



Ministry of Planning
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Government of Pakistan



**URAAN
PAKISTAN**
توشائیں ہے پرواز ہے کام تیرا

BALANCING URBAN GROWTH AND FARMLAND PROTECTION

2026

Planning Commission

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The team appreciates the support of SUPARCO for providing satellite-based land-use assessment data, which formed a critical basis for analyzing urban expansion patterns across major cities. The team also recognizes the Pakistan Bureau of Statistics for supplying national-level economic and demographic data essential to this study.

The team further acknowledges the support of the World Bank as a key development partner, whose insights contributed to the analytical framework of the report.

The team also recognizes the valuable inputs received from relevant federal and provincial stakeholders, including representatives from planning, agriculture, revenue, local government, and climate-related institutions. Their perspectives and domain expertise have significantly enriched the analysis and policy recommendations presented in this report.

MESSAGE BY MINISTER

I am pleased to present this report, Balancing Urban Growth and Farmland Protection in Pakistan, an important policy roadmap developed under the third “E” of URAAN Pakistan, Environment and Climate Change. As we implement the 5Es-based National Economic Transformation Plan (2024-29), this report tackles a challenge at the intersection of our economic future and national survival: the unchecked loss of our most fertile agricultural land to unplanned urban sprawl.



Our agricultural land is the foundation of food security, the bedrock of the rural economy, and a repository of our national heritage. Unfortunately, weak governance and speculative real estate practices have allowed haphazard housing expansion to eat away at our most productive farmlands, the citrus plantations of Sargodha, the mango orchards of Multan, the date farms of Khairpur. This is a direct threat to the prosperity of our farmers and the very notion of self-sufficiency. The status quo, where fertile land is treated as a commodity for quick profit, is a disservice to coming generations. We must chart a new course.

A central weakness has been the persistent neglect of local governments. The 18th Amendment envisioned empowered local tiers as the primary agents of planning and implementation. Instead, we have witnessed provincial centralization, leaving urban governance fragmented and master plans unenforced. Reversing this requires genuine devolution, giving cities and tehsils the authority, resources, and technical support to manage their own growth.

I commend the Member (Infrastructure & Regional Connectivity) and his entire team for their diligence and professionalism in preparing this report. With coordinated effort and unwavering resolve, we can build a future where our cities thrive while preserving the land that feeds us.

Pakistan Zindabad.

Prof. Ahsan Iqbal

Minister for Planning, Development and Special Initiatives

EXECUTIVE SUMMARY

Pakistan is experiencing an accelerating loss of fertile agricultural land due to unchecked urban sprawl, fragmented governance, and weak land-use regulation. Under the second “E” of URAAN Pakistan, Environment and Climate Change, the Government of Pakistan has prioritized addressing these risks to food security and sustainable development. In support of these objectives, this report outlines a policy roadmap for sustainable urbanization and agricultural land preservation by reviewing existing frameworks, assessing land-use trends, and proposing actionable reforms.

SUPARCO’s satellite assessment shows significant horizontal expansion in major cities, Islamabad (104%), Quetta (72%), Lahore (59%), Karachi and Peshawar (43% each) between 2005 and 2022, much of it at the cost of productive peri-urban farmland. Rapid population growth, rising urbanization, and concentration of people in provincial capitals further intensify these conversion pressures.

Global experiences from countries such as Japan, India, Bangladesh, the USA, and China demonstrate the benefits of compact development, transit-oriented planning, vertical mixed-use growth, and tools like Transfer of Development Rights (TDR) to conserve agricultural zones.

Based on national evidence and global best practices, 12 priority actions are recommended for federal and provincial governments. These include: protecting high-value agricultural and peri-urban lands; introducing Transfer of Development Rights; preparing statutory land-use maps and master plans; promoting vertical, mixed-use redevelopment and Land Pooling; implementing transit-oriented development and urban transport plans; strengthening rural land-use planning; and establishing provincial urban units for coordinated and sustainable urban growth.

Together, these reforms offer a coherent pathway to safeguard high-value farmland, guide cities toward efficient and climate-resilient growth, and strengthen Pakistan’s long-term food security.

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1. BACKGROUND

Sustainable urbanization has emerged as a central policy challenge in Pakistan, driven by rapid demographic growth, rural-to-urban migration, and evolving economic structures. While urbanization can enhance productivity and improve access to services, its prevailing pattern—characterized by low-density horizontal expansion and weak regulatory oversight—has led to significant encroachment upon fertile agricultural land, particularly in peri-urban areas.

This pattern of land conversion is closely linked to structural weaknesses in land-use governance. Fragmented institutional responsibilities across federal, provincial, and local tiers, coupled with the absence of integrated spatial planning frameworks, have limited the effectiveness of regulatory controls. In many cases, urban development is guided by incomplete land-use data, outdated master plans, and weak enforcement mechanisms, resulting in inefficient land allocation and the proliferation of unplanned housing developments.

At the same time, agriculture remains a critical pillar of Pakistan's economy and food security system. The ongoing conversion of high-quality agricultural land to urban uses not only constrains domestic food production capacity but also disrupts rural livelihoods and increases vulnerability to external supply shocks. These dynamics underscore the need for a more balanced and coordinated approach to managing urban growth.

To examine these challenges, this study adopts a multi-dimensional analytical framework combining policy review, spatial analysis, and comparative international assessment. First, the study reviews existing legal, institutional, and policy frameworks governing land use and urban development to identify key gaps related to regulatory fragmentation, data limitations, and enforcement capacity.

Second, spatial patterns of urban expansion are assessed using satellite-based land-use data, including analyses conducted by SUPARCO, to quantify the scale and distribution of horizontal growth across major urban centers.

Third, a comparative assessment of international practices is undertaken to identify policy instruments and planning approaches that have effectively managed urban growth while preserving agricultural land. These include compact city development, transit-oriented planning, vertical mixed-use development, land pooling mechanisms, and market-based tools such as Transfer of Development Rights.

By integrating these analytical components, the report develops an evidence-based understanding of land-use change in Pakistan and identifies reform pathways to strengthen planning systems, improve land governance, and support more sustainable and resource-efficient urban development.

2.AGRICULTURE SECTOR OVERVIEW

Agriculture remains a foundational pillar of Pakistan's economy, distinguished by its relative stability compared with other major sectors. Over the past decade, the sector has grown at an average of 2.8 percent, and notably, has never recorded a contraction in any financial year. Yet, its growth ceiling has remained modest, with the highest annual increase recorded at 6.4 percent in FY2023–24 (Figure 1).

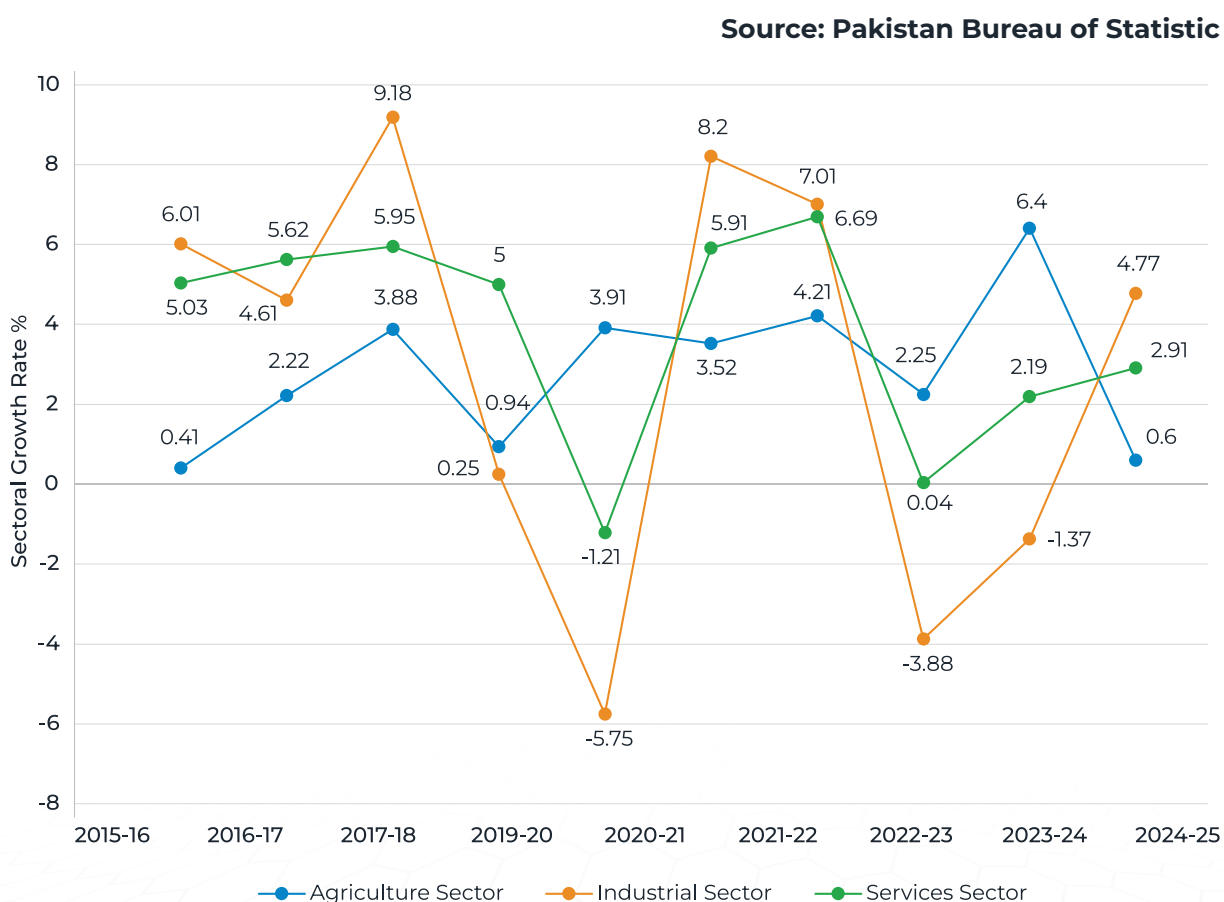


Figure 1: Annual Growth of Pakistan's Major Sectors (FY15-25)

Agriculture’s macroeconomic importance extends beyond output. The sector contributes approximately 24 percent to Pakistan’s GDP (Figure 2) and remains the single largest employer, still accounting for one-third of the country’s total employment despite a long-term downward trend, from 42.3 percent in FY2014–15 to 33.1 percent in FY2024–25 (Figure 3). This gradual reduction not only indicates increased mechanization and structural shifts in the labour market, but it also underscores the continued dependence of millions of households on agricultural livelihoods.

Source: Pakistan Bureau of Statistics

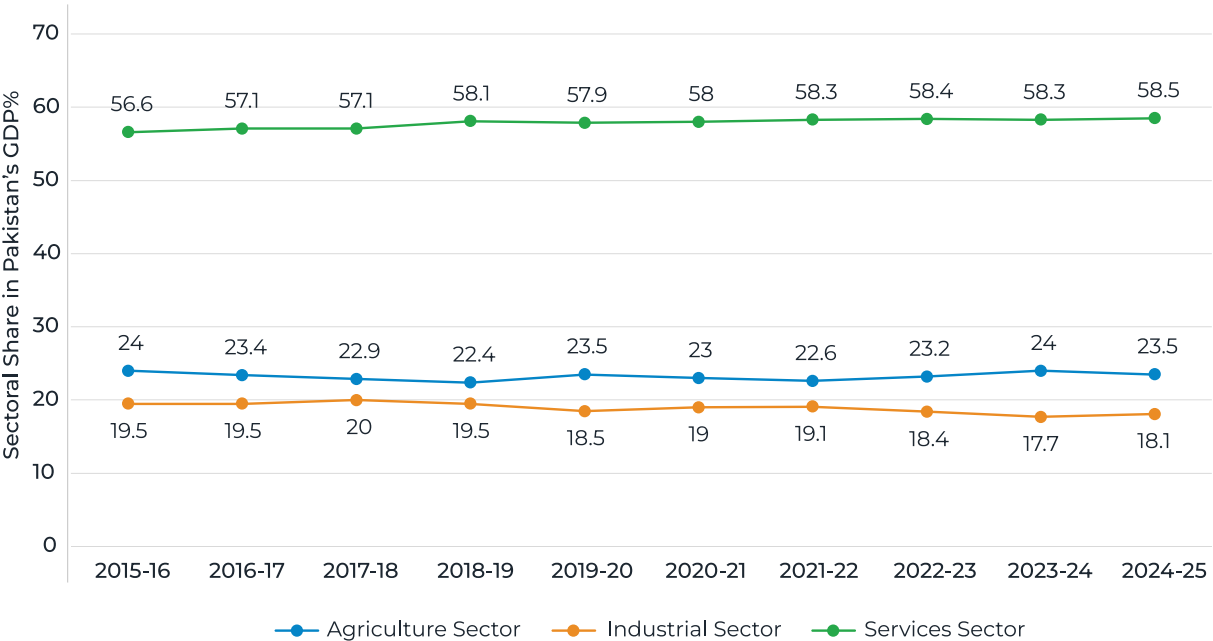


Figure 2: Sectoral Share in GDP (2015-25)

Land-use indicators reinforce this mixed picture. Between 2010 and 2024, Pakistan’s total farmland expanded by 12% with an additional 4.8 million acres brought under agricultural use. Cultivated area also increased significantly, rising from 80.5% to 89% of total cultivable land (Figure 4). The most notable improvement occurred in Balochistan, where cultivated land more than doubled, reflecting substantial new land brought under production and contributing to improved national food availability.

Source: Pakistan Bureau of Statistics

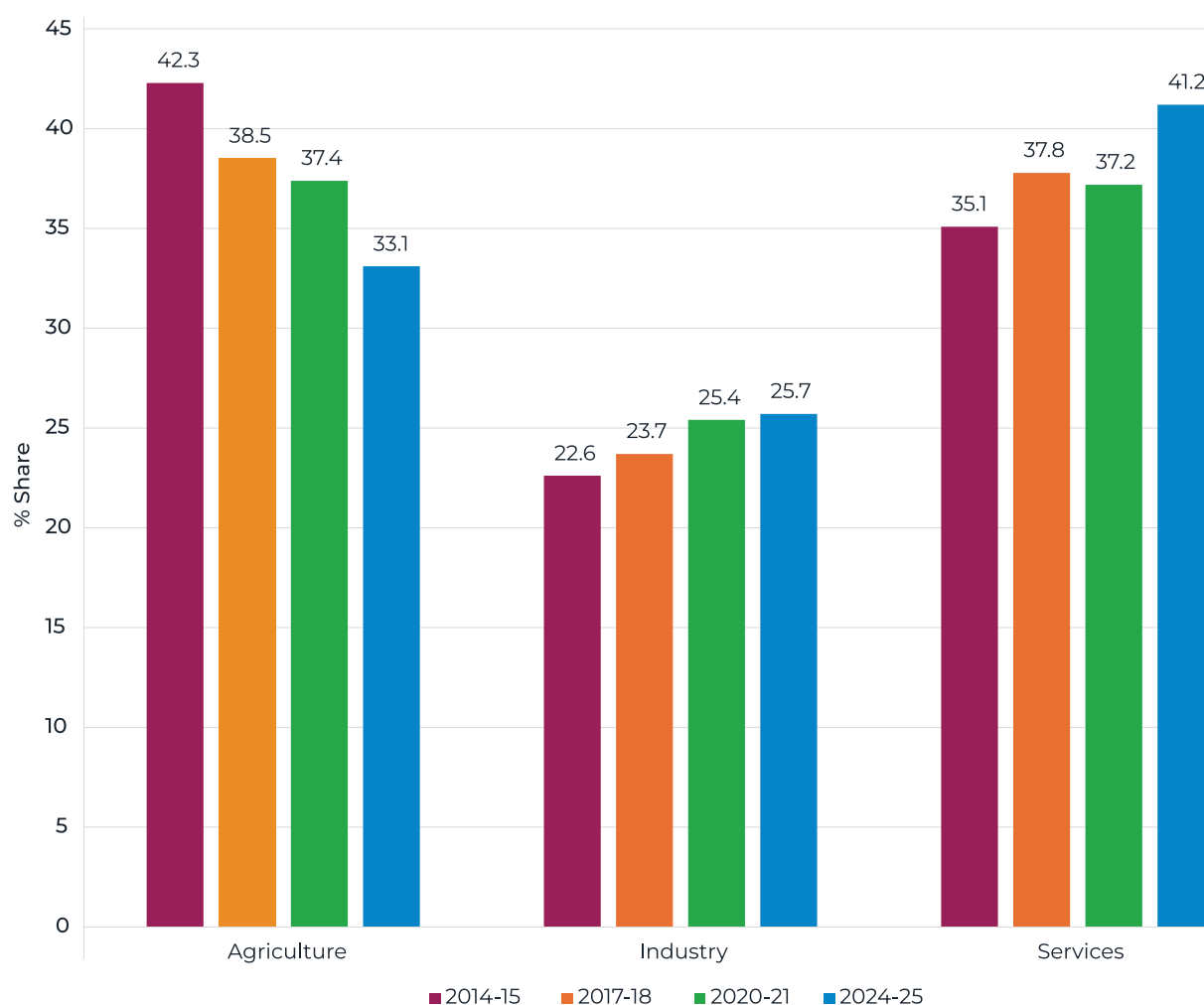


Figure 3: Change in Employment Share of Pakistan's Major Sectors (FY14-25)

Yet, these gains are occurring alongside demographic pressures that compress the margin between demographic expansion and agricultural output growth. The national population growth rate rose from 2.4% (1998–2017) to 2.55% (2017–2023), a reversal of the global trend of declining growth rates (Figure 9). This intensifying population pressure places increasing strain on agricultural output and heightens the importance of protecting productive land.

Accordingly, despite the expansion in farmland, cultivated area, and productivity, safeguarding high-value agricultural land remains an essential national priority. Rapid urban encroachment, particularly through unregulated housing schemes on fertile peri-urban belts, poses a long-term threat to food security, regional crop specialisation, and the ecological foundation of Pakistan’s agriculture. Without strong land protection and planning mechanisms, these emerging risks may offset recent productivity gains and undermine national economic and food-system stability.

Source: Pakistan Bureau of Statistics

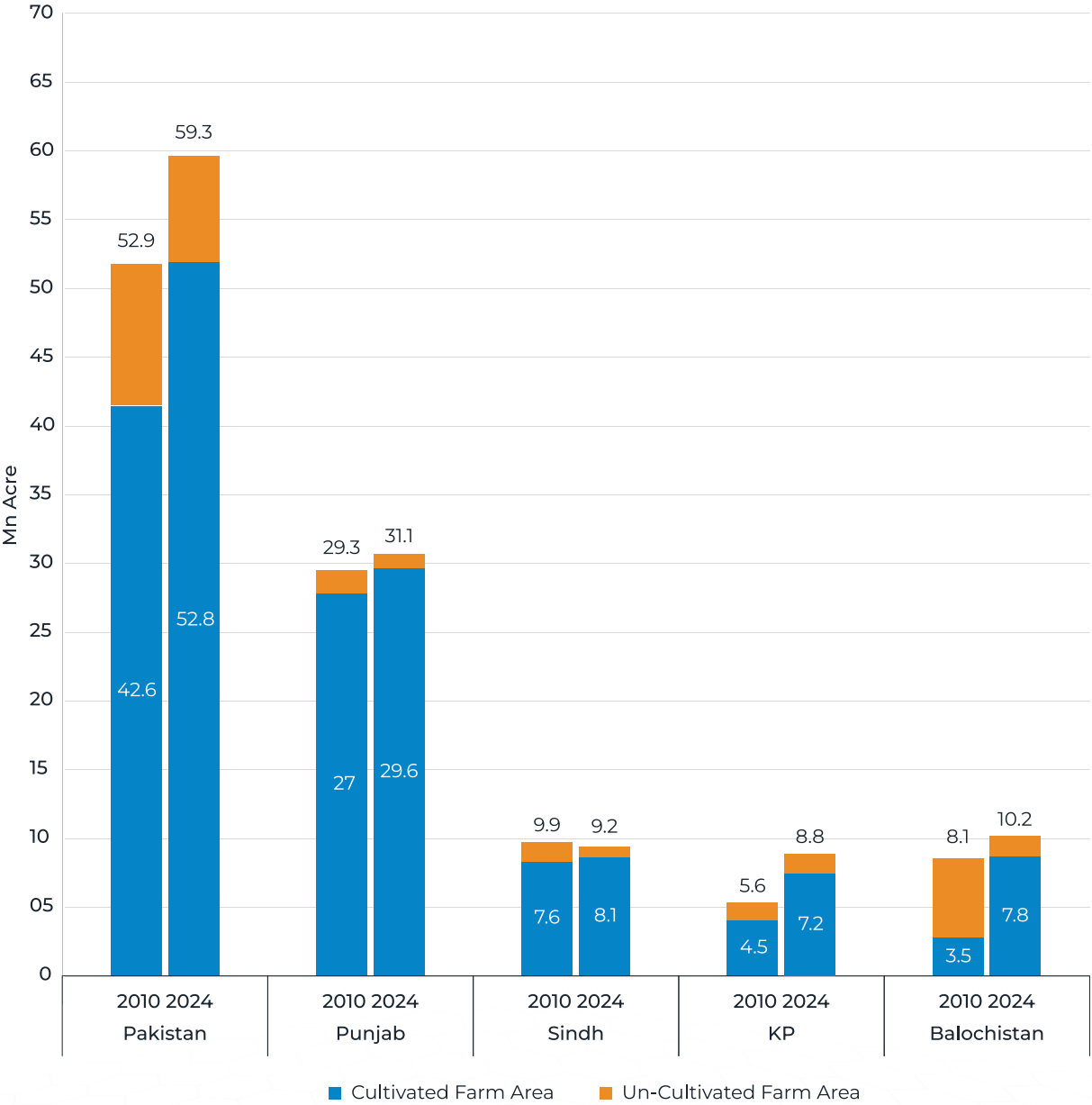


Figure 4: Pakistan’s Farm Land Expansion and Utilization (FY10-24)

3.URBAN DEMOGRAPHICS TRENDS

Pakistan has experienced a sustained and substantial demographic expansion over the past quarter century, with the national population increasing from 132 million in 1998 to 241.5 million in 2023 (Figure 5). This scale of growth has intensified pressure on land, infrastructure, and public services. Punjab and Sindh have continued to expand at significant rates, contributing the largest absolute increments due to their already sizeable population bases. Similarly, Balochistan and Khyber Pakhtunkhwa have witnessed the most accelerated increases, with both provinces more than doubling their populations over the period under review.

Source: Pakistan Bureau of Statistics

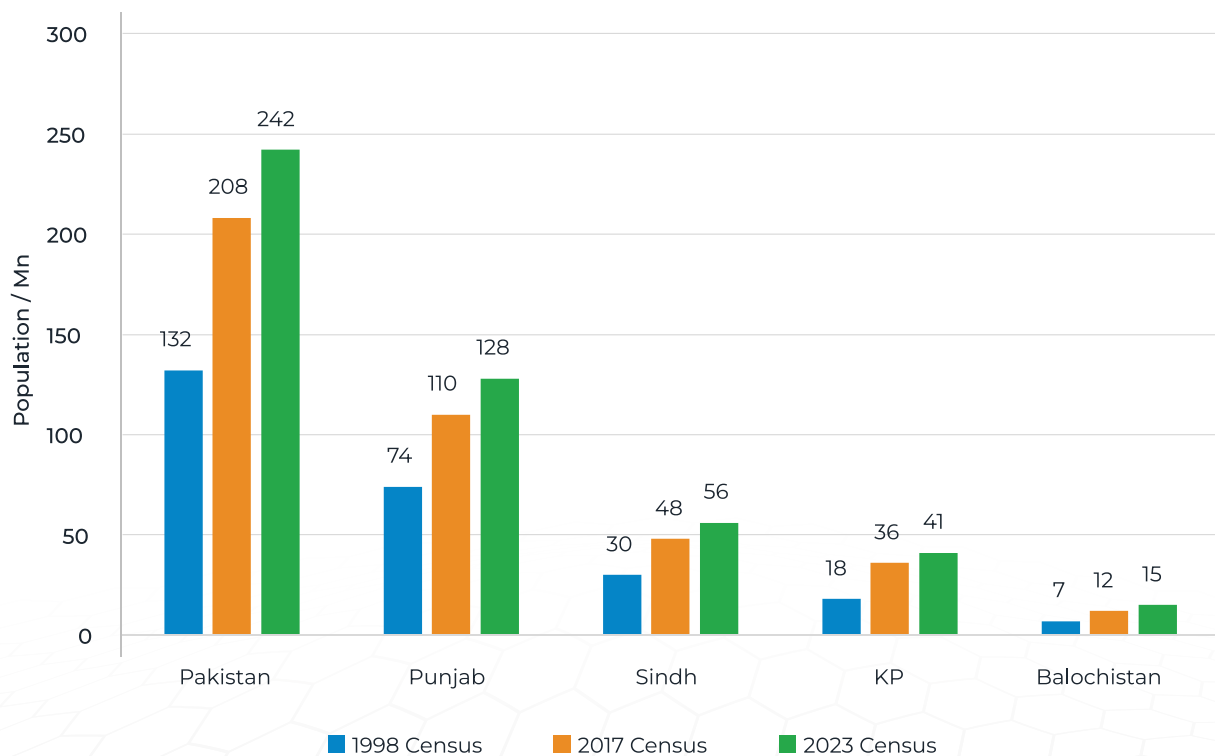


Figure 5: National / Provincial Population (1998-2023)

Moreover, the total urban population increased substantially between 2017 and 2023, rising from approximately 76 million to 94 million and adding over 18 million new urban residents within a six-year period (Figure 6). Punjab accounted for nearly half of this increase, followed by Sindh, Balochistan, and Khyber Pakhtunkhwa. This divergence in growth intensity underscores the distinct demographic dynamics shaping each region, with implications for spatial planning, public service delivery, and long-term development policy.

Source: Pakistan Bureau of Statistics

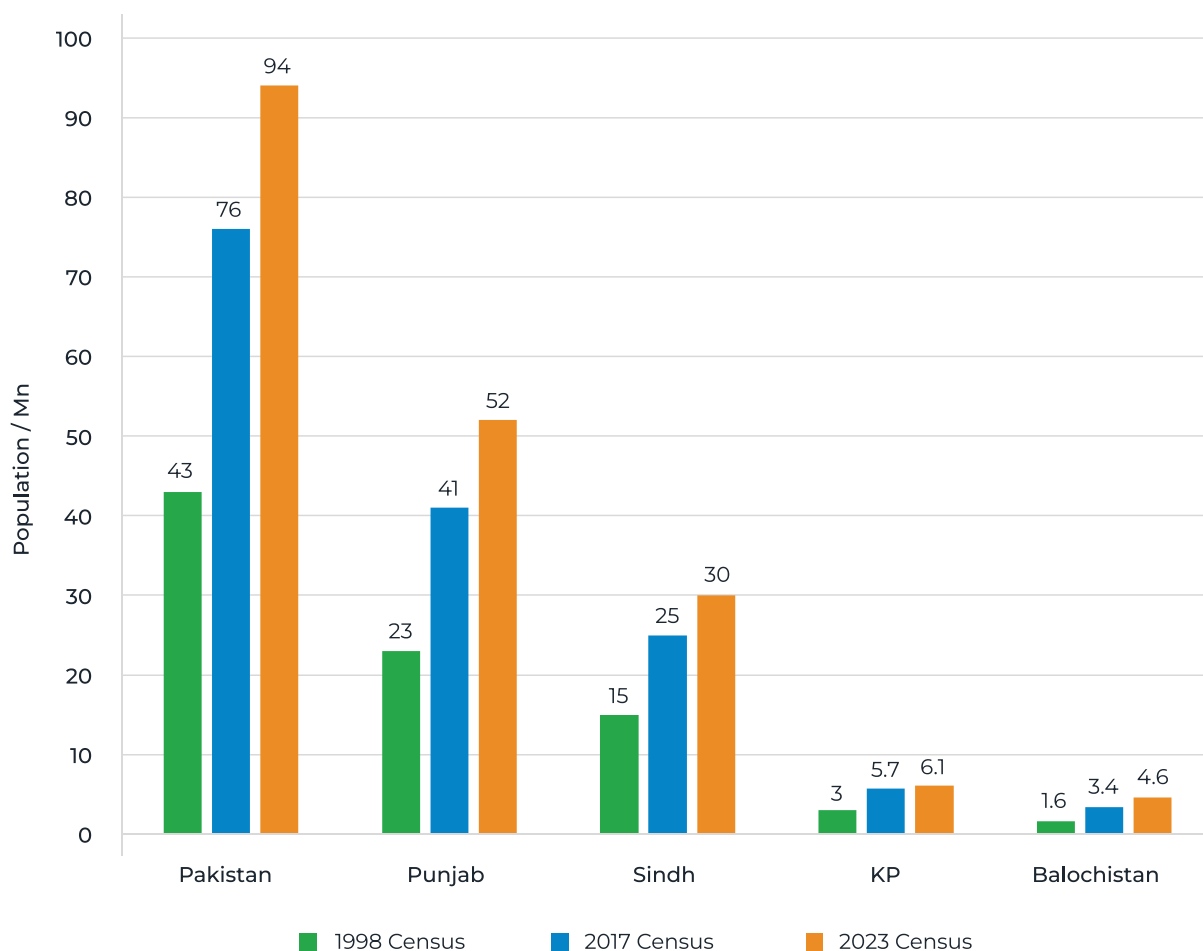


Figure 6: National / Provincial Urban Population (1998-2023)

In proportional terms, Pakistan’s urban population share increased from 36.4% of the total population in 2017 to 38.8% in 2023, reflecting the continued expansion of urban settlements across the country (Figure 7). Sindh remained the most urbanized province, with its urban share rising from 51.9% to 53.7%, largely concentrated within the Karachi metropolitan region. In contrast, Khyber Pakhtunkhwa remained the least urbanized province and was the only province where the urban share of the total provincial population declined during the period, falling to 15% in 2023.

Source: Pakistan Bureau of Statistics

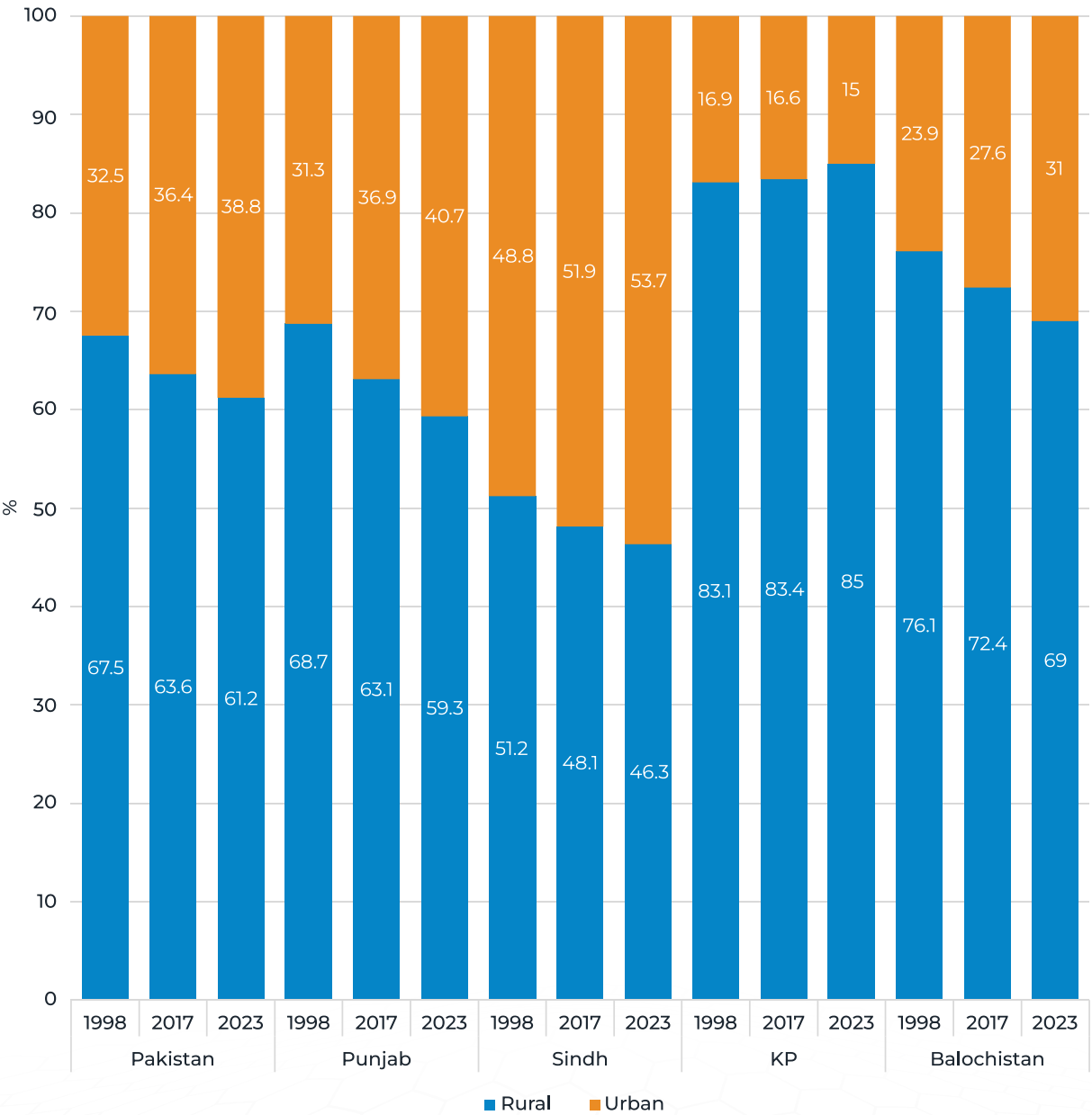


Figure 7: National / Provincial Urban-Rural Population Ratio (1998-2023)

In line with Pakistan's population growth, the national population density has risen sharply. Density increased from 166 persons/km² in 1998 to 303 persons/km² in 2023 (Figure 8), representing an 82% rise. Punjab and Sindh now exhibit densities that exceed 620 persons/km² and 395 persons/km² respectively, while Khyber Pakhtunkhwa's density has also grown substantially. Although Balochistan remains sparsely populated, its upward trend is evident. This trend underscores the escalating competition for land and the need for compact, vertical and transit-oriented urban development rather than continued horizontal expansion.

Source: Pakistan Bureau of Statistics

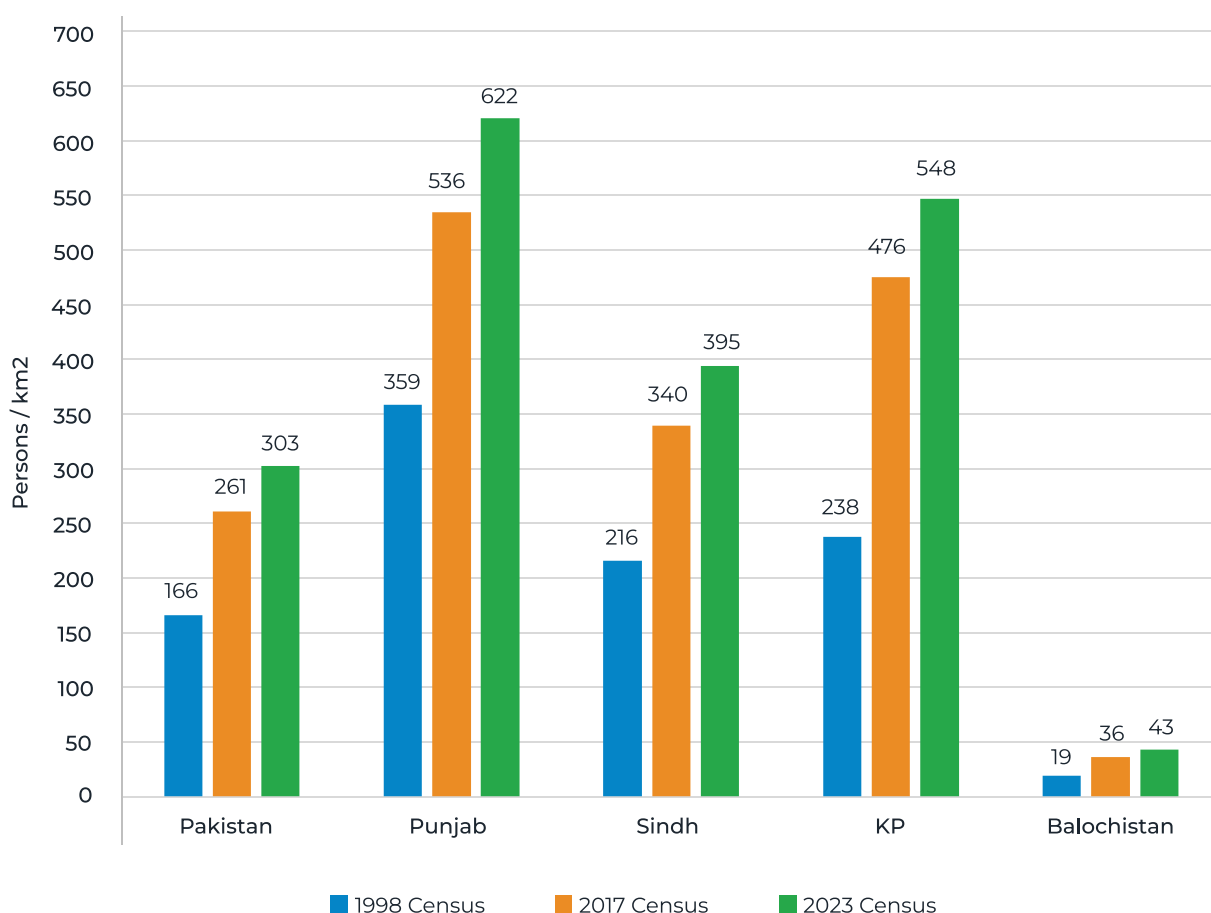


Figure 8: National / Provincial Population Density (1998-2023)

Pakistan's population growth rate, after declining from 2.7% in 1998 to 2.4% in 2017, rose again to 2.55% during 2017–2023, reversing the earlier downward trend at a time when global population growth rates are generally slowing (Figure 9). Urban population growth also continued to outpace rural growth, averaging 3.7% annually compared to 1.9% for the rural population. Together, these trends indicate accelerating demographic pressure on urban centres, particularly in provinces already experiencing rapid urban expansion and increasing land-use stress.

Source: Pakistan Bureau of Statistics

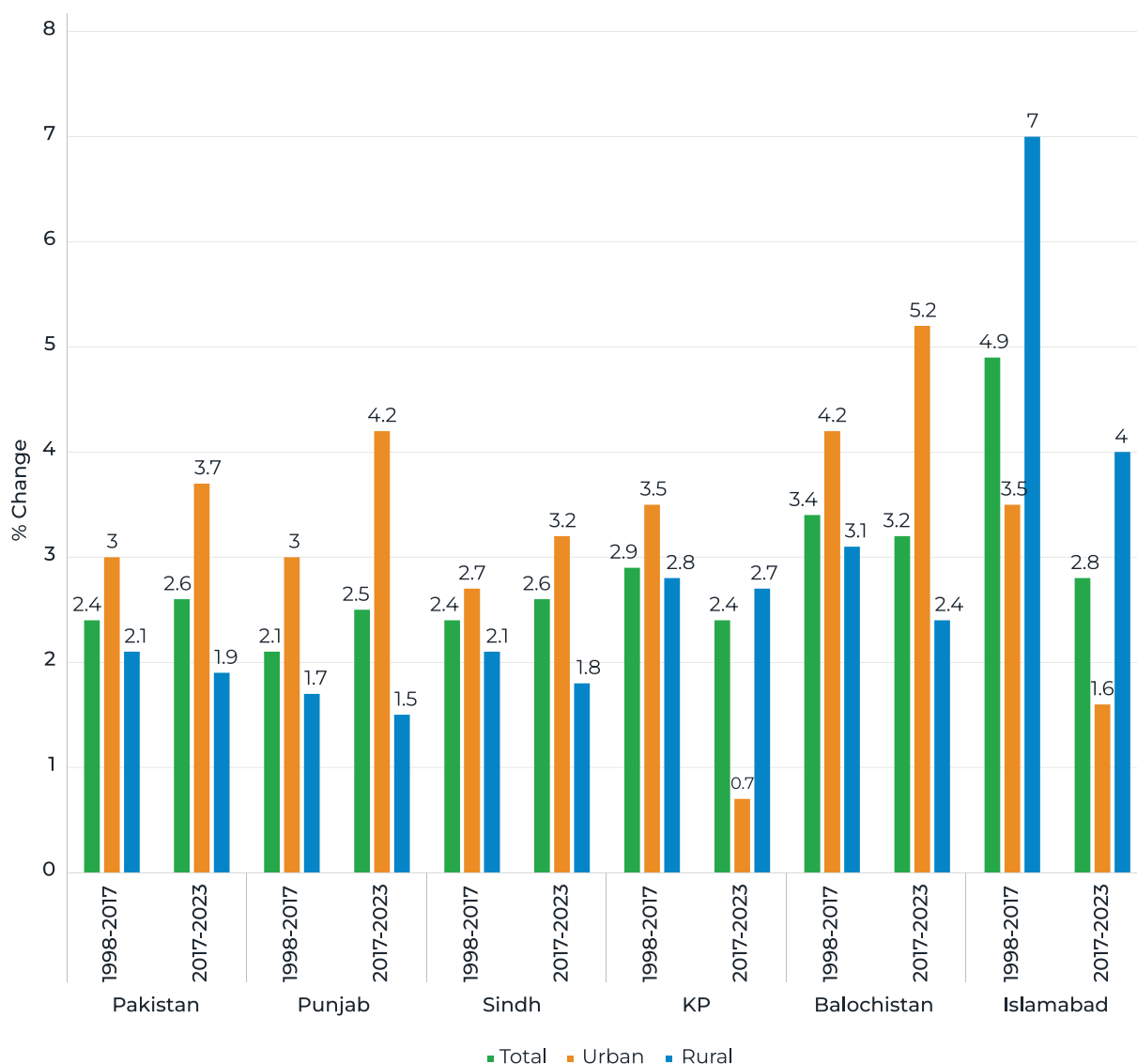


Figure 9: National / Provincial Average Annual Population Growth Rate (1998-2023)

Provincial patterns reinforce these concerns. In 2023, Balochistan recorded the highest population growth rate at 3.2%, while KP stood lowest at 2.4%. Although both provinces saw slight declines since 2017, Punjab and Sindh experienced increases, with Punjab showing the sharpest rise from 2.1% to 2.5% during 2017–2023. Growth acceleration in Punjab and Sindh, where urban concentration and agricultural land conversion are already most acute, intensifies demand for housing and services, further straining peri-urban farmland. Conversely, high but declining growth in Balochistan continues to pressure a province with limited institutional capacity. These trends underscore the need to integrate population management into broader urbanization and land-use policy to prevent further erosion of productive agricultural land.

Provincial capitals continue to dominate Pakistan's urban hierarchy, reflecting a highly concentrated form of urbanization. Karachi alone accounts for 33.9% of Sindh's total population and 62.9% of the province's urban population, representing 7.8% of Pakistan's national population and 20.1% of its total urban population (Table 1). Lahore, Peshawar, and Quetta also command significant shares of their respective provincial populations.

These distributions are shown in Table 1, which captures the degree of primacy exhibited by major cities. It demonstrates that Pakistan's urbanization pattern is heavily centralized around a few metropolitan cores, resulting in spatial imbalance, heightened service pressures, and rapid peri-urban expansion as these cities absorb disproportionate demographic growth.

The pattern of urban concentration seen in the provincial capitals is reflected across Pakistan's entire urban system. While cities such as Karachi, Lahore, Peshawar, and Quetta already dominate their provincial urban populations, the national distribution, shown in Table 2, demonstrates a similar centralization: over half of Pakistan's urban population (55.2%) resides in just 46 cities with more than 500,000 people, with another 13.3% living in the next tier of large cities. Thus, merely 89 cities account for nearly two-thirds of all urban residents.

Source: Pakistan Bureau of Statistics

Provincial Capital City	Population Size (2023)	% Share in Total Population		% Share in Urban Population	
		National	Provincial	National	Provincial
Quetta	1,565,546	0.6	10.5	1.6	34.0
Peshawar	1,905,975	0.8	4.65	2.0	30.1
Lahore	13,004,135	5.4	10.2	13.8	25.0
Karachi	18,868,021	7.8	33.9	20.1	62.9

Table 1: Share of Provincial Capital Cities in National and Provincial Population

This degree of concentration intensifies the pressures noted earlier, as a small number of rapidly expanding metropolitan areas drive most of the demand for land, resulting in significant conversion of high-value peri-urban agricultural land. The national urban hierarchy therefore reinforces the same planning and land-use challenges observed at the provincial level.

Source: Pakistan Bureau of Statistics

Population Size	Total Localities	Total Inhabitants	% Share in National Urban Population
Census 2023			
500,000 and above	46	51,781,590	55.2
200,000 to 499,999	43	12,474,448	13.3
100,000 to 199,999	76	10,530,232	11.2
50,000 to 99,999	134	9,461,324	10.1
Below 50,000	358	9,637,108	10.3

Table 2: Share of Urban Localities in National Urban Population

Migration trends further reinforce the growing concentration of population within major urban centers. Migration in Pakistan may broadly be categorized into intra-provincial migration (movement within the same province), inter-provincial migration (movement between provinces), and overseas migration. As illustrated in Figure 10, intra-provincial migration continued to constitute the overwhelming share of total migration across all provinces during both 2020–21 and 2024–25, indicating that most population movement occurs within provincial boundaries, largely toward major cities and peri-urban regions.

Inter-provincial migration, however, showed a noticeable increase across all provinces between 2020–21 and 2024–25, except KP. Sindh recorded the highest share of inter-provincial migrants in total migration, increasing sharply from 27.9% to 43.7%, followed in 2024–25 by Balochistan (22.4%), Punjab (20.3%), and Khyber Pakhtunkhwa (10.6%). Much of this migration is concentrated in urban centers, particularly Karachi and Lahore, contributing to rising demand for housing, infrastructure, and urban land.

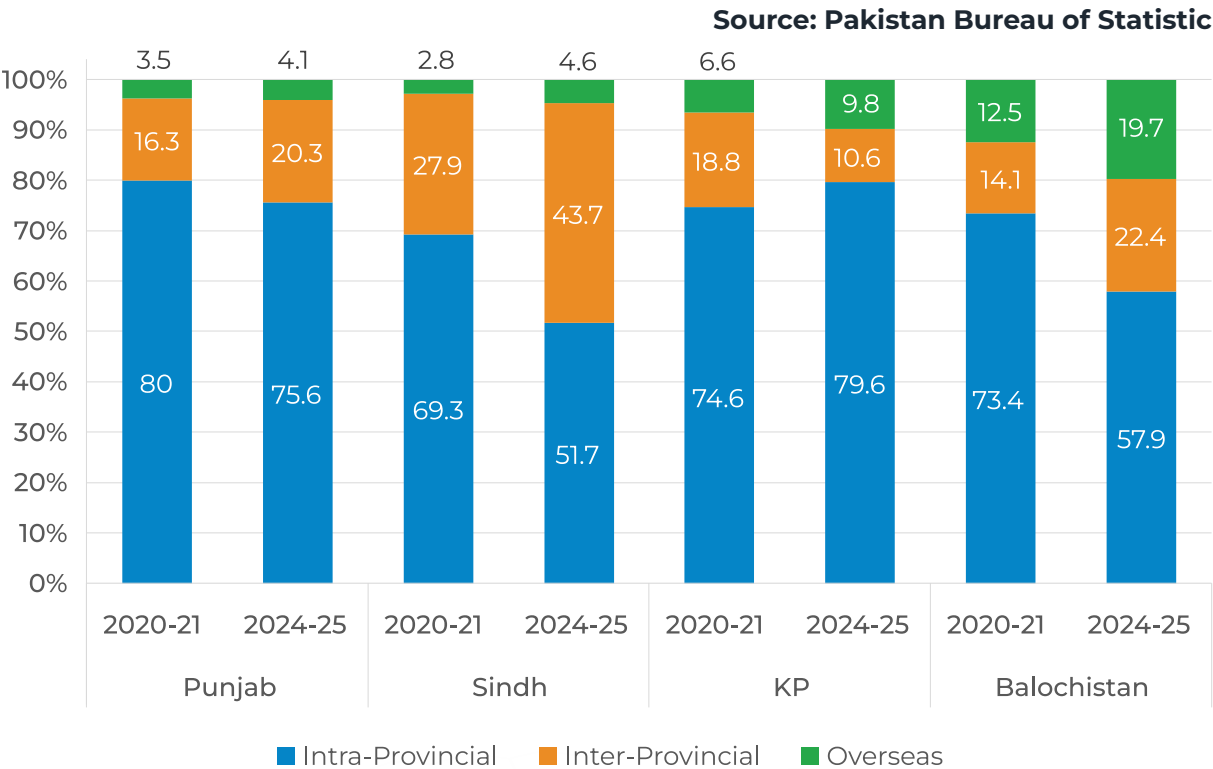


Figure 10: Migration patterns breakdown, by province (2021-2025)

Overseas migration remained comparatively smaller in overall proportional terms but increased across all provinces between 2020–21 and 2024–25. The highest shares were observed in Khyber Pakhtunkhwa and Balochistan, where overseas migration rose from 6.6% to 9.8% and from 12.5% to 19.7% respectively during the period.

A further breakdown of inter-provincial migration patterns is presented in Table 3. Punjab and Sindh remained the principal net recipient provinces, recording net in-migration of approximately 1.71 million and 0.66 million persons respectively. Sindh’s inflows were primarily concentrated in Karachi due to its role as Pakistan’s financial and industrial center, while Punjab attracted migrants owing to comparatively stronger economic opportunities and urban service availability. In contrast, Khyber Pakhtunkhwa recorded the largest net outflow, with net outward migration of approximately 1.2 million persons, while Balochistan also experienced negative net migration, with outward movement exceeding inward migration by approximately 0.14 million persons.

Source: Pakistan Bureau of Statistic

Inter-Provincial Migration ('000s)			
Province	In-Migration	Out-Migration	Net Migration
Punjab	2045.4	338.7	1706.7
Sindh	1091.6	427.5	664.1
KP	417.3	1619.6	(1202.3)
Balochistan	135.7	273.2	(137.5)

Table 3: Inter-provincial migration breakdown, by province, in 2025

4. URBAN DEVELOPMENT TRENDS

A study was conducted by SUPARCO to analyze urban sprawl in Pakistan's major cities. Remote Sensing, specifically Satellite Imagery Classification methodology was adopted to measure built-up area. In order to determine urban sprawl / built-area expansion in recent years and conversion of agricultural / green land, a comparison of urban development in 2005 versus 2022 was conducted. Maps illustrating this comparison for Islamabad, Lahore, Karachi, Peshawar and Quetta are presented in Figure 11, Figure 12, Figure 13, Figure 14 and Figure 15 respectively, with a compilation of results shown in Table 4.

Source: SUPARCO

Built-up Area (Sq. Km)	Islamabad	Lahore	Karachi	Peshawar	Quetta
2005	198	478	684	193	119
2022	403	758	980	276	205
Expansion (2005-2022)	104%	59 %	43 %	43 %	72 %

Table 4: Built-up Area Expansion of Pakistan's major cities (2005-2022)

Alongside this technical assessment, it is important to situate Pakistan's urbanization trends within the broader institutional landscape that supports (or constrains) effective spatial planning. Provinces have progressively established specialized bodies to strengthen analytical and planning capacity for managing rapid urban growth. Punjab's Planning & Development Board created The Urban Unit, now a government-owned corporate entity offering

advanced urban data systems, spatial modeling, and multisector planning. In Khyber Pakhtunkhwa, the Urban Policy Unit within the P&D Department undertakes spatial planning for tehsils and supports the province's urban development authorities. Sindh's Directorate of Urban, Regional Policy & Strategic Planning, housed in the P&D Department, performs a similar technical function for urban policy and planning.

These institutional arrangements represent meaningful progress. However, their full value can only be realized when they are formally and consistently engaged by municipal authorities, local governments, and development authorities, who hold the primary mandates for master planning and spatial regulation. Provinces that do not yet have such institutions should establish their own Urban Units. A coordination mechanism is also needed to ensure that local governments' independent authority over spatial planning is respected, while enabling them to benefit from the analytical and technical expertise of these provincial units.

a. Islamabad

1. Land Use Analysis:

Islamabad has witnessed the largest conversion of agricultural / green land into urban sprawl among Pakistan's major cities over the last two decades, its built-up area having increased by 104%, as illustrated by Figure 11. The converted landscape previously comprised barani paddy fields, which have progressively given way to low-rise, low-density housing developments dominated by single-family units. The absence of vertical growth has accentuated horizontal expansion, exerting pressure on the city's surrounding green and agricultural zones.

Green areas, particularly along the Margalla foothills and the corridor leading towards Murree, once covered with dense natural vegetation, have increasingly been targeted for greenfield development by both private and government housing schemes. Consequently, Islamabad's vegetation cover has declined from 42% to 24% over the past two decades. This unchecked horizontal growth underscores the urgency of introducing regulatory controls on the conversion of prime agricultural and green areas to ensure ecological balance and national food security.

2. Urban Planning Analysis:

Islamabad was originally developed under a master plan that adopted a gridiron pattern with clear functional zoning, residential, institutional, and conservation areas, intended to promote orderly and sustainable urbanization. Over time, however, weak coordination among multiple entities, including the Capital Development Authority (CDA), Metropolitan Corporation Islamabad (MCI) and Islamabad Capital Territory Administration (ICTA) has resulted in fragmented decision-making and inconsistent enforcement of planning regulations. The lack of coordinated urban governance has facilitated unplanned suburban expansion, while weak enforcement of zoning and building by-laws has led to the proliferation of informal settlements and slum areas, particularly in the city's peripheral zones.

In 2023, the CDA formally amended its 2020 Building Control Regulations to increase permissible building heights and floor area ratios in selected sectors to encourage vertical growth and optimize land use. However, despite these measures, horizontal sprawl continues to dominate the city's development pattern. This trend highlights the need for a metropolitan-level planning framework and strengthened enforcement mechanisms to ensure that future urban expansion aligns with sustainable land-use principles and the preservation of agricultural and green assets.

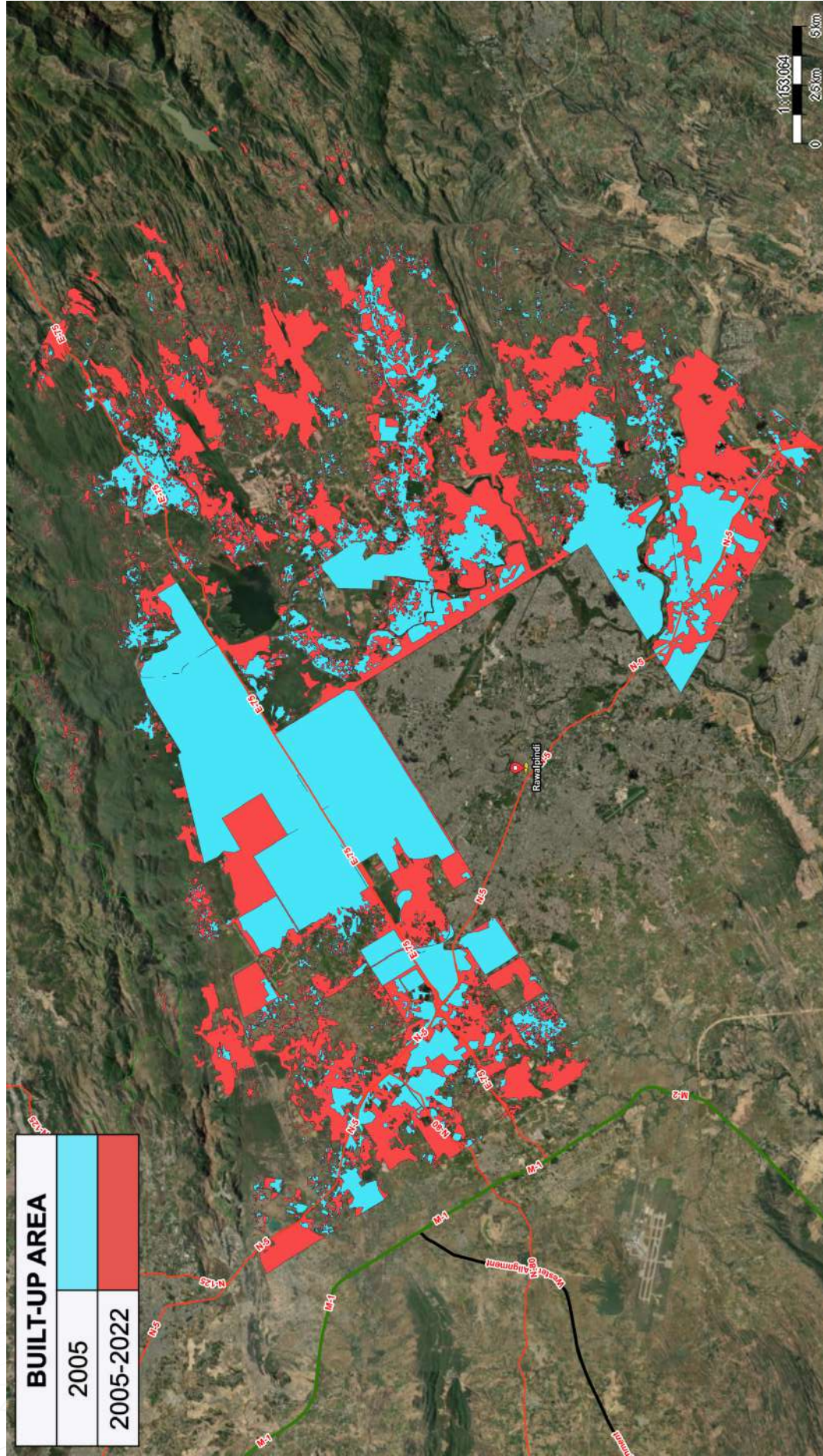


Figure 71: Map illustrating Islamabad's Built-up Area Expansion (2005-2022)

b. Lahore

3. Land Use Analysis:

Lahore's built-up area has increased by 59% between 2005 and 2022, as illustrated by Figure 12, making it one of the fastest-growing major cities in Pakistan. This expansion has primarily occurred through the conversion of fertile agricultural land on the city's peripheries into uncoordinated housing schemes. The proliferation of such developments, many initiated without requisite approvals, has resulted in the rapid loss of productive farmland, particularly in the southern and western fringes of the city. The absence of a centralized mechanism to monitor and curb early-stage construction has allowed agricultural areas to be absorbed into urban fabric with limited oversight.

The expansion also missed an opportunity to utilize the newly constructed Ring Road as a planned urban growth boundary and economic corridor. Lahore, once renowned for its gardens and green spaces, has lost nearly 10–15% of its vegetation cover over the past two decades, with the city's natural drainage and ecological systems increasingly under strain. Smog formation, contamination of surface and groundwater, and recurrent seasonal flooding risks are emerging as direct outcomes of this unregulated sprawl and loss of green cover. This situation will not change if developers can continue to buy inexpensive agricultural land and convert it to residential plots at will. Awareness of the value of agricultural land and the potential impact of encroachment on food security should be fostered at the institutional and societal levels.

4. Urban Planning Analysis:

Lahore's urban planning framework has evolved through several master plans, yet implementation has remained weak due to overlapping institutional jurisdictions. The first Greater Lahore Master Plan, initiated in 1961 and approved in 1972, was already outdated at adoption, and subsequent planning instruments faced similar delays and capacity constraints. The Integrated Master Plan 2021, initiated in 1998, was eventually approved in 2004 after prolonged delays due to fragmented mandates of the Lahore Development Authority (LDA) and city district government. More recently, the broader Master Plan for Lahore Division 2050 has been approved by the Provincial Cabinet, redefining LDA's jurisdiction to focus solely on the metropolitan area. However, persistent

overlaps between LDA, local governments, and other provincial agencies including Punjab Housing and Town Planning Agency (PHATA) continue to impede coherent urban management. Weak enforcement of zoning regulations and unchecked private sector development have led to the emergence of unplanned settlements and informal housing clusters along the city's outskirts. The situation calls for stronger inter-agency coordination and stricter enforcement of land-use regulations to preserve agricultural land and promote sustainable urbanization in line with the Committee's objectives.

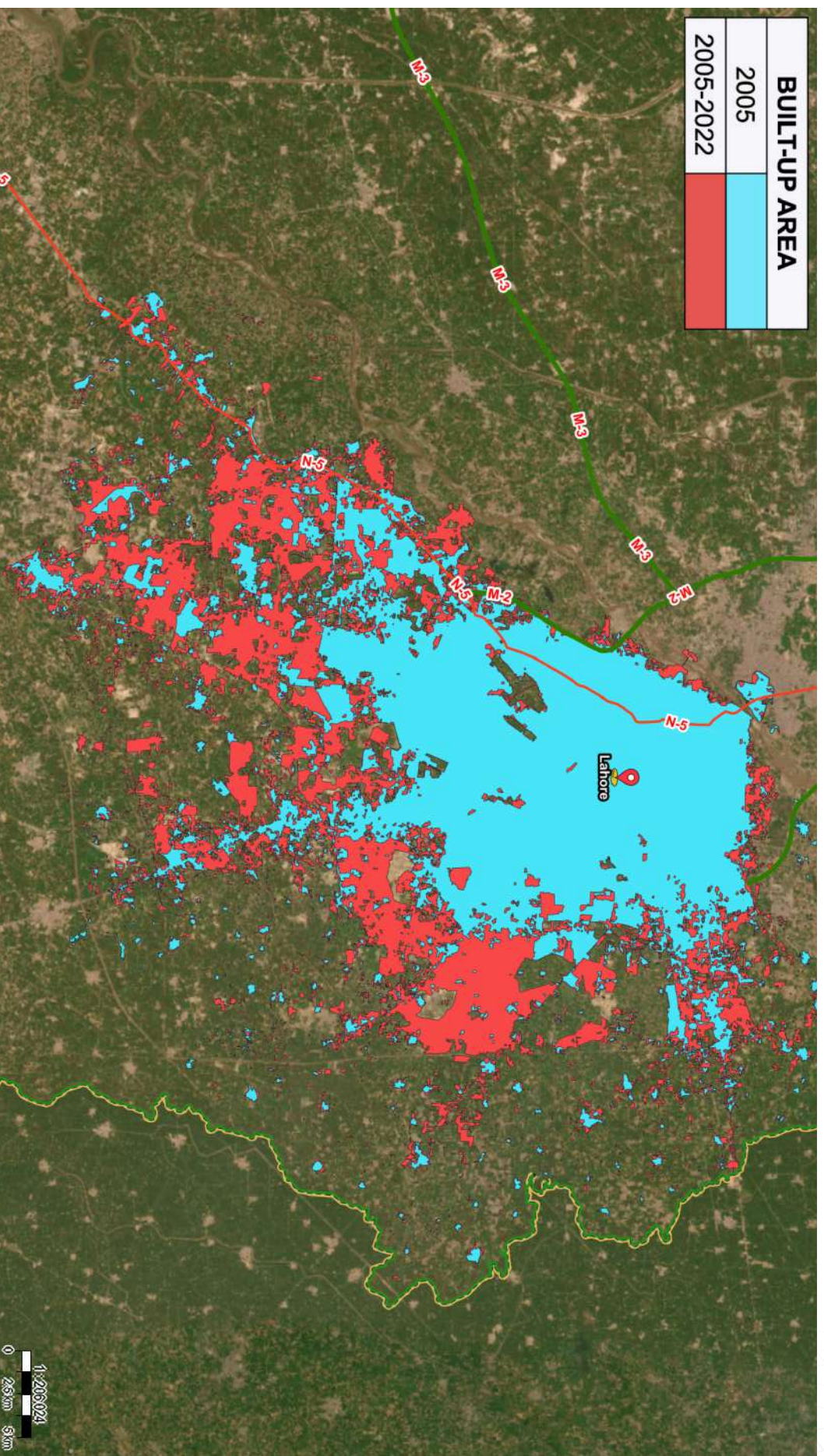


Figure 12: Map illustrating Lahore's Built-up Area Expansion (2005-2022)

c. Karachi

5. Land Use Analysis:

Karachi is distinct among Pakistan's major cities in its vertical development, an adaptive response to land scarcity and rising housing demand. Residential buildings exceeding 15 floors are common, particularly in the central districts. However, Karachi's built-up area expanded by 43% between 2005 and 2022, as illustrated by Figure 13. This is due to development of extensive large-scale greenfield housing societies along the Karachi–Hyderabad corridor. Unlike other major cities, much of the newly converted land was largely barren or of low agricultural productivity, minimizing direct impacts on national food security.

While these projects relieve population pressure from the urban core, they also contribute to car-dependent, single-family housing typologies that extend the city's footprint without proportional infrastructure upgrades. Moreover, encroachments into the city's remaining green zones, including mangrove areas along the coast and Malir riverbed, have reduced natural buffers against flooding and urban heat, compounding Karachi's environmental vulnerabilities.

6. Urban Planning Analysis:

Karachi remains Pakistan's economic and financial nucleus, yet its planning framework has struggled to keep pace with the city's demographic and spatial growth. Over half of its population resides in informal settlements, many in peripheral districts where land-use enforcement is weak. Absence of coordinated planning for vertical expansion has led to uneven infrastructure provision, strain on utilities, and violations of building codes. Urban management is fragmented among several entities, totaling 14 according to a study conducted by PIDE, including the Karachi Development Authority (KDA), Sindh Building Control Authority (SBCA), Karachi Metropolitan Corporation (KMC), and various cantonment boards, each operating under separate mandates.

The lack of integrated oversight and coherent zoning enforcement continues to foster unplanned settlements and environmental degradation. Strengthening inter-agency coordination, formalizing high-rise development standards, and linking land-use regulation to climate resilience objectives remain essential to guide Karachi's future growth toward a more sustainable and spatially efficient trajectory.

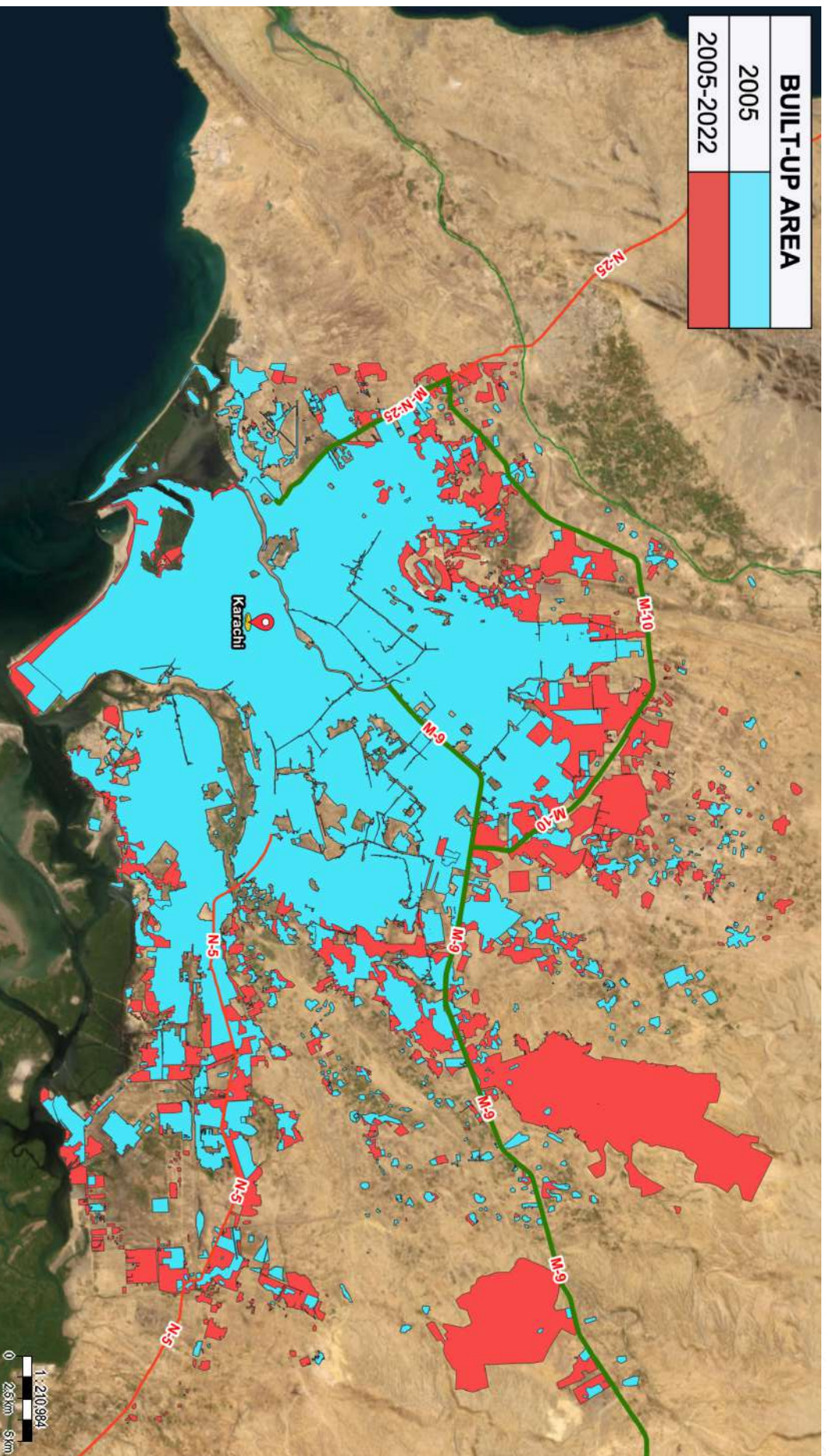


Figure 13: Map illustrating Karachi's Built-up Area Expansion (2005-2022)

d. Peshawar

1. Land Use Analysis:

Peshawar's built-up area increased by 43% between 2005 and 2022, as illustrated by Figure 14. This outward expansion has primarily taken the form of ribbon development along major intercity roads and highways, as well as the informal densification of former rural settlements. There has been minimal vertical development, with expansion continuing horizontally. As a result, large tracts of fertile agricultural land on the city's periphery have been lost to unplanned urban sprawl.

However, despite this conversion, the overall agricultural land in Peshawar District increased by 14% between 2010 and 2020, owing to the expansion of the irrigation network that brought new areas under cultivation. This dual trend, urban encroachment on productive land alongside agricultural expansion elsewhere, reflects the absence of spatial coordination in land-use management. The city's rural-urban transition zone now faces increasing environmental and infrastructural strain due to fragmented growth and unregulated conversion of land.

2. Urban Planning Analysis:

Peshawar's urbanization has been largely unplanned and unregulated, shaped by successive waves of migration from Afghanistan and, more recently, from the merged tribal districts. The city's planning institutions, principally the Peshawar Development Authority (PDA), Tehsil Municipal Administration, and the KP Urban Policy Unit, have struggled to manage the pace of growth, resulting in weak enforcement of building and zoning regulations. Regulatory oversight remains extremely weak, leading to poor infrastructure provisioning, irregular road networks, inadequate drainage, and the proliferation of informal settlements. The KP Urban Policy 2030, adopted in 2023, provides a new strategic framework for guiding Peshawar's development, but its effective implementation will require significantly stronger institutional coordination and enforcement capacity.

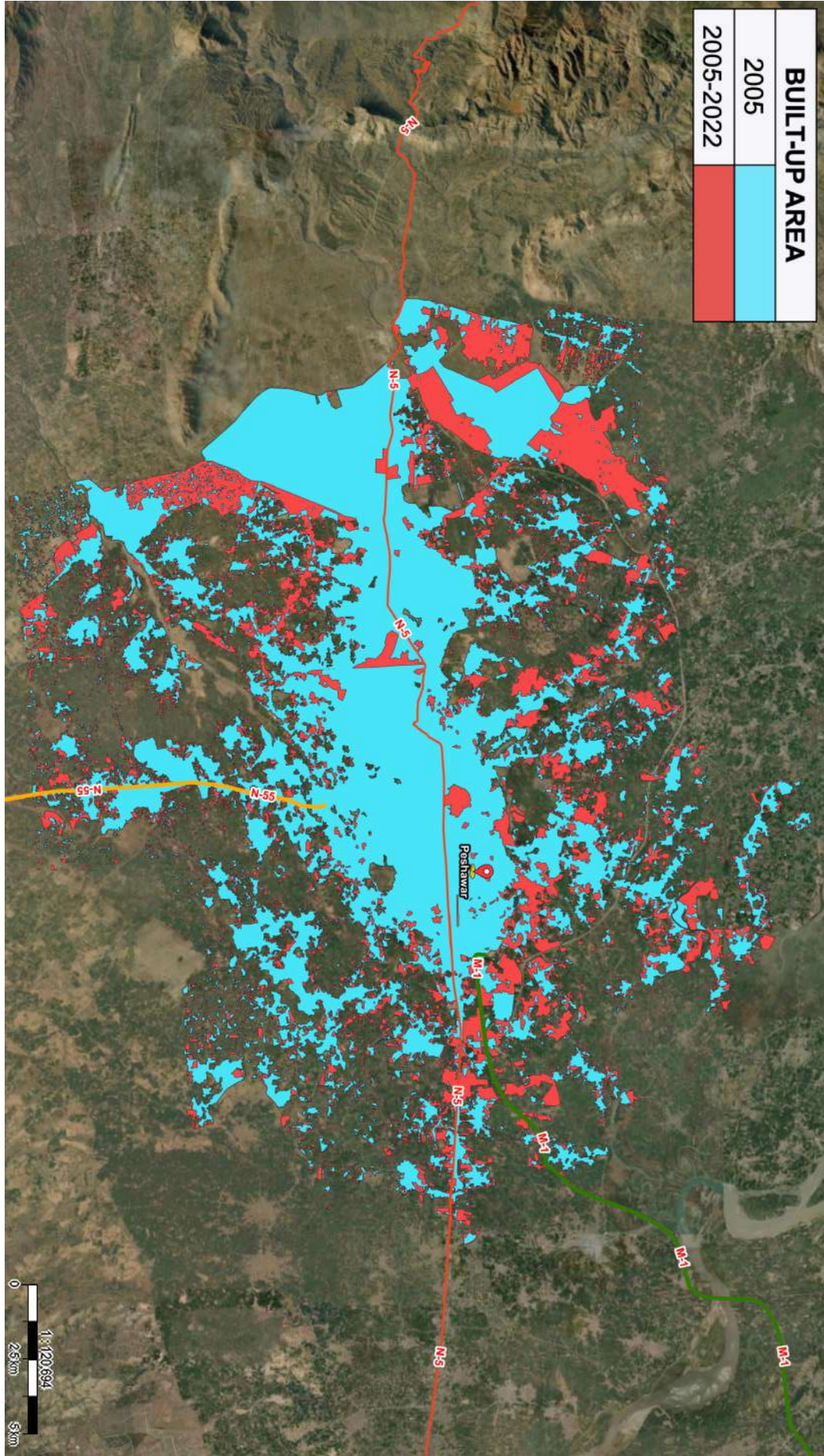


Figure 14: Map illustrating Peshawar's Built-up Area Expansion (2005-2022)

e. Quetta

1. Land Use Analysis:

Quetta's built-up area expanded by 72% between 2005 and 2022, as illustrated by Figure 15. However, much of this expansion occurred over already barren land, given the city's arid climate and limited natural vegetation, resulting in minimal direct loss of green cover. The city's spatial footprint has largely evolved as an agglomeration of rural-type settlements, expanding mainly toward the northwest and south due to the mountainous terrain that restricts development in other directions. Although efforts to update the 1985 Master Plan began in 2020, as of 2025, no tangible progress or implementation has materialized.

The absence of an up-to-date planning framework has allowed unregulated horizontal sprawl and discouraged vertical development, despite the growing pressure on limited urban land. Although revisions to the building codes are being considered to promote vertical construction, progress remains slow, leaving the city's land-use pattern dominated by single-story structures and low-density expansion.

2. Urban Planning Analysis:

Urban planning and development in Quetta are managed by multiple entities with overlapping mandates, leading to fragmented governance. The Quetta Development Authority (QDA) oversees residential and commercial development schemes, while the Metropolitan Corporation Quetta (MCQ) is responsible for municipal services. The Quetta Cantonment Board manages local governance within cantonment areas, and over 20 private housing schemes operate with minimal coordination among these institutions. Weak enforcement, outdated regulations, and limited institutional capacity have contributed to poor infrastructure provision and uncoordinated urban growth, resulting in severe challenges in water supply, sanitation, and energy services.

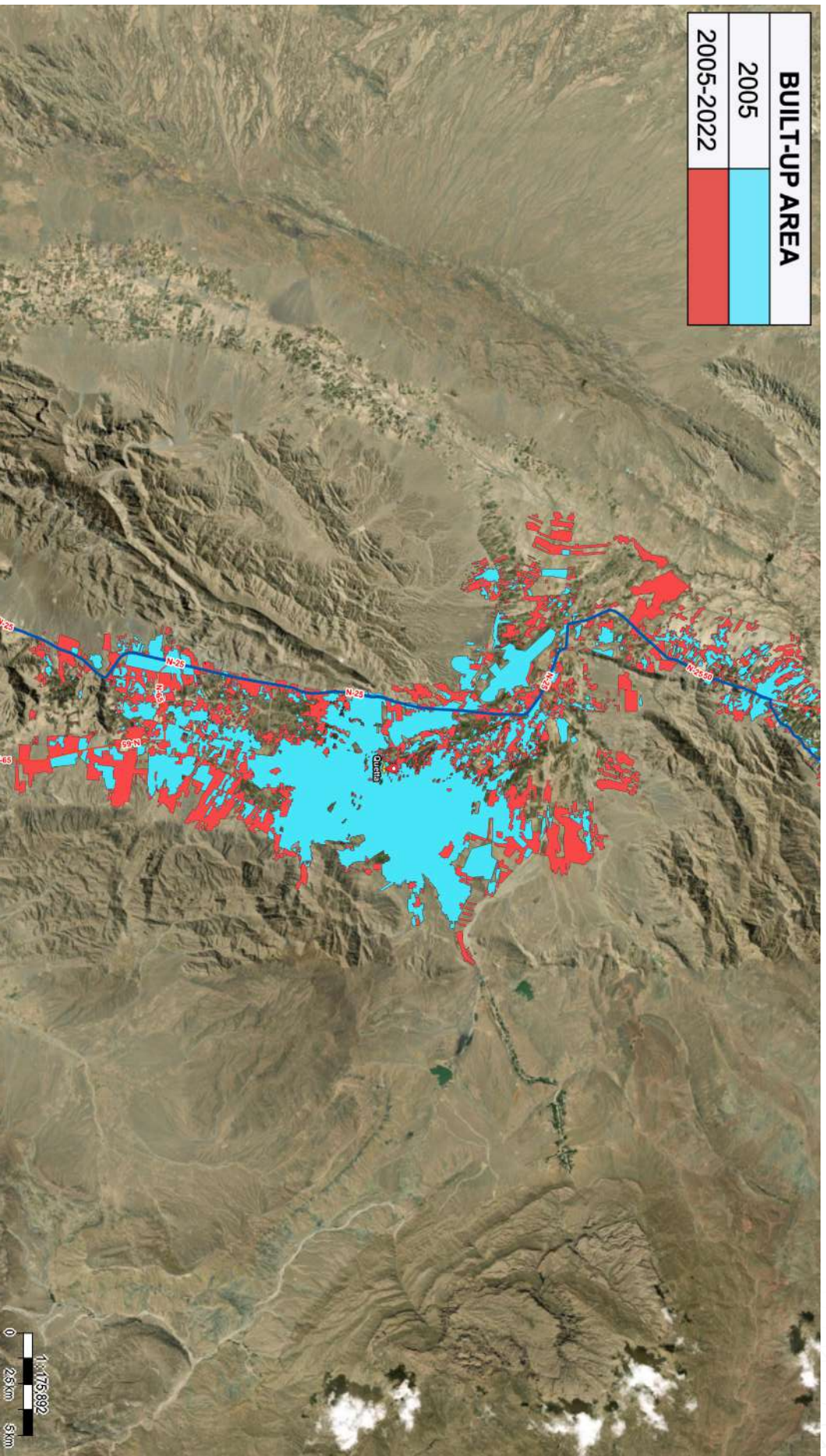


Figure 15: Map illustrating Quetta's Built-up Area Expansion (2005-2022)



5. GLOBAL BEST PRACTICES

a. Transit-Oriented Development (TOD)

Transit-Oriented Development (TOD) is an urban planning approach that focuses high-density, mixed-use development around public transport nodes, such as metro stations, bus rapid transit corridors, and commuter rail hubs. TOD aims to create compact, walkable communities where residents have convenient access to transit, reducing dependence on private vehicles and minimizing urban sprawl. By aligning urban growth with transport infrastructure, TOD integrates land-use planning and mobility, enabling efficient use of land and public resources while supporting sustainable urban expansion.

Under TOD, development intensity is typically highest within a defined radius around transit stations, gradually tapering with distance. This encourages vertical and mixed-use construction in core zones, while preserving peripheral land for agriculture, open space, or ecological conservation. Key features of TOD include increased Floor Area Ratios (FAR) near transit nodes, pedestrian-friendly streetscapes, and the integration of residential, commercial, and institutional land uses. By concentrating growth around transit, TOD promotes reduced travel times, lower transport emissions, and more efficient infrastructure investment, creating urban environments that are both economically vibrant and environmentally sustainable.

b. Transfer of Development Rights (TDR)

Transfer of Development Rights (TDR) is a zoning and land-management instrument designed to protect farmland and other critical agricultural areas by shifting development potential from sensitive zones to designated growth corridors. Instead of prohibiting development outright, which can generate economic conflict, TDR establishes a market-based mechanism that compensates landowners while directing urban expansion to suitable

areas. By separating the right to develop from land ownership, TDR allows land in preservation zones, such as farmland, wetlands, forests, or heritage sites, to remain undeveloped, while landowners retain the economic value of their property by selling unused development rights.

Developers purchase these rights and apply them in designated receiving zones, typically urban areas planned for higher-density, mixed-use, or transit-oriented development. This creates a regulated “density market” that protects high-value agricultural land from sprawl, channels growth toward serviced locations, provides fair compensation to landowners without displacing them, reduces government expenditure on land acquisition, and promotes compact, efficient land-use patterns. Through this mechanism, TDR aligns private incentives with broader planning objectives, enabling sustainable urban expansion while safeguarding vital agricultural

6. GLOBAL URBANIZATION MODELS

a. Japan

Under Japan's Urban Redevelopment Law, landowners, tenants, and private developers can jointly initiate redevelopment in already built-up areas—typically around existing or newly opened transit stations. To harness the improved accessibility and land value uplift generated by the station, the local government first revises zoning regulations, converting them from single-use to mixed-use and allowing higher floor area ratios (FAR). Figure 16 illustrates this process.

Source: World Bank

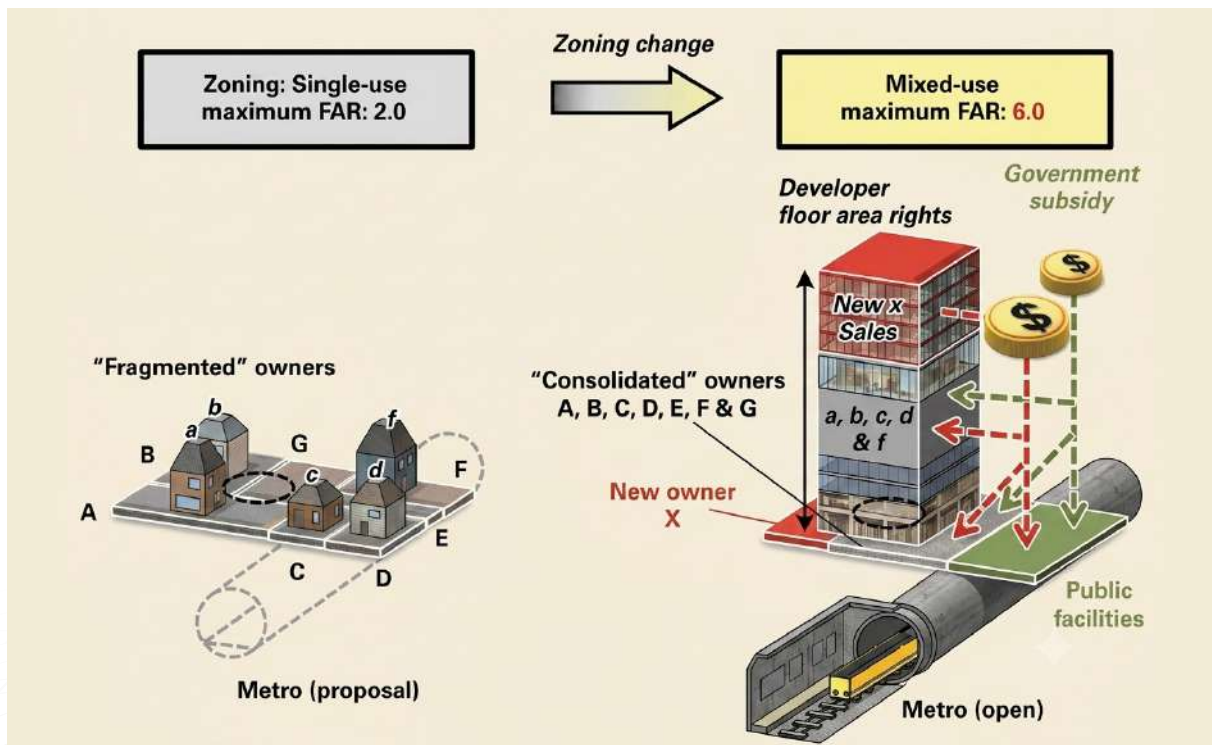


Figure 16: Japan's Land Pooling Model; Inclusive Urban Redevelopment Scheme

Before redevelopment, the area usually comprises numerous small, individually owned parcels, each occupied by different tenants. The existing buildings are predominantly one- or two-story structures, as the small plot sizes prevent landowners from independently replacing old buildings with taller ones, and they often lack the capital and technical capacity to do so.

The urban redevelopment project therefore involves:

- 1. Consolidating fragmented parcels to create a single developable site,*
- 2. Constructing a taller, higher-quality mixed-use building,*
- 3. Building a new underground metro station, and*
- 4. Delivering public infrastructure, including widened roads, a station plaza, and other amenities.*

Financing follows a shared responsibility model: the national government covers one-third of costs related to site survey, land readjustment, and open-space development through the general budget, and funds half of all public infrastructure costs using the roadway special fund.

Through this process, original landholders and building owners retain property rights in the new development. They receive floor space in the reconstructed building equivalent in value to their pre-redevelopment property (although in some cases, a developer may consolidate ownership by purchasing all original rights to expedite implementation). The additional FAR granted by the municipal government creates “surplus” floor space, which the developer sells to new buyers. Revenues generated from this surplus help finance land assembly, new construction, and district-level public facilities. Table 5 presents respective stakeholder’s contribution to the land value and their benefit received through the urban redevelopment undertaking.

Stakeholder	Contribution	Benefit
Landholders (A–G)	Provide land parcels for redevelopment	Joint ownership of the consolidated land and improved access, services, and infrastructure
Building owners (a–f)	Contribute old buildings and housing units	Ownership of new, higher-quality building sections with enhanced accessibility and services
Developer	Capital investment and technical expertise	Profit from Section X and sale of surplus FAR
Transit agency	Construction of the transit station	Transit-supportive urban environment that boosts ridership
National government	Subsidies for land assembly and road infrastructure	Reduced long-term public expenditure on roads and related facilities
Local government	Zoning change from single-use to mixed-use with higher FAR	Stronger local economic development and greater control over urban form

Table 5: Contributions & Benefits of Stakeholders of Japan's Inclusive Redevelopment Scheme

b. India

1. Vertical Development

New Delhi's urban planning framework encourages moderate verticality as a tool to manage density within already built-up areas. The city allows residential structures to rise up to four floors plus a stilt, while commercial zones permit up to five floors, industrial areas three, and mixed-use areas four (with overall height caps of roughly 15–17 meters). These calibrated height limits aim to support compact urban form, enhance land-use efficiency, and prevent further horizontal sprawl at the city's periphery. In contrast, Islamabad restricts residential construction to just two floors, at least doubling outward expansion and inefficient land consumption. New Delhi's vertical development policy, though modest compared to global megacities, reflects a deliberate attempt to balance neighbourhood character with the need for greater density and transit-supportive development.

2. Land Pooling

India has increasingly turned to land pooling to manage rapid urbanization, reduce fragmentation, and guide city expansion in a planned manner. The approach, used prominently in states like Gujarat and incorporated into the Draft Delhi Master Plan 2041, consolidates multiple small land parcels voluntarily contributed by landowners. A portion of the pooled land is reconstituted for public infrastructure, roads, utilities and public facilities, while the remainder is redistributed back to landowners as serviced plots of higher market value. This mechanism enables large-scale redevelopment without compulsory acquisition and ensures that both landowners and development authorities share the benefits of increased land value.

Gujarat's model is one of India's most successful as agricultural and peri-urban land is pooled and redeveloped into planned sectors equipped with transport links, utilities, and mixed-use zoning. Delhi's Draft Master Plan 2041 adopts a similar framework to curb unauthorized colonies and unregulated urban expansion. Land contributed under the scheme is reallocated according to clear formulas, for instance under the Punjab Land Pooling Policy 2025, one acre surrendered for residential pooling yields 1,000 square yards of developed residential land plus 200 square yards of commercial land, while industrial and institutional pooling provide 1,600 square yards of serviced plots per acre. External development costs (roads, drainage, power, water supply) are borne by the state, strengthening the incentive for landowner participation.

The land pooling mechanism is closely aligned with Transit-Oriented Development (TOD) principles in New Delhi, where pooled land near mass transit corridors is earmarked for higher-density, mixed-use development. By integrating pooling with TOD, India seeks to achieve more compact, transit-supportive urban growth while preventing further outward sprawl.

c. USA

The USA hosts some of the most advanced TDR programs globally, with over 200 counties and municipalities implementing them.

Key features for farmland conservation:

1. *Agricultural protection: Maryland, New Jersey, and Pennsylvania counties use TDR to conserve farmland while allowing growth in designated urban nodes*

2. *Market-driven density: Developers in receiving areas gain additional floors, higher FAR, or relaxed parking requirements in exchange for purchased development rights*
3. *Proven impact: Montgomery County, Maryland, has preserved more than 50,000 acres of farmland since the 1980s*

d. Bangladesh

Introduced in 2024, TDR aims to preserve the country's "three-crop fields" farmland capable of producing three harvests per year. It has balanced Dhaka's rapid urban expansion with national food security and livelihood protection.

Key features for farmland conservation:

1. *Sending zones: High-yield agricultural land under threat from peri-urban sprawl*
2. *Receiving zones: Urban areas identified for densification under municipal plans*
3. *Farmer compensation: Landowners sell development rights instead of facing displacement*

e. China

Chongqing's "Dipiao" system transfers rural development rights to urban construction zones, integrating farmland conservation with urban growth. It has allowed urban expansion without increasing total land conversion, aligning with China's arable land protection policies.

Key features for farmland conservation:

1. *Rural homestead consolidation: Villages reduce the footprint of scattered homesteads to free up land for ecological or agricultural use. The released development quota is converted into land tickets (Dipiao). Urban developers purchase Dipiao to obtain development approval in designated growth areas.*
2. *Revenue distribution: A portion of the proceeds returns to rural communities to fund resettlement, infrastructure, and rural revitalization.*

7. RECOMMENDATIONS

Agricultural and Peri-Urban Land Protection

Sr	Action	Responsibility	Timeline
1	Provinces should designate regions with high-value and high-intensity agricultural output such as orchards and command-irrigated farmlands, as Protected Productive Zones (PPZs). Conversion of PPZs for housing societies or industrial estates must be restricted. The PPZ initiative should be piloted in the following districts, renowned for their high-value and specialized agricultural output: Sargodha District, Punjab – known for citrus production Multan District, Punjab – known for mango production Khairpur District, Sindh – known for dates production	Provincial Governments	MT
2	Provinces should establish Transfer of Development Rights (TDR) mechanism to enable landowners in preservation zones to sell development rights to developers operating in designated urban growth corridors. The identified PPZs should adopt TDR mechanism to channel urban growth away from prime farmland. The respective provincial Urban Units may provide guidance and training to local administration and farmers' unions in this regard.	Provincial Governments	MT
3	Provinces should formally demarcate Peri-Urban Agricultural Preservation Zones (PAPZs) around large and mid-sized cities. These belts would function as strategic food-production areas that supply fresh produce to urban centers. PAPZs would carry stringent development restrictions and be integrated into master plans to create certainty for farmers while preventing speculative conversion pressures.	Provinces	MT
4	Tehsil administrations should be required to prepare rural land-use plans that define permissible agricultural, ecological, and residential uses in rural territories, to prevent uncontrolled peri-urban sprawl. Such plans would help guard against ad-hoc fragmentation of farmland and provide clarity for farmers, developers, and local governments.	Tehsil Administrations	MT

5	Provincial governments should prepare inventories of barren, low-productivity, or non-arable land within peri-urban and rural belts. Such belts should be designated as preferred urban expansion zones and/or areas for establishment of new planned cities/townships.	Provincial Governments	MT
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*ST=Short Term, MT=Medium Term, LT=Long Term

Urban Planning, Land Management, and Redevelopment

Sr	Action	Responsibility	Timeline
1	National Urban Policy should be developed after broad consultation with all relevant stakeholders and provincial consensus.	Federal Government	MT
2	Provinces should require every city above 250,000 population to prepare and formally notify a statutory land-use classification map and a comprehensive master plan consistent with provincial spatial planning laws.	Provincial Governments	MT
3	Metropolitan regions with overlapping jurisdictions should create Regional Urban Coordination Committees comprising municipal corporations, development authorities and relevant utilities. These bodies would harmonize land-use decisions, infrastructure alignment, and urban service delivery across administrative boundaries, reducing fragmentation and improving implementation of master plans.	Provinces	MT
4	Provinces should introduce minimum density requirements for all new housing developments. This measure would reduce low-density sprawl, improve the financial viability of infrastructure, and shift the market toward more compact, service-efficient urban forms. Density thresholds should be aligned with public transport corridors to support transit-oriented growth.	Tehsil Administrations	MT
5	Metropolitan cities should undertake systematic rezoning of underutilized, or decaying inner-city areas to allow higher-density, vertical, mixed-use redevelopment as a tool to contain sprawl and optimize land value. Rezoning should be supported by clear floor-area ratios, height regulations, and incentives for redevelopment along key corridors. The Capital Development Authority (CDA) should pilot a "Vertical Regeneration District" in Islamabad.	Provincial Governments	MT

6	Provinces should formulate and notify a comprehensive Land Pooling Policy to guide both redevelopment and urban expansion. This policy should provide a uniform legal and procedural framework for assembling fragmented land parcels, reconstituting them into planned layouts, and redistributing serviced plots to original owners in proportion to their contributions. It should specify valuation rules, land readjustment ratios, infrastructure cost-sharing mechanisms, dispute-resolution procedures, and safeguards against coercion. ICT should pilot this policy and implement it for CDA's "Vertical Regeneration District".	Provincial Governments, ICT, CDA	MT
7	The Government of Balochistan should establish a dedicated Urban Unit to coordinate urban planning, support master plans, and guide sustainable and well-managed growth across the province.	Government of Balochistan	ST

*ST=Short Term, MT=Medium Term, LT=Long Term

Transit-Oriented Development (TOD) and Transport Planning

Sr	Action	Responsibility	Timeline
1	Provinces should introduce a Transit-Oriented Development (TOD) regulatory framework requiring that land within 250–500 metres of all mass-transit stations, BRT, LRT or MRT, be designated as high-density, mixed-use zones with minimum density thresholds, pedestrian-priority street layouts, integrated commercial/residential uses, and limited parking supply. Cities with existing BRT/LRT systems (Lahore, Rawalpindi–Islamabad, Multan, Karachi, and Peshawar) should prepare pilot TOD precinct plans around selected stations to retrofit current corridors. All new and planned urban development along future transit routes should be master-planned in accordance with TOD principles to ensure compact, walkable, and transit-aligned growth.	Provincial Governments, City Governments	MT
2	Mandate all cities above 500,000 population to prepare 10-year Urban Transport Master Plans covering public transport corridors, traffic management, freight routes, and NMT (non-motorized transport) infrastructure. Plans should be vetted by provincial transport departments, and adopted by local governments as statutory instruments. Each city should also maintain a transport data system to support modelling and periodic updates.	City Governments, Provincial Transport Departments	MT

*ST=Short Term, MT=Medium Term, LT=Long Term



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<http://pc.gov.pk/uploads/pub/balancing-urban-growth-and-farmland-protection.pdf>