, the consistency of the demographic, territorial, and housing evidence makes these implications sufficiently well supported for planning interpretation.

## CONCLUSION

Kudus Regency demonstrates how a regency can become functionally urban at city scale without corresponding administrative reclassification. Longitudinal evidence shows a clear transition from a partly urban territory in 1971 to an overwhelmingly urbanized regency by 2020. The urban population increased from 87,767 to 788,240, while the urbanization level rose from 19.53% to 92.82%. Between 1990 and 2020, urbanized villages increased from 68 of 130 to 116 of 132.

The spatial pattern of that change matters as much as its magnitude. Kecamatan Kota Kudus remained fully urbanized and highly dense throughout the study period, but the strongest population gains increasingly occurred in bordering and surrounding districts. The main urban concentration grew substantially, yet the scattered urban concentrations grew even faster, indicating a broader territorial urban system rather than a single compact core. Industrial decentralization, ring-road development, and concentrated but limited formal housing provision are all consistent with this outcome and help explain why growth was redistributed across the regency.

The case therefore offers a clear planning lesson: urbanized regencies require management frameworks that match their functional reality. Where urban growth spreads beyond the formal city and across multiple districts, planning must shift toward integrated territorial governance, network-based infrastructure strategy, and settlement management that includes both formal and incremental urbanization. Because the study is intentionally descriptive and case-based, its strongest contribution is not causal proof but a well-supported planning diagnosis of administrative-spatial mismatch. On that basis, Kudus is not only a case of urban growth; it is a case of institutional adaptation under rapid spatial change.

## DATA AVAILABILITY STATEMENT

All quantitative values used in this manuscript are drawn from publicly reported census and district statistics for Kudus Regency as published in *Kudus Dalam Angka*, village-classification records, and the cited scholarly synthesis of those materials. No proprietary dataset was used.

## DECLARATION OF CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

## FUNDING

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