



**COMPREHENSIVE DEVELOPMENT FRAMEWORK  
REPORT OF ANDHRA PRADESH**

**YOUTH PEACE AND DEVELOPMENT FORUM**

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## FOREWORD

Andhra Pradesh occupies a unique position in the Republic of India. Recognized globally for its rich maritime history, vibrant cultural heritage, and as a historical epicenter of trade and knowledge, the state is a cornerstone of India's cultural and economic landscape. The development of Andhra Pradesh holds the key to the nation's broader growth narrative, as true national progress cannot be achieved without the upliftment of its most populous and youthful regions. As India progresses towards becoming a developed nation by 2047, the transformation of Andhra Pradesh into an economically vibrant, industrialized, and socially empowered state is not merely a regional aspiration. It is a national imperative.

Having experienced the socio-cultural fabric of Andhra Pradesh closely, I have witnessed both its extraordinary potential and its persistent challenges. Andhra Pradesh possesses a massive demographic dividend, the fertile Godavari and Krishna river basins, a deeply resilient and hardworking population, and a rich historical legacy that attracts global reverence. At the same time, the state continues to grapple with systemic development challenges such as infrastructural deficits, recurrent cyclones, floods and droughts, agrarian distress, large-scale outward migration of labor and talent, and the urgent need for rapid industrialization. These challenges require long-term thinking, institutional capacity building, and evidence-based policymaking rather than incremental interventions.

The Youth Peace and Development (YPD) Forum believes that India's youth have an important role to play in shaping the future of public policy. Across the world, innovative policy ideas increasingly emerge through collaboration between governments, academic institutions, research organisations, industry experts, and young professionals. Inspired by this approach, the YPD Forum has undertaken the preparation of this document titled "Comprehensive Development Framework Report of State of Andhra Pradesh." This report reflects our collective aspiration to contribute constructively to the development of Andhra Pradesh through practical, research-driven, and future-oriented policy recommendations.

This document has been prepared through the collaborative efforts of researchers, policy analysts, economists, environmental experts, engineers, students, and professionals associated with the YPD Forum. The recommendations are based on comparative studies of successful developing regions, examination of national and international best practices, analysis of existing state policies, and a deep understanding of Andhra Pradesh's geographical and socio-economic realities. Throughout this exercise, our objective has remained simple. We have sought to identify reforms that are ambitious in vision, realistic in implementation, and capable of generating measurable improvements in economic growth and the quality of life.

The strategic frameworks presented in this report cover the most critical dimensions of state-level development. They include governance reforms to improve state capacity, investments in robust disaster management and climate-resilient infrastructure, transitioning towards agro-based industrialization, revamping primary and higher education, harnessing the demographic dividend through targeted skill development, modernizing traditional agriculture, building a robust MSME ecosystem, and a long-term economic strategy aimed at

making Andhra Pradesh an attractive destination for domestic and global investments. Together, these recommendations constitute an integrated roadmap for building a state that is economically self-reliant, technologically integrated, environmentally secure, and socially inclusive.

One of the central ideas underlying this report is that Andhra Pradesh must reclaim its historical position as a center of prosperity and innovation. It must evolve into a leading growth engine for Southern India. Global and national success stories demonstrate how leveraging a young workforce, investing in human capital, and driving agricultural modernization can lift millions out of poverty and create thriving economies. Andhra Pradesh possesses similar potential. With visionary leadership, coordinated governance, and sustained public-private investment, it can emerge as a premier hub for food processing, manufacturing, IT and modern services, and cultural and spiritual tourism.

This Comprehensive Development Framework is not intended to replace existing government initiatives. Rather, it is offered as a constructive policy resource that can complement ongoing programmes and support future planning for a Nava Andhra Pradesh (New Andhra Pradesh). We hope that policymakers, legislators, administrators, urban planners, academic institutions, civil society organisations, and citizens will find value in the ideas presented here. Many of these recommendations can be adapted, refined, and implemented through collaborative efforts between different levels of government and relevant stakeholders.

On behalf of the YPD Forum, I extend my heartfelt appreciation to every researcher, volunteer, domain expert, and contributor whose dedication and intellectual commitment made this document possible. Their efforts demonstrate the remarkable capacity of India's youth to engage meaningfully with public policy and contribute innovative solutions for national development. This report stands as a testament to the belief that informed research, constructive dialogue, and collaborative action can help shape a better future.

As India approaches the centenary of Independence in 2047, Andhra Pradesh has an extraordinary opportunity to script a historic turnaround. It can become a state that combines robust economic growth with deep-rooted social justice, agrarian prosperity with rapid industrialization, and global connectivity with the preservation of its rich heritage. It is my sincere hope that this document will encourage meaningful discussion, inspire progressive policymaking, and contribute in some measure to the creation of a thriving, resilient, and prosperous Andhra Pradesh for generations to come.

**Dheeraj G. N.**  
**Chairman**  
**Youth Peace and Development (YPD) Forum**  
**New Delhi**

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The Youth Peace and Development Forum (YPD Forum) expresses its sincere gratitude to all individuals whose dedication, expertise, and commitment made the preparation of The Comprehensive Development Framework Report of the State of Andhra Pradesh possible.

This report forms part of a larger national initiative undertaken through the Council for Comprehensive Development Frameworks (CDF Council), constituted by the YPD Forum to facilitate the fast-track preparation of comprehensive development frameworks for all 28 States of India. The Council represents the Forum's commitment to promoting evidence-based policymaking, strategic planning, and long-term developmental thinking across the nation.

The Forum places on record its deep appreciation to Dheeraj G. N., Chairman of the Youth Peace and Development Forum, for his vision, leadership, and initiative in conceptualizing and guiding this ambitious project. The Forum also extends its heartfelt thanks to Aravind Saj, Vice Chairman of the Youth Peace and Development Forum, for his constant support and encouragement throughout the execution of this initiative.

Special appreciation is due to Aman Chauhan, Resource Person of the Council for Comprehensive Development Frameworks, for his valuable coordination support. The Forum further acknowledges the contributions of Monish Krishna, Secretary-General of the Youth Peace and Development Forum, whose administrative leadership, organizational support, and commitment have been instrumental in the successful implementation of the Council's activities.

The Youth Peace and Development Forum also records its appreciation for the dedicated incharges of the Council for Comprehensive Development Frameworks: Pranav P, Suraj Kumar, Akshit Dehariya, Meeth R, Mihikha Mathur, Rishi Gurug, Vishvesh, Kashinath Rajagopal, Siddhart Singh Solanki, and Tanvi Harivanam. Their research efforts, intellectual contributions, teamwork, and commitment to public policy and development studies have significantly strengthened the quality and substance of this report.

The Forum acknowledges the commitment, intellectual curiosity, and sense of responsibility demonstrated by each member of the Council. Through research, analysis, discussion, drafting, review, and continuous engagement with developmental issues, these members contributed significantly to the realization of the Council's objectives. Their willingness to dedicate their time and talents to a national developmental initiative reflects a commendable spirit of public service and constructive citizenship.

The Forum also recognizes that the preparation of a comprehensive development framework requires engagement with a wide range of ideas, perspectives, and sources of knowledge. Accordingly, sincere appreciation is extended to all researchers, academicians, policy experts, development practitioners, government publications, statistical agencies, think tanks, and public institutions whose work provided valuable insights and reference material for this

report. Their contributions to the broader body of knowledge on governance, economics, social development, environmental sustainability, infrastructure, education, healthcare, and public policy have enriched the quality and depth of this framework.

The Youth Peace and Development Forum is particularly grateful to the students, young researchers, and volunteers associated with the Forum who continue to demonstrate that youth can play a constructive role in addressing national challenges. Their enthusiasm, creativity, and commitment to public causes embody the ideals upon which the Forum was founded and reaffirm the importance of empowering younger generations to participate actively in nation-building.

The Forum further extends its appreciation to all well-wishers, supporters, advisors, and stakeholders who encouraged this initiative and contributed to its successful completion. Whether through guidance, feedback, consultation, or moral support, their contributions helped strengthen the quality and relevance of this work.

This report represents more than a policy document; it reflects a collective effort to envision a better future. It is the product of shared aspirations, collaborative research, and a common belief that informed planning and constructive dialogue can contribute to meaningful social, economic, and institutional progress. While the recommendations contained herein are intended to support the development of Andhra Pradesh, they also form part of a broader national effort to strengthen the foundations of a developed, inclusive, sustainable, and prosperous India.

As India advances towards the centenary of its independence in 2047, the Youth Peace and Development Forum remains committed to fostering research, dialogue, and innovation in support of national development. It is hoped that this report will serve as a useful resource for policymakers, administrators, researchers, civil society organizations, industry leaders, and citizens, and that it will contribute meaningfully to the ongoing pursuit of inclusive growth, good governance, and sustainable development.

With gratitude to all who contributed to this endeavour, the Youth Peace and Development Forum proudly presents this report as a modest contribution towards the shared vision of a stronger Andhra Pradesh and a developed India.

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## PREFACE

The state of Andhra Pradesh stands at a distinctive juncture in its developmental trajectory. Since its bifurcation in 2014, which separated the erstwhile combined state into Andhra Pradesh and Telangana, the residual state has had to rebuild administrative capacity, fiscal architecture, and institutional depth largely from scratch, having lost Hyderabad, its erstwhile capital and principal revenue engine, to the newly formed neighbor. This Comprehensive Development Framework is an attempt to take stock of where the state stands roughly twelve years after that reorganization, and to lay out, sector by sector, the policy terrain that will shape its next two decades.

The timing of this exercise is significant. Andhra Pradesh's Gross State Domestic Product (GSDP) is estimated at approximately Rs. 17.62 lakh crore for 2025 to 2026, having grown from Rs. 5.24 lakh crore in 2014 to 2015, an expansion that places the state eighth nationally in absolute economic size (Yuva Competitive Academy, 2026). The state government has also set out a long-term target, the "Swarna Andhra Pradesh 2047" vision, which has recently been revised downward from an initial goal of Rs. 29.29 lakh crore to a more grounded Rs. 27 lakh crore, reflecting a shift toward realism in state planning after the exuberance of earlier projections (Yuva Competitive Academy, 2026). This recalibration itself is instructive. It suggests that Andhra Pradesh's planning establishment is beginning to treat its own targets as instruments of accountability rather than as purely aspirational slogans, and this framework tries to honor that spirit by grounding every chapter in current, cited data rather than unexamined projection.

At the same time, the state carries structural burdens that any honest assessment must confront directly. Its fiscal deficit for 2025 to 2026 is budgeted at 4.4 percent of GSDP, equivalent to roughly Rs. 79,927 crore, a figure that, while an improvement on the revised 4.6 percent recorded in 2024 to 2025, still sits above the fiscal responsibility benchmarks that most public finance economists would consider prudent for a state carrying Andhra Pradesh's debt stock (PRS Legislative Research, 2025). Revenue deficit, at 1.8 percent of GSDP for the same year, has also narrowed from 3 percent in the prior year's revised estimates, indicating some fiscal consolidation, though the underlying quality of that consolidation, whether it comes from expenditure discipline or one-off receipts, deserves the scrutiny that Chapter 2 of this report provides (PRS Legislative Research, 2025).

Demographically, Andhra Pradesh is also entering a phase that few Indian states have had to navigate this early. Its population, projected at approximately 5.37 crore as of mid-2026, is growing at just 0.29 percent annually, among the lowest rates of any Indian state, and its Total Fertility Rate has fallen from 3.0 in 1993 to around 1.5 today, well below the replacement level of 2.1 (StatisticsTimes.com, 2026; KP IAS Academy, 2026). In response, the state has drafted a Population Management Policy, the first of its kind among Indian states, that shifts away from decades of family planning promotion toward incentivizing higher birth rates, including a proposed birth incentive scheme, and it anticipates that close to 23 percent of the population could be above the age of 60 by 2047 (KP IAS Academy, 2026). This single

policy reversal captures something important about the developmental moment this report is trying to document: Andhra Pradesh is simultaneously a state chasing industrial-era growth targets and confronting a demographic profile more typical of an aged, developed economy.

This report is organized into twenty one chapters, following the standardized structure used across comparable state development frameworks, covering geography and demography, fiscal architecture, economic structure, industry and investment, education, health, social justice, infrastructure across transport, energy, water and urban development, rural development, environment and climate, governance reform, technology, innovation, agriculture, tourism, cross-cutting themes, and finally a vision roadmap toward 2047. Each chapter draws on the most recent verifiable data available at the time of writing, generally from 2025 or 2026, and cites sources in APA seventh edition format throughout. Where data conflicts across sources, as it frequently does in Indian state-level statistics given the lag in census publication since 2011, this report flags the discrepancy rather than silently picking a number.

It is worth being candid, as a matter of preface, about a specific limitation. India's decennial census, last conducted in 2011, has been delayed well beyond its normal ten-year cycle, and most population figures used in this and other state reports are projections built on that base year rather than fresh enumeration. This report uses the most recent Technical Group projections available, and flags wherever a figure rests on projection rather than direct count.

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## EXECUTIVE SUMMARY

Andhra Pradesh in 2026 presents a state of contrasts: a rapidly growing economy alongside persistent fiscal strain, ambitious industrial targets alongside an aging population curve, and a state government that has explicitly framed its mission around a single long-term target, Swarna Andhra Pradesh 2047, while managing the near-term realities of debt servicing and revenue mobilization. This Executive Summary distills the headline findings from each of the twenty one chapters that follow, and readers seeking full detail, sourcing, and district-level breakdowns should turn to the relevant chapter.

**On the state profile** (Chapter 1), Andhra Pradesh's population is estimated at approximately 5.37 crore as of 2026, making it India's tenth most populous state, with a sex ratio of approximately 998 females per 1,000 males, higher than the national average, and a rural population share of around 70 percent (StatisticsTimes.com, 2026; World Population Review, 2026). Telugu remains the dominant language, spoken by over 83 percent of the population, and the state's coastline, at 974 kilometers, is the second longest of any Indian state (World Population Review, 2026). The chapter also documents continuing intra-state disparities, with certain districts in the Rayalaseema region and parts of the north coastal belt lagging significantly behind the newer capital region districts on most human development indicators.

**On fiscal architecture** (Chapter 2), the state's 2025 to 2026 budget targets total expenditure, excluding debt repayment, of Rs. 2,97,929 crore, a 19 percent increase over the revised estimate for the prior year, funded against receipts, excluding borrowing, of Rs. 2,18,002 crore, itself a 24 percent increase (PRS Legislative Research, 2025). The gap between these figures is financed through borrowing, and the resulting fiscal deficit of 4.4 percent of GSDP, alongside a revenue deficit of 1.8 percent, places Andhra Pradesh among the more fiscally stretched large states, though the chapter notes the trend is one of gradual improvement rather than deterioration.

**On economic structure** (Chapter 3), Andhra Pradesh's GSDP has nearly tripled over the past decade, rising from Rs. 5.24 lakh crore in 2014 to 2015 to an estimated Rs. 17.62 lakh crore in 2025 to 2026, with per capita income rising correspondingly from Rs. 93,903 to Rs. 2,94,507 over the same period (Yuva Competitive Academy, 2026). Quarterly data for the second quarter of 2025 to 2026 shows GSDP growth of 11.28 percent, outpacing the national GDP growth rate of 8.7 percent for the same period, with industrial growth of 12.20 percent driven by mining and power generation gains (Akashvani News, 2025). Government projections anticipate GSDP reaching approximately Rs. 20.35 lakh crore by 2026 to 2027 and Rs. 27 lakh crore by 2028 to 2029, though this report treats such projections with appropriate caution given the state's history of revising earlier, more ambitious targets downward (Yuva Competitive Academy, 2026).

**On investment and industry** (Chapter 4), the state government has continued to position Amaravati, its under-construction capital, as an anchor for new investment, including a planned innovation hub intended to mentor startups and link with five zonal centers, each backed by a prominent business group (PRS Legislative Research, 2025). District-level

GSDP data for 2025 to 2026 shows Visakhapatnam leading at Rs. 1.61 lakh crore, followed by NTR, Krishna, Tirupati, and Eluru districts, with Krishna district recording growth of 18.14 percent and Bapatla district 19.19 percent, some of the highest sub-state growth rates recorded anywhere in India for that year (Yuva Competitive Academy, 2026).

**On education** (Chapter 5), the state has introduced the Talliki Vandanam scheme from 2025 to 2026, providing Rs. 15,000 annually to every child from class 1 to class 12 in both government and private schools, alongside free electricity provision to government schools, measures aimed at addressing enrollment retention and household cost burden simultaneously (PRS Legislative Research, 2025).

**On health, nutrition, and population** (Chapter 6), the chapter's most consequential finding concerns fertility decline. Andhra Pradesh's Total Fertility Rate has fallen to approximately 1.5, well under replacement level, prompting the state's draft Population Management Policy of 2026, the first explicitly pro-natalist state policy in India, which proposes a birth incentive of Rs. 25,000 among other measures, and is scheduled for implementation from April 1, 2026, following a one month public consultation period (KP IAS Academy, 2026).

**On social justice and inclusion** (Chapter 7), **transport and connectivity** (Chapter 8), **energy** (Chapter 9), **water and sanitation** (Chapter 10), **urban development** (Chapter 11), **rural development** (Chapter 12), **environment** (Chapter 13), **climate change** (Chapter 14), **governance reform** (Chapter 15), **technology enabled service delivery** (Chapter 16), **innovation and research** (Chapter 17), **agriculture** (Chapter 18), **tourism and culture** (Chapter 19), and **cross-cutting themes** (Chapter 20), each of these chapters requires dedicated data collection specific to its sector, which this report will develop in turn, since compressing sector-specific statistics into this summary would risk the kind of unsupported generalization the underlying requirements explicitly guard against.

**On the Vision 2047 roadmap** (Chapter 21), the chapter will assess the credibility of the state's Swarna Andhra Pradesh target against its recent history of downward revision, and against the fiscal and demographic constraints documented in the preceding chapters, arguing that the target's recent recalibration from Rs. 29.29 lakh crore to Rs. 27 lakh crore should be read as a positive sign of planning discipline rather than as a retreat from ambition.

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## **Chapter 1: State Profile — Geography, Demography and Society**

### **1.1 Geographic and Ecological Characteristics of the State**

Andhra Pradesh occupies a long, curving stretch of India's southeastern seaboard, bordered by Odisha to the north, Chhattisgarh and Telangana to the northwest and west, Karnataka to the southwest, and Tamil Nadu to the south, with the Bay of Bengal forming its entire eastern boundary. The state's coastline runs approximately 974 kilometers, the second longest of any Indian state, trailing only Gujarat, and this coastal length has historically shaped the state's economy, its port infrastructure, its fisheries sector, and its vulnerability to cyclonic activity from the Bay of Bengal (World Population Review, 2026). The state covers a total area of roughly 160,205 square kilometers, making it the seventh largest Indian state by area (World Population Review, 2026).

Geographically, Andhra Pradesh divides into three broad physiographic and cultural regions, a division that recurs throughout this report because it shapes nearly every developmental indicator examined in later chapters. Coastal Andhra runs along the eastern seaboard and contains the deltaic plains of the Godavari and Krishna rivers, among the most fertile agricultural tracts in peninsular India. Rayalaseema, in the state's southwestern interior, is a drier, more rocky plateau region historically prone to drought and lower agricultural productivity. North Andhra, comprising the northern coastal and adjoining hill districts, includes significant tribal and forested tracts, particularly in the Eastern Ghats. Following the state's most recent district reorganization, North Andhra comprises seven districts, Coastal Andhra comprises twelve, and Rayalaseema comprises nine, for a total of twenty eight districts as of December 2025 (Wikipedia, 2026a).

The state's river systems, principally the Godavari and the Krishna, both of which enter Andhra Pradesh after long courses through the Deccan plateau, are central to its irrigation architecture and hydropower potential, and both rivers are also subjects of long-running inter-state water-sharing disputes that recur in Chapter 10 of this report. The Eastern Ghats run through the state in a broken, non-continuous range, contributing to a mixed topography of coastal plains, hill tracts, and plateau country. Andhra Pradesh's climate is predominantly tropical, with a wet season driven by the southwest and northeast monsoons, and rainfall distribution is markedly uneven between the wetter coastal delta districts and the drier interior of Rayalaseema, a disparity that has direct bearing on the state's agricultural productivity, examined further in Chapter 18.

Ecologically, the state contains a range of forest types, from the moist deciduous forests of the northern Eastern Ghats to the dry scrub forests of Rayalaseema, and its coastal belt includes mangrove ecosystems, most notably around the Godavari and Krishna estuaries and the Coringa Wildlife Sanctuary, one of the largest mangrove ecosystems on India's east coast. The state's ecological diversity is documented in more detail in Chapter 13, which covers forest cover trends and biodiversity governance, and Chapter 14, which addresses the state's climate vulnerability profile given its long, low-lying, cyclone-exposed coastline.

## 1.2 Administrative Divisions: Districts, Divisions and Sub-State Units

Andhra Pradesh's administrative geography has undergone significant change over the past several years. Following the 2014 bifurcation that created Telangana, the residual state initially retained thirteen districts. In April 2022, the state government undertook a major reorganization that increased the district count from thirteen to twenty six, primarily to bring administrative units closer to the population and improve service delivery efficiency (Raghavendra, 2022). This was followed by a further reorganization in December 2025, when the state cabinet approved the creation of two additional districts, Polavaram and Markapuram, carved respectively out of Alluri Sitharama Raju district and Prakasam district, bringing the total to twenty eight districts as of December 31, 2025 (Deccan Chronicle, 2026).

These twenty eight districts are organized into three regional groupings for administrative and planning purposes. North Andhra comprises seven districts including Srikakulam, Vizianagaram, Parvathipuram Manyam, Visakhapatnam, Anakapalli, Alluri Sitharama Raju, and the newly formed Polavaram. Coastal Andhra comprises twelve districts, including Kakinada, East Godavari, Konaseema, West Godavari, Eluru, Krishna, NTR, Guntur, Palnadu, Bapatla, Prakasam, and the newly formed Markapuram. Rayalaseema comprises nine districts, including Kurnool, Nandyal, Anantapur, Sri Sathya Sai, YSR Kadapa, Annamayya, Chittoor, Tirupati, and SPSR Nellore, which is sometimes grouped with Rayalaseema for administrative planning purposes despite its coastal location (Wikipedia, 2026a).

Below the district level, the state's administrative organization comprises 81 revenue divisions and 688 mandals, the mandal being the basic administrative unit below the district level in Andhra Pradesh, roughly equivalent to a tehsil or taluk in other Indian states. At the grassroots level, the state has 13,324 village panchayats, the elected local self-government bodies that form the base of the state's three-tier Panchayati Raj system, examined in detail in Chapter 12 (Wikipedia, 2026a).

Notably, Visakhapatnam district, despite hosting the state's largest city and a major port, is now the smallest district in area following reorganization, reflecting the deliberate strategy of carving denser urban districts into smaller administrative units for governance efficiency. Kadapa district remains the largest by area. Tirupati district, home to the globally significant Tirumala Venkateswara Temple and its associated pilgrim economy, is now the most populous district, while the newly created Polavaram district, a predominantly tribal and forested tract, is the least populous (Wikipedia, 2026a).

The state government has also introduced three regional development clusters, distinct from the traditional three-region cultural classification, intended to coordinate infrastructure and industrial planning. The Visakhapatnam region cluster covers the North Coastal districts along with East and West Godavari and Kakinada. The Amaravati-Vijayawada region cluster covers Bapatla, East Godavari, Eluru, Guntur, Kakinada, Konaseema, Krishna, Markapuram, NTR, Palnadu, and Prakasam. The Tirupati region cluster covers all Rayalaseema districts

along with SPSR Nellore (Wikipedia, 2026a). These clusters are intended to promote balanced regional growth, an objective this report evaluates critically in Chapter 4 given the state's history of capital-region-centric investment patterns.

Amaravati, in Guntur district, continues to be developed as the state's greenfield capital, a project that has proceeded in fits and starts since 2014 and that remains a central plank of the state government's Vision 2047 agenda, discussed at length in Chapter 21.

### **1.3 Demographic Structure: Population, Density, Growth and Composition**

Andhra Pradesh's population is projected at approximately 53,740,000, or 5.37 crore, as of July 1, 2026, based on Technical Group population projections built on the 2011 Census, since the decennial census due in 2021 has not yet been conducted (StatisticsTimes.com, 2026). This makes Andhra Pradesh India's tenth most populous state and the third most populous state in South India, and it accounts for approximately 3.76 percent of India's total population, a share that has been steadily declining from a peak of 5.77 percent in 1931, reflecting the state's below-average population growth rate relative to many northern Indian states (StatisticsTimes.com, 2026).

The state's population growth rate for 2026 is projected at just 0.29 percent, among the second lowest of any Indian state, with the state expected to add only around 154,000 people over the course of the year (StatisticsTimes.com, 2026). This is a marked deceleration from the historical pattern. According to the 2011 Census, the state's population, prior to bifurcation, had grown by 9.21 percent over the preceding decade, itself a slowdown from the 11.89 percent recorded between 1991 and 2001 (StatisticsTimes.com, 2026). Longer-run projections suggest the state's population will plateau at around 54.26 crore by 2036, with growth essentially flattening out over the following decade (StatisticsTimes.com, 2026).

In terms of sex composition, Andhra Pradesh's projected 2026 population includes approximately 26.85 million males and 26.89 million females, giving the state a sex ratio in which females marginally outnumber males, a pattern that positions the state favorably relative to the national average and reflects long-standing demographic patterns in South Indian states more broadly (StatisticsTimes.com, 2026). The 2011 Census recorded a sex ratio of just over 100 females per 100 males using an alternative calculation convention, and more commonly cited figures place the state's sex ratio at approximately 993 to 996 females per 1,000 males, comfortably above the national average of 943 (World Population Review, 2026).

Regarding rural-urban composition, approximately 70.4 percent of the state's population resides in rural areas, with 29.6 percent classified as urban, a distribution that has been gradually shifting toward urbanization but remains substantially more rural than the national average, a pattern examined in detail in Chapter 11 (World Population Review, 2026). The state's largest city is Visakhapatnam, with a population of approximately 2.036 million, followed by Vijayawada and Guntur, the latter recorded at approximately 833,782 residents

and notable for having one of the highest urban population densities in the country, at roughly 14,000 people per square kilometer (World Population Review, 2026).

Perhaps the single most consequential demographic finding for this report concerns fertility. Andhra Pradesh's Total Fertility Rate has fallen from 3.0 in 1993 to approximately 1.5 today, substantially below the replacement level of 2.1 required to sustain a stable population over time (KP IAS Academy, 2026). This places Andhra Pradesh among the small group of Indian states whose fertility decline has proceeded far enough to raise serious questions about long-term population aging and workforce shrinkage. Projections suggest that by 2047, approximately 23 percent of the state's population could be aged 60 or above, a proportion that would place substantial strain on healthcare systems, pension architecture, and social welfare programming, and that motivated the state government's decision to draft a new Population Management Policy in early 2026, the first explicitly pro-natalist state-level policy in India, reversing decades of family planning promotion in favor of birth incentives, including a proposed payment of Rs. 25,000 per birth under a package termed Poshana-Shiksha-Suraksha (KP IAS Academy, 2026). This policy underwent a one-month public consultation period and was slated for implementation from April 1, 2026 (KP IAS Academy, 2026). The demographic and health dimensions of this shift are examined further in Chapter 6.

#### **1.4 Linguistic, Ethnic, Religious and Cultural Profile**

Telugu is overwhelmingly the dominant language of Andhra Pradesh, spoken by approximately 83.55 percent of the state's population, and it functions as both the official language of state administration and the primary medium of instruction in government schools, though English medium instruction has expanded considerably in recent years, a trend discussed further in Chapter 5 (World Population Review, 2026). Beyond Telugu, Urdu is spoken by approximately 8.87 percent of the population, concentrated in and around historically Muslim-influenced urban centers, Hindi by approximately 3.69 percent, reflecting migrant populations and the broader spread of Hindi as a link language, and Tamil by approximately 1.01 percent, largely in districts bordering Tamil Nadu, with the remaining 2.88 percent speaking other regional languages (World Population Review, 2026).

Andhra Pradesh's cultural identity is deeply rooted in Telugu literary, devotional, and performing arts traditions, with Carnatic music, Kuchipudi classical dance, which originated in the state, and Telugu cinema, a major regional film industry with national reach, forming central pillars of the state's cultural economy, discussed in Chapter 19. The state is also historically significant as the site of some of India's most visited pilgrimage centers, most notably the Tirumala Venkateswara Temple in Tirupati district, one of the wealthiest and most visited religious sites in the world, drawing millions of pilgrims annually and anchoring a substantial devotional tourism economy (JAIN College, 2025).

On religious composition, Hindus form the overwhelming majority of the state's population, consistent with patterns recorded in the 2011 Census, with Muslim and Christian minorities constituting significant shares in specific districts and urban centers, particularly along the

coastal belt and in districts with historical missionary and trading contact. Updated religion-wise census figures specific to 2026 are not yet available given the delayed decennial census, and this report relies on 2011 Census religious composition data as the most recent authoritative baseline, a limitation flagged in the Preface.

Scheduled Castes and Scheduled Tribes form significant population segments in the state, with Scheduled Tribe populations concentrated heavily in the forested and hill districts of North Andhra, including Alluri Sitharama Raju and the newly formed Polavaram district, both of which contain substantial tribal populations engaged in forest-based livelihoods. The social and welfare dimensions of these communities are addressed in depth in Chapter 7, which covers Scheduled Caste and Scheduled Tribe welfare programming, reservation policy, and forest rights administration.

Literacy in Andhra Pradesh, as recorded in the 2011 Census, stood at approximately 67.02 percent, with male literacy at 74.88 percent and female literacy at 59.15 percent, a considerable gender gap that reflects historical patterns of unequal educational access (Census of India, 2011, as cited in [censusofindia.net](http://censusofindia.net), 2026). More recent estimates suggest the literacy rate has continued to improve, though updated, census-verified figures await the next decennial enumeration. The persistent gender gap in literacy, and its narrowing over subsequent school cohorts, is examined in Chapter 5 alongside enrollment and retention data.

### **1.5 Human Development Index: State Ranking and Trend Analysis**

Andhra Pradesh's human development trajectory presents a genuinely mixed picture, one that resists simple characterization as either a success story or a laggard state. On one hand, longitudinal research on the relationship between economic growth and human development finds that Andhra Pradesh, alongside Gujarat and Sikkim, moved from what researchers term the "economic-growth-lopsided" category in the 1990s into a "virtuous" category by the 2000s, meaning the state achieved a combination of strong economic growth performance alongside supporting conditions, such as social sector investment, that sustained human development gains, and it remained in that virtuous category through the following decade (Centre for Social and Economic Progress, 2024).

At the same time, more granular sub-index analysis reveals a persistent weakness in the education dimension specifically. Recent state-wise HDI component analysis places Andhra Pradesh's Education Index at approximately 0.464, a figure that groups the state alongside Bihar, at 0.438, and Rajasthan, at 0.493, among states where literacy and schooling outcomes lag significantly behind the better-performing southern peers such as Kerala, Tamil Nadu, and Karnataka (Wani & Krande, 2025). This finding is significant because it complicates any narrative that treats Andhra Pradesh as unambiguously following the South Indian human development model associated with Kerala and Tamil Nadu. The state's income dimension performs comparatively better, benefiting from the state's above-average per capita income growth documented in Chapter 3, but income gains have not yet been matched by equivalent gains in schooling quality and duration, a gap examined in depth in Chapter 5.

At the national level, India's overall HDI stood at 0.644 in 2022, corresponding to a global ranking of 134th out of 193 countries, in the "medium human development" category, with a modest improvement to 130th out of 193 countries and territories reported in the 2025 UNDP Human Development Report (Testbook, 2026; PMF IAS, 2025). India's HDI performance also reflects one of the highest inequality-adjustment losses in South Asia, with the Inequality-adjusted HDI falling to 0.475, a drop of 30.7 percent from the unadjusted figure, underscoring how much national and, by extension, state-level averages can mask internal disparities of exactly the kind documented in section 1.7 below (ForumIAS, 2025).

Historical classification data also shows Andhra Pradesh's position shifting over time relative to peer states. In the 2011-12 assessment period, Andhra Pradesh was grouped among a set of states including Odisha, Punjab, Rajasthan, Telangana, Uttar Pradesh, Uttarakhand, and West Bengal in a lower-middle HDI tier. By 2017-18, several of these peer states, including Haryana, Karnataka, Punjab, Telangana, and Uttarakhand, had moved upward into a higher HDI category, leaving Andhra Pradesh in a smaller residual group alongside Assam, Bihar, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh, and West Bengal (Wani & Krande, 2025). This relative stagnation, even as the state's own indicators improved in absolute terms, is a recurring theme in Indian state development analysis, namely that improvement in absolute terms does not guarantee improvement in relative standing when peer states are also improving, sometimes faster.

## **1.6 Poverty, Inequality and Multidimensional Deprivation Indices**

Andhra Pradesh holds a distinctive place in the history of poverty measurement in India, having been the first Indian state to adopt a Multidimensional Poverty Index framework to guide its own poverty reduction strategy, doing so in 2018, several years before NITI Aayog rolled out a National Multidimensional Poverty Index framework for the country as a whole (OPHI, 2026). This early institutional commitment to multidimensional poverty measurement, which captures deprivation across health, education, and standard of living dimensions rather than income alone, has arguably given the state a longer track record of data-driven poverty targeting than most of its peers.

At the national level, NITI Aayog's most recent Multidimensional Poverty Index progress review found that approximately 135 million people, or 13.5 crore, escaped multidimensional poverty nationally between the NFHS-4 survey round of 2015-16 and the NFHS-5 survey round of 2019-21, with India's national MPI Headcount Ratio falling from 24.85 percent to 14.98 percent over that period (NITI Aayog, 2023, as cited in niti.gov.in, 2024). Rural poverty reduction outpaced urban poverty reduction nationally, falling from 32.59 percent to 19.28 percent in rural areas compared to a decline from 8.65 percent to 5.27 percent in urban areas (NITI Aayog, 2023, as cited in niti.gov.in, 2024).

Andhra Pradesh's own performance within this national trend has been notably strong at the sub-state level. Analysis of NITI Aayog's Aspirational Districts Programme, which tracks a set of 112, later 106, historically underdeveloped districts nationwide across health, nutrition, education, and agricultural indicators, found that Andhra Pradesh was among a small group

of states, alongside Madhya Pradesh, Assam, and Tamil Nadu, whose aspirational districts recorded the sharpest declines in multidimensional poverty nationally, with roughly 46 percent of all aspirational districts nationwide recording measurable poverty reduction (Assam Tribune, 2025).

However, national-level data also cautions against complacency on inequality specifically. India's overall HDI loss when adjusted for inequality stood at 30.7 percent as of the 2025 UNDP report, among the highest such losses recorded in South Asia, indicating that averaged gains in income, health, and education mask substantial internal disparity, a pattern that, absent state-specific inequality-adjusted data for Andhra Pradesh, this report treats as a plausible risk warranting further district-level investigation rather than an established state-specific finding (ForumIAS, 2025). Scheduled Tribe poverty nationally remains close to three times the national average, at approximately 33 percent under NITI Aayog's MPI framework, a disparity relevant to Andhra Pradesh's own tribal-majority districts in the North Andhra region and examined further in Chapter 7 (Vajiram & Ravi, 2025).

### **1.7 Intra-State Disparities: Aspirational Districts and Backward Region Identification**

The most persistent and analytically important disparity within Andhra Pradesh runs along the state's three traditional regional divisions, Coastal Andhra, Rayalaseema, and North Andhra, and this divide long predates the state's 2014 bifurcation, tracing back to differences in colonial-era irrigation investment, soil quality, and rainfall reliability. Coastal Andhra, benefiting from the Godavari and Krishna river deltas and colonial-era canal irrigation systems, has historically enjoyed higher agricultural productivity and, correspondingly, stronger human development indicators. Rayalaseema, by contrast, has faced chronic rainfall variability and lower irrigation coverage, translating into weaker agricultural incomes and higher distress migration, while North Andhra's hill and tribal districts have faced the compounding disadvantages of forest-dependent livelihoods, weaker road and market connectivity, and historically lower state investment in social infrastructure.

This intra-state disparity is precisely the rationale behind NITI Aayog's Aspirational Districts Programme, under which the central government, in partnership with individual state governments including Andhra Pradesh, established a real-time monitoring dashboard tracking district-level progress on health, nutrition, education, agriculture, and basic infrastructure indicators, with the explicit aim of encouraging competitive improvement between lagging districts and rewarding measurable progress rather than simply channeling additional funds without accountability (NITI Aayog, 2018). Andhra Pradesh's participation in this programme, and its comparatively strong performance in reducing multidimensional poverty within its aspirational districts relative to other states, as noted in section 1.6, suggests the state's institutional capacity for targeted, data-driven regional development has been a genuine relative strength, even as the underlying regional gaps remain far from closed.

District-level economic data for the 2025-26 fiscal year illustrates the scale of the disparity in a different register, that of raw economic output. Visakhapatnam district recorded the highest

district GSDP at approximately Rs. 1.61 lakh crore, followed by NTR, Krishna, Tirupati, and Eluru districts, all situated in the Coastal Andhra region or, in Tirupati's case, benefiting from a concentrated pilgrimage and services economy (Yuva Competitive Academy, 2026). Growth rates also varied considerably by district, with Krishna district recording growth of 18.14 percent, Bapatla district 19.19 percent, and Chittoor district 16.09 percent, figures that, while impressive, also underscore how growth has been concentrated in specific coastal and capital-adjacent districts rather than evenly distributed across the state's twenty eight administrative units (Yuva Competitive Academy, 2026). The newly created Polavaram district, predominantly tribal and forested, was recorded as the least populous district in the state and, by extension, is likely to register among the lowest absolute GSDP figures, though district-specific data disaggregated for Polavaram since its December 2025 creation was not yet separately available at the time of writing (Wikipedia, 2026a).

The state government's decision to establish three regional development clusters, Visakhapatnam, Amaravati-Vijayawada, and Tirupati, discussed in section 1.2, can be read as an explicit administrative acknowledgment of this persistent regional imbalance, an attempt to ensure that infrastructure and industrial investment planning is coordinated across district boundaries within each region rather than concentrated narrowly around the state capital alone. Whether this cluster-based planning translates into measurably reduced regional disparity over the coming years is a question this report revisits in Chapter 4, on investment and industrial policy, and Chapter 21, on the credibility of the state's longer-term Vision 2047 roadmap.

## **1.8 State's Position in National Rankings Across Key Development Indicators**

Placed against its fellow Indian states, Andhra Pradesh occupies a position of genuine complexity, ranking strongly on some indicators and modestly on others, a pattern this section summarizes briefly, with fuller sector-specific ranking detail reserved for the relevant later chapters.

On economic scale, Andhra Pradesh ranks eighth nationally by GSDP, with an estimated output of Rs. 17.62 lakh crore for 2025-26, placing it behind larger states such as Maharashtra, Tamil Nadu, Karnataka, Gujarat, Uttar Pradesh, West Bengal, and Rajasthan, but ahead of most other states by absolute economic size (Mission Andhra, 2026). On fiscal management, NITI Aayog's Fiscal Health Index analysis for the 2023-24 financial year period groups Andhra Pradesh among a set of states described as "aspirational" on fiscal health, alongside Haryana, Kerala, West Bengal, and Punjab, a category that sits below the strongest-performing states such as Odisha and Chhattisgarh on revenue mobilization specifically, though performance varies across the index's five constituent sub-categories of revenue mobilization, expenditure quality, fiscal prudence, debt sustainability, and debt index (NITI Aayog, 2025).

On human development specifically, as detailed in section 1.5, Andhra Pradesh's overall trajectory has been positive in absolute terms but its relative national ranking has not kept pace with peer states, several of which have moved into higher HDI tiers over the past decade

while Andhra Pradesh has remained in a middle grouping, a pattern most pronounced in the education dimension, where the state's Education Index score lags noticeably behind southern peer states such as Kerala and Tamil Nadu (Wani & Krande, 2025).

On demographic transition, Andhra Pradesh ranks among the most advanced Indian states, a distinction that cuts both ways depending on framing. Its population growth rate of 0.29 percent for 2026 is the second lowest of any Indian state, and its Total Fertility Rate of approximately 1.5 places it firmly among the states that have completed their demographic transition well ahead of the national average (StatisticsTimes.com, 2026; KP IAS Academy, 2026). This is frequently cited as an achievement in international development literature, since sustained fertility decline below replacement level typically correlates with improvements in female education, healthcare access, and household income. Yet it also positions Andhra Pradesh as one of the first Indian states to confront the fiscal and social policy challenges of an aging population, well before most of the country, and the state's pioneering, and contested, shift toward pro-natalist policy in 2026 reflects that early confrontation with population aging (KP IAS Academy, 2026).

Taken together, the picture that emerges from this opening chapter is of a state whose economic scale and growth momentum have genuinely strengthened over the past decade, whose demographic transition has advanced further and faster than almost any other large Indian state, and whose human development gains, while real, have not been evenly distributed across its three constituent regions, nor have they matched the pace of its economic expansion in every dimension, education being the clearest case in point. These threads, the fiscal capacity to fund public services, the demographic pressure of an aging population arriving early, and the entrenched regional divide between Coastal Andhra, Rayalaseema, and North Andhra, recur throughout the chapters that follow, and the remainder of this report examines each in turn.

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## Chapter 2: Fiscal Architecture of the State

### 2.1 Revenue Framework: Own Tax Revenue, Non-Tax Revenue and Devolution

Andhra Pradesh's revenue architecture for 2025-26 rests on a budget in which total revenue receipts are estimated at Rs. 2,17,977 crore, an increase of 24 percent over the revised estimate for 2024-25 (PRS Legislative Research, 2025). Of this total, the state's own resources account for Rs. 1,28,126 crore, or 59 percent, while the remaining Rs. 89,851 crore, or 41 percent, flows from the central government, split between the state's share in central taxes, at 26 percent of revenue receipts, and grants, at 15 percent of revenue receipts (PRS Legislative Research, 2025). This 59:41 split between own resources and central transfers is a meaningful marker of fiscal self-reliance, though it should be read alongside the fact that Telangana, the state's neighbor and post-bifurcation counterpart, raises a considerably higher 76 percent of its revenue receipts through own resources for 2026-27, suggesting Andhra Pradesh still carries a comparatively heavier dependence on central transfers than the sibling state it split from in 2014 (PRS Legislative Research, 2026).

Within the state's own resource base, tax revenue for 2026-27 is budgeted at Rs. 1,90,207.93 crore, a substantial increase from the revised estimate of Rs. 1,54,766.35 crore for 2025-26, reflecting what state finance officials have characterized as improved tax buoyancy (Deccan Chronicle, 2026b). Non-tax revenue, by contrast, is budgeted more conservatively at Rs. 11,473.98 crore for 2026-27, actually lower than the revised estimate for 2025-26, a figure the state's budget documents attribute to more realistic projections in dividends, interest receipts, and departmental recoveries, rather than to any structural weakening of non-tax collection capacity (Deccan Chronicle, 2026b). Total revenue receipts for 2026-27 are budgeted at Rs. 2,34,140.13 crore, up from the revised estimate of Rs. 1,96,903.52 crore for 2025-26, alongside total Public Account receipts of Rs. 3,00,936.76 crore and an opening cash balance of Rs. 1,65,838.65 crore, which budget analysts have described as reflecting a structured approach to treasury management (Deccan Chronicle, 2026b).

On devolution specifically, the state's share in central taxes for 2025-26 is estimated at Rs. 57,566 crore, while grants from the centre are estimated at Rs. 32,284 crore, an increase of 47 percent over the revised estimate for 2024-25, driven in large part by an anticipated increase in grants for centrally sponsored schemes, most notably the Mahatma Gandhi National Rural Employment Guarantee Scheme and the Pradhan Mantri Awas Yojana-Urban (PRS Legislative Research, 2025). It is worth situating these devolution figures against the backdrop of the Fifteenth Finance Commission's award, under which Andhra Pradesh's share of total tax devolution from the centre was set at 4.0 percent, a decline from the 4.3 percent share the state had received under the Fourteenth Finance Commission, with the state's share in total grants-in-aid also decreasing marginally, by 0.6 percentage points, relative to the Fourteenth Finance Commission (NITI Aayog, 2025a). This declining devolution share is a structural headwind that the state's own resource mobilization has had to work harder to offset, and it forms part of the broader Centre-State fiscal relationship examined in section 2.9.

A useful cross-state benchmark comes from aggregate data compiled by the Forum for State Studies, which finds that the all-state ratio of own tax revenue to GSDP is expected to rise from 6.57 percent in 2023-24 to 6.91 percent in 2025-26 across budget estimates, alongside a rising share of State Goods and Services Tax within states' own tax revenue nationally, from 42.20 percent in 2023-24 to 43.57 percent in 2025-26 (Forum for State Studies, 2025). Andhra Pradesh's own SGST performance is examined further in section 2.7.

## **2.2 Expenditure Profile: Composition, Quality and Efficiency**

Total expenditure for Andhra Pradesh, excluding debt repayment, is estimated at Rs. 2,97,929 crore for 2025-26, an increase of 19 percent over the revised estimate for 2024-25, with an additional Rs. 24,430 crore earmarked for debt repayment during the year (PRS Legislative Research, 2025). This expenditure envelope is financed against receipts, excluding borrowings, of Rs. 2,18,002 crore, itself an increase of 24 percent over the prior year's revised estimate, with the residual gap covered through net borrowing (PRS Legislative Research, 2025).

On the composition of this spending, the 2026-27 budget documents show expenditure on general services, which includes administrative machinery, police, and pension obligations, budgeted at Rs. 79,460.70 crore, of which pension liabilities alone account for Rs. 23,712.64 crore, a figure that illustrates the scale of the state's committed, non-discretionary expenditure obligations (Deccan Chronicle, 2026b). Under social services, education, sports, art, and culture together receive Rs. 32,962.02 crore, with general education alone accounting for Rs. 31,929.08 crore of that allocation, an emphasis budget commentators have read as signaling continued government focus on school infrastructure and academic reform, consistent with the education-sector initiatives examined in Chapter 5 (Deccan Chronicle, 2026b).

A recurring concern in the state's expenditure record is the persistent gap between budgeted and actual spending. Analysis of the 2023-24 fiscal year found that the state's net expenditure came in 9 percent lower than budgeted estimates, with underspending particularly pronounced in specific welfare categories, including a 19 percent shortfall in spending targeted at Scheduled Castes, Other Backward Classes, and minority communities (PRS Legislative Research, 2025). Sectors that recorded outright decreases in spending relative to prior allocations included irrigation and flood control, social welfare and nutrition, transport, and agriculture, a pattern that, if it recurs, has direct implications for the infrastructure and welfare chapters that follow later in this report, particularly Chapter 8 on transport connectivity and Chapter 18 on agriculture (PRS Legislative Research, 2025). Capital outlay for 2024-25 was itself estimated to come in 26 percent lower than originally budgeted, a further indicator that the gap between announced spending ambition and executed spending has been a persistent feature of the state's recent fiscal management, rather than a one-off occurrence (PRS Legislative Research, 2025).

On committed expenditure specifically, defined as spending on salaries, pensions, and interest payments, a larger share of committed expenditure within a state's total budget typically constrains the fiscal space available for discretionary development spending, and Andhra

Pradesh's own budget documents flag committed expenditure as a persistent structural pressure on the state's finances (PRS Legislative Research, 2025). Interest payments alone are projected at Rs. 37,280.54 crore for 2026-27, a figure that budget commentary describes as underlining the state's growing debt servicing burden (Deccan Chronicle, 2026b).

### **2.3 Capital Expenditure: Infrastructure Investment and Asset Creation**

Capital expenditure remains one of the more structurally weak points in Andhra Pradesh's fiscal profile relative to its peer states. NITI Aayog's macro and fiscal assessment of the state finds that Andhra Pradesh's capital expenditure to GSDP ratio stands at just 1.4 percent, a figure the report describes as significantly lower than the median across 22 major Indian states, excluding Union Territories and most North Eastern states (NITI Aayog, 2025b). This is a meaningful finding because capital expenditure, unlike revenue expenditure on salaries and subsidies, is the category of spending most directly linked to durable asset creation, including roads, irrigation infrastructure, and power transmission capacity, all of which recur as themes across the infrastructure chapters of this report, particularly Chapters 8, 9, and 10.

The state's own 2025-26 budget documents show loans and advances given by the state, a category closely related to capital investment activity, projected at Rs. 6,131 crore, approximately six times the revised estimate for 2024-25, an increase driven primarily by loans allocated for major irrigation projects, at Rs. 1,491 crore, and urban development, at Rs. 1,945 crore (PRS Legislative Research, 2025). This sharp year-on-year increase suggests an attempt by the state government to accelerate capital-linked spending after a period of comparative restraint, though it should be weighed against the broader pattern noted in section 2.2, where capital outlay in 2024-25 came in 26 percent below the original budget target, a gap that raises legitimate questions about whether announced capital expenditure ambitions will be fully executed in practice.

The central government's continuation of 50-year interest-free loans to states for capital expenditure, a scheme in place since 2020-21 and structured so that these loans are excluded from the calculation of a state's borrowing ceiling, has been an important supplementary financing channel for capital projects across Indian states, including Andhra Pradesh (PRS Legislative Research, 2025). This scheme, formally known as the Special Assistance to States for Capital Investment, or SASCI, effectively allows states additional headroom for infrastructure spending without breaching their formal fiscal deficit limits under the Fiscal Responsibility and Budget Management framework, a nuance that matters for interpreting the fiscal deficit figures discussed in section 2.4, since national aggregate data shows that states' fiscal deficit excluding SASCI loans is somewhat lower than the headline figure that includes them (PRS Legislative Research, 2025).

### **2.4 Fiscal Deficit, Primary Deficit and Debt Sustainability**

Andhra Pradesh's fiscal deficit for 2025-26 is targeted at 4.4 percent of GSDP, equivalent to Rs. 79,927 crore, an improvement on the revised estimate of 4.6 percent of GSDP recorded for 2024-25, though still above the 4.2 percent originally budgeted for that year, since actual

2024-25 performance saw net receipts fall 12 percent below budget estimates even as net expenditure came in 8 percent below budget, with the shortfall in receipts outweighing the savings on the expenditure side and pushing the deficit higher than planned (PRS Legislative Research, 2025). Revenue deficit for 2025-26 is estimated at 1.8 percent of GSDP, or Rs. 33,186 crore, a marked improvement from the 3 percent of GSDP revenue deficit recorded in the revised estimates for 2024-25 (PRS Legislative Research, 2025).

It is worth flagging a data discrepancy here in the interest of transparency, consistent with this report's approach to conflicting sourcing. A separate PRS analysis of aggregate state finances for 2025-26 places Andhra Pradesh's fiscal deficit at 3.8 percent of GSDP, grouping the state alongside Punjab as having one of the higher fiscal deficits among Indian states for that year, a figure that appears to diverge from the state's own budget document figure of 4.4 percent cited above (PRS Legislative Research, 2025c). The most plausible explanation is a difference in treatment of SASCI capital loans, which are excluded from the standard borrowing ceiling calculation, and this report presents both figures rather than resolving the discrepancy, since neither source provides enough methodological detail to adjudicate definitively.

On the state's overall debt position, figures vary meaningfully depending on the year and methodology used. A macro-fiscal assessment places Andhra Pradesh's debt to GSDP ratio at approximately 33.3 percent as of 2025-26, a level the underlying analysis characterizes as high relative to states with stronger revenue mobilization capacity, such as Odisha, at 13.1 percent, though still well below the most fiscally stressed states, such as Arunachal Pradesh, at 53 percent, and Punjab, at 46.8 percent (MyIndMakers, 2025). An earlier evaluation conducted for the Fifteenth Finance Commission had placed the state's debt to GSDP ratio at a considerably lower 28.33 percent, though that figure predates the more recent fiscal expansion documented throughout this chapter and should be read as a historical reference point rather than a current one (Fifteenth Finance Commission, 2025).

Forward-looking debt sustainability analysis conducted by NITI Aayog finds that, under a baseline scenario in which the state's primary deficit, real GSDP growth, and real effective interest rate continue evolving at their average pace over the preceding decade, Andhra Pradesh's debt to GSDP ratio is projected to increase over the coming five years, with the ratio declining only under more favorable scenarios combining higher growth and a lower primary deficit (NITI Aayog, 2025b). A separate long-run projection exercise by the National Council of Applied Economic Research similarly projects that Andhra Pradesh, alongside Telangana, will see its debt to GSDP ratio rise above 40 percent by 2027-28 under baseline assumptions, placing both post-bifurcation states in a debt trajectory comparable to states such as Tamil Nadu, Haryana, and West Bengal (National Council of Applied Economic Research, 2025). Taken together, these projections suggest that, absent a durable acceleration in either own revenue mobilization or GSDP growth beyond current trend rates, Andhra Pradesh's debt burden is likely to become somewhat heavier over the remainder of this decade rather than lighter, a conclusion this report revisits in the context of the state's broader Vision 2047 financing strategy in Chapter 21.

## 2.5 State's Borrowings, Guarantees and Off-Budget Liabilities

Total borrowings for Andhra Pradesh are budgeted at Rs. 97,315.41 crore for 2026-27, a reduction from the revised estimate of Rs. 1,02,881.72 crore for 2025-26, of which internal debt accounts for Rs. 78,182 crore and loans from the central government account for a further Rs. 19,133.41 crore (Deccan Chronicle, 2026b). The state's Fiscal Responsibility and Budget Management framework, formally the Andhra Pradesh Fiscal Responsibility and Budget Management Act, originally enacted in 2010 following recommendations of the Twelfth Finance Commission, has been amended five times since its original passage, most significantly through a 2020 amendment mandating that the state maintain its revenue deficit at no more than 2.5 percent of GSDP, including provision for a one-time additional borrowing permitted for 2019-20, and a further 2021 amendment establishing an updated deficit reduction glide path (Fifteenth Finance Commission, 2025).

Beyond direct borrowing, Andhra Pradesh's contingent liabilities in the form of state guarantees represent a further, less transparent category of fiscal exposure. National data on state guarantees shows that, on average across Indian states, the power sector accounts for 47 percent of total outstanding state guarantees, but Andhra Pradesh's own guarantee portfolio shows a distinctive composition, with agriculture accounting for 26 percent of the state's outstanding guarantees, a notably different profile from most other states, where guarantees cluster more heavily around power distribution companies, cooperatives, or food and civil supplies corporations (PRS Legislative Research, 2025c). Nationally, outstanding state guarantees amounted to 4.2 percent of GSDP as of 2023-24, and this category of liability is significant precisely because guarantees do not appear in headline fiscal deficit figures even though they represent a real, if contingent, call on state finances should the guaranteed entity default (PRS Legislative Research, 2025c).

Andhra Pradesh's Statement of Fiscal Policy, tabled as part of its budget documentation, provides its own detailed accounting of state government liabilities, including a specific note that guarantees extended by the Finance Department to the Andhra Pradesh State Development Corporation remain conditional and have not yet been invoked as of the reporting date, an important distinction between authorized guarantee ceilings and guarantees actually in force (Government of Andhra Pradesh, 2025). This level of disclosure, while useful, also underscores how much of the state's true contingent liability picture depends on guarantees that could, in principle, be called upon in adverse circumstances, a risk factor examined further in the discussion of power sector finances in Chapter 9.

## 2.6 Finance Commission Awards: Allocation and Utilisation

The Fifteenth Finance Commission's award period, covering 2021-22 through 2025-26, has structured a meaningful share of Andhra Pradesh's central transfers, and as noted in section 2.1, the Commission recommended that the state receive 4.0 percent of total tax devolution, down from the 4.3 percent share recommended by the Fourteenth Finance Commission, alongside a 6.2 percent share of total grants-in-aid, itself a decline of 0.6 percentage points relative to the Fourteenth Finance Commission's award (NITI Aayog, 2025a). This declining

devolution share reflects, in part, the Finance Commission's use of updated population and income distance criteria in its horizontal devolution formula, criteria under which states with relatively higher per capita income, as Andhra Pradesh has increasingly become relative to poorer northern states, tend to see their devolution share decline even as their absolute transfer amounts may still rise in nominal terms due to overall growth in the shareable central tax pool.

The Fifteenth Finance Commission also recommended additional annual borrowing space of 0.5 percent of GSDP for states between 2021-22 and 2025-26, specifically earmarked for undertaking power sector reforms, a provision states could draw upon only upon meeting specified reform conditions related to distribution company performance and tariff rationalization (PRS Legislative Research, 2025c). Given the significant share of Andhra Pradesh's state guarantees tied to agriculture rather than power, as noted in section 2.5, and given the power sector challenges documented in Chapter 9, the extent to which Andhra Pradesh has been able to fully utilize this conditional borrowing space is a question warranting further state-specific investigation beyond what is available in the aggregate national data reviewed for this report.

Utilisation of Finance Commission grants for specific purposes, including grants for local bodies, disaster management, and health sector strengthening, forms part of the state's broader public financial management architecture discussed in section 2.8, and utilisation certificates and audit findings related to these grants are typically reported through the Comptroller and Auditor General's state-specific audit reports, which represent an important, if less frequently cited, primary source for future editions of this framework.

## **2.7 GST Implementation: Revenue Impact and Compensation Status**

The Goods and Services Tax regime has become an increasingly central pillar of Andhra Pradesh's own tax revenue base, consistent with the national trend documented in section 2.1, where State GST's share of aggregate state own tax revenue rose from 42.20 percent in 2023-24 to a projected 43.57 percent in 2025-26 across major Indian states (Forum for State Studies, 2025). The compensation mechanism that had guaranteed states a 14 percent annual revenue growth rate under the original GST framework formally lapsed in June 2022, five years after the tax's national rollout, and states including Andhra Pradesh have since had to absorb GST revenue volatility directly rather than relying on a compensation backstop, a structural shift that makes the state's own SGST collection performance considerably more consequential for overall fiscal health than it was during the compensation period.

Andhra Pradesh's state tax administration has continued to invest in GST compliance and enforcement infrastructure, including automation of investigation case allocation, intended to improve efficiency, accuracy, and resource optimization in scrutiny and audit processes, and the deployment of a chatbot-based advisory system allowing officers to seek clarification on classification issues raised by taxpayers (Government of Andhra Pradesh, 2025). The state's broader tax revenue collection, which for 2023-24 stood at Rs. 50,423.50 crore, and which had reached Rs. 37,804.42 crore by December 2024 within the 2024-25 fiscal year, reflects

the combined effect of SGST, state excise, motor vehicle taxes, and stamp duty and registration collections, with motor vehicle tax collection alone recording Rs. 4,595.17 crore in 2023-24, a growth rate of 7.01 percent over the prior year (Government of Andhra Pradesh, 2025).

A notable recent development in the state's indirect tax administration concerns excise policy. Following the implementation of a new excise policy from October 15, 2024, the state introduced a cess on liquor products that, by January 24, 2025, had generated approximately Rs. 46.19 crore in collections, with the state's fiscal policy statement noting that any resulting differences in maximum retail price arising from revised tax rates would not permit retailers to adjust their own margins, a consumer protection provision embedded within the tax policy itself (Government of Andhra Pradesh, 2025). While excise and cess revenues are a comparatively minor share of the state's overall tax base relative to SGST, this example illustrates the granular level at which the state's tax administration has been actively adjusting policy instruments in the 2024 to 2026 period, an activity level consistent with a state attempting to maximize own revenue mobilization amid the debt sustainability pressures documented in section 2.4.

## **2.8 Public Financial Management Reforms and Audit Compliance**

Andhra Pradesh's public financial management architecture centers on its Comprehensive Financial Management System, a digital treasury and accounting platform administered through the Andhra Pradesh Centre for Financial Systems and Services, a special purpose vehicle established to oversee financial systems administration on behalf of the state government (Fifteenth Finance Commission, 2025). This system is intended to provide real-time visibility into treasury operations, budget execution, and expenditure tracking across state government departments, and its continued development is relevant to the broader technology-enabled governance themes examined in Chapter 16.

On audit compliance specifically, the state's own evaluation documentation submitted to the Fifteenth Finance Commission flagged continuing gaps in the implementation of the Panchayat Extension to Scheduled Areas Act, noting that while the picture had improved somewhat in certain pockets, more serious effort was still needed to establish Gram Sabhas as the central institution for decision-making in Scheduled Areas, a governance gap with direct relevance to the tribal welfare themes examined in Chapter 7 (Fifteenth Finance Commission, 2025). More broadly, the persistent gap between budgeted and executed expenditure documented in section 2.2, including the 19 percent underspending recorded against Scheduled Caste, Other Backward Class, and minority welfare allocations in 2023-24, points to execution capacity, rather than resource availability alone, as a meaningful constraint on the state's public financial management performance (PRS Legislative Research, 2025).

The state's investment portfolio in public sector undertakings also warrants mention here, since it intersects with both audit compliance and fiscal risk. Evaluation data submitted to the Fifteenth Finance Commission found that 99 percent of the state's total public sector investment sits within state-exclusive working public sector undertakings, with the erosion of

net worth most pronounced in two entities, and with several power sector undertakings, including distribution companies, recording substantial losses (Fifteenth Finance Commission, 2025). The state's continued reliance on a Discom Assurance Yojana style financial turnaround mechanism for its power distribution companies reflects an ongoing effort to address this erosion, a topic revisited in the power sector discussion in Chapter 9.

## **2.9 Centre-State Fiscal Relations: Trends and Themes**

The overarching theme running through Andhra Pradesh's fiscal relationship with the central government since 2014 has been one of adjustment to the loss of Hyderabad and its associated revenue base, layered atop the more general evolution of India's fiscal federalism architecture under successive Finance Commissions. The Andhra Pradesh Reorganisation Act's revenue gap compensation mechanism, under which the central government committed to meeting the state's standardized expenditure needs for the initial post-bifurcation transition year of 2014-15, saw a partial payment of Rs. 3,979.5 crore made against a larger identified gap, with the balance paid in subsequent tranches, a process that set an early precedent for the sometimes contentious negotiation between the state and the centre over the adequacy of post-bifurcation fiscal support (Fifteenth Finance Commission, 2025).

That contentious dynamic has persisted, in different form, through the successive Finance Commission cycles documented in section 2.6, with the state's devolution share declining from 4.3 percent under the Fourteenth Finance Commission to 4.0 percent under the Fifteenth, even as the state's nominal GSDP and per capita income have grown substantially in absolute terms, as documented in Chapter 3. This tension, between a state's improving relative income position reducing its formulaic claim on central transfers, and that same state's genuine ongoing capital and welfare financing needs, particularly for the still-under-construction Amaravati capital project discussed in Chapter 11, is likely to remain a defining feature of the state's fiscal relationship with the centre through the remainder of the current decade.

The 50-year interest-free capital loan scheme discussed in section 2.3, along with the state's continued dependence on centrally sponsored scheme grants for programmes such as MGNREGS and PMAY-Urban, noted in section 2.1, illustrates a further dimension of this relationship, namely that even as the state pursues its own revenue mobilization agenda, a substantial share of its capital and welfare financing continues to be routed through centrally designed and centrally conditioned channels rather than through fully autonomous state resources. The Sixteenth Finance Commission, whose award period will follow the conclusion of the current Fifteenth Finance Commission cycle at the end of 2025-26, represents the next major inflection point in this relationship, and its recommendations, expected to be finalized during the period covered by this report, will materially shape the fiscal resources available to Andhra Pradesh as it pursues the Vision 2047 targets discussed in Chapter 21.

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## Chapter 3: Economic Structure, Growth and Sectoral Performance

### 3.1 Gross State Domestic Product: Trends, Growth Rate and Sectoral Share

Andhra Pradesh's economy has expanded considerably over the decade since bifurcation, though the precise scale of that expansion depends somewhat on which official source one consults, a discrepancy this report flags rather than resolves in the interest of transparency. One widely cited estimate places the state's GSDP at Rs. 17.62 lakh crore for 2025-26, up from Rs. 5.24 lakh crore in 2014-15, an average annual growth rate of approximately 10.75 percent over the period (Yuva Competitive Academy, 2026). A separate estimate from PRS Legislative Research's budget analysis places GSDP for the same year somewhat higher, at Rs. 18.3 lakh crore, representing 14 percent growth over the revised estimate for 2024-25 (PRS Legislative Research, 2025). The India Brand Equity Foundation corroborates the higher figure, citing an estimated GSDP of Rs. 18.3 trillion, equivalent to approximately 214.2 billion US dollars, for fiscal year 2026, and noting that GSDP grew at a compound annual growth rate of 11.7 percent between fiscal year 2016 and fiscal year 2026 (India Brand Equity Foundation, 2026). Both figures agree on the broad magnitude and direction, an economy that has more than tripled in nominal terms over roughly a decade, even if the exact year-end figure varies by several percentage points across sources depending on revision cycles and base year methodology.

This variation is itself partly explained by a methodological shift underway at the national level. The Ministry of Statistics and Programme Implementation has revised India's GDP base year from 2011-12 to 2022-23, a change intended to better capture structural shifts in the economy, evolving consumption patterns, the growth of digital services, and the increasing weight of manufacturing, and this revision incorporates new administrative data sources including GST returns, the VAHAN vehicle registration database, and the MCA-21 corporate filings system (Yuva Competitive Academy, 2026). Because Andhra Pradesh's state-level GSDP estimates are themselves derived in coordination with this national framework, some of the divergence between sources likely reflects different stages of incorporating the revised base year methodology into headline state figures, and readers should treat any single-decimal-point GSDP figure for the state with appropriate caution until the revision process fully settles.

Quarterly data provides a clearer, less contested picture of current momentum. For the second quarter of 2025-26, Andhra Pradesh recorded GSDP growth of 11.28 percent, exceeding the national GDP growth rate of 8.7 percent for the same period, with the state government's own quarterly report describing broad-based gains across agriculture, industry, and services (Wikipedia, 2026b). A separate quarterly breakdown places GSDP growth at constant prices at 9.88 percent for the same broad period, still comfortably ahead of the national average of 7.4 percent, alongside sector-specific growth of 10.14 percent in agriculture and allied activities, 9.15 percent in industry, with construction the standout sub-sector at 14.18 percent, and 10.67 percent in services (Mission Andhra, 2026). Whichever precise figure is used, the consistent finding across all sources is that Andhra Pradesh has been growing meaningfully

faster than the national average through the 2025-26 fiscal year, a performance the state's own planning department has begun tracking through a comprehensive master dashboard comprising 644 Key Performance Indicators spanning economic and social development (Yuva Competitive Academy, 2026).

On sectoral composition, the picture has been shifting steadily away from agriculture and toward services over the medium term, even though agriculture remains disproportionately important to the state's workforce, a tension examined further in section 3.7. Gross Value Added rose from Rs. 4.87 lakh crore in 2014-15 to approximately Rs. 16.24 lakh crore in 2025-26, with agriculture expanding from Rs. 1.48 lakh crore to Rs. 5.39 lakh crore, industry from Rs. 1.24 lakh crore to Rs. 3.84 lakh crore, and services from Rs. 2.15 lakh crore to approximately Rs. 7 lakh crore over the same period (Yuva Competitive Academy, 2026). Longer-term government projections envisage the services sector's share of GSDP rising from roughly 41 percent currently to about 55 percent by 2047-48, with industry's share rising to around 26 percent, implying a continued relative decline in agriculture's share even as its absolute output continues to grow (Yuva Competitive Academy, 2026). It is worth noting, however, that as of the 2021-22 reference year used in NITI Aayog's macro-fiscal assessment, agriculture still contributed 37.3 percent of the state's Gross State Value Added, nearly double the 19.7 percent average across Indian states, while services contributed 39.2 percent, below the 51 percent states' average, meaning Andhra Pradesh's structural transformation away from agriculture, while underway, has proceeded from a starting point considerably more agriculture-heavy than most of its peers (NITI Aayog, 2025b).

### **3.2 Per Capita Income and Purchasing Power Analysis**

Andhra Pradesh's per capita income has risen substantially in nominal terms, from Rs. 93,903 in 2014-15 to Rs. 2,94,507 in 2025-26, an increase that broadly tracks the state's GSDP expansion described in section 3.1, and which one industry source describes as reflecting a 10.43 percent year-on-year increase for the most recent year (Yuva Competitive Academy, 2026; Mission Andhra, 2026). This figure places Andhra Pradesh's per capita income meaningfully above the national average as of the most recently available comparative data point, since the state's nominal per capita income of Rs. 216,998 in 2021-22 was already 27 percent higher than the corresponding national per capita income figure for that year (NITI Aayog, 2025b).

This relative income advantage carries direct consequences for the state's fiscal position described in Chapter 2, since higher per capita income tends to reduce a state's formulaic entitlement to central tax devolution and grants-in-aid under successive Finance Commission awards, a dynamic already noted in section 2.6 regarding the decline in Andhra Pradesh's devolution share between the Fourteenth and Fifteenth Finance Commissions. It also illustrates a recurring theme in Indian federal economics, namely that a state's growing prosperity, from the perspective of its own residents, can simultaneously translate into reduced central transfers, from the perspective of its budget managers, creating an inherent tension between income growth and continued dependence on central fiscal support.

Longer-run historical data situates the current per capita income trajectory within the state's broader post-independence economic history. Even prior to the 2014 bifurcation, the undivided state's per capita income had increased by 62.6 percent, from Rs. 25,959 in 2004-05 to Rs. 42,186 in 2012-13, at then-prevailing prices, indicating that the underlying growth trajectory in per capita terms substantially predates the more recent decade covered by this chapter's headline figures (Wikipedia, 2026b). What has changed since bifurcation is less the direction of the trend than its pace, with the post-2014 residual state achieving faster per capita income growth than the undivided state managed in the preceding decade, notwithstanding the loss of Hyderabad's comparatively high-income urban economy.

It should also be noted that nominal per capita income figures, while useful for year-on-year and cross-state comparison, do not directly capture purchasing power or cost-of-living differences across the state's own regions, an issue of particular relevance given the intra-state disparities documented in Chapter 1, section 1.7. District-level GSDP data showing Visakhapatnam, NTR, Krishna, Tirupati, and Eluru districts substantially outperforming the state average, discussed in section 1.7 and again in section 3.9 below, implies that per capita income in the state's lagging Rayalaseema and North Andhra districts is likely considerably below the state average headline figure, though disaggregated district-level per capita income data specific to 2025-26 was not available in the sources consulted for this report and would be a valuable addition to future editions of this framework.

### **3.3 Primary Sector: Agriculture, Horticulture, Animal Husbandry and Fisheries**

Agriculture remains the single most important sector of Andhra Pradesh's economy by employment, even as its share of GSDP gradually declines relative to services, as noted in section 3.1. The sector directly and indirectly employs approximately 62 percent of the state's population, a dependency ratio considerably higher than the sector's roughly 30 to 37 percent contribution to state output, underscoring the productivity gap between agricultural and non-agricultural employment that recurs as a theme throughout Chapter 18 of this report (Wikipedia, 2026b).

Recent performance in the sector has been notably strong. Agriculture and allied activities recorded growth of 15.86 percent at current prices for 2024-25, contributing Rs. 5.19 lakh crore to state output, driven by record food grain production of 161.86 lakh tonnes, a 12.94 percent increase over the prior year, alongside enhanced agricultural credit disbursement of Rs. 1.70 lakh crore (Grokikipedia, 2026). For the most recent 2025-26 period, agriculture and allied sectors grew by 10.14 percent, with particularly strong performance in specific crops, rice output rising 15.3 percent, maize rising 18.9 percent, and fisheries output rising 12.4 percent (Mission Andhra, 2026). The state's Socio-Economic Survey for 2024-25 provides further sub-sectoral detail, recording horticulture output at Rs. 60,527 crore, livestock sector output at Rs. 66,456 crore, forestry and logging at Rs. 2,644 crore, and fishing and aquaculture at Rs. 77,085 crore, all measured at constant 2011-12 prices (Government of Andhra Pradesh Planning Department, 2025).

The livestock sub-sector deserves particular attention given its scale relative to other Indian states. Andhra Pradesh's livestock sector generates approximately Rs. 1.69 lakh crore in income and sustains roughly 4.2 million families as of 2025, accounting for 11.23 percent of the state's GSDP, a contribution the state government has increasingly sought to prioritize as part of its broader agricultural diversification strategy (Groklopedia, 2026). Fisheries similarly represent a sector of disproportionate national significance for the state. Andhra Pradesh contributes over 40 percent of India's total fish production, and the state has long been recognized as the country's leading producer of shrimp, a position anchored by extensive vannamei shrimp hatchery infrastructure along the coastal belt (India Brand Equity Foundation, 2026; Wikipedia, 2026b). This fisheries strength connects directly to the state's long coastline and extensive estuarine and backwater ecosystems described in Chapter 1, and is examined further in the aquaculture-specific discussion in Chapter 18, section 18.6.

Notwithstanding this strong recent performance, the sector's underlying vulnerability to rainfall variability, particularly in the drier Rayalaseema region discussed in Chapter 1, section 1.7, means that headline growth figures in any given year can mask considerable volatility at the district level, a concern this report treats with appropriate caution given the single-year strength of the 2024-25 and 2025-26 figures cited above.

### **3.4 Secondary Sector: Industry, Manufacturing and Mining**

Andhra Pradesh's industrial sector has grown at a pace exceeding national averages over the past decade, with the sector expanding at an annual rate of 10.9 percent between 2013-14 and 2022-23, compared to a national manufacturing sector growth rate of 5.5 percent over the same period (NITI Aayog, 2025b). For the most recent 2025-26 period, industrial growth registered at 9.15 percent, with construction the standout sub-sector at 14.18 percent, and a separate quarterly estimate placing industrial growth as high as 12.20 percent, supported by increases in mining and power generation activity (Mission Andhra, 2026; Wikipedia, 2026b).

Within the industry sector, manufacturing, construction, electricity, and mining each play distinct roles. As of the 2021-22 reference year, manufacturing contributed 10.7 percent of the state's Gross State Value Added and construction contributed 6.9 percent, together forming the bulk of the industry sector's contribution, with electricity contributing a further 3.2 percent and mining 2.7 percent (NITI Aayog, 2025b). Andhra Pradesh ranked 20th out of 33 Indian states and union territories in its share of GSDP attributable to the industry sector as of that year, a middling position that reflects the state's continued relative concentration in agriculture rather than any weakness in industrial growth momentum, which, as noted above, has consistently outpaced national averages (NITI Aayog, 2025b).

The state possesses a genuinely substantial mineral resource base, with large deposits of chrysotile, mica, asbestos, barytes, and limestone, and Andhra Pradesh accounts for approximately 93 percent of India's total barytes production, a striking degree of national concentration in a single mineral commodity (Wikipedia, 2026b). Other significant minerals present in the state, some still comparatively under-exploited, include copper ore, manganese,

coal, natural gas, diamond, gold-bearing beach sand, bauxite, ball clay, fire clay, and dolomite, feeding into downstream industries spanning power generation, metals and alloys, cement, chemicals, paints, cosmetics, glass, ceramics, and refractory products (Wikipedia, 2026b).

On industrial investment specifically, the period following the formation of a new coalition government under Chief Minister N. Chandrababu Naidu in June 2024 saw accelerated project activity, with Rs. 12,830 crore committed across ten large and mega industrial projects, together expected to create 11,925 jobs, as recorded by December 2024 (Grokikipedia, 2026). The state has continued to pursue sector-specific industrial policies built around dedicated infrastructure clusters, including biotech parks, textile parks, and hardware parks, a strategy examined in greater institutional detail in Chapter 4, alongside the state's broader Special Economic Zone architecture, which comprised 47 SEZs as of the most recent count from the Andhra Pradesh Industrial Infrastructure Corporation, including 10 SEZs with formal approval, 5 with in-principle approval, and 32 already notified, spread across sectors including textiles and apparel, food processing, footwear and leather, pharmaceuticals, and information technology (India Brand Equity Foundation, 2026).

### **3.5 Tertiary Sector: Trade, Finance, Real Estate and Services**

The services sector has grown into the largest single contributor to Andhra Pradesh's GSDP, and, as noted in section 3.1, its share is projected to continue rising over the coming decades, from roughly 41 percent currently toward an anticipated 55 percent by 2047-48 (Yuva Competitive Academy, 2026). Services output rose from Rs. 2.15 lakh crore in 2014-15 to approximately Rs. 7 lakh crore in 2025-26, and grew 11.70 percent in 2024-25 alone, reaching Rs. 6.11 lakh crore in that year, before recording a further 10.67 percent growth in 2025-26 (Yuva Competitive Academy, 2026; Grokikipedia, 2026; Mission Andhra, 2026).

Within services, real estate, ownership of dwellings, and business services form the single largest sub-category, contributing 8.3 percent of the state's Gross State Value Added as of the 2021-22 reference year, followed closely by transport, storage, and communication services, at 8 percent (NITI Aayog, 2025b). Notwithstanding this strong absolute contribution, Andhra Pradesh ranked a comparatively low 28th out of 33 states and union territories in its share of GSDP attributable to services as of the same reference year, a ranking that, when read alongside the state's above-average share of GSDP from agriculture, noted in section 3.3, where it ranked 2nd nationally, paints a consistent picture of a state whose economic structure remains comparatively agriculture-weighted relative to its peers, even as its services sector grows in both absolute and relative terms (NITI Aayog, 2025b).

Financial sector activity within the state has also expanded, reflected in rising agricultural and broader credit disbursement figures noted in section 3.3, where credit to the agriculture sector alone reached Rs. 1.70 lakh crore in 2024-25 (Grokikipedia, 2026). The state's digital and telecommunications infrastructure, a foundational input for modern services growth, has also matured considerably, with the Telecom Regulatory Authority of India recording 42.79 million wireless and 3.26 million wireline subscribers in Andhra Pradesh as of June 2025,

and overall teledensity reaching 86.82 percent as of the same date, a connectivity base that underpins the state's broader digital services and e-governance ambitions discussed in Chapter 16 (India Brand Equity Foundation, 2026).

### **3.6 Informal Economy: Size, Significance and Integration Challenges**

Precise, state-specific data quantifying the size of Andhra Pradesh's informal economy was not available among the sources consulted for this chapter, and this report flags that gap explicitly rather than substituting an estimate that cannot be properly sourced. What can be said with confidence, drawing on the sectoral data presented in sections 3.3 through 3.5, is that the structural composition of the state's economy, with agriculture employing 62 percent of the workforce while contributing a considerably smaller share of GSDP, strongly implies a substantial informal employment base, since Indian agricultural employment is overwhelmingly informal in nature, characterized by the absence of formal contracts, social security coverage, or regulated working conditions (Wikipedia, 2026b).

Beyond agriculture, informality is also likely to be significant within the state's construction sub-sector, which recorded the fastest growth of any sub-sector within industry at 14.18 percent for 2025-26, since construction employment in India is characteristically dominated by informal, often migratory, daily-wage labor arrangements (Mission Andhra, 2026). Similarly, within the state's substantial fisheries and aquaculture sector, discussed in section 3.3, much of the workforce engaged in small-scale coastal fishing operates outside formal employment registration frameworks.

The integration challenge this informality poses for state policy is threefold, and each dimension recurs in later chapters of this report. First, informal workers generally fall outside the ambit of standard labor law protections, an issue relevant to the labor market discussion in section 3.7. Second, informal economic activity is inherently more difficult to capture within the state's own tax base, a constraint relevant to the revenue mobilization themes discussed throughout Chapter 2. Third, informal workers are disproportionately likely to lack access to formal social security and health insurance coverage, a concern that connects directly to the social security architecture discussed in Chapter 7, section 7.9. Given the significance of this gap in the current evidentiary record, this report recommends that subsequent editions incorporate dedicated analysis drawing on the Periodic Labour Force Survey's employment status classifications, specifically its breakdown of self-employed, regular salaried, and casual labor categories, disaggregated to the state level, once such disaggregated data becomes available in a form suitable for citation.

### **3.7 Labour Market: Employment, Unemployment and Workforce Quality**

Andhra Pradesh's labor force participation rate has historically ranked among the stronger performers nationally. One comparative state-wise analysis places the state's overall labor force participation rate at 68.0 percent, a figure the underlying analysis attributes in part to the benefits the state has derived from rural employment guarantee programs, a theme examined further in the MGNREGA-specific discussion in Chapter 12, section 12.2

(IndiaDataMap, 2026). This places Andhra Pradesh considerably above the national labor force participation rate, which national Periodic Labour Force Survey data placed at 59.3 percent for persons aged 15 and above as of the 2025 calendar year reporting period, itself a substantial increase from 51.5 percent recorded in 2017-18 (Drishti IAS, 2026; IndiaDataMap, 2026).

At the national level, the most recent Periodic Labour Force Survey data, covering the 2025 calendar year under the survey's newly revamped monthly and quarterly reporting framework, found the unemployment rate for persons aged 15 and above stable at approximately 3.1 percent, alongside a Worker Population Ratio of 57.4 percent, equivalent to approximately 61.6 crore employed Indians nationally (Drishti IAS, 2026). Gender disparity in labor force participation remains pronounced nationally, with male participation recorded at 79.1 percent compared to female participation at just 40.0 percent, though female participation has shown a rising trend through 2025, climbing from 30.2 percent in June to 34.1 percent by September on a Worker Population Ratio basis, driven substantially by increases in rural female employment (Drishti IAS, 2026; Government of India Press Information Bureau, 2025). Rural male labor force participation nationally stood at 80.5 percent as of the 2025 annual report, with rural female participation at 45.9 percent, both broadly stable relative to the prior year (Government of India Press Information Bureau, 2025).

Applying these national patterns to Andhra Pradesh's specific context, where rural population share is high, at approximately 70.4 percent as documented in Chapter 1, section 1.3, suggests the state's labor market is likely to be shaped disproportionately by rural employment dynamics, including agricultural seasonality and the reach of rural employment guarantee schemes, relative to states with a more urbanized workforce composition. On workforce quality specifically, national PLFS data reveals a persistent skills gap that almost certainly extends to Andhra Pradesh's workforce as well, with only 4.2 percent of India's workforce aged 15 to 59 having received formal vocational or technical training as of the 2025 survey round, alongside a concerning finding that approximately 25.0 percent of national youth aged 15 to 29 fall into the NEET category, meaning not in employment, education, or training, representing substantial underutilization of the demographic dividend nationally (Drishti IAS, 2026). This finding on vocational training gaps connects directly to the Technical, Vocational Education and Training ecosystem discussed in Chapter 5, section 5.4, and to the skill development themes revisited in Chapter 17, section 17.6.

### **3.8 Inflation, Price Stability and Consumer Welfare**

Andhra Pradesh's consumer price trends are tracked through the state-specific Consumer Price Index compiled by the state government in coordination with the Labour Bureau and the Ministry of Statistics and Programme Implementation, with the state's own Socio-Economic Survey documenting the AP Combined Consumer Price Index across the April to December 2024 period (Government of Andhra Pradesh Planning Department, 2025). Detailed month-by-month inflation figures specific to Andhra Pradesh for the full

2025-26 fiscal year were not available in comprehensive form among the sources consulted for this chapter, a gap this report flags for future refinement, though the broader national inflation trajectory through this period provides useful context, given that state and national consumer price movements tend to be correlated, particularly for the food and beverages component of the index, which carries the heaviest weight in India's CPI basket and which, given Andhra Pradesh's strong recent agricultural output growth documented in section 3.3, may plausibly have exerted a moderating effect on food price inflation within the state during this period, though this remains an inference rather than a directly sourced finding.

What can be stated with greater confidence is that the state's strong agricultural performance, including record food grain production and above-average growth in staples such as rice and maize, as documented in section 3.3, generally supports improved food price stability and consumer welfare outcomes for the state's large rural population, even as it may exert some downward pressure on farm gate prices received by producers, a tension examined further in the agricultural marketing discussion in Chapter 18, section 18.3. Consumer welfare in the state is also shaped by the substantial public distribution and welfare transfer architecture the state government maintains, including the education-linked cash transfer scheme discussed in Chapter 5 and the broader social security architecture discussed in Chapter 7, both of which act as partial buffers against the effects of price volatility for lower-income households, though a full assessment of their adequacy relative to actual cost-of-living pressures would require household expenditure survey data disaggregated to the state level that was not available for this chapter.

### **3.9 Growth Corridors: Engines of Economic Expansion**

Andhra Pradesh's most significant recent economic growth has been concentrated in identifiable geographic corridors rather than distributed evenly across the state, a pattern already introduced in Chapter 1, section 1.7, and worth revisiting here in explicitly economic terms. District-level GSDP estimates for 2025-26 show Visakhapatnam leading with output of Rs. 1.61 lakh crore, followed by NTR, Krishna, Tirupati, and Eluru districts, with Visakhapatnam alone contributing approximately 9.1 percent of the state's Gross District Domestic Product and ranking as the state's number one district by this measure (Yuva Competitive Academy, 2026; Mission Andhra, 2026). Growth rates at the district level have also varied considerably, with Krishna district recording growth of 18.14 percent, Bapatla district 19.19 percent, and Chittoor district 16.09 percent, figures well above the state's already strong overall growth rate (Yuva Competitive Academy, 2026).

This pattern of concentrated growth maps closely onto the three regional development clusters the state government established for coordinated infrastructure and industrial planning purposes, described in Chapter 1, section 1.2: the Visakhapatnam region cluster, the Amaravati-Vijayawada region cluster, and the Tirupati region cluster. The Visakhapatnam corridor's strength is anchored substantially in port-led trade and industrial activity, with the Visakhapatnam port alone handling 43.08 million tonnes of traffic during the April to September 2025 period of fiscal year 2026, underscoring the port's role as a genuine engine

of regional economic activity rather than simply a logistics node (India Brand Equity Foundation, 2026). The Amaravati-Vijayawada corridor's growth is more directly tied to the ongoing capital city construction project and its associated urban development and construction activity, consistent with the strong 14.18 percent growth recorded in the construction sub-sector for 2025-26 noted in section 3.4, while the Tirupati corridor benefits substantially from pilgrimage-linked services activity, an economic dimension examined further in the tourism-specific discussion in Chapter 19.

Transport infrastructure investment has been a key enabler of this corridor-based growth pattern. Union government commitments announced in August 2025 include 27 new road projects worth Rs. 5,233 crore, alongside in-principle approval for a broader set of schemes valued at approximately Rs. 1,00,000 crore, and a public statement by the Union Minister of Road Transport and Highways projecting that Andhra Pradesh's road connectivity would surpass that of the United States within two years, a claim this report notes without independent verification given its evidently promotional framing (India Brand Equity Foundation, 2026). More concretely verifiable is the state's rail budget allocation, which rose to Rs. 9,417 crore for fiscal year 2026, over ten times the allocation received a decade earlier, a substantial and independently corroborated increase in central rail investment directed at the state (India Brand Equity Foundation, 2026). Tirupati Airport recorded domestic passenger traffic growth exceeding 50 percent year-on-year in May 2025, coinciding with the state's unveiling of a Rs. 600 crore tourism and hospitality development project intended to reinforce the Tirupati corridor's travel infrastructure specifically (India Brand Equity Foundation, 2026). These transport investments, and their implications for the state's broader connectivity infrastructure, are examined in comprehensive detail in Chapter 8.

Whether these three growth corridors will, over the coming decade, succeed in generating meaningful spillover effects into the state's less prosperous Rayalaseema interior and North Andhra tribal districts, rather than simply deepening the existing geographic concentration of economic activity documented throughout this chapter, remains an open and consequential question, one this report returns to directly in the Vision 2047 assessment presented in Chapter 21.

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## **Chapter 4: Investment, Industry and Private Sector Development**

### **4.1 Investment Climate Assessment and Ease of Doing Business**

Andhra Pradesh has built its investment promotion strategy around a heavily digitized, single-window approval architecture, an approach the state credits with having propelled it to the top position nationally in the Department for Promotion of Industry and Internal Trade's Ease of Doing Business rankings, achieved through sustained digitization and procedural reform of industrial approval processes (SBC, 2024). At the institutional core of this system sits the state's Single Desk Portal, which now provides instant industrial approvals and has meaningfully reduced turnaround time for business licenses, alongside the broader Andhra Pradesh Industrial Infrastructure Corporation's ongoing effort to move all of its services online, an initiative intended to minimize the need for in-person interaction between entrepreneurs and government officials (StartupFlora, 2025; India Brand Equity Foundation, 2026a).

Decision-making authority for major investment proposals is structured through a two-tier governance mechanism. The State Investment Promotion Board, chaired by the Chief Minister personally, meets monthly to expedite decisions on industrial projects and approve mega projects, while the State Investment Promotion Committee, chaired by the Chief Secretary and comprising key departmental secretaries, meets on the same monthly cadence to monitor investment policy implementation, review large projects, and advise the Board on proposed amendments and incentive structures, though final approval authority rests with the Board itself (SBC, 2024). This structure is designed to compress what, in many Indian states, remains a multi-agency, multi-month approval process into a considerably shorter and more predictable timeline, a design choice consistent with the state's broader effort to position itself as a low-friction destination for both domestic and international capital.

The tangible results of this investment promotion architecture are reflected in recent project approval data. Investments approved across 15 meetings of the State Investment Promotion Board are expected to generate over 8.5 lakh jobs in Andhra Pradesh, a scale of anticipated employment generation that, if realized even partially, would represent a meaningful contribution to the state's labor market absorption capacity discussed in Chapter 3, section 3.7 (Invest India, 2026). The state's strategic geographic position, anchored by its 974 kilometer coastline along the Bay of Bengal, described in Chapter 1, section 1.1, and by the presence of major rivers including the Godavari and Krishna, is explicitly marketed by national investment promotion agencies as a structural advantage supporting consistent water availability and favorable agro-climatic conditions for industrial and agricultural investment alike (Invest India, 2026).

### **4.2 Industrial Policy Framework and MSME Development**

The centerpiece of Andhra Pradesh's current industrial policy architecture is the Andhra Pradesh Industrial Development Policy for 2024 to 2029, sometimes referred to in

sector-specific variants as Industrial Policy 4.0, which establishes the overarching incentive framework covering capital subsidies, tax refunds, and power benefits across the state's targeted sectors (Unique Group, 2026). Within this broader framework, the Andhra Pradesh MSME and Entrepreneurship Development Policy 4.0, covering the same 2024 to 2029 period, is specifically structured around the goal of achieving what the policy terms "One Entrepreneur, One Family" by 2030, an explicit target of fostering widespread small business formation across the state's households (KIP Financial Consultancy, 2025a).

The MSME policy's incentive structure is built around several concrete financial pillars. New enterprises are eligible for a capital subsidy of up to 25 percent of Fixed Capital Investment, capped at Rs. 7 crore for medium enterprises, Rs. 1.5 crore for small enterprises, and Rs. 25 lakh for micro enterprises, with an enhanced subsidy ceiling of up to 35 percent of Fixed Capital Investment available to women, Backward Class, Scheduled Caste, Scheduled Tribe, and specially-abled entrepreneurs, though still subject to the same Rs. 7 crore overall cap (KIP Financial Consultancy, 2025a). A separate summary of the same policy cites a somewhat different capital subsidy figure of 12 percent of Fixed Capital Investment, with an additional 5 percent for women and backward community entrepreneurs, a discrepancy this report flags rather than resolves, since it may reflect different subsidy components within a multi-tiered incentive structure rather than a genuine contradiction between sources (StartupFlora, 2025). Beyond capital subsidies, the policy provides an employment-based incentive of 8 to 10 percent of Fixed Capital Investment, disbursed over a five to seven year period, and a State Goods and Services Tax reimbursement of up to 100 percent for five years on products manufactured within the state, subject to an annual cap of 5 percent of turnover, with the combined value of all incentive components under the policy capped at 75 percent of Fixed Capital Investment (KIP Financial Consultancy, 2025b; StartupFlora, 2025).

Beyond direct subsidy, the state has invested in physical MSME infrastructure at considerable scale, with an ongoing programme targeting more than 175 dedicated MSME parks across the state, several of which have been inaugurated together as part of a coordinated rollout intended to create what state officials describe as "walk-to-work" MSME hubs, alongside related economic township and flatted factory complex projects designed to provide ready-made, rentable industrial space to micro enterprises that would otherwise struggle to secure standalone facilities (Udyam MSME Registration Portal, 2025). Complementing physical infrastructure, the AP Startup One portal, launched as a one-stop platform for startup registration, grant application, and status tracking, alongside new university-industry innovation clusters developed in partnership with the Cyient Foundation and the All India Council for Technical Education, form the core of the state's parallel startup promotion architecture, with an explicit ambition of establishing Andhra Pradesh as the leading technology startup destination in South India (StartupFlora, 2025).

### **4.3 Large and Anchor Industries: Sectoral Analysis**

Andhra Pradesh's anchor industry strategy has increasingly concentrated around a defined set of high-value sectors targeted through dedicated, sector-specific policy instruments layered

atop the general industrial policy described in section 4.2. These include the Andhra Pradesh Semiconductor and Display Fab Policy 4.0 for 2024 to 2029, intended to build a domestic semiconductor and display manufacturing ecosystem within the state, the Andhra Pradesh Information Technology and Global Capability Centre Policy 4.0, intended to accelerate growth of the state's information technology sector and its global capability centre presence, the Andhra Pradesh Electronics Manufacturing Policy 4.0, and the Andhra Pradesh Data Centre Policy 4.0 (Invest India, 2026).

The data centre sector in particular has attracted marquee international investment, most notably Google's commitment of approximately 15 billion US dollars toward a data centre facility in Visakhapatnam, a project state investment promotion materials cite as a flagship validation of the state's technology infrastructure ambitions, and one that connects directly to the Visakhapatnam growth corridor discussed in Chapter 3, section 3.9 (Invest India, 2026). Pharmaceuticals represent a second clearly established anchor sector, with pharmaceutical exports from the state reaching Rs. 24,298 crore, equivalent to approximately 2.74 billion US dollars, in fiscal year 2025 (India Brand Equity Foundation, 2026a). Within pharmaceuticals, the Nakkapalli Bulk Drug Park, spanning 2,001 acres at an estimated cost of Rs. 1,877 crore, is scheduled to complete its first phase by March 2026, and is projected to attract total investment of Rs. 11,542 crore while generating approximately 54,000 jobs once fully operational, positioning it as one of the more significant single anchor projects currently under development in the state (India Brand Equity Foundation, 2026a). It is worth noting that some pharmaceutical investment figures cited in national industry reporting, including a reference to Rs. 7,500 crore in pharma biotech investment attracting 35,000 jobs, appear in source material to pertain specifically to Hyderabad rather than to Andhra Pradesh proper, an important distinction given that Hyderabad has been part of Telangana since the 2014 bifurcation, and this report treats such references with appropriate caution to avoid conflating investment activity across the two successor states (India Brand Equity Foundation, 2026a).

Beyond pharmaceuticals and technology infrastructure, sector-specific policies extend to more traditional manufacturing anchors, including the Andhra Pradesh Leather and Footwear Policy, termed LEAF 4.0, covering 2025 to 2030, which positions the state as an aspiring global hub for sustainable and innovative leather and footwear manufacturing, aligned with the Government of India's national target of a 50 billion US dollar turnover for the Indian leather industry by 2030 (Unique Group, 2026). A renewed Food Processing Policy, offering capital subsidies for new enterprises, technology upgrades, waste processing infrastructure, and quality certification support, rounds out the state's sector-specific anchor industry framework, reflecting the strong underlying agricultural and fisheries base documented in Chapter 3, section 3.3 (Unique Group, 2026).

#### **4.4 Special Economic Zones, Industrial Corridors and Clusters**

As documented in Chapter 3, section 3.4, Andhra Pradesh hosts a total of 47 Special Economic Zones according to the Andhra Pradesh Industrial Infrastructure Corporation, comprising 10 SEZs with formal approval, 5 with in-principle approval, and 32 already

notified and operational, spread across a diversified sectoral base including textiles and apparel, food processing, footwear and leather products, multi-product zones, pharmaceuticals, and information technology (India Brand Equity Foundation, 2026a). This SEZ architecture functions in conjunction with the state's Policy for Establishment of Private Industrial Parks with Plug and Play Industrial Infrastructure, version 4.0, covering 2024 to 2029, which is designed to lower the entry barrier for private developers seeking to establish ready-to-operate industrial parks, thereby reducing the lead time between initial investment commitment and actual production start for tenant industries (Unique Group, 2026).

The state's industrial cluster strategy also extends into energy efficiency and modernization support specifically targeted at MSME clusters. Under the ADEETIE initiative, MSME clusters located in Chittoor and Visakhapatnam receive interest subvention and modernization grants aimed at improving energy efficiency, a programme that connects the state's industrial development objectives with the renewable energy and energy conservation themes examined in Chapter 9, section 9.5 (StartupFlora, 2025). This cluster-based approach to industrial infrastructure aligns closely with the three regional development clusters, Visakhapatnam, Amaravati-Vijayawada, and Tirupati, described in Chapter 1, section 1.2, and Chapter 3, section 3.9, reinforcing this report's broader observation that the state's industrial and investment policy architecture has been deliberately designed to concentrate infrastructure investment within a small number of high-potential geographic corridors, rather than dispersing it evenly across all twenty eight districts.

#### **4.5 Foreign Direct Investment: Inflows, Sectoral Distribution and Policy**

Andhra Pradesh's foreign direct investment inflows, at least as measured through the Department for Promotion of Industry and Internal Trade's official equity inflow tracking methodology, have remained relatively modest in absolute national terms. Cumulative FDI inflow into the state between October 2019 and June 2025 stood at Rs. 11,297 crore, equivalent to approximately 1.27 billion US dollars (India Brand Equity Foundation, 2026b). This figure is worth situating against the broader national FDI landscape discussed in Chapter 1, section 1.8, where analysis of India's overall foreign equity flows found that Maharashtra, Gujarat, and Karnataka together captured little more than two thirds of all national equity inflows between April 2000 and September 2025, a concentration pattern that leaves considerably less headroom for states such as Andhra Pradesh to attract large-scale foreign equity investment purely through policy incentive competition, absent a more fundamental shift in investor perception of the state's relative advantages (MyIndMakers, 2025).

Notwithstanding this comparatively modest cumulative equity inflow figure, the state's sector-specific FDI-oriented policies described in section 4.3, particularly around semiconductors, data centres, and electronics manufacturing, appear designed to attract precisely the kind of large, capital-intensive, foreign-anchored projects exemplified by Google's data centre commitment in Visakhapatnam, suggesting that the state's FDI strategy may be increasingly weighted toward securing a smaller number of very large individual investments rather than pursuing broad-based equity inflow volume across many smaller

foreign investors. Manufacturing sector FDI equity inflow data, tracked cumulatively from October 2019 through March 2025, provides a further sectoral breakdown of the state's foreign investment composition, though granular current-year sectoral disaggregation for the full 2025-26 period was not available in a form suitable for citation among the sources consulted for this chapter (Indiastat, 2026).

Export performance provides a complementary lens on the state's international economic integration, distinct from but related to foreign investment attraction. Merchandise exports from Andhra Pradesh rose to Rs. 1,84,277 crore, equivalent to approximately 20.78 billion US dollars, in fiscal year 2025, with engineering goods the largest single export category at approximately 20.78 percent of total exports, followed by marine products at 15.45 percent, a composition directly reflecting the state's dual strength in industrial manufacturing and the fisheries sector documented in Chapter 3, section 3.3 (India Brand Equity Foundation, 2026a). Marine exports specifically have continued to grow in relative national significance, with a substantial share of India's total marine exports for fiscal year 2026 originating from Andhra Pradesh, reinforcing the state's position as the country's leading marine products exporter (Invest India, 2026).

#### **4.6 Public Sector Undertakings: Performance and Reform Agenda**

As noted in Chapter 2, section 2.8, the state's public sector investment portfolio is heavily concentrated, with approximately 99 percent of total state investment held within state-exclusive working public sector undertakings, and evaluation documentation submitted to the Fifteenth Finance Commission identified substantial net worth erosion concentrated in two specific entities, alongside recorded losses within several power sector undertakings, including the state's distribution companies (Fifteenth Finance Commission, 2025). This concentration of both investment and financial distress within a small number of large public sector entities, particularly in the power distribution sub-sector, represents a structural reform challenge the state government has sought to address through mechanisms including the Discom Assurance Yojana style financial turnaround framework referenced in Chapter 2, and the broader power sector governance issues are examined in fuller detail in Chapter 9.

Beyond the power sector, the state's public sector undertaking portfolio spans the Andhra Pradesh Industrial Infrastructure Corporation, discussed throughout this chapter as the primary vehicle for SEZ and industrial park development, and various sector-specific development corporations, including the Andhra Pradesh State Development Corporation, whose conditional financial guarantees were noted in Chapter 2, section 2.5, as not yet having been invoked as of the most recent reporting period (Government of Andhra Pradesh, 2025). The reform agenda for the state's public sector undertakings, as with many Indian states, centers on a tension between maintaining public ownership of strategically important infrastructure entities, particularly in power distribution and industrial land development, and addressing the persistent net worth erosion and operating losses that several of these entities continue to record, a tension this report expects will remain a live policy question through the remainder of the current Finance Commission cycle discussed in Chapter 2, section 2.9.

#### **4.7 Public-Private Partnership Framework and Pipeline**

Andhra Pradesh's public-private partnership pipeline is most visibly concentrated in infrastructure sectors where the state has sought to leverage private capital and operational expertise alongside public investment, particularly transport and urban development. The rural road and bridge infrastructure sanction of Rs. 35,882 crore under the Pradhan Mantri JanaMAN initiative, approved by the Government of India on October 27, 2025, while primarily a central government funding commitment, is expected to be implemented in significant part through public-private construction and maintenance contracting arrangements consistent with the state's broader transport infrastructure delivery model discussed further in Chapter 8 (India Brand Equity Foundation, 2026a).

Within the power sector, the composition of the state's installed generation capacity itself illustrates the extent to which private capital already plays the dominant operational role in what might otherwise be assumed to be a primarily public utility function. As of September 2025, Andhra Pradesh's total installed power generation capacity stood at 28,416.25 megawatts, of which private utilities contributed 17,453.43 megawatts, or approximately 61 percent of total capacity, state utilities contributed 8,576.38 megawatts, and central utilities contributed the remaining 2,386.45 megawatts (India Brand Equity Foundation, 2026a). This heavy private sector weighting within generation capacity, contrasted with the public sector's continued dominance of distribution infrastructure discussed in section 4.6, illustrates a partnership model in which private capital has been substantially integrated into generation while distribution remains a more centrally state-controlled, and financially more distressed, segment of the power value chain, a dynamic examined further in Chapter 9.

The Amaravati capital city development project itself represents perhaps the most ambitious ongoing test of the state's public-private partnership capacity, with Rs. 6,000 crore allocated toward capital city development in recent budget documentation, and with the broader financing strategy for the capital's construction expected to draw on a combination of state capital expenditure, central government support, and private developer participation in specific zones of the planned city, a financing architecture examined in greater institutional detail in Chapter 11, section 11.4 (India Brand Equity Foundation, 2026a).

#### **4.8 Regional Cooperation: Shared Region and Growth**

Andhra Pradesh's regional economic cooperation dimension operates on two distinct levels, one intra-state and one inter-state, both relevant to the investment and industrial development themes of this chapter. At the intra-state level, the three regional development clusters described in Chapter 1, section 1.2, Visakhapatnam, Amaravati-Vijayawada, and Tirupati, function as a deliberate mechanism for coordinating industrial and infrastructure investment planning across district boundaries within each broader region, an approach intended to generate agglomeration benefits for investors while avoiding the administrative fragmentation that might otherwise result from planning at the individual district level alone.

At the inter-state level, Andhra Pradesh's economic relationship with Telangana remains the most consequential regional cooperation dynamic the state navigates, given the shared origin of both states in the 2014 bifurcation and continuing areas of overlapping interest, including river water sharing arrangements over the Krishna and Godavari systems, discussed further in the water resources context of Chapter 10, and continued competition for investment in overlapping target sectors, particularly information technology and pharmaceuticals, where Telangana's Hyderabad-centered ecosystem retains substantial first-mover advantages that Andhra Pradesh's Visakhapatnam and Amaravati-based ecosystems are still working to match, as illustrated by the Hyderabad-specific pharma investment figures noted with appropriate caution in section 4.3. Broader eastern coastal regional cooperation, including coordination with neighboring Odisha on shared port and logistics corridor development along the Bay of Bengal seaboard, represents a further, less institutionally developed dimension of regional cooperation relevant to the state's long-term industrial corridor strategy, though detailed, current, state-specific documentation of formal inter-state industrial cooperation agreements with Odisha was not available among the sources consulted for this chapter and would merit further investigation in subsequent editions of this framework.

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## Chapter 5: Education — Access, Quality and Future Readiness

### 5.1 Elementary Education: Enrolment, Retention, Dropout and Learning Outcomes

The centerpiece of Andhra Pradesh's current elementary and secondary education strategy is the Talliki Vandanam scheme, launched on June 12, 2025, as one of the state government's flagship "Super Six" election commitments, and explicitly designed to address household-level financial barriers to school retention rather than infrastructure or curriculum gaps alone (Deccan Chronicle, 2025; The South First, 2025). Under the scheme, eligible mothers or guardians receive Rs. 15,000 annually for each child enrolled in Classes 1 through 12 across government, private aided, and private unaided schools, with Rs. 13,000 credited directly to the mother's Aadhaar-seeded bank account and the remaining Rs. 2,000 retained for school-level development and hygiene maintenance (Govt Schemes India, 2026; BankBazaar, 2026). Eligibility is means-tested, requiring household income below Rs. 10,000 per month in rural areas or Rs. 12,000 in urban areas, possession of a valid rice card, and landholding below specified thresholds, and critically, the scheme conditions continued benefit on the child maintaining at least 75 percent attendance, an explicit design feature intended to convert a cash transfer into a retention incentive rather than a no-strings payment (Deccan Chronicle, 2025).

The scale of this intervention is substantial. Approximately 67 lakh beneficiaries were expected under the scheme's first disbursement cycle, with an initial transfer of Rs. 8,745 crore made to over 67.2 lakh mothers beginning June 11, 2025, and a subsequent budgetary allocation of Rs. 9,407 crore reported for the scheme's continuing rollout (South First, 2025; Festivals Duniya, 2026). A notable design distinction from the scheme's predecessor, the Jagananna Amma Vodi programme, which restricted benefit to only one child per household, is that Talliki Vandanam extends assistance to every eligible child within a family, a change intended to avoid penalizing larger families and to ensure that household-level financial constraint does not force parents to choose which of several children continues in school (Cleartax, 2026). For the 2026-27 academic year, the scheme's disbursement has been scheduled for the third week of July 2026, timed to align with the state's Mega Parent-Teacher Meeting programme and to allow backend verification of Aadhaar-linked banking details ahead of payment (Cleartax, 2026).

Beyond direct cash transfer, the state has pursued foundational learning improvement through the establishment of thousands of Model Primary Schools and the introduction of Personalised Adaptive Learning Labs, interventions that independent studies cited in state education commentary have credited with producing measurable improvements in student learning outcomes, though the specific studies underlying this claim were not independently verifiable among the sources consulted for this chapter (The South First, 2025). The extension of mid-day meal provision to intermediate-level students, beyond the traditional elementary and secondary coverage, represents a further retention-oriented reform introduced alongside Talliki Vandanam, recognizing that nutritional support, like cash assistance,

functions as a retention lever particularly for economically vulnerable households (The South First, 2025).

On baseline literacy, the most recent authoritative, census-verified figure for Andhra Pradesh remains the 2011 Census result of 67.02 percent overall literacy, with a pronounced gender gap of male literacy at 74.88 percent against female literacy at 59.15 percent, a gap of nearly 16 percentage points (Census of India, 2011, as cited in [censusofindia.net](http://censusofindia.net), 2026). As flagged in Chapter 1, section 1.4, updated, census-verified literacy figures for 2026 are not available given the continuing delay in India's decennial census, and any figures suggesting meaningfully improved literacy since 2011 should be treated as estimates rather than enumerated fact until the next census is conducted and published.

## **5.2 Secondary and Senior Secondary Education: Transition and Achievement**

The extension of Talliki Vandanam coverage through Class 12, described in section 5.1, represents the state's primary policy lever for addressing secondary and senior secondary transition, on the theory that the financial pressure driving dropout intensifies rather than diminishes as students progress toward the more costly senior secondary years, when opportunity costs of continued schooling, in terms of foregone household labor or early employment income, tend to rise. The scheme's extension to intermediate education, which in Andhra Pradesh's educational structure corresponds to the two years following Class 10 and functions as a distinct administrative tier overseen by the state's Board of Intermediate Education, reflects explicit recognition that the transition from secondary to senior secondary education is a particularly vulnerable dropout point (Govt Schemes India, 2026).

It is worth noting a specific scheme exclusion relevant to vocational transition pathways. Students enrolled in Industrial Training Institutes, Polytechnic institutions, or the Rajiv Gandhi University of Knowledge Technologies, commonly known by its acronym IIIT-RGUKT, are excluded from Talliki Vandanam eligibility on the grounds that these students already benefit from separate fee reimbursement arrangements (Deccan Chronicle, 2025). This exclusion is analytically significant because it means the state's primary retention incentive scheme is not directly extended to students who opt into vocational or technical secondary pathways, a design choice that, depending on its practical effect on enrollment patterns, could either be neutral, given the separate reimbursement students in these tracks already receive, or could inadvertently disincentivize vocational pathway selection if the separate reimbursement proves less generous or less reliably disbursed than Talliki Vandanam itself, a question this report flags for further monitoring rather than resolving given the absence of comparative disbursement data.

## **5.3 Higher Education: Institutional Capacity, Gross Enrolment and Quality**

Andhra Pradesh maintains a comparatively dense higher education institutional base relative to most Indian states. College density, defined as the number of colleges per 100,000 eligible population aged 18 to 23, stood at 49 for Andhra Pradesh according to recent national data, placing the state fifth nationally behind Karnataka at 62, Telangana at 53, and Kerala and

Himachal Pradesh, both at 50, and comfortably above the national average college density of 32 (QS, 2026). This relatively strong institutional density reflects, at least in part, the historical legacy of the undivided state's substantial higher education infrastructure, much of which, including a significant share of engineering and professional colleges, remained with the residual Andhra Pradesh state after the 2014 bifurcation rather than transferring to Telangana.

On enrollment specifically, the most recent verifiable state-level tertiary Gross Enrolment Ratio figure available for Andhra Pradesh from economic indicator tracking services is 37.2 percent, recorded for the September 2020 reporting period, itself an increase from 35.2 percent the prior year, though this figure predates the period covered by this report and more recent state-specific tertiary GER data was not available among the sources consulted for this chapter (CEIC Data, 2023). At the national level, India's overall higher education Gross Enrolment Ratio stood at 32.5 percent for individuals aged 18 to 23 as of 2025, itself a rise from 28.4 percent in 2021-22, attributed substantially to the implementation of the National Education Policy 2020, which encourages expanded college establishment and the growth of online learning options (IndiaDataMap, 2026). Given that Andhra Pradesh's 2020 tertiary GER of 37.2 percent already exceeded this more recent national average, it is plausible, though not independently confirmed by current state-specific data, that the state continues to outperform the national tertiary enrollment average, consistent with its above-average college density.

Comparative regional context is instructive here. Neighboring Telangana recorded a tertiary Gross Enrollment Ratio of 40.2 percent as of the most recent comparative data, and has been actively expanding online course offerings and vocational training programmes to further raise this figure, suggesting Andhra Pradesh's higher education system faces meaningful competitive pressure from its immediate post-bifurcation neighbor in attracting and retaining students within the state's own institutional base rather than losing them to cross-border enrollment (IndiaDataMap, 2026). India's National Education Policy 2020 sets a national target of a 50 percent Gross Enrolment Ratio by 2035, a benchmark against which both Andhra Pradesh's and Telangana's current trajectories still fall considerably short, underscoring that even the state's above-average performance relative to national figures leaves substantial ground still to cover (IndiaDataMap, 2026).

#### **5.4 Technical, Vocational Education and Training (TVET) Ecosystem**

Andhra Pradesh's technical and vocational education ecosystem is anchored institutionally by its network of Industrial Training Institutes and Polytechnic colleges, alongside the distinctive Rajiv Gandhi University of Knowledge Technologies system, which operates integrated six-year undergraduate programmes admitting students directly following Class 10 and combining intermediate-level and undergraduate engineering education within a single residential institutional framework, a model unique among Indian states in its structure and scale (Deccan Chronicle, 2025). As noted in section 5.2, students within this TVET ecosystem receive fee reimbursement support structurally separate from the Talliki Vandanam

scheme, reflecting a policy design that treats vocational and technical pathway students as falling under a distinct support architecture rather than the mainstream schooling cash transfer framework.

At the national level, data from the Periodic Labour Force Survey discussed in Chapter 3, section 3.7, reveals a persistent and significant vocational training gap, with only 4.2 percent of India's workforce aged 15 to 59 having received formal vocational or technical training as of the 2025 survey round (Drishti IAS, 2026). Given the absence of state-specific vocational training coverage data for Andhra Pradesh among the sources consulted for this chapter, this national figure should be read as indicative context rather than a state-specific finding, though it plausibly signals that even a state with comparatively strong TVET institutional infrastructure, such as Andhra Pradesh's ITI, Polytechnic, and RGUKT network, likely continues to face the broader national challenge of converting institutional capacity into actual workforce-wide vocational skill coverage, a gap directly relevant to the skill development and workforce alignment themes revisited in Chapter 17, section 17.6.

## **5.5 Teacher Recruitment, Training and Professional Development**

Teacher staffing has been a central focus of the state's recent education reform agenda, driven by what state officials and education commentary describe as a chronic staffing shortage in government schools (The South First, 2025). The state's response has centered on the Mega Direct Selection Committee recruitment drive of 2025, commonly referred to as Mega DSC 2025, which aims to fill over 16,000 teacher vacancies across the state's government school system, representing one of the largest single teacher recruitment exercises undertaken by the state in recent years (The South First, 2025).

Alongside this large-scale recruitment effort, the state has pursued procedural transparency reforms intended to address longstanding criticism of opacity and favoritism within the teacher management system. These include the digitisation of teacher transfer processes and seniority list management, and the introduction of computer-based recruitment examinations for educational administrators, both changes explicitly framed by state education officials as efforts to reduce discretionary interference in personnel decisions that have historically been sources of public grievance and litigation within the state's education bureaucracy (The South First, 2025). Whether the Mega DSC 2025 recruitment drive succeeds in fully closing the identified 16,000-position vacancy gap, and whether the digitised transfer and seniority systems meaningfully reduce disputes relative to the prior, more manual system, are outcomes this report recommends tracking in subsequent editions once post-implementation data becomes available, since the reforms described here were, as of the most recent sourcing available for this chapter, still in active rollout rather than fully evaluated.

## **5.6 Digital Education, EdTech Integration and ICT in Schools**

The Personalised Adaptive Learning Labs introduced as part of the state's foundational learning strategy, discussed in section 5.1, represent the most concrete documented instance of EdTech integration within Andhra Pradesh's current school system, combining adaptive,

individualized digital learning tools with the state's broader Model Primary Schools initiative (The South First, 2025). Beyond this specific programme, detailed, current, comprehensive data on the state's broader ICT infrastructure penetration within government schools, including metrics such as the share of schools with functional computer labs, internet connectivity, or digital classroom equipment, was not available among the sources consulted for this chapter, and this represents a documented gap this report flags for further investigation in future editions.

What can be stated with greater confidence, drawing on the state's broader digital infrastructure position discussed in Chapter 3, section 3.5, is that Andhra Pradesh's underlying telecommunications base, with teledensity reaching 86.82 percent as of June 2025 and over 42.79 million wireless subscribers statewide, provides a reasonably strong connectivity foundation upon which school-level digital education initiatives could plausibly be built, even though the specific extent to which this general connectivity has translated into in-classroom digital learning infrastructure remains undocumented in the sources available for this report (India Brand Equity Foundation, 2026a). The state's broader digital governance ambitions, including its Ayushman Bharat Digital Mission implementation discussed in Chapter 6, and its digital public infrastructure programmes discussed in Chapter 16, suggest an institutional environment generally receptive to digital-first service delivery models, which would be a reasonable foundation for further digital education expansion, though this remains an inference rather than a directly documented finding specific to the education sector.

## **5.7 Special Education: Children with Disabilities and Inclusive Schooling**

Comprehensive, current, state-specific data on special education provision, inclusive schooling infrastructure, or disability-specific enrollment figures for Andhra Pradesh was not available among the sources consulted for this chapter, representing a further documented gap this report flags rather than fills with unsupported estimation. It is worth noting that the Talliki Vandanam scheme's eligibility framework does make explicit provision for highly vulnerable populations at its margins, including orphaned and street children enrolled through recognized voluntary organizations, suggesting the state's broader welfare architecture for education has at least considered inclusion of the most vulnerable non-standard student populations, even if disability-specific inclusive education infrastructure and enrollment data remain undocumented in the sources available here (BankBazaar, 2026).

The disability rights and empowerment dimensions of state policy, including accessibility standards, disability certification processes, and disability-specific welfare programming more broadly, are addressed in fuller context in Chapter 7, section 7.7, and this report recommends that subsequent editions incorporate dedicated research into the state's specific inclusive education policy framework, ideally drawing on the state's School Education Department annual reports or Unified District Information System for Education, commonly known as UDISE, data disaggregated for children with disabilities, sources that were referenced in passing within teacher recruitment documentation reviewed for this chapter but

whose specific disability-related content was not independently accessed for citation here (APTeachers, 2026).

## 5.8 State-Specific Educational Challenges and Reform Priorities

Drawing together the findings of this chapter, Andhra Pradesh's education sector presents a distinctive combination of strengths and unresolved challenges. On the strength side, the state's college density of 49 per 100,000 eligible population and historical tertiary Gross Enrolment Ratio of 37.2 percent, both discussed in section 5.3, indicate an institutional base considerably stronger than many Indian states, a legacy advantage the state has continued to build upon through recent reforms. The state's willingness to commit substantial fiscal resources directly to household-level retention incentives, exemplified by the Rs. 8,745 crore initial disbursement under Talliki Vandanam and its subsequent Rs. 9,407 crore allocation, discussed in section 5.1, represents a significant and well-targeted intervention specifically aimed at the financial barriers that most directly drive dropout in lower-income households (South First, 2025; The South First, 2025).

On the challenge side, three findings from earlier in this report bear directly on the education sector's remaining reform priorities. First, as documented in Chapter 1, section 1.5, Andhra Pradesh's Education Index score within composite Human Development Index calculations, at approximately 0.464, groups the state alongside considerably lower-HDI states such as Bihar and Rajasthan, a finding that stands in some tension with the state's comparatively strong higher education institutional density discussed in section 5.3, and that most plausibly reflects persistent weaknesses at the foundational and secondary levels, including the historical literacy gender gap of nearly 16 percentage points documented in section 5.1, rather than any weakness in tertiary provision specifically (Wani & Krande, 2025). Second, the chronic teacher vacancy problem partially addressed through the Mega DSC 2025 recruitment drive, discussed in section 5.5, indicates that institutional capacity in terms of physical school and college infrastructure has, in recent years, outpaced the state's capacity to staff that infrastructure adequately, a gap the current recruitment drive is attempting to close but whose full resolution remains to be verified. Third, the persistent national-level vocational training gap discussed in section 5.4, if it holds true at the state level as plausibly inferred, suggests that even Andhra Pradesh's above-average TVET institutional base has not yet translated into broad workforce-wide vocational skill coverage, a gap with direct implications for the labor market quality concerns raised in Chapter 3, section 3.7, and revisited in the skill development discussion of Chapter 17.

Taken together, these findings suggest that Andhra Pradesh's most consequential education policy choices over the remainder of this decade will likely concern the translation of strong institutional capacity, in both the higher education and, following current recruitment efforts, the school teaching workforce, into improved foundational learning outcomes and reduced gender and regional disparities.

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## Chapter 6: Health, Nutrition and Population

### 6.1 Public Health Infrastructure: Facilities, Human Resources and Gaps

Andhra Pradesh's public health delivery system is organized through the standard three-tier Indian rural health architecture of sub-centres, Primary Health Centres, and Community Health Centres, layered beneath district hospitals and a smaller number of tertiary teaching hospitals concentrated in the state's larger urban centres, including Visakhapatnam, Vijayawada, and Guntur. This structure operates under the coordination of the National Health Mission, which channels both central and state funding toward rural and urban healthcare delivery, and the state's expenditure under this mission has been tracked annually by the Ministry of Health and Family Welfare alongside every other Indian state (Ministry of Health and Family Welfare, 2025a).

On ambulance and emergency response infrastructure specifically, a costing study conducted through the Copenhagen Consensus and IIHMR partnership found that, as of its reference period, Andhra Pradesh operated 468 ambulances statewide, of which approximately 42 percent were deployed in urban areas, leaving the majority serving the state's considerably larger rural population (Copenhagen Consensus, 2026). The same study calculated that the state would require approximately 33 ambulances per million population in urban areas and 99 per million in rural areas to meet an adequate service coverage benchmark, a target that, given the state's rural population of approximately 3.78 crore documented in Chapter 1, section 1.3, implies a considerably larger ambulance fleet than the 468 vehicles recorded at the time of the study (Copenhagen Consensus, 2026). This gap is significant because, as the same study documented, only about 14 percent of pregnant women in Andhra Pradesh were transported by any public or private ambulance service during childbirth as of the reference period, a coverage rate lower than the already low national figure of 24 percent recorded under NFHS-4 (Copenhagen Consensus, 2026).

Urban primary healthcare delivery in the state has followed a distinctive institutional model relative to many other Indian states. Andhra Pradesh has completely outsourced service delivery in 191 Urban Health Posts spread across 73 towns to non-governmental organizations, an experimental model that national health systems assessment documentation has flagged as noteworthy precisely because it diverges from the more directly state-administered urban primary health models used elsewhere in India (National Urban Health Mission, 2026). Whether this NGO-delivery model has produced measurably different outcomes relative to directly state-run urban health posts in comparable Indian cities is a question this report flags for further investigation, since comparative outcome data specific to this delivery model was not available among the sources consulted for this chapter.

Human resource gaps remain a persistent theme in national assessments of the state's public health workforce, consistent with patterns documented across most Indian states under the National Health Mission. A national review of NHM's impact on health systems governance selected West Godavari district in Andhra Pradesh as one of its four state-representative case

study districts, alongside districts in Rajasthan, Chhattisgarh, and Karnataka, specifically because Andhra Pradesh's health system organizational structure was judged sufficiently distinct from the other study states to merit independent examination, and the resulting comparative analysis examined staffing ratios of doctors and nursing personnel per 10,000 population across Primary Health Centres and Community Health Centres over the 2005 to 2018 period (NITI Aayog, 2023).

The choice of West Godavari as the state's representative district is itself analytically useful, since it sits within the Coastal Andhra region identified in Chapter 1, section 1.1, as historically better resourced than the state's Rayalaseema and North Andhra regions, meaning that even the comparatively favorable staffing picture such a study might reveal should be read as an upper bound on the state's public health human resource adequacy rather than a representative state average. Applying the intra-state disparity framework developed in Chapter 1, section 1.7, to the health sector specifically, it is reasonable to expect that staffing ratios of doctors and nursing personnel per 10,000 population in the more remote, forested districts of North Andhra, including Alluri Sitharama Raju and the newly created Polavaram district, fall meaningfully below whatever baseline a Coastal Andhra study district such as West Godavari would show, a disparity with direct implications for the tribal welfare and healthcare access themes examined further in Chapter 7, section 7.2. District-level staffing data disaggregated specifically for the state's Rayalaseema and North Andhra districts was not available among the sources consulted for this chapter, and this report recommends that future editions draw on the state's own Health, Medical and Family Welfare Department district-wise establishment data to properly quantify this regional staffing gap, rather than relying on inference from a single, comparatively well-resourced representative district.

A further structural human resource consideration concerns the balance between the state's substantial private hospital sector, documented through recognized hospital listings maintained by the state's Directorate of Medical Education across cities including Visakhapatnam, Vijayawada, and Eluru, and its public sector delivery network (Directorate of Medical Education, 2026). The concentration of specialist private hospital capacity in the state's larger coastal cities, evident from the geographic distribution of recognized private facilities, reinforces the broader pattern of urban and coastal healthcare capacity concentration that recurs across the infrastructure and human development chapters of this report, and raises the practical question of how effectively the state's public referral and insurance architecture, discussed in section 6.4, succeeds in connecting rural and interior district residents to this urban-concentrated specialist capacity.

## **6.2 Epidemiological Profile: Communicable and Non-Communicable Disease Burden**

Andhra Pradesh's epidemiological profile reflects the broader Indian pattern of a protracted, incomplete transition from a disease burden historically dominated by communicable disease toward one increasingly shaped by non-communicable and lifestyle-related conditions. On the non-communicable side, data from the National Family Health Survey's fifth round period

found that in Andhra Pradesh, alongside Goa, Karnataka, Telangana, Kerala, and Himachal Pradesh, nearly one third of both men and women between the ages of 15 and 49 were classified as overweight or obese based on Body Mass Index measurement, placing the state among a cluster of relatively higher-income southern and western states where rising obesity prevalence has emerged as a significant public health concern (PRS Legislative Research, 2026a). This finding is directly relevant to the state's broader non-communicable disease burden, since elevated Body Mass Index is a well-established risk factor for cardiovascular disease, type 2 diabetes, and several forms of cancer, conditions that increasingly dominate mortality and healthcare utilization patterns in states that have advanced furthest along the epidemiological transition.

On the communicable and nutritional deficiency side, anaemia prevalence in Andhra Pradesh has historically been a significant concern, with National Family Health Survey fourth round data finding that 60 percent of women of reproductive age, between 15 and 49 years, were anaemic, alongside 52.9 percent of pregnant women specifically and 58.6 percent of children found to be anaemic (Copenhagen Consensus, 2026). These figures, while dated to the 2015-16 survey round, illustrate the scale of the nutritional deficiency burden the state's health system has had to address, a burden examined further in the maternal and child health discussion in section 6.3 and the nutrition programme discussion in section 6.6.

The state's digital health infrastructure has advanced notably in recent years as a tool for both communicable and non-communicable disease surveillance and management. Andhra Pradesh became the first state in India to connect the electronic health records of one crore people to the central database under the Ayushman Bharat Digital Mission, a milestone that positions the state as a comparatively advanced adopter of digital health record infrastructure relative to its peers, and one with potential long-term implications for improved disease surveillance and chronic condition management, though the practical clinical impact of this digital integration on actual epidemiological outcomes remains to be independently assessed (India Brand Equity Foundation, 2026a).

This obesity and non-communicable disease pattern connects meaningfully to the state's demographic transition documented in Chapter 1, section 1.3, and revisited in section 6.7 of this chapter. States that reach an advanced stage of demographic transition, characterized by low fertility and rising life expectancy, typically also see their disease burden shift decisively toward chronic, non-communicable conditions associated with aging and lifestyle factors, precisely the pattern the National Family Health Survey data on obesity prevalence suggests is already underway in Andhra Pradesh. This has direct implications for the composition of future healthcare demand the state's system will need to absorb, a theme this report returns to in section 6.8. Diabetes prevalence specifically, while not independently documented with state-specific figures in the sources consulted for this chapter, is a condition strongly correlated with the obesity patterns described above, and southern Indian states, including Andhra Pradesh, have historically recorded diabetes prevalence rates among the highest in the country, a pattern consistent with, though not directly confirmed by, the obesity data cited here.

On communicable disease specifically, the state's coastal geography and extensive irrigation infrastructure, discussed in Chapter 1, section 1.1, and Chapter 10, also create conditions conducive to vector-borne disease transmission, including dengue and malaria, particularly in the state's extensive deltaic and backwater regions along the Godavari and Krishna river systems. Comprehensive, current, state-specific vector-borne disease incidence data for Andhra Pradesh was not available among the sources consulted for this chapter, representing a further area this report recommends for dedicated attention in subsequent editions, ideally drawing on the state's Integrated Disease Surveillance Programme reporting.

### **6.3 Maternal and Child Health: MMR, IMR, Under-5 Mortality and Nutrition**

Andhra Pradesh has recorded genuinely strong performance on maternal mortality relative to most Indian states, a finding this report is able to state with confidence given corroboration across multiple sources. The state's Maternal Mortality Ratio stood at 45 per 100,000 live births as of the most recent comparative national assessment, a figure that places Andhra Pradesh among only eight Indian states that have already achieved the Sustainable Development Goal target of reducing MMR below 70 per 100,000 live births ahead of the 2030 target date, joining Kerala at 19, Maharashtra at 33, Telangana at 43, Tamil Nadu at 54, Jharkhand at 56, Gujarat at 57, and Karnataka at 69 (Government of India Press Information Bureau, 2026a). This represents a substantial improvement from the state's Maternal Mortality Ratio of 92 per 100,000 live births recorded for the 2011-13 period, indicating that the state has more than halved its maternal mortality rate over roughly a decade (Copenhagen Consensus, 2026).

This achievement should be read alongside the national trajectory for context. India's overall Maternal Mortality Ratio fell from 130 per 100,000 live births in 2014-16 to 97 per 100,000 live births in 2018-20, successfully bringing the national figure below the National Health Policy 2017 target of 100 per 100,000 live births (Government of India Press Information Bureau, 2026a). Andhra Pradesh's current figure of 45 per 100,000 live births sits well below this national average, reinforcing the state's position, discussed in Chapter 1, section 1.6, as a comparatively strong performer on health outcome indicators even as its Education Index performance lags regional peers.

On infant and under-five mortality specifically, national Sample Registration System data recorded India's overall Infant Mortality Rate falling from 32 per 1,000 live births in 2018 to 28 per 1,000 live births in 2020, meeting the national policy target for that year (Ministry of Health and Family Welfare, 2025a). State-specific, current Infant Mortality Rate and Under-5 Mortality Rate figures disaggregated for Andhra Pradesh specifically under the most recent Sample Registration System or NFHS-5 reporting round were not independently accessed in a form suitable for direct citation in this chapter, a gap this report flags rather than fills with estimation, though given the state's comparatively strong Maternal Mortality Ratio performance documented above, it is plausible that the state's infant and under-five mortality indicators similarly outperform the national average, consistent with the general pattern observed across most maternal and child health indicators in southern Indian states.

On nutritional status among children specifically, National Family Health Survey fourth round data for Andhra Pradesh found that 31.4 percent of children under five were stunted, 31.9 percent were underweight, 17.2 percent were wasted, and 4.5 percent were severely wasted, indicating that malnutrition among young children remained a substantial concern in the state as of that survey round (Copenhagen Consensus, 2026). At the national level, malnutrition indicators showed improvement between the fourth and fifth rounds of the National Family Health Survey, with stunting falling from 38.4 percent to 35.5 percent nationally, wasting falling from 21.0 percent to 19.3 percent, and underweight prevalence falling from 35.8 percent to 32.1 percent (Press Information Bureau, 2026b). Whether Andhra Pradesh's state-specific child malnutrition indicators improved by a comparable margin between the fourth and fifth survey rounds could not be independently confirmed from the sources consulted for this chapter, representing a further documented data gap this report recommends addressing in subsequent editions through direct reference to the state-specific NFHS-5 factsheet.

On antenatal care coverage, National Family Health Survey fourth round data found that only about 40 percent of pregnant women in Andhra Pradesh received full antenatal care, though 76.3 percent received at least four of the recommended antenatal visits during pregnancy, and full childhood immunization coverage among children aged 12 to 23 months stood at 65.3 percent, modestly above the national average of 62.0 percent recorded for the same period (Copenhagen Consensus, 2026). These figures, again dated to the 2015-16 survey round, illustrate that while the state's ultimate maternal mortality outcome has been comparatively strong, the underlying process indicators of antenatal care completeness suggest continued room for improvement in ensuring pregnant women receive the full recommended course of prenatal medical attention, a gap of the sort typically addressed through continued strengthening of the frontline Accredited Social Health Activist and Anganwadi worker network discussed further in section 6.6.

This tension, between strong ultimate outcomes and incomplete underlying process coverage, is worth dwelling on because it recurs as a pattern throughout this chapter, and indeed throughout this report's broader treatment of Andhra Pradesh's human development performance in Chapter 1, section 1.5. A state can achieve comparatively strong headline outcomes, such as the 45 per 100,000 live births Maternal Mortality Ratio documented above, through a combination of factors that do not necessarily require universally complete process coverage, including effective emergency obstetric referral systems that compensate for gaps in routine antenatal follow-through, relatively better baseline maternal nutrition and health status entering pregnancy compared to lower-performing states, and the layered insurance coverage discussed in section 6.4 that reduces financial barriers to seeking care once complications arise. This does not diminish the genuine achievement the state's maternal mortality figures represent, but it does suggest that further improvement in antenatal care completeness, rather than being redundant given already strong outcomes, likely represents a meaningful remaining opportunity to reduce the residual burden of the roughly 800 maternal deaths and 12,100 neonatal deaths the state was estimated to record annually as of the

reference period examined in the Copenhagen Consensus and IIHMR costing study (Copenhagen Consensus, 2026).

The state's Accredited Social Health Activist network, functioning as the primary community-level link between pregnant women and the formal health system, plays a central role in closing this antenatal care completeness gap, and the effectiveness of this frontline workforce is itself shaped by the broader human resource adequacy questions raised in section 6.1 regarding regional staffing disparities across the state's three constituent regions.

#### **6.4 Universal Health Coverage: State Health Assurance Schemes**

Andhra Pradesh's principal state health assurance mechanism is the YSR Aarogyasri scheme, a cashless health insurance programme originally introduced under the state's earlier Rajiv Aarogyasri branding and subsequently expanded and rebranded to cover a broader range of secondary and tertiary care procedures for economically vulnerable households across the state. This state scheme operates alongside the central government's Pradhan Mantri Jan Arogya Yojana, under which, as of December 12, 2024, 36.16 crore Ayushman Cards had been created nationally for beneficiaries drawn from deprived rural families and identified occupational categories of urban workers, providing a complementary layer of financial protection to the state-specific Aarogyasri architecture (Ministry of Health and Family Welfare, 2025a).

The combination of a well-established, longstanding state-level cashless insurance scheme in Aarogyasri, together with the more recently expanded national Ayushman Bharat framework, positions Andhra Pradesh's population with a comparatively dense layering of financial health protection mechanisms relative to states that rely on the national scheme alone. This layered coverage architecture is consistent with the state's broader welfare transfer approach documented throughout this report, including the education-linked Taliki Vandanam scheme discussed in Chapter 5 and the social security architecture discussed in Chapter 7, section 7.9, reflecting a consistent state government preference for direct, means-tested welfare delivery mechanisms across multiple sectors rather than universal, non-targeted provision.

Detailed, current enrollment and utilization statistics specific to the Aarogyasri scheme for the 2025-26 period, including total beneficiary counts, annual claim volumes, and empanelled hospital network size, were not available among the sources consulted for this chapter, representing a further documented gap this report recommends filling in subsequent editions through direct reference to the Andhra Pradesh Health and Family Welfare Department's own scheme-specific reporting, which would allow more precise assessment of how effectively the scheme's coverage translates into actual reduced out-of-pocket health expenditure for enrolled households.

The interaction between the state-level Aarogyasri scheme and the national Ayushman Bharat framework also raises a coordination question relevant to the state's broader fiscal position discussed in Chapter 2. Where beneficiary eligibility overlaps between the two schemes, effective coordination can reduce duplicate administrative overhead and allow the state to

direct its own Aarogyasri-specific fiscal resources toward coverage gaps the national scheme does not address, such as procedures or beneficiary categories outside the Ayushman Bharat framework's scope. Conversely, poorly coordinated overlap can result in administrative confusion for beneficiaries attempting to determine which scheme covers a given procedure, and potentially in resource inefficiency at the state level. Given the fiscal pressures documented in Chapter 2, section 2.2, including the persistent gap between budgeted and executed welfare spending, the efficiency of this coordination between state and central health insurance architecture is a meaningful, if under-documented, dimension of the state's overall public financial management performance in the health sector specifically.

More broadly, the existence of two parallel, well-established insurance mechanisms, one state-administered and one centrally administered, means that Andhra Pradesh residents in principle face fewer purely financial barriers to accessing secondary and tertiary care than residents of states with less mature insurance infrastructure. Whether this translates into measurably reduced catastrophic health expenditure at the household level, the standard metric international health financing literature uses to assess insurance scheme effectiveness, is a question this report was unable to answer definitively given the absence of state-specific catastrophic health expenditure survey data among the sources consulted, and this represents a priority area for future editions of this framework to address directly.

## **6.5 Mental Health Services: Availability, Access and Stigma Reduction**

Comprehensive, current, state-specific data on mental health service availability, psychiatric bed capacity, or mental health workforce density for Andhra Pradesh was not available among the sources consulted for this chapter, and this report flags this as a significant documented gap rather than substituting estimation for verified data. Mental health service provision in most Indian states, including Andhra Pradesh, is typically delivered through the District Mental Health Programme framework operating under the National Mental Health Programme, which provides for mental health service integration at the district hospital and Community Health Centre level, though the specific coverage density and staffing adequacy of this programme within Andhra Pradesh specifically could not be verified from the sources available for this chapter.

Given the broader national context of rising obesity and non-communicable disease burden documented in section 6.2, and the well-established bidirectional relationship between chronic physical health conditions and mental health outcomes, the state's continued investment in mental health service integration within its broader primary and secondary healthcare architecture represents an area this report recommends receiving dedicated attention in subsequent editions, ideally drawing on state-specific District Mental Health Programme implementation data and any available state mental health survey findings, neither of which were accessible in a form suitable for citation within the scope of the research conducted for this chapter.

Stigma reduction represents a further dimension of mental health service access that typically proves at least as significant a barrier as physical service availability across Indian states

generally, since even where psychiatric services exist within a district hospital or Community Health Centre, social stigma associated with seeking mental health treatment frequently discourages utilization, particularly in rural and more socially conservative communities. The National Mental Health Programme's broader public awareness and destigmatization components are intended to address this barrier alongside the service delivery expansion components, though the relative effectiveness of these two complementary strategies within Andhra Pradesh specifically could not be assessed from the sources available for this chapter. Given the state's demographic trajectory documented in section 6.7, with a rapidly rising share of elderly residents, mental health conditions associated with aging, including dementia and late-life depression, represent a category of mental health need likely to grow considerably in absolute scale over the coming two decades, adding urgency to the case for expanded mental health service capacity and destigmatization efforts alike, even in the absence of current state-specific baseline data against which to measure future progress.

## **6.6 Nutrition Programmes: ICDS, Mid-Day Meal and Poshan Abhiyan**

Nutrition programming in Andhra Pradesh operates through the standard national architecture of the Integrated Child Development Services scheme, delivered through the state's Anganwadi worker network, alongside the Mid-Day Meal scheme within schools and the Poshan Abhiyan national nutrition mission, all coordinated under the broader Umbrella Integrated Child Development Services framework that also encompasses the Scheme for Adolescent Girls and the Pradhan Mantri Matru Vandana Yojana maternity benefit programme (Press Information Bureau, 2026b). As documented in Chapter 5, section 5.1, the state has recently extended mid-day meal provision to intermediate-level students, beyond the traditional elementary and secondary coverage, a reform explicitly linked to the state's broader retention and welfare strategy for students from economically vulnerable households (The South First, 2025).

Given the child malnutrition indicators documented in section 6.3, including stunting at 31.4 percent and underweight prevalence at 31.9 percent as of the most recent state-specific figures available for this chapter, continued strengthening of the state's Anganwadi-delivered nutrition supplementation programme remains a significant priority, particularly given that these indicators, while dated to the 2015-16 survey round, likely still reflect meaningful residual malnutrition burden even accounting for the general national improvement trend documented between the fourth and fifth National Family Health Survey rounds. The state's own more recent nutrition programme performance data, ideally sourced from the Andhra Pradesh Women Development and Child Welfare Department's current reporting, would allow a more precise assessment of programme effectiveness than the dated survey figures available for this chapter, and this report recommends such direct sourcing for subsequent editions.

The intersection of the state's nutrition programming with its strong agricultural performance, documented in Chapter 3, section 3.3, deserves particular note. A state recording record food grain production and strong growth in staples such as rice and maize might reasonably be

expected to see this agricultural strength translate into improved household-level food security and, over time, improved child nutrition indicators, provided the gains in agricultural output reach vulnerable households rather than being absorbed primarily through export or market channels. Whether this translation from agricultural strength to nutritional outcome has in fact occurred at the pace the state's strong agricultural growth figures might suggest is a question this report cannot answer definitively given the data gaps noted throughout this chapter, but it represents precisely the kind of cross-sectoral linkage that a comprehensive development framework of this kind is intended to surface for further policy attention, connecting the agricultural performance documented in Chapter 3 directly to the nutritional outcomes that are, ultimately, one of the more meaningful measures of whether broad-based economic growth is reaching the state's most vulnerable households.

## **6.7 Population Stabilisation and Family Planning**

As documented extensively in Chapter 1, section 1.3, Andhra Pradesh's demographic transition has proceeded further than that of almost any other major Indian state, with the state's Total Fertility Rate having fallen to approximately 1.5, well below the replacement level of 2.1, a decline that reflects decades of sustained family planning programme success within the state's health system (KP IAS Academy, 2026). This trajectory mirrors, in accelerated form, the national pattern documented by the National Family Health Survey's fifth round, which found that India's overall Total Fertility Rate had fallen to 2.0 by 2019-21, down from 2.2 in 2015-16, meeting the national replacement-level target three years ahead of the 2025 target date, with all medium and large Indian states in the survey's first phase, aside from Bihar, already recording fertility below the replacement level of 2.1 by that point (Government of India Press Information Bureau, 2025b; PRS Legislative Research, 2026a).

What distinguishes Andhra Pradesh within this broader national fertility decline is the state's response to it. As discussed in Chapter 1, section 1.3, the state government has drafted a Population Management Policy scheduled for implementation from April 1, 2026, explicitly reversing decades of family planning promotion in favor of pro-natalist measures, including a proposed birth incentive of Rs. 25,000, in direct response to projections that approximately 23 percent of the state's population could be aged 60 or above by 2047 (KP IAS Academy, 2026). This represents a genuinely novel policy direction for family planning and population stabilisation infrastructure that has historically been oriented toward fertility reduction, and the practical implementation of this shift, including how the state's existing family planning service delivery infrastructure, built over decades around contraceptive access and sterilization services, will be reoriented or supplemented to support pro-natalist objectives, remains an open institutional question this report expects to be a significant policy development to track through the remainder of this decade.

## **6.8 Health System Strengthening and Future Preparedness**

Drawing together the findings of this chapter, Andhra Pradesh's health system presents a pattern broadly consistent with the state's overall human development profile discussed in

Chapter 1, section 1.5: genuinely strong performance on headline outcome indicators, exemplified by the state's Maternal Mortality Ratio of 45 per 100,000 live births, one of the better performances nationally, alongside persistent underlying process and infrastructure gaps, exemplified by the ambulance coverage shortfall documented in section 6.1 and the incomplete antenatal care coverage documented in section 6.3, that suggest the strong headline outcomes may rest on a less robust underlying service delivery foundation than the outcome figures alone would suggest.

The state's future health system preparedness challenges are shaped significantly by the demographic transition documented in section 6.7 and Chapter 1, section 1.3. A rapidly aging population, with close to a quarter of residents projected to be aged 60 or above by 2047, will place fundamentally different demands on the state's health system than the maternal and child health-oriented infrastructure that has been the historical focus of the state's public health investment, discussed throughout sections 6.1 through 6.6 of this chapter. Chronic disease management, geriatric care infrastructure, and long-term care services will need to expand considerably relative to their current scale to meet this shifting demand profile, a transition that will require sustained fiscal commitment from a state government already managing the debt sustainability pressures documented in Chapter 2, section 2.4.

The state's comparatively advanced digital health infrastructure, exemplified by its status as the first Indian state to connect one crore residents' electronic health records to the central Ayushman Bharat Digital Mission database, discussed in section 6.2, represents a potentially valuable foundation for more efficient, data-driven health system management going forward, particularly for the kind of longitudinal chronic disease tracking that an aging population will increasingly require (India Brand Equity Foundation, 2026a). Whether this digital infrastructure advantage translates into measurably improved health system efficiency and outcome tracking over the coming years, or whether it remains primarily a record-keeping achievement without corresponding gains in actual care coordination and chronic disease management, is a question this report recommends monitoring closely in subsequent editions of this framework.

Three specific priorities emerge from this chapter's findings as meriting particular attention from state health policymakers over the remainder of this decade. First, closing the ambulance and emergency obstetric transport gap documented in section 6.1, where the state's fleet of 468 ambulances falls considerably short of the coverage benchmark identified in the Copenhagen Consensus and IIHMR costing study, represents a comparatively low-cost, high-impact intervention given its direct link to the residual maternal and neonatal mortality burden discussed in section 6.3. Second, addressing the regional staffing disparity inferred in section 6.1 between the state's better-resourced Coastal Andhra districts and its more remote Rayalaseema and North Andhra districts will require dedicated district-level human resource data collection that goes beyond the single representative district approach used in the national NHM assessment literature reviewed for this chapter. Third, beginning the institutional groundwork for the demographic shift documented in section 6.7, including geriatric care workforce training and long-term care infrastructure planning, represents a

longer-horizon but no less urgent priority given the pace at which the state's population is projected to age.

Taken together, these findings position Andhra Pradesh's health system as one of genuine comparative strength on headline outcomes within the Indian state context, but one whose continued performance, and whose capacity to absorb the very different demand profile an aging population will bring, depends on addressing infrastructure and human resource gaps that are less visible in aggregate outcome statistics than they are in the process and access indicators examined throughout this chapter. This pattern, strong outcomes resting on an unevenly distributed and incompletely documented underlying service delivery base, is one this report expects to recur across several of the social sector chapters that follow, particularly the social justice and inclusion themes examined in Chapter 7 and the water and sanitation infrastructure examined in Chapter 10. Readers seeking the most current, granular figures on any of the specific gaps identified throughout this chapter are encouraged to consult the Andhra Pradesh Health, Medical and Family Welfare Department's own annual reporting directly, since national-level compilations of the kind relied upon here necessarily lag the state's own internal monitoring systems by a year or more in most cases.

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## Chapter 7: Social Justice, Inclusion and Community Welfare

### 7.1 Scheduled Castes: Demographic Profile, Deprivation and Development Programmes

Scheduled Castes constitute a significant share of Andhra Pradesh's population, with 2011 Census data for the undivided state recording a total Scheduled Caste population of 13,878,078, comprising 6,913,047 males and 6,965,031 females, a figure that, following the 2014 bifurcation, applies to a smaller residual population base but remains the most recent enumerated baseline available given the continued delay in India's decennial census (Wikipedia, 2026c). Comparative national data places Andhra Pradesh's Scheduled Caste share of population at approximately 16.4 percent, close to the national average of 16.7 percent, and comparable in magnitude to Tamil Nadu's 18 percent, with Scheduled Caste communities in the state drawn substantially from groups such as the Adi Dravida community (IndiaDataMap, 2026b).

The most significant recent policy development affecting Scheduled Castes in Andhra Pradesh is the state's move toward sub-classification of the Scheduled Caste category for reservation purposes. On April 16, 2025, the state government issued an ordinance implementing Scheduled Caste sub-classification, following the Supreme Court's 2023 verdict permitting states to sub-divide Scheduled Caste and Scheduled Tribe categories for more targeted allocation of affirmative action benefits, a verdict whose constitutional validity a seven-judge Supreme Court bench upheld in 2024 (Universal Institutions, 2025; Wikipedia, 2026d). The state's sub-classification framework rests on a report submitted on March 10, 2025, by a one-member commission led by Rajeev Ranjan Mishra, which studied the socio-economic status of various Scheduled Caste sub-castes and classified them into three groups, with Group 1, designated the most backward category, including twelve sub-castes such as Relli, Chandala, and Mehtar, allocated a one percent reservation quota (Universal Institutions, 2025). Andhra Pradesh's move followed Telangana's earlier implementation of a similar sub-quota system, positioning both post-bifurcation successor states among the first in the country to operationalize the Supreme Court's sub-classification ruling (Universal Institutions, 2025).

This sub-classification represents a genuinely significant shift in the state's approach to Scheduled Caste welfare policy, since it explicitly acknowledges that treating all Scheduled Castes as a single homogeneous category for reservation purposes had, in practice, allowed certain better-positioned sub-castes to capture a disproportionate share of reservation benefits while more marginalized sub-castes remained comparatively excluded, a critique that had circulated in Indian social policy debate for decades before receiving judicial and, subsequently, state-level administrative endorsement (Wikipedia, 2026d). The formal institutional architecture supporting Scheduled Caste welfare in the state includes the Andhra Pradesh State Commission for Scheduled Castes and Scheduled Tribes, a constitutional body established in 2016, and a dedicated Scheduled Castes Sub-Plan mechanism, under which the state earmarks a portion of its total plan outlay proportional to the Scheduled Caste

population share, an approach intended to ensure development spending tracks demographic representation rather than being allocated on a purely discretionary basis (Government of Andhra Pradesh Social Welfare Department, 2026a; SCSP, 2026).

Protective legal infrastructure for Scheduled Castes in the state includes thirteen Special Sessions Courts functioning across the state's districts to handle cases under the Scheduled Castes and Scheduled Tribes Prevention of Atrocities Act, alongside a dedicated Special Cell within the state's Criminal Investigation Department, headed by an Inspector General or Deputy Inspector General rank officer, tasked with the investigation and prosecution of untouchability and atrocity cases against Scheduled Castes and Scheduled Tribes (Government of Andhra Pradesh Social Welfare Department, 2026a). Educational support programmes specific to Scheduled Castes include the NTR Vidyonnathi scheme, introduced in 2015-16 to provide professional civil services examination coaching, which expanded its intake from 350 to 700 students between 2015-16 and 2016-17, sponsoring beneficiaries to reputed coaching institutions across the country (Government of Andhra Pradesh Social Welfare Department, 2026a).

The practical implementation challenge that now follows from the April 2025 sub-classification ordinance concerns how consistently and transparently the three-tier grouping developed by the Mishra Commission is applied across the state's education admission and public employment reservation systems, since sub-classification of this kind, while addressing intra-category inequity in principle, also introduces new administrative complexity into what had previously been a comparatively simpler single-category reservation calculation. Telangana's earlier implementation of a broadly similar sub-quota system provides a natural comparison case for Andhra Pradesh's own rollout, and this report recommends that subsequent editions track litigation and administrative dispute patterns arising from the sub-classification's practical application, since sub-classification frameworks introduced in other Indian states and contexts have historically generated legal challenges from sub-castes who perceive themselves as disadvantaged by the specific groupings chosen, even where the overall policy intent of more equitable benefit distribution is broadly shared across affected communities.

It is also worth situating Andhra Pradesh's Scheduled Caste population data within the broader national context documented by comparative demographic analysis, which found that the Scheduled Caste share of India's total population stood at 16.6 percent as of the 2011 Census, projected to rise to approximately 241.8 million nationally by 2025 given an annual growth rate outpacing the national average, itself attributed to demographic patterns among Scheduled Caste households that have historically included comparatively larger family sizes (IndiaDataMap, 2026b). Andhra Pradesh's Scheduled Caste population, concentrated substantially in rural areas consistent with the national pattern, and drawn predominantly from agricultural livelihoods, faces the same broad structural association between caste-based social disadvantage and rural agricultural employment documented for Scheduled Castes nationally, a linkage that connects the social justice themes of this chapter directly to the

agricultural labor market conditions discussed in Chapter 3, sections 3.3 and 3.7, and the rural development themes examined in Chapter 12.

## **7.2 Scheduled Tribes: Rights, Forest Dwelling Communities and Welfare Measures**

Andhra Pradesh's Scheduled Tribe population is concentrated heavily in the forested and hill districts of North Andhra, particularly Alluri Sitharama Raju district and the newly created Polavaram district, discussed in Chapter 1, section 1.2, both of which contain substantial tribal populations engaged predominantly in forest-based livelihoods. The institutional architecture for tribal welfare in the state is anchored by the Tribal Welfare Department, which administers educational schemes, health services, and forest-based livelihood support programmes, and which oversees the Gurukulam network, formally the Andhra Pradesh Tribal Welfare Residential Educational Institutions Society, a system of residential educational institutions serving tribal students across the state (Government of Andhra Pradesh Department of Women, Children, Disabled and Senior Citizens, 2026).

Central government support for tribal development in Andhra Pradesh flows through several dedicated funding mechanisms. The state is among 23 states covered under the Special Central Assistance to Tribal Sub-Scheme, a grant charged to the Consolidated Fund of India that supplements state plan funds and is utilized for the economic development of Integrated Tribal Development Projects, Integrated Tribal Development Agencies, Modified Area Development Approach clusters, and Particularly Vulnerable Tribal Groups (Ministry of Tribal Affairs, 2026). The state also receives Grants-in-Aid under Article 275(1) of the Constitution, a fully centrally funded annual grant available to a broader set of 27 states including Andhra Pradesh, similarly directed toward the socio-economic development of tribal development agencies, area development clusters, and Particularly Vulnerable Tribal Groups specifically (Ministry of Tribal Affairs, 2026).

Livelihood support for tribal communities in the state extends beyond direct welfare transfers into commodity-specific development programming, with tribal development initiatives spanning agriculture, horticulture, beekeeping, and the cultivation of coffee and spice crops, delivered in coordination with national commodity boards including the National Honey Board, the Indian Coffee Board, the Indian Spices Board, and the Indian Tobacco Board (Government of Andhra Pradesh Department of Women, Children, Disabled and Senior Citizens, 2026). This commodity-based approach reflects the ecological reality of the state's tribal-majority districts, situated within the Eastern Ghats forest belt described in Chapter 1, section 1.1, where forest-based and hill agriculture livelihoods, rather than the irrigated paddy cultivation dominant in Coastal Andhra, form the primary economic base for tribal households.

A dedicated Tribal Welfare Health Information Management System tracks tribal-specific health outcomes, including sickness pattern data disaggregated for tribal communities, an institutional capability that, if consistently maintained and utilized, could provide the kind of granular, tribal-specific health monitoring this report flagged as absent from the broader

state-level health data reviewed in Chapter 6 (Government of Andhra Pradesh Department of Women, Children, Disabled and Senior Citizens, 2026). Whether this system's data has been systematically used to inform tribal health policy interventions, or functions primarily as a passive data repository, could not be assessed from the sources available for this chapter, and this report recommends the question be investigated directly in future editions given its potential significance for closing the regional health disparities identified in Chapter 6, section 6.1.

The forest rights dimension of tribal welfare in Andhra Pradesh, governed nationally through the Forest Rights Act of 2006, which recognizes the individual and community land and resource rights of forest-dwelling tribal communities, intersects directly with the state's broader forest cover and biodiversity governance framework discussed in Chapter 13, section 13.1. Effective implementation of forest rights recognition is widely regarded, in national tribal welfare policy literature, as a precondition for meaningful economic security among forest-dependent tribal households, since without secure tenure recognition, tribal communities face heightened vulnerability to both displacement pressures from competing land uses and restricted access to the forest resources their livelihoods depend upon. Comprehensive, current, state-specific data on the pace and completeness of forest rights title recognition in Andhra Pradesh's tribal districts was not available among the sources consulted for this chapter, though the Fifteenth Finance Commission's evaluation documentation, referenced in Chapter 2, section 2.8, specifically flagged continuing gaps in the implementation of the Panchayat Extension to Scheduled Areas Act within the state, noting that more serious effort remains needed to establish Gram Sabhas as the central decision-making institution in Scheduled Areas, a governance shortfall directly relevant to the practical realization of tribal community rights over forest resources (Fifteenth Finance Commission, 2025).

This PESA implementation gap is analytically significant because the Panchayat Extension to Scheduled Areas Act is specifically designed to extend meaningful self-governance authority to tribal communities in Scheduled Areas, including authority over resource management decisions that directly affect forest-dependent livelihoods, and incomplete implementation of this framework means that the formal welfare and livelihood support programmes documented elsewhere in this section may be operating within a governance environment that does not yet fully empower tribal communities themselves to shape the resource management decisions most consequential to their economic security.

### **7.3 Other Backward Classes: Identification, Reservation and Social Mobility**

Backward Classes welfare schemes in Andhra Pradesh are administered as a distinct category within the state's broader social welfare architecture, tracked separately from Scheduled Caste and Scheduled Tribe schemes within the state's official statistical reporting framework, which maintains dedicated categories for Backward Classes Schemes, Minorities Schemes, and Tribal Schemes as distinct reporting heads (Indiastat, 2026a). This administrative separation reflects the distinct constitutional and legal basis for Other Backward Classes

reservation in India, which, unlike Scheduled Caste and Scheduled Tribe reservation, rests on socio-educational backwardness criteria rather than the historical caste-based discrimination framework underlying Scheduled Caste and Scheduled Tribe protections specifically.

The YSR Cheyutha scheme, while primarily framed as a women's welfare programme and discussed further in section 7.4, is notable for its cross-cutting eligibility structure, extending financial assistance of Rs. 75,000 disbursed over four years specifically to women aged 45 to 60 drawn from Backward Class, Scheduled Caste, Scheduled Tribe, and Minority community backgrounds, subject to income thresholds of Rs. 12,000 per month in urban areas and Rs. 10,000 per month in rural areas (PolicyBazaar, 2025). This scheme design, spanning multiple historically disadvantaged categories within a single programme rather than maintaining fully separate parallel schemes for each category, illustrates one practical approach the state has taken to addressing overlapping dimensions of social and economic disadvantage among women specifically, rather than treating caste-based and gender-based disadvantage as entirely separate policy domains.

Comprehensive, current, disaggregated data on Other Backward Classes population share, sub-caste composition, and reservation utilization specific to Andhra Pradesh was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the state's Backward Classes Welfare Department reporting and any state-specific backward classes commission findings, which would parallel the kind of Mishra Commission analysis conducted for Scheduled Caste sub-classification discussed in section 7.1.

#### **7.4 Gender Equity: Women's Participation in Education, Economy and Governance**

Gender equity considerations recur throughout this report's treatment of Andhra Pradesh's development profile, and this section draws together several threads examined in earlier chapters while adding state-specific welfare programming detail not covered elsewhere. As documented in Chapter 1, section 1.4, the state's 2011 Census literacy gender gap stood at nearly sixteen percentage points, with male literacy at 74.88 percent against female literacy at 59.15 percent, a gap whose narrowing across more recent school-age cohorts is examined in Chapter 5. As documented in Chapter 3, section 3.7, national labor force participation data reveals a substantial gender gap as well, with male labor force participation at 79.1 percent nationally compared to female participation at 40.0 percent, though rising through 2025, and Andhra Pradesh's overall labor force participation rate of 68.0 percent, among the strongest of any Indian state, likely reflects a comparatively narrower, though not fully closed, gender gap relative to less economically active states.

The state's most significant dedicated women's economic welfare programme is the YSR Cheyutha scheme discussed in section 7.3, providing Rs. 75,000 over four years to eligible women aged 45 to 60 from Backward Class, Scheduled Caste, Scheduled Tribe, and Minority backgrounds, an intervention explicitly designed to enhance livelihood security for women in an age bracket that frequently faces reduced income-earning opportunities following the end

of active child-rearing responsibilities but before reaching pension-eligible age (PolicyBazaar, 2025). The state's broader pension architecture, discussed further in section 7.6, also includes specific provision for widows and single women, categories that receive Rs. 4,000 per month under the current NTR Bharosa Pension Scheme structure, reflecting explicit state recognition of the particular economic vulnerability widowed and unmarried older women face in the absence of either a working spouse's income or their own accumulated retirement savings (NTR Bharosa Pension Scheme, 2026).

The Girl Child Protection Scheme, administered by the state's Women Development and Child Welfare Department, represents a further dimension of the state's gender equity programming, aimed explicitly at preventing gender discrimination against girl children through direct government investment intended to alter household-level incentives around girl child welfare and, implicitly, to counter the kind of sex-selective preference for male children that has historically driven skewed sex ratios in parts of India (Government of Andhra Pradesh Department of Women, Children, Disabled and Senior Citizens, 2026). As documented in Chapter 1, section 1.3, Andhra Pradesh's overall sex ratio, at approximately 993 to 998 females per 1,000 males depending on the source consulted, already compares favorably to the national average of 943, suggesting that whatever combination of factors, including this scheme, cultural patterns, and broader socio-economic development, has shaped the state's sex ratio outcome has been comparatively more favorable to female survival than the national pattern, though attributing this outcome specifically to the Girl Child Protection Scheme rather than to broader socio-economic factors would require a more rigorous programme evaluation than the sources available for this chapter permit.

On political and governance representation specifically, comprehensive, current data on women's representation in the state legislature, in Panchayati Raj institutions, and in the state's civil service was not available among the sources consulted for this chapter, though India's Panchayati Raj framework nationally mandates a minimum of one-third reservation for women in local self-government bodies, a mandate that would apply to Andhra Pradesh's 13,324 village panchayats documented in Chapter 1, section 1.2, and that this report recommends verifying against state-specific implementation data in subsequent editions.

## **7.5 Child Rights, Protection and Development: POCSO, Child Labour and Nutrition**

Child welfare programming in Andhra Pradesh operates through the Department of Women, Children, Disabled and Senior Citizens, which maintains dedicated reporting categories for Child Schemes distinct from broader family or household welfare programming (Indiastat, 2026a). As documented in Chapter 5, section 5.1, and Chapter 6, section 6.6, the state's most significant recent child welfare intervention is the Talliki Vandanam education-linked cash transfer scheme, whose eligibility framework explicitly extends to orphaned and street children enrolled through recognized voluntary organizations, representing an attempt to ensure the state's largest child welfare cash transfer programme reaches even children outside conventional household structures (BankBazaar, 2026).

Protection of children from sexual offences in Andhra Pradesh operates under the national Protection of Children from Sexual Offences Act framework, implemented in coordination with the state's judicial and child welfare infrastructure, though comprehensive, current, state-specific data on POCSO case registration, disposal rates, and special court capacity for Andhra Pradesh specifically was not available among the sources consulted for this chapter. This represents a significant documented gap given the sensitivity and importance of this protection framework, and this report strongly recommends that subsequent editions incorporate direct reference to the state's Woman and Child Welfare Department annual reports and National Crime Records Bureau state-specific POCSO data, which would allow a substantive rather than merely structural assessment of child protection outcomes in the state.

On child labour specifically, similarly, comprehensive current state-specific data on child labour prevalence, rescue and rehabilitation programme coverage, or enforcement activity under the Child Labour Prohibition and Regulation Act was not available among the sources consulted for this chapter. Given the state's substantial informal economy, discussed in Chapter 3, section 3.6, and its significant agricultural and fisheries workforce, discussed in Chapter 3, section 3.3, both sectors nationally associated with elevated child labour risk relative to formal sector employment, this represents a further priority area this report recommends for dedicated data collection in subsequent editions.

## **7.6 Welfare of Elderly Persons: Pension, Care Infrastructure and Policy**

The state's primary social security mechanism for elderly persons is the NTR Bharosa Pension Scheme, launched in June 2024 as a rebranded and enhanced successor to the earlier YSR Pension Kanuka scheme, covering thirteen categories of beneficiaries including old age persons, widows, toddy tappers, weavers, single women, fishermen, persons living with HIV under antiretroviral therapy, traditional cobblers, transgender persons, and Dappu artists, among others (NTR Bharosa Pension Scheme, 2026; Cleartax, 2026b). Under Government Order Ms.No.43, dated June 13, 2024, pension amounts for these general categories were enhanced to Rs. 4,000 per month, payable from July 2024 onward, with disabled persons and multi-deformity leprosy patients receiving Rs. 6,000 per month, fully disabled individuals receiving Rs. 10,000 per month, bedridden persons receiving the scheme's highest tier of Rs. 15,000 per month, and patients with specified chronic conditions, including bilateral elephantiasis at grade four severity, organ transplant recipients, and chronic kidney disease patients on dialysis, also receiving Rs. 10,000 per month (NTR Bharosa Pension Scheme, 2026; Cleartax, 2026b).

The scale of this programme is substantial, with Rs. 16,366.80 crore allocated for the April to September 2025 pension disbursement cycle alone, and the scheme covering more than 60 lakh beneficiaries across all districts of the state, delivered through the Village and Ward Secretariat system that forms the state's frontline administrative delivery mechanism for welfare programmes more broadly (Cleartax, 2026b). Eligibility for the elderly-specific pension category requires a minimum age of 60 years, consistent with the standard Indian

convention for defining senior citizen status, while disability-linked pension categories remain available to eligible individuals regardless of age (Bajaj Finserv, 2026).

Given the demographic projections discussed in Chapter 1, section 1.3, and Chapter 6, section 6.7, anticipating that close to 23 percent of the state's population could be aged 60 or above by 2047, the fiscal sustainability of a pension programme already costing over Rs. 16,000 crore per six-month disbursement cycle, before accounting for the substantial further expansion in the eligible elderly population base that population aging will bring, represents a significant medium-term fiscal planning consideration for the state government, one this report connects directly to the debt sustainability concerns documented in Chapter 2, section 2.4. Beyond direct cash transfer, comprehensive, current, state-specific data on residential elderly care infrastructure, including old age home capacity and geriatric daycare provision, was not available among the sources consulted for this chapter, a gap consistent with the broader geriatric care infrastructure gap identified in Chapter 6, section 6.8.

A simple order-of-magnitude projection illustrates the scale of the fiscal challenge ahead. If the roughly 60 lakh current beneficiary base of the NTR Bharosa Pension Scheme were to grow in rough proportion to the projected near-doubling of the state's 60-plus population share implied by the 23 percent by 2047 projection relative to current elderly population shares, and if per-beneficiary pension amounts continue to be periodically enhanced in line with past practice, exemplified by the June 2024 enhancement documented above, the annual fiscal commitment associated with elderly and disability pension provision alone could plausibly rise to a multiple of its current level over the coming two decades, absent offsetting revenue growth of the kind documented in Chapter 3. This is a illustrative projection rather than an official state government forecast, and this report emphasizes that it should be read as indicating the general direction and rough scale of the fiscal challenge rather than as a precise forecast, since actual future pension costs will depend on policy choices, including whether benefit levels are indexed to inflation or periodically revised at the discretion of the state government, that cannot be reliably predicted from current data alone. Nonetheless, the exercise usefully illustrates why this report treats the pension architecture documented in this section as a first-order fiscal planning concern for the state's Vision 2047 strategy, examined further in Chapter 21.

## **7.7 Persons with Disabilities: Rights, Accessibility and Empowerment**

As documented in section 7.6, persons with disabilities in Andhra Pradesh receive differentiated pension support under the NTR Bharosa Pension Scheme, with amounts scaled to disability severity, ranging from Rs. 6,000 per month for disabled persons and multi-deformity leprosy patients up to Rs. 10,000 per month for fully disabled individuals and Rs. 15,000 per month for bedridden persons, a tiered structure that represents a more differentiated approach to disability-linked income support than a flat, undifferentiated disability pension would provide (NTR Bharosa Pension Scheme, 2026). This tiered approach implicitly recognizes that the economic and care burden associated with disability varies considerably by severity, an analytically reasonable design choice, though this report

was unable to independently verify how disability severity assessment is conducted or how consistently it is applied across the state's Village and Ward Secretariat delivery network.

Beyond direct income support, the state maintains a dedicated mobility assistance programme, administered through what state government portals refer to as the disability welfare corporation, providing retrofitted motorized vehicles and motorized three-wheelers to eligible persons with disabilities through an online application process, an intervention aimed at addressing transportation-related barriers to employment, education, and social participation that disabled individuals frequently face (APDASCAC, 2026). This mobility support programme connects meaningfully to the broader accessibility themes this section is intended to cover, since transportation access is frequently among the most significant practical barriers to full social and economic participation for persons with mobility-related disabilities specifically.

Comprehensive, current, state-specific data on built environment accessibility standards and compliance, disability employment quotas and their fulfillment within state government and public sector undertaking employment, and disability-inclusive education coverage beyond the special education gap already flagged in Chapter 5, section 5.7, was not available among the sources consulted for this chapter. This represents a further significant documented gap, and this report recommends that subsequent editions draw directly on the state's Department for the Welfare of Differently Abled and Senior Citizens reporting, along with Right of Persons with Disabilities Act compliance audits, to provide a more complete picture of disability rights implementation beyond the income support and mobility assistance programmes documented here.

## **7.8 Minority Communities: Development, Representation and Welfare**

Minority community welfare in Andhra Pradesh is administered through community-specific finance corporations, including the Andhra Pradesh State Minorities Finance Corporation, which provides loan schemes for education and small business development to eligible minority community members, and the Andhra Pradesh State Christian Minorities Finance Corporation, established specifically to assist the state's Christian community with socio-economic development through collaboration with banks and other development finance agencies (Government of Andhra Pradesh Department of Women, Children, Disabled and Senior Citizens, 2026). This community-specific finance corporation model, rather than a single undifferentiated minority welfare fund, reflects an administrative approach that treats different minority religious communities as having potentially distinct developmental needs and historical circumstances warranting separately structured support mechanisms.

As documented in section 7.4, the YSR Cheyutha women's livelihood scheme explicitly extends eligibility to women from Minority community backgrounds alongside Backward Class, Scheduled Caste, and Scheduled Tribe beneficiaries, illustrating that minority community members are integrated into the state's broader cross-category welfare programming in at least some instances, rather than being served exclusively through minority-specific finance corporation channels (PolicyBazaar, 2025). As noted in Chapter 1,

section 1.4, Muslim and Christian minority communities in Andhra Pradesh are concentrated particularly in specific urban centres and coastal districts with historical missionary and trading contact, though updated, census-verified religious composition data specific to 2026 was not available given the continued delay in India's decennial census, a limitation flagged repeatedly throughout this report.

Comprehensive, current data on minority community representation in state government employment, educational institution enrollment relative to population share, and utilization rates for the minority finance corporation loan schemes described above was not available among the sources consulted for this chapter, representing a further documented gap this report recommends addressing through direct reference to the state Minorities Welfare Department's annual reporting in subsequent editions.

## **7.9 Social Security and Beneficiary-Linked Welfare Architecture**

Drawing together the findings of this chapter, Andhra Pradesh's social security architecture is characterized by a consistent institutional pattern: rather than relying primarily on universal, non-targeted welfare provision, the state has built an extensive network of means-tested, category-specific cash transfer and pension schemes, delivered through the common administrative backbone of the Village and Ward Secretariat system, and increasingly linked through Aadhaar-seeded direct bank transfer mechanisms intended to reduce beneficiary duplication and leakage. This pattern recurs across every welfare domain examined in this chapter and throughout this report more broadly, from the education-linked Talliki Vandanam scheme discussed in Chapter 5, to the health insurance architecture discussed in Chapter 6, section 6.4, to the pension, disability, and minority-specific finance corporation programmes documented in this chapter.

The scale of this welfare architecture, illustrated concretely by the NTR Bharosa Pension Scheme's Rs. 16,366.80 crore six-month disbursement cycle covering over 60 lakh beneficiaries, and the Talliki Vandanam scheme's Rs. 8,745 crore initial disbursement to over 67 lakh mothers documented in Chapter 5, section 7.1, represents a genuinely substantial share of the state's overall expenditure envelope, one that connects directly to the fiscal architecture concerns documented in Chapter 2, particularly the persistent gap between budgeted and executed welfare spending noted in Chapter 2, section 2.2, including the specific finding that spending targeted at Scheduled Castes, Other Backward Classes, and minority communities came in 19 percent below budget in the 2023-24 fiscal year.

This gap between the scale of the state's welfare commitments, as reflected in headline scheme allocations, and the documented pattern of underspending relative to budgeted welfare targets, represents perhaps the single most important synthesis point to emerge from this chapter. It suggests that the state's social justice and inclusion architecture, while extensive and well-designed at the level of programme structure, targeting criteria, and delivery mechanism, may not be consistently translating budgeted ambition into fully executed spending on the ground, a pattern that, if it continues, risks undermining the credibility and effectiveness of an otherwise comprehensive welfare framework. This report

recommends that subsequent editions track execution rates specifically for the welfare schemes documented throughout this chapter, rather than relying solely on budgeted allocation figures, since the gap between the two appears, based on the fiscal analysis presented in Chapter 2, to be a meaningful and recurring feature of the state's public financial management performance in the social welfare domain specifically.

A second synthesis point concerns the distributional logic underlying the state's welfare architecture as a whole. The consistent use of income thresholds, typically Rs. 10,000 per month in rural areas and Rs. 12,000 per month in urban areas, as the primary eligibility filter across schemes as varied as Talliki Vandanam, discussed in Chapter 5, and YSR Cheyutha, discussed in section 7.4, suggests the state has converged on a broadly consistent definition of economic vulnerability that it applies across sectorally distinct welfare programmes, an approach with the administrative advantage of consistency but the potential limitation that a single income threshold, applied uniformly across a state with the significant intra-district cost-of-living and regional economic disparities documented in Chapter 1, section 1.7, may not capture genuine economic need with equal accuracy across the state's Coastal Andhra, Rayalaseema, and North Andhra regions. A household just above the income threshold in a high-cost coastal urban centre may face more acute practical hardship than a household comfortably below the threshold in a lower-cost rural interior district, a nuance that uniform income-based eligibility criteria, by design, do not capture. This is not a criticism unique to Andhra Pradesh, since most Indian state welfare systems rely on broadly similar uniform income thresholds, but it is a structural feature of the state's welfare architecture worth flagging explicitly given the significant regional cost and opportunity disparities documented throughout this report.

Finally, the degree to which Aadhaar-linked direct bank transfer delivery, now the common mechanism across nearly every scheme documented in this chapter, has succeeded in reducing beneficiary duplication and leakage relative to the state's earlier, less digitized welfare delivery systems represents an important open question this report was unable to answer definitively given the absence of independent audit or evaluation data specific to leakage rates under the current digitized delivery architecture. Given the scale of resources involved, documented throughout this chapter, an independent programme evaluation of delivery efficiency across the state's major welfare schemes would represent a valuable addition to future editions of this framework, and would allow a more complete, evidence-based assessment of whether the state's genuinely ambitious welfare commitments are translating as intended into improved material conditions for Andhra Pradesh's most vulnerable residents across all three regions of the state.

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## Chapter 8: Transport and Connectivity Infrastructure

### 8.1 Road Network: National Highways, State Highways and Rural Roads

Andhra Pradesh's road network forms the backbone of the state's domestic connectivity, and, as with several other infrastructure metrics examined throughout this report, the precise total length of this network varies meaningfully depending on the source and reference year consulted. Wikipedia's transport-specific compilation places the state's total road network, including national highways, state highways, and district roads, at 123,334 kilometers, while a separate Grokipedia compilation, drawing on Roads and Buildings Department data, places the broader network, inclusive of major district roads and rural links, at approximately 179,000 kilometers as of 2020, and a further comparative state-wise ranking places Andhra Pradesh's total road length at approximately 4.00 lakh kilometers, or 400,000 kilometers, accounting for 6.05 percent of India's total road network (Wikipedia, 2026e; Grokipedia, 2026b; IndiaDataMap, 2026c). This report flags this considerable variation explicitly rather than resolving it, since it most plausibly reflects differing methodological choices about which categories of road, including village-level and unclassified rural tracks, are counted within the headline total, a common source of divergence in Indian state road statistics more broadly.

On national highways specifically, similar source variation is evident. Wikipedia records the state's national highway length at 4,422.53 kilometers, CEIC Data's economic indicator series places the figure at 8,683.15 kilometers as of March 2024, up from 6,913 kilometers in March 2020, and a separate national highway development summary places the total at 7,118 kilometers following the addition of 2,746 kilometers of new and proposed highways over a recent four-year period (Wikipedia, 2026e; CEIC Data, 2026; National Highway Development Documentation, 2026). Notwithstanding this numerical variation, the consistent underlying finding across all these sources is that Andhra Pradesh's national highway network has expanded substantially over the past several years, and NH 16, the longest national highway traversing the state at 1,024 kilometers, running from Srikakulam district to Nellore district as part of the Golden Quadrilateral project and the Asian Highway Network's AH 45 corridor, remains the backbone of the state's coastal highway connectivity (Wikipedia, 2026e).

State highways, maintained by the state's own Roads and Buildings Department, comprised a total length of 13,500 kilometers as of March 31, 2020, with all routes fully surfaced (Grokipedia, 2026b). The Andhra Pradesh Roads and Buildings Department oversees approximately 45,433 kilometers of roads under its direct jurisdiction, encompassing state highways, major district roads, and other connectivity networks, and the department received Rs. 9,554 crore in the 2024-25 state budget to support road infrastructure construction, maintenance, and upgradation (Grokipedia, 2026b).

Recent investment activity in the state's road sector has been substantial and well-documented. The Union Minister of Road Transport and Highways inaugurated and laid

the foundation stone for 29 National Highway projects covering 272 kilometers, with investment exceeding Rs. 5,233 crore, at Mangalagiri in August 2025, alongside foundation stones for 27 additional projects intended to improve access to religious sites including Tirupati, Srisailem, and Kadiri, and tourist destinations such as Horsley Hills, while also establishing seamless links to economic hubs including Sri City, Krishnapatnam Port, and Tirupati Airport (Ministry of Road Transport and Highways, 2026). A further six-lane Greenfield Highway from Sabbavaram to Sheelanagar, costed at over Rs. 960 crore, had its foundation stone laid in Kurnool in October 2025, specifically intended to ease congestion in Visakhapatnam and facilitate trade and employment, alongside six further road projects worth approximately Rs. 1,140 crore covering bridge construction, rail overbridges, and highway widening across multiple districts (Ministry of Road Transport and Highways, 2026). At the state level, a Rs. 4,500 crore plan launched in September 2025 targets the improvement of 15,000 kilometers of roads, including Rs. 1,000 crore earmarked specifically for upgrading 2,104 kilometers of state highways to two-lane configurations with paved shoulders (Groklopedia, 2026b).

Rural road connectivity in the state benefits from the national Pradhan Mantri Gram Sadak Yojana framework, under which, as of July 31, 2025, road connectivity works for 1,63,339 habitations had been sanctioned nationally, with 99.7 percent already constructed, and under the newer PMGSY-IV phase, specifically designed to converge with initiatives targeting tribal and Scheduled Caste populations in backward areas, Andhra Pradesh received Rs. 223.65 crore sanctioned in 2025 for 20 rural roads under the standard 60:40 central-state cost-sharing ratio (Press Information Bureau, 2026c; Groklopedia, 2026b). The state also participates in the Road Connectivity Project for Left Wing Extremism-Affected Areas, a special initiative covering 44 of India's most affected districts across nine states including Andhra Pradesh, intended to both facilitate anti-insurgency operations and promote socio-economic development in remote, historically underserved districts, a programme with direct relevance to the North Andhra tribal districts discussed in Chapter 1, section 1.7, and Chapter 7, section 7.2 (Press Information Bureau, 2026c).

The Andhra Pradesh government has also pursued private capital participation in road infrastructure delivery, launching Phase 1 of a public-private partnership initiative in November 2024 targeting the upgradation of 18 state highways spanning 1,307 kilometers under a build-operate-transfer framework, with the state providing viability gap funding where necessary and toll collection limited specifically to heavy commercial and transport vehicles, exempting two-wheelers, autos, tractors, and agricultural vehicles from tolling obligations (Groklopedia, 2026b). This exemption structure is a deliberate policy choice intended to ensure that the toll-financed model for road upgrades does not impose a direct cost burden on the rural and agricultural users who depend most heavily on these roads for daily transportation, while still generating sufficient revenue from commercial freight traffic to support long-term maintenance and the debt service associated with build-operate-transfer financing. The Andhra Pradesh Road Development Corporation, the statutory body formed in 1998 to lead such public-private partnership initiatives, prepares detailed project reports and implements upgrades under both build-operate-transfer and annuity-based models, reflecting

a financing approach that spreads the capital cost of road development across private investors and future toll or annuity revenue streams rather than relying solely on upfront state budget allocation (Groklopedia, 2026b).

Taken together, the road sector's recent trajectory illustrates a state pursuing simultaneous expansion across every tier of its road hierarchy, from national highway widening and greenfield expressway construction at the top, through state highway upgradation financed partly via public-private partnership, down to last-mile rural road connectivity financed through the PMGSY framework at the base. This layered, multi-tier investment approach is consistent with the state's broader growth corridor strategy discussed in Chapter 3, section 3.9, since each tier of road investment serves a distinct connectivity function, national highways and greenfield expressways primarily serving inter-regional and inter-state freight and passenger movement, state highways serving intra-state connectivity between district headquarters and economic hubs, and rural roads serving the last-mile connectivity that determines whether the state's more remote villages can meaningfully participate in the broader economic growth documented throughout this report.

## **8.2 Railways: Existing Network, Pending Projects and Expansion Proposals**

Andhra Pradesh's railway network runs across approximately 5,046 kilometers of track, serving 182 railway stations across the state, and is administered primarily under the South Coast Railway zone, a comparatively recently established zone covering the Guntakal, Guntur, Vijayawada, and Visakhapatnam divisions, with smaller portions of the state's network falling under the South Central Railway, East Coast Railway, and South Western Railway zones (Maps of India, 2026; Wikipedia, 2026e). The state hosts three A1-category and twenty three A-category railway stations, and Visakhapatnam railway station has been recognized as the cleanest railway station in the country, while the Shimiliguda railway station, situated along the Eastern Ghats route between Visakhapatnam and Anantagiri, holds the distinction of being the highest broad gauge railway station in India, a genuinely unusual engineering feature given the challenging hill terrain the line traverses (Wikipedia, 2026e).

As documented in Chapter 3, section 3.9, the state's rail budget allocation rose to Rs. 9,417 crore for fiscal year 2026, over ten times the allocation received a decade earlier, reflecting a substantial acceleration in central government rail investment directed at the state (India Brand Equity Foundation, 2026a). This increased investment is reflected in a substantial pipeline of ongoing projects, with 39 new rail lines under development, covering 2,318 kilometers of track at a combined investment of Rs. 34,310 crore, according to state government project review documentation (Amaravati News24, 2026). Among the specific priorities identified in recent project reviews chaired by the Chief Minister are plans to rapidly link the state's major ports, including Mulapeta, Visakhapatnam, Kakinada, Machilipatnam, Ramayapatnam, and Krishnapatnam, to the main railway network, recognizing the Tirupati-Renigunta region's emergence as an industrial hub requiring strengthened rail connectivity, and an action plan to connect the state's ports with hinterland states including Telangana, Chhattisgarh, and Madhya Pradesh (Amaravati News24, 2026).

Specific named projects under active development include the Kadapa-Bengaluru new broad-gauge line, the Errupalem-Namburu line intended to serve Amaravati connectivity specifically, and the Nadikudi-Srikalahasti line, targeted for completion by March 2029 (Amaravati News24, 2026). Terminal capacity expansion is also underway, with plans to expand the Vijayawada and Guntur terminals and establish new terminals at Amaravati and Gannavaram, while the Rajahmundry railway station is slated for full modernization ahead of the Godavari Pushkarams, a major periodic religious festival for which the railway network has historically needed to operate 1,012 special trains with 2,370 additional coaches to accommodate pilgrim traffic (Amaravati News24, 2026). Level crossing safety also features prominently in the state's rail infrastructure agenda, with a planned solution for 808 railway level crossings through the construction of road overbridges and road underbridges, and 73 railway stations across the state are slated for development under the Amrit Bharat Station Scheme by 2027 (Amaravati News24, 2026).

Looking further ahead, a proposed Bengaluru-Chittoor-Tirupati-Amaravati High-Speed Rail corridor is currently under study, which, if it proceeds to implementation, would represent a qualitatively different tier of rail infrastructure investment than the conventional broad-gauge expansion documented above, and would connect the state's emerging capital region directly to Bengaluru, one of India's most significant technology and economic hubs, a linkage with potentially substantial implications for the investment climate themes examined in Chapter 4 (Amaravati News24, 2026). The state government's stated readiness to provide land for railway expansion, and its appointment of Deputy Tahsildars across 25 parliamentary constituencies specifically for land acquisition and monitoring purposes, signals a level of administrative commitment to accelerating rail expansion that goes beyond simply lobbying the central government for greater allocation, reflecting genuine state-level institutional investment in removing the land acquisition bottlenecks that have historically slowed rail infrastructure projects across India (Amaravati News24, 2026).

The formation of the South Coast Railway zone itself, established as a distinct zonal entity covering the state's Guntakal, Guntur, Vijayawada, and Visakhapatnam divisions rather than continuing to operate as a subordinate portion of the historically larger South Central Railway zone headquartered in Secunderabad, Telangana, represents a structurally significant development for the state's rail governance, since a dedicated zonal headquarters typically brings with it greater administrative autonomy over investment prioritization, maintenance scheduling, and local project sequencing than would be available under a zone headquartered outside the state entirely (Maps of India, 2026; Wikipedia, 2026e). This zonal reorganization, completed in the years following the state's 2014 bifurcation, can be read as part of the broader institutional rebuilding effort discussed in the Preface and Chapter 1 of this report, through which Andhra Pradesh has sought to establish administrative and infrastructure institutions of its own commensurate with its post-bifurcation status as an independent, full-scale state economy rather than one whose transport governance remained tied to institutions headquartered in the neighboring state that inherited Hyderabad. Subsequent editions of this framework should track whether the South Coast Railway zone's project prioritization and budget allocation decisions increasingly diverge from patterns that might

have prevailed under continued South Central Railway oversight, as such divergence would offer a useful, concrete test of whether zonal autonomy has translated into materially different infrastructure outcomes for the state.

The scale of committed investment across the 39 new rail lines currently under development, at Rs. 34,310 crore for 2,318 kilometers of track, implies an average per-kilometer investment of approximately Rs. 14.8 crore, a figure broadly consistent with typical broad-gauge new-line construction costs in hilly or environmentally sensitive terrain of the kind found in parts of the Eastern Ghats and Rayalaseema regions, though this report notes this as an illustrative calculation rather than a verified per-project cost breakdown, since the aggregate figures reported in state government project review documentation do not disaggregate cost by individual line (Amaravati News24, 2026). The prioritization of specific named lines, including the Kadapa-Bengaluru broad-gauge line serving the Rayalaseema region and the Nadikudi-Srikalahasti line targeted for 2029 completion, suggests the state's rail expansion strategy is being deliberately extended into its historically less-connected interior districts, rather than concentrating exclusively on further densifying the already better-connected Coastal Andhra corridor, a pattern that, if sustained, would represent a meaningful counterweight to the broader regional growth concentration this report has documented repeatedly, including in Chapter 1, section 1.7, and Chapter 3, section 3.9.

### **8.3 Aviation: Airport Infrastructure and Air Connectivity**

Andhra Pradesh's aviation infrastructure comprises three functional domestic airports, at Kadapa, Rajahmundry, and Kurnool, alongside three airports with international connectivity, and the state also hosts a customs airport at Visakhapatnam (Wikipedia, 2026e). Visakhapatnam's airport is the state's busiest and most internationally connected facility, serving more than 2.8 million passengers annually and operating international flights to Singapore, Dubai, the wider United Arab Emirates, Malaysia, and Thailand, alongside an extensive domestic route network (Wikipedia, 2026e).

As documented in Chapter 3, section 3.9, Tirupati Airport recorded domestic passenger traffic growth exceeding 50 percent year-on-year in May 2025, a striking growth rate that coincided with the state's unveiling of a Rs. 600 crore tourism and hospitality development project specifically intended to reinforce the Tirupati corridor's travel infrastructure, reflecting the airport's role as a critical gateway for the millions of pilgrims visiting the Tirumala Venkateswara Temple discussed in Chapter 1, section 1.4, and examined further in the tourism-specific discussion of Chapter 19 (India Brand Equity Foundation, 2026a). The August 2025 national highway investment announcement discussed in section 8.1 explicitly identified seamless road links to Tirupati Airport as a priority, illustrating how the state's aviation, road, and tourism infrastructure planning are being coordinated as an integrated system rather than developed in isolation from one another (Ministry of Road Transport and Highways, 2026).

Comprehensive, current, passenger traffic and cargo handling data for the state's remaining domestic airports at Kadapa, Rajahmundry, and Kurnool, and detailed data on the specific

international destinations and frequency served from the state's other internationally connected airports beyond Visakhapatnam, was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to Airports Authority of India traffic statistics disaggregated by individual Andhra Pradesh airport. Given the state's ambitious tourism and industrial growth targets documented throughout this report, particularly the anchor industry investment themes examined in Chapter 4, continued expansion of airport capacity and international connectivity beyond the current Visakhapatnam-centered international gateway model would likely be necessary to fully support the state's broader economic corridor strategy discussed in Chapter 3, section 3.9, and would merit dedicated tracking in future editions of this framework.

The state's aviation sector also bears directly on the industrial anchor investments discussed in Chapter 4, section 4.3, particularly the Google data centre commitment in Visakhapatnam and the broader technology and pharmaceutical anchor investment strategy, since reliable, high-frequency air connectivity is typically a significant factor in large multinational investors' site selection decisions, both for the movement of specialized technical personnel and for the confidence such connectivity provides regarding the broader logistics maturity of a candidate investment location. Visakhapatnam's status as the state's primary international gateway, combined with its position as the anchor of the Visakhapatnam growth corridor discussed in Chapter 3, section 3.9, suggests the airport's continued capacity expansion is likely to remain a priority alongside the port and rail investments already documented in this chapter specifically for that corridor.

Regional air connectivity within the state, linking secondary cities and district headquarters to the state's primary hubs at Visakhapatnam and Tirupati, represents a further important dimension of aviation infrastructure that could meaningfully support the kind of regional economic balance this report has repeatedly flagged as an unresolved challenge, discussed most extensively in Chapter 1, section 1.7, and Chapter 3, section 3.9. The central government's regional connectivity scheme, known as UDAN, has historically sought to expand air services to underserved and unserved airports across India through a combination of subsidy and route viability guarantee mechanisms, and the extent to which Andhra Pradesh's Rayalaseema and North Andhra districts have benefited from UDAN-supported route expansion was not documented in the sources available for this chapter, representing a further area this report recommends for direct investigation in subsequent editions given its potential relevance to closing the state's persistent regional connectivity gap.

## **8.4 Ports, Inland Waterways and Logistics Hubs**

Andhra Pradesh's 974 kilometer coastline, the second longest of any Indian state as documented in Chapter 1, section 1.1, supports a substantial port infrastructure comprising 14 ports with a combined capacity of 250 million tonnes, of which Visakhapatnam, Gangavaram, and Krishnapatnam function as the state's three deep water ports capable of handling the largest vessel classes (Wikipedia, 2026e). During the 2014-15 reference year,

traffic handled at the state's non-major ports alone reached 83.43 million tonnes, illustrating that even excluding the major port at Visakhapatnam, the state's port infrastructure handles a substantial cargo volume (Wikipedia, 2026e). As documented in Chapter 3, section 3.9, the Visakhapatnam port specifically handled 43.08 million tonnes of traffic during the April to September 2025 period of fiscal year 2026 alone, underscoring the port's continued centrality to the state's trade and industrial economy (India Brand Equity Foundation, 2026a).

The state government has planned further port capacity expansion, with new ports under development at Bhavanapadu, Narsapur, Ramayapatnam, and Duggirajapatnam, additions that would further extend the state's already extensive port network and provide additional capacity to accommodate the growing export volumes documented in Chapter 4, section 4.5, where merchandise exports from the state reached Rs. 1,84,277 crore in fiscal year 2025, with marine products and engineering goods together comprising the largest export categories (Wikipedia, 2026e; India Brand Equity Foundation, 2026a). The state's port network also intersects meaningfully with its fisheries sector, discussed in Chapter 3, section 3.3, since Andhra Pradesh's position as India's leading shrimp producer and a major contributor to national marine exports depends substantially on efficient port-based cold chain and export logistics infrastructure.

Rail connectivity to the state's ports has been identified as a specific priority in recent state government infrastructure planning, as documented in section 8.2, with named projects intended to rapidly link Mulapeta, Visakhapatnam, Kakinada, Machilipatnam, Ramayapatnam, and Krishnapatnam ports to the main railway network, and a broader action plan to connect these ports with hinterland states including Telangana, Chhattisgarh, and Madhya Pradesh, positioning Andhra Pradesh's port network as a potential gateway not only for the state's own trade but for a wider swath of central and southern India's export and import logistics (Amaravati News24, 2026). Industry commentary from a recent CII-convened session on rail-led development specifically highlighted that ports including Visakhapatnam, Krishnapatnam, Gangavaram, and Kakinada provide Andhra Pradesh with a natural advantage in exports, and that linking industrial corridors with railway freight terminals could help transform the state into a genuine manufacturing hub rather than simply a raw commodity export conduit, a vision consistent with the anchor industry and industrial corridor strategy discussed in Chapter 4 (Deccan Chronicle, 2026c).

On inland waterways specifically, the state's National Waterways infrastructure, connected to its extensive river and canal network along the Godavari and Krishna systems discussed in Chapter 1, section 1.1, is described in available transport documentation as the most economical mode for transporting goods within the state, though comprehensive, current, quantitative data on inland waterway cargo volumes, navigability improvements, or utilization rates specific to Andhra Pradesh was not available among the sources consulted for this chapter, representing a further documented gap this report recommends addressing through direct reference to the Inland Waterways Authority of India's state-specific reporting in subsequent editions.

The state's port sector also illustrates a broader pattern relevant to the public-private partnership themes discussed in Chapter 4, section 4.7, since Krishnapatnam Port, one of the state's three deep water ports, operates as a private port developed and managed under a captive infrastructure model, in contrast to the more directly state and central government-administered Visakhapatnam major port, which falls under the jurisdiction of the central Ministry of Ports, Shipping and Waterways rather than the state government. This mixed public and private port ownership structure, paralleling the mixed public and private generation capacity documented in the state's power sector in Chapter 4, section 4.7, and Chapter 9, reflects a broader pattern in which Andhra Pradesh's infrastructure development strategy has consistently sought to combine public capital and coordination with private capital and operational expertise across multiple infrastructure sub-sectors, rather than relying predominantly on either public or private investment alone.

Given the scale of new port capacity under development at Bhavanapadu, Narsapur, Ramayapatnam, and Duggirajapatnam, and the parallel rail connectivity investments discussed above intended to link these and existing ports to the broader freight network, Andhra Pradesh's port sector appears positioned for continued expansion over the remainder of this decade, provided the state's broader industrial and export growth documented in Chapter 3 and Chapter 4 continues at a pace sufficient to generate the cargo volumes necessary to justify this expanded capacity. Whether demand growth will in fact keep pace with this ambitious port capacity expansion program, or whether some of the newly planned ports may experience underutilization in their initial years of operation, a pattern not uncommon among newly commissioned Indian ports elsewhere in the country, is a question this report was unable to assess definitively given the absence of detailed port-specific demand forecasting data among the sources consulted for this chapter. Subsequent editions of this framework would benefit from direct engagement with the Andhra Pradesh Maritime Board's own capacity utilization projections, which would allow a more grounded assessment of whether the current pace of new port announcement reflects genuine anticipated demand or a more speculative bid to capture future trade growth ahead of firm commitments from shipping lines and cargo owners.

## **8.5 Urban Mass Transit: Metro, Bus Rapid Transit and Integrated Mobility**

Andhra Pradesh's urban mass transit infrastructure remains at a comparatively early planning stage relative to the state's road, rail, and port infrastructure documented elsewhere in this chapter, though two significant metro rail projects are under active development. The proposed Visakhapatnam Metro Rail project is planned to cover four corridors spanning 76.90 kilometers, while the Vijayawada Metro Rail project is planned to span 66.20 kilometers across three corridors, and both projects are expected, according to the Andhra Pradesh Metro Rail Corporation Limited, to improve urban mobility and reduce traffic congestion in the state's two largest urban agglomerations (Deccan Chronicle, 2026c).

These metro proposals are directly relevant to the urbanisation trends discussed in Chapter 11, section 11.1, and to the Visakhapatnam and Amaravati-Vijayawada regional development

clusters discussed in Chapter 1, section 1.2, and Chapter 3, section 3.9, since effective urban mass transit is widely regarded, in Indian urban planning literature, as a necessary complement to the kind of concentrated economic growth corridor strategy the state has pursued, given that rising economic activity within Visakhapatnam and the Amaravati-Vijayawada corridor will, absent adequate mass transit capacity, likely generate increasing traffic congestion that could ultimately constrain the very economic agglomeration benefits the corridor strategy is intended to capture.

Comprehensive, current data on the specific implementation timeline, financing structure, and construction progress for either the Visakhapatnam or Vijayawada metro projects was not available among the sources consulted for this chapter beyond their status as proposed projects discussed at a recent industry conference, and this report recommends that subsequent editions track these projects' progression from planning to construction, given their potential significance for the state's broader urban mobility and economic corridor strategy. Comprehensive data on Bus Rapid Transit systems, integrated multimodal transit card systems, or other urban mobility interventions specific to Andhra Pradesh's cities was similarly not available among the sources consulted for this chapter, representing a further documented gap.

It is worth noting that Andhra Pradesh's comparatively low urbanisation rate, at approximately 29.6 percent as documented in Chapter 1, section 1.3, means that the immediate pressure for large-scale urban mass transit investment has historically been less acute in the state than in more heavily urbanized Indian states such as Maharashtra or Karnataka. However, given the state's own projections of continued urbanisation over the coming decades, examined further in Chapter 11, section 11.1, and the concentration of that urbanisation specifically within the Visakhapatnam and Amaravati-Vijayawada corridors, the current planning stage of both proposed metro systems positions the state to potentially avoid the retrofit challenges that many Indian cities have faced in attempting to introduce mass transit infrastructure into already dense, congested urban environments after urbanisation has substantially outpaced transit capacity. Whether the state succeeds in sequencing metro construction ahead of, rather than behind, the pace of urban growth in Visakhapatnam and Vijayawada will likely prove a meaningful determinant of how effectively these two cities avoid the congestion patterns that have constrained economic productivity in several other rapidly urbanizing Indian metropolitan areas.

## **8.6 Multimodal Logistics: Last-Mile Connectivity and Freight Corridors**

The overarching theme emerging from this chapter's review of Andhra Pradesh's transport infrastructure is a deliberate, and increasingly explicit, state and central government effort to integrate the previously separate domains of road, rail, port, and, to a lesser extent, aviation infrastructure into a coordinated multimodal logistics system, rather than developing each mode in isolation. This integration is most clearly illustrated by the port-rail connectivity priorities discussed in sections 8.2 and 8.4, where named projects explicitly aim to link major ports including Visakhapatnam, Krishnapatnam, Kakinada, Machilipatnam, Ramayapatnam,

and Mulapeta directly to the expanding rail network, and by the August 2025 national highway investment announcement discussed in section 8.1, which explicitly framed new road projects in terms of establishing seamless links to economic hubs including Sri City and Krishnapatnam Port alongside religious and tourist destinations (Ministry of Road Transport and Highways, 2026; Amaravati News24, 2026).

This multimodal integration strategy connects directly to the state's broader industrial and investment ambitions discussed in Chapter 4, where the CII industry commentary discussed in section 8.4 specifically identified linking industrial corridors with railway freight terminals as a pathway toward transforming Andhra Pradesh into a genuine manufacturing hub for southern and central India, rather than a state whose economic role remains centered on raw commodity production and export alone (Deccan Chronicle, 2026c). The state's horticulture sector, producing 225 lakh metric tonnes annually according to recent state government project review documentation, was specifically cited as a sector requiring improved railway connectivity to reach national markets efficiently, illustrating a further concrete linkage between the state's strong agricultural performance documented in Chapter 3, section 3.3, and its ongoing transport infrastructure investment priorities (Amaravati News24, 2026).

Last-mile connectivity, particularly for the state's rural and tribal districts in North Andhra and the Rayalaseema interior, discussed throughout Chapter 1, section 1.7, remains a persistent structural challenge notwithstanding the state's evident recent success in accelerating national highway and rail investment. The Pradhan Mantri Gram Sadak Yojana's continuing rural road sanctioning activity, documented in section 8.1, and the specific Road Connectivity Project for Left Wing Extremism-Affected Areas covering the state's most remote tribal districts, represent the primary mechanisms through which the state is attempting to close this last-mile gap, though whether these programmes are proceeding at a pace sufficient to meaningfully narrow the intra-state connectivity disparity documented throughout this report remains a question this report recommends tracking closely in subsequent editions, given the direct bearing such connectivity has on the health, education, and economic outcomes examined in Chapters 5, 6, and 7 for the state's most underserved districts.

Three broad conclusions emerge from this chapter's review of Andhra Pradesh's transport and connectivity infrastructure taken as a whole. First, the sheer volume of concurrent investment activity across every transport sub-sector, road, rail, port, and, to a lesser degree, aviation, documented throughout this chapter, represents a genuinely significant and largely well-coordinated infrastructure push, one that compares favorably in scale and coordination to most other Indian states over the same period, and that connects coherently to the state's broader growth corridor and industrial anchor strategies documented in Chapters 3 and 4. Second, notwithstanding this genuine coordination at the level of flagship corridor and port-linked rail projects, the persistent data gaps this report has flagged around last-mile rural connectivity outcomes, urban mass transit implementation timelines, and secondary airport traffic performance suggest that the state's own public reporting infrastructure for transport sector performance monitoring has not kept fully abreast of the pace of physical

infrastructure investment itself, an observation that echoes the broader public financial management and data transparency themes raised in Chapter 2, section 2.8. Third, and most consequentially for the remainder of this report, the transport investment pattern documented throughout this chapter, concentrated heavily around the Visakhapatnam, Amaravati-Vijayawada, and Tirupati growth corridors identified in Chapter 1, section 1.2, appears likely to reinforce rather than fundamentally rebalance the state's existing regional economic geography, notwithstanding specific rail and road projects explicitly targeted at the Rayalaseema interior and North Andhra tribal districts.

Whether the cumulative effect of these targeted interior connectivity investments proves sufficient to meaningfully narrow the persistent regional disparities this report has documented since Chapter 1 is likely to be one of the more consequential open questions determining whether Andhra Pradesh's Vision 2047 ambitions, examined in full in Chapter 21, are realized in a way that is broadly shared across all twenty eight of the state's districts, or one that remains disproportionately concentrated in the three corridors that have already captured the lion's share of the state's growth, investment, and infrastructure attention over the period this report has documented. Readers seeking a more granular, district-level assessment of transport infrastructure equity are directed to the Andhra Pradesh Roads and Buildings Department's own district-wise reporting, which was beyond the scope of the aggregate state-level sources relied upon for this chapter.

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## Chapter 9: Energy, Power and Renewable Transition

### 9.1 Power Generation: Installed Capacity, Mix and Dependence Profile

Andhra Pradesh's power generation capacity has grown substantially over the past several years, with total installed utility generation capacity reported at approximately 24,854 megawatts as of March 31, 2020, rising to 28,416.25 megawatts as of September 2025, an increase of roughly 14 percent over that period (Wikipedia, 2026f; India Brand Equity Foundation, 2026a). As documented in Chapter 4, section 4.7, the ownership composition of this capacity is heavily weighted toward private generation, with private utilities contributing 17,453.43 megawatts, or approximately 61 percent of total capacity as of September 2025, state utilities contributing 8,576.38 megawatts, and central utilities contributing the remaining 2,386.45 megawatts (India Brand Equity Foundation, 2026a). This private-sector-dominant generation structure sits in contrast to the state's distribution segment, which, as discussed in section 9.2, remains substantially more publicly administered and financially distressed.

The state's principal generation entity, the Andhra Pradesh Power Generation Corporation, commonly known as APGENCO, handles electricity production, maintenance, and the proposal and upgrading of new generation projects, and has established a special purpose vehicle, the Andhra Pradesh Power Development Company Limited, structured as a joint venture with equal 50 percent equity holdings between APGENCO and the private infrastructure firm IL&FS, specifically to develop the Krishnapatnam thermal power project, a 2x800 megawatt facility (Wikipedia, 2026f). Notably, performance documentation indicates that the Krishnapatnam thermal station's units have rarely operated at rated capacity even after its first year of commercial operation, forcing the state to purchase costlier replacement power through day-ahead trading on the Indian Energy Exchange, an operational underperformance that illustrates a recurring challenge in Indian state thermal generation more broadly, where large coal-fired assets frequently underdeliver relative to their nameplate capacity due to a combination of fuel supply constraints, plant availability issues, and merit-order dispatch dynamics that favor cheaper renewable and hydro sources when available (Wikipedia, 2026f).

Beyond thermal generation, the state's installed capacity mix includes a substantial renewable component, examined in detail in section 9.4, alongside approximately 103 megawatts of small hydro plants, approximately 490 megawatts of bagasse, industrial and municipal waste, and biomass co-generation projects, and a further 78.79 megawatts of mini grid-connected power plants and 67.20 megawatts of other grid-connected plants based on isolated gas wells, none of which include captive power capacity operated privately within individual industries that remains outside the grid-connected accounting presented here (Wikipedia, 2026f). This diversified generation mix, spanning coal thermal, gas, large and small hydro, solar, wind, and biomass sources, reflects a state that has pursued a comparatively broad-based generation portfolio rather than concentrating dependence on any single fuel or technology type, a structural characteristic that provides some resilience against fuel-specific supply shocks,

whether in the form of coal linkage disruptions or hydrological variability affecting hydro generation.

The state's long-term power purchase agreement portfolio provides further insight into its generation dependence profile. As of March 31, 2019, APTransCo had established long-term power purchase agreements covering 19,068 megawatts, against a total installed capacity base of approximately 24,854 megawatts as of March 2020, indicating that the substantial majority of the state's generation capacity at that time was contracted through long-term agreements rather than relying primarily on short-term or spot market procurement (Wikipedia, 2026f). This preference for long-term contracted capacity reflects a broadly conventional risk management approach common among Indian state utilities, providing greater cost predictability than heavier reliance on the more volatile day-ahead and real-time spot markets, though it also reduces flexibility to take advantage of periods when spot market prices fall below contracted rates, a tension the Krishnapatnam thermal station's documented underperformance illustrates concretely, since the state has in that specific instance ended up purchasing costlier replacement power through day-ahead trading precisely because a contracted, long-term asset has failed to perform at its rated capacity.

The state's per capita electricity consumption stood at 1,234 units annually, with gross electricity supply of 63,143 million kilowatt-hours recorded for the 2018-19 reference year, a consumption level that, while dated, provides a useful baseline against which to assess the growth in both generation capacity and underlying demand documented throughout this chapter (Wikipedia, 2026f). Given the substantial industrial growth documented in Chapter 3, section 3.4, and Chapter 4, particularly the state's semiconductor, data centre, and electronics manufacturing anchor industry strategy discussed in Chapter 4, section 4.3, all of which are typically power-intensive sectors, it is reasonable to expect that the state's per capita and aggregate electricity consumption have risen considerably since this 2018-19 baseline, placing continued upward pressure on the generation capacity expansion documented at the start of this section.

## **9.2 Transmission and Distribution: Infrastructure, Losses and Reliability**

Andhra Pradesh's transmission network is described in state government documentation as well spread, with the Andhra Pradesh Transmission Corporation, commonly known as APTRANSCO, and the state's distribution companies collectively owning and operating transmission lines ranging from 400 kilovolts down to 11 kilovolts across a combined circuit length of 231,127 kilometers (Wikipedia, 2026f). The state's distribution segment is organized through three distinct distribution companies following a 2019 demerger of the erstwhile Central Discom, comprising the Southern Power Distribution Company of Andhra Pradesh Limited, commonly known as APSPDCL, which serves districts including Tirupati, Chittoor, Annamayya, Kadapa, Anantapuramu, Sri Sathya Sai, Kurnool, Nandyal, and Nellore, the Andhra Pradesh Central Power Distribution Corporation Limited, commonly known as APCPDCL, and the Eastern Power Distribution Company of Andhra Pradesh Limited, commonly known as APEPDCL (Wikipedia, 2026f; SolarQuarter, 2026).

Notwithstanding the financial distress documented for the state's power distribution sector in Chapter 2, section 2.8, and Chapter 4, section 4.6, Andhra Pradesh's distribution companies have received recognition for operational performance relative to national peers, with three of the state's discoms ranked among the top ten power utilities nationally as of a February 2024 assessment, and APEPDCL specifically recognized with two national awards for power performance (Wikipedia, 2026f). This combination of strong operational recognition alongside continuing underlying financial distress illustrates a distinction this report has drawn in other sectors as well, particularly in the health system assessment in Chapter 6, between operational and outcome performance on one hand and underlying financial and structural sustainability on the other, two dimensions that do not necessarily move in lockstep.

On distribution losses specifically, comprehensive, current, Andhra Pradesh-specific Aggregate Technical and Commercial loss data was not available among the sources consulted for this chapter, though national data provides useful context, with India's overall AT&C losses falling from 23.70 percent in fiscal year 2015-16 to 15.37 percent in fiscal year 2023, and the gap between the average cost of supply and average revenue realized, known as the ACS-ARR gap, narrowing from Rs. 0.54 per kilowatt-hour to Rs. 0.45 per kilowatt-hour over the same period nationally (Ministry of Power, 2026). A separate international assessment found that AT&C losses across India fell more specifically from 22 percent in 2020-21 to 16 percent in 2021-22, with the cost-revenue supply gap narrowing from Rs. 0.69 per kilowatt-hour to Rs. 0.22 per kilowatt-hour over the same one-year period, and payment delays to distribution companies improving from 175 to 163 days, though total outstanding dues owed by India's discoms nationally still stood at approximately 9 billion US dollars as of January 2024, down from approximately 18 billion US dollars in June 2022 (International Energy Agency, 2026). Given Andhra Pradesh's above-average operational ranking among national discoms noted above, it is plausible that the state's specific AT&C loss figures perform somewhat better than the national average, though this inference should be treated with appropriate caution absent state-specific verification.

The persistent revenue gap in the state's distribution sector is illustrated concretely by the Andhra Pradesh Electricity Regulatory Commission's Retail Supply Tariff Order for fiscal year 2025-26, under which the Commission maintained existing consumer tariffs unchanged while the state government agreed to bear a revenue gap of Rs. 12,632 crore, out of a total Aggregate Revenue Requirement of Rs. 58,868 crore across all three distribution companies, of which power purchase costs alone accounted for Rs. 40,472 crore (SolarQuarter, 2026). This arrangement, whereby the state government absorbs the revenue shortfall directly through budgetary support rather than passing the full cost recovery burden onto consumers through higher tariffs, represents a deliberate policy choice to protect consumer affordability, consistent with the broader welfare-oriented policy posture documented throughout Chapter 7, but one that adds a further recurring fiscal commitment to the debt sustainability concerns already examined in Chapter 2, section 2.4.

National-level analysis of the underlying causes of distribution company revenue losses identifies several recurring structural factors relevant to interpreting Andhra Pradesh's own revenue gap, including delays in tariff order issuance, poor billing and collection efficiency, non-implementation of Fuel and Power Purchase Cost Adjustment mechanisms that would otherwise allow automatic pass-through of fluctuating fuel costs, under-recovery of electricity dues owed by state government departments themselves, and the practical challenge of ensuring that state government subsidy commitments to specific consumer categories, such as the agricultural consumers discussed in section 9.4, are fully and promptly reimbursed to the distribution companies rather than accumulating as unpaid receivables (Ministry of Power, 2026). Each of these factors, while documented at the national level rather than verified specifically for Andhra Pradesh, plausibly contributes in some measure to the Rs. 12,632 crore revenue gap the state absorbed for fiscal year 2025-26, and disentangling their relative contribution would require a level of distribution company financial statement detail beyond what was available among the sources consulted for this chapter.

The central government's broader policy response to this national pattern of distribution company financial distress has included the Revamped Distribution Sector Scheme, additional borrowing space of 0.5 percent of GSDP for states linked to power sector reform implementation, discussed in Chapter 2, section 2.6, and enhanced prudential lending norms applied by the Power Finance Corporation and Rural Electrification Corporation Limited to discourage further unsustainable lending to financially weak distribution utilities (Ministry of Power, 2026). The historical Ujwal Discom Assurance Yojana scheme, referenced briefly in Chapter 4, section 4.6, had envisaged states taking over 75 percent of distribution company debt outstanding as of September 30, 2015, by issuing State Development Loans, effectively converting distribution company liabilities into direct state government sovereign debt, a restructuring mechanism that, whatever its short-term balance sheet benefits for the distribution companies themselves, ultimately shifted the underlying financial burden onto state government balance sheets rather than resolving the structural revenue-cost mismatch that had generated the debt in the first place. Whether Andhra Pradesh's specific distribution companies participated in this restructuring mechanism, and the current state of their balance sheets following any such restructuring, was not independently verified from the sources available for this chapter, and this report recommends direct reference to APTRANSCO and the three distribution companies' own audited financial statements as the most reliable path to closing this gap in subsequent editions.

### **9.3 Rural and Household Electrification: Coverage and Quality**

Andhra Pradesh achieved a significant electrification milestone by becoming the second Indian state to reach 100 percent electrification, according to historical Economic Times reporting, a distinction that positioned the state ahead of most of its peers in achieving universal grid access (Wikipedia, 2026f). More recent efforts have shifted focus from basic access toward improving the quality and reliability of that access, particularly in rural areas. The Eastern Power Distribution Company of Andhra Pradesh has been working toward providing 24-hour three-phase power supply to 11.7 lakh rural households by 2025,

according to reporting from May 2024, an initiative that reflects the state's recognition that nominal electrification access does not necessarily translate into the continuous, reliable three-phase supply that rural households and small enterprises require for productive uses such as irrigation pumping, cold storage, and small-scale processing equipment (Wikipedia, 2026f).

This distinction between basic electrification and reliable, continuous supply quality is analytically significant because it connects directly to the agricultural productivity themes examined in Chapter 3, section 3.3, and Chapter 18, since reliable three-phase power supply is a precondition for efficient operation of electric irrigation pumps, which remain the dominant irrigation technology across much of rural Andhra Pradesh. Intermittent or single-phase-only rural power supply can force farmers to irrigate at inconvenient hours, often overnight when three-phase supply has historically been prioritized in many Indian states to manage overall grid load, a pattern that imposes real costs in terms of farmer labor, safety, and irrigation scheduling flexibility. The state's explicit target of extending 24-hour three-phase supply to a specific, quantified number of rural households, rather than simply claiming generic rural electrification achievement, suggests an encouraging shift toward more granular, outcome-oriented electrification planning.

Comprehensive, current, district-level data on rural electrification quality, including specific figures for voltage stability, outage frequency, and three-phase coverage completeness across the state's twenty eight districts, was not available among the sources consulted for this chapter, and given the regional disparities documented throughout Chapter 1, section 1.7, it is plausible that electrification quality, like most other infrastructure indicators examined in this report, varies considerably between the state's better-resourced Coastal Andhra districts and its more remote Rayalaseema and North Andhra districts, a disparity this report recommends verifying through direct reference to the state's Energy Department district-wise reporting in subsequent editions.

The specific targeting of the APEPDCL service area, covering the state's northern coastal districts, for the 24-hour three-phase rural supply initiative documented above is itself worth noting, since APEPDCL's territory overlaps substantially with the North Andhra region identified throughout this report as comparatively underserved relative to Coastal Andhra proper. If this initiative succeeds in delivering genuinely improved supply quality specifically within APEPDCL's northern and more tribal-adjacent districts, it would represent a meaningful, concrete counterexample to the broader pattern of infrastructure investment concentration in the state's three growth corridors documented in Chapter 8, section 8.6. Conversely, if the 11.7 lakh household target proves concentrated within APEPDCL's more urbanized and economically advantaged sub-districts rather than its more remote tribal and hill areas, the initiative would instead reinforce rather than counteract the regional disparity pattern this report has traced across nearly every infrastructure and social sector chapter. Absent household-level geographic disaggregation of the initiative's rollout, this report is unable to determine which of these two scenarios more accurately describes the programme's

actual distributional impact, and recommends this be a specific point of verification in subsequent editions.

#### **9.4 Renewable Energy Potential: Solar, Wind, Hydro and Biomass**

Andhra Pradesh possesses substantial renewable energy potential across multiple technology types, and state government policy documentation explicitly frames the state's ambition in terms of establishing itself as a leader in India's renewable energy transition, citing its rich natural resources spanning solar, wind, and hydropower potential as a foundation for contributing significantly to the country's broader clean energy goals (Government of Andhra Pradesh, 2025b). On solar specifically, the state has offered five Ultra Mega Solar Power Projects with a combined capacity of 12,200 megawatts to developers under a renewable power export policy explicitly designed to supply power to markets outside the state, a notable strategic choice that positions Andhra Pradesh not merely as a state seeking to meet its own domestic renewable energy needs but as an aspiring net exporter of clean power to other Indian states (Wikipedia, 2026f).

On wind energy, the state's installed wind power capacity stood at 4,083.57 megawatts as of June 30, 2021, and the state's solar potential is described in regulatory documentation as among the highest in India, a natural resource advantage the state's distribution companies have increasingly sought to leverage through expanded solar power procurement to balance supply and demand while managing overall energy costs (Wikipedia, 2026f; SolarQuarter, 2026). The Andhra Pradesh Electricity Regulatory Commission's fiscal year 2025-26 Retail Supply Tariff Order specifically noted that the state's performance review for fiscal year 2023-24 showed improvement in energy distribution efficiency and reduced transmission and distribution losses, attributing part of this improvement to solar energy's distribution closer to consumption points through rooftop systems and local solar farms, which helps reduce line losses relative to power transmitted over longer distances from centralized thermal generation (SolarQuarter, 2026).

The state's renewable energy regulatory architecture has continued to evolve, with the Andhra Pradesh Electricity Regulatory Commission issuing a new Renewable Energy Tariff Determination Regulation in 2025, following a public comment process that solicited stakeholder input on the draft regulation from May 27, 2025, and received submissions from 16 stakeholders before finalization (Andhra Pradesh Electricity Regulatory Commission, 2025). Separately, the Commission approved procurement of 1,162.8 megawatts of solar power specifically for feeder-level solarization of agricultural feeders under Component C of the national PM-KUSUM programme, at a tariff cap of Rs. 3.09 per kilowatt-hour, an intervention directly aimed at reducing the state's often costly subsidized agricultural power supply burden by substituting solar-generated power, procured at a capped and predictable rate, for grid power that would otherwise need to be purchased at potentially higher and more variable cost (Mercom India, 2026).

The New and Renewable Energy Development Corporation of Andhra Pradesh, a state-owned company commonly known as NREDCAP, serves as the primary institutional

vehicle actively promoting renewable energy projects across the state, and rooftop solar power costs per unit in Andhra Pradesh have fallen below the prevailing domestic power tariff, an economic milestone that, where achieved, typically accelerates voluntary rooftop solar adoption among households and small businesses without requiring continued subsidy support, since the underlying economics become self-sustaining once rooftop solar generation costs less than the alternative of purchasing equivalent power from the grid (Wikipedia, 2026f). On biomass and other renewable sources, the approximately 490 megawatts of bagasse, industrial and municipal waste, and biomass co-generation capacity documented in section 9.1 reflects meaningful, if comparatively modest, diversification beyond the state's dominant solar and wind renewable capacity, drawing on agricultural residue from the state's substantial sugar and other crop processing industries discussed in Chapter 3, section 3.3, and Chapter 18.

The state's clean energy policy architecture extends beyond conventional solar and wind generation into emerging technologies including green hydrogen, with the state's Clean Energy and Green Hydrogen Policy operational guidelines defining detailed technical parameters for green hydrogen desalination plant infrastructure, direct employment obligations tied to clean energy and renewable energy manufacturing projects under the state's broader Industrial, Clean Energy, and Electronics Policy framework of 2024, and specific provisions for renewable energy that is stored in energy storage systems or banked with the grid under applicable regulations (Government of Andhra Pradesh, 2025b). This forward-looking regulatory attention to green hydrogen and energy storage, technologies that remain at a comparatively early commercial deployment stage nationally and globally relative to mature solar and wind generation, suggests the state is attempting to position itself for participation in the next generation of clean energy technology deployment rather than treating its renewable energy strategy as complete once solar and wind capacity targets are met.

At the national policy level, the central government has extended waiver of inter-state transmission charges for wind power projects commissioned by June 30, 2025, for green hydrogen projects until December 2030, and for offshore wind projects until December 2032, alongside a notified Renewable Consumption Obligation trajectory extending to 2029-30 that includes a separate obligation specifically for Distributed Renewable Energy, and a Viability Gap Funding scheme the Union Cabinet approved specifically for offshore wind energy projects, targeting installation and commissioning of 1 gigawatt of offshore wind capacity, split evenly between two coastal locations (Ministry of Power, 2026). Given Andhra Pradesh's 974 kilometer coastline, documented in Chapter 1, section 1.1, and Chapter 8, section 8.4, the state represents a plausible candidate location for future offshore wind development under this national framework, though comprehensive, current, Andhra Pradesh-specific offshore wind project pipeline data was not available among the sources consulted for this chapter, representing an area this report recommends monitoring closely in subsequent editions given the potential scale of the opportunity relative to the state's already substantial onshore wind capacity documented earlier in this section, and given the broader coastal infrastructure and port development priorities already underway along the same

stretch of coastline. The central government has also funded new transmission line construction and substation capacity specifically for renewable energy evacuation under its Green Energy Corridor Scheme, a programme of direct relevance to Andhra Pradesh given the state's stated ambition to export power generated from its Ultra Mega Solar Power Projects to markets beyond its own borders, since such export ambitions depend fundamentally on adequate inter-state transmission capacity being available to carry that power to purchasing states (Ministry of Power, 2026).

## **9.5 Energy Efficiency, Conservation and Demand-Side Management**

Andhra Pradesh's energy efficiency and demand-side management efforts intersect directly with the industrial cluster energy efficiency programming discussed in Chapter 4, section 4.4, where the ADEETIE initiative provides interest subvention and modernization grants to MSME clusters in Chittoor and Visakhapatnam specifically aimed at improving energy efficiency, connecting the state's industrial development policy directly to its energy conservation objectives rather than treating the two as separate policy domains. This integration reflects a broader principle in energy policy design, namely that industrial energy efficiency improvements often represent among the lowest-cost interventions available for reducing overall system-wide power demand growth, since retrofitting existing industrial equipment for greater efficiency typically costs less per unit of energy saved than constructing equivalent new generation capacity.

The state's emerging electric vehicle charging infrastructure policy framework, formalized under the Andhra Pradesh ICE Policy of 2024, establishes detailed technical and employment-related definitions for Electric Vehicle Supply Equipment and Electric Vehicle Charging Stations, including requirements for power management systems for energy optimization, grid stability integration, and renewables integration within charging infrastructure design (New and Renewable Energy Development Corporation of Andhra Pradesh, 2025). This policy architecture positions electric vehicle charging demand, a growing component of overall electricity consumption nationally as vehicle electrification accelerates, to be managed in a manner that supports rather than undermines grid stability and renewable energy integration, through smart charging infrastructure design rather than allowing uncontrolled charging demand growth to strain distribution infrastructure without corresponding planning.

Comprehensive, current, quantitative data on the specific scale of energy savings achieved through the state's industrial energy efficiency programmes, or on broader building energy code compliance and appliance efficiency standard enforcement within the state, was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the Andhra Pradesh State Energy Conservation Mission's own programme performance reporting, which would allow a more complete assessment of demand-side management progress beyond the industrial cluster and electric vehicle policy frameworks documented here.

Demand-side management in the state's agricultural sector deserves particular attention given the scale of subsidized agricultural power consumption documented implicitly through the feeder-level solarization initiative discussed in section 9.4. Agricultural power consumption in most Indian states, including Andhra Pradesh, has historically been supplied at heavily subsidized or, in some categories, free rates, a policy choice that, while providing meaningful support to farm incomes and irrigation access consistent with the state's broader agricultural strategy documented in Chapter 3, section 3.3, and Chapter 18, also removes much of the price signal that would otherwise incentivize more efficient pump usage and irrigation scheduling. The feeder-level solarization approach documented in section 9.4 represents one increasingly common Indian state policy response to this tension, since substituting solar-generated power for grid power specifically at the agricultural feeder level reduces the state's net subsidy burden without requiring the politically difficult step of raising the tariff farmers themselves pay, effectively shifting the cost of the subsidy from an ongoing fiscal transfer to distribution companies toward a one-time capital investment in solar generation capacity dedicated to agricultural feeders. Whether this approach ultimately proves more fiscally sustainable than continued direct subsidy, once the capital cost of the dedicated solar capacity and its own operations and maintenance requirements are fully accounted for, is a question this report was unable to assess definitively given the absence of detailed lifecycle cost comparison data among the sources consulted for this chapter, though the approach's rapid adoption across multiple Indian states, including through the national PM-KUSUM programme framework itself, suggests it has gained considerable policy favor as at least a partial solution to the long-standing agricultural power subsidy challenge.

## **9.6 State Electricity Regulatory Framework and Tariff Policy**

The Andhra Pradesh Electricity Regulatory Commission, commonly known as APERC, serves as the state's independent electricity sector regulator, responsible for tariff determination, licensing, and regulatory oversight across the generation, transmission, and distribution segments discussed throughout this chapter (Wikipedia, 2026f). The Commission's institutional structure follows the standard framework established under India's Electricity Act of 2003, which mandates state-level regulatory commissions independent of the state government departments whose utilities they regulate, a governance design intended to insulate tariff-setting and licensing decisions from direct political interference, though the extent to which this independence is realized in practice varies across Indian states and is not something this report was able to independently assess for Andhra Pradesh specifically given the sources available.

The Commission's fiscal year 2025-26 Retail Supply Tariff Order, discussed in section 9.2, illustrates the practical tension inherent in the regulatory framework's design, between the Commission's mandate to ensure cost-reflective tariffs that maintain distribution company financial viability, and the state government's evident preference, reflected in its decision to absorb the Rs. 12,632 crore revenue gap directly through budgetary support rather than passing the full cost through to consumer tariffs, to prioritize consumer affordability over full cost recovery through the tariff mechanism alone (SolarQuarter, 2026). This tension is not

unique to Andhra Pradesh and recurs across most Indian states' power sectors, but the specific scale of the revenue gap the state has chosen to absorb, at over Rs. 12,000 crore for a single fiscal year, represents a substantial ongoing fiscal commitment that connects directly to the debt sustainability concerns and public sector undertaking net worth erosion documented in Chapter 2, section 2.4, and Chapter 4, section 4.6.

Looking forward, the state's regulatory framework continues to evolve in response to both the renewable energy transition documented in section 9.4 and the persistent distribution sector financial distress documented in section 9.2. The Commission's active issuance of new renewable energy tariff regulations in 2025, alongside its approval of feeder-level agricultural solarization procurement under the national PM-KUSUM programme, suggests a regulatory posture that is actively adapting to accommodate a rapidly changing generation mix, even as the underlying financial architecture of the state's distribution companies continues to require substantial state budgetary support to remain viable. Whether this combination, a regulator actively encouraging renewable energy transition on one hand while presiding over a distribution sector that continues to depend on large annual state subsidy to bridge its revenue gap on the other, represents a sustainable long-term equilibrium, or whether more fundamental distribution sector reform will ultimately prove necessary, is a question this report expects to remain a defining feature of Andhra Pradesh's energy sector policy debate through the remainder of this decade, and one this report recommends tracking closely in subsequent editions given its direct bearing on both the state's fiscal sustainability, examined in Chapter 2, and its capacity to support the industrial growth ambitions examined in Chapter 4.

Three broad synthesis points emerge from this chapter's review of the state's energy sector taken as a whole. First, Andhra Pradesh's generation capacity has expanded steadily and its renewable energy resource base, spanning solar, wind, and to a lesser degree biomass and small hydro, appears genuinely substantial, positioning the state credibly among India's leading renewable energy states rather than merely aspiring to that status rhetorically. Second, the private sector's dominant role in generation capacity, at roughly 61 percent of installed capacity as documented in section 9.1, stands in structural contrast to the continued public ownership and financial distress characterizing the distribution segment, documented in section 9.2, a bifurcated ownership pattern that recurs across several other infrastructure sectors examined in this report, including the port sector discussed in Chapter 8, section 8.4. Third, and perhaps most consequentially, the scale of the state government's annual fiscal commitment to bridging the distribution sector's revenue gap, at over Rs. 12,000 crore for fiscal year 2025-26 alone, represents a recurring budgetary obligation of a magnitude comparable to some of the major welfare schemes documented in Chapter 7, and one that competes for the same constrained fiscal space discussed throughout Chapter 2.

This final point deserves particular emphasis in the context of this report's broader analytical framework. Just as this report has repeatedly identified a pattern, across health in Chapter 6, social welfare in Chapter 7, and transport in Chapter 8, of genuine institutional ambition and policy sophistication coexisting with underlying fiscal execution and sustainability gaps, the

energy sector examined in this chapter exhibits precisely the same pattern: a technically sophisticated, actively evolving regulatory and renewable energy policy framework, operating atop a distribution sector financial structure that continues to depend on substantial, recurring state government subsidy to remain solvent. Resolving this underlying tension, whether through accelerated AT&C loss reduction, more complete and timely government department bill payment, deeper agricultural feeder solarization of the kind documented in section 9.4, or some combination of these and other measures, will likely prove central to whether Andhra Pradesh's energy sector can sustainably support the industrial growth ambitions documented in Chapter 4 without imposing an ever-growing fiscal burden on the state exchequer already strained by the debt sustainability pressures examined in Chapter 2, section 2.4. This chapter's findings, taken together with those of Chapter 2, Chapter 4, and Chapter 8, suggest that energy sector reform deserves to be treated as a first-order fiscal priority rather than a purely technical or environmental policy matter within the state's broader Vision 2047 planning, examined fully in Chapter 21.

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## Chapter 10: Water, Sanitation and Solid Waste Management

### 10.1 Drinking Water Supply: Coverage, Quality and Infrastructure

Andhra Pradesh's rural drinking water supply architecture is currently undergoing a significant institutional transition, both in terms of programme timeline and underlying management philosophy. On the national policy level, the Jal Jeevan Mission, the central government's flagship programme for providing functional household tap connections to every rural household, has been extended from its original 2024 target date to December 2028 under a newly designated Jal Jeevan Mission 2.0 framework, with the Union Cabinet approving an enhanced total outlay of Rs. 8.69 lakh crore for the extended mission on March 10, 2026 (India Brand Equity Foundation, 2026c). The mission's own budget allocation rose to Rs. 67,000 crore for fiscal year 2025-26, a substantial increase from the revised estimate of Rs. 22,694 crore for 2024-25, and the mission received a further, more marginal increase to Rs. 67,670 crore for fiscal year 2026-27 (India Water Portal, 2026; India Brand Equity Foundation, 2026c).

Andhra Pradesh formally signed a Memorandum of Understanding with the Union Ministry of Jal Shakti for implementation of Jal Jeevan Mission 2.0, setting a specific state target of providing safe drinking water to all households by 2028, with Chief Minister N. Chandrababu Naidu reaffirming the state's commitment to uninterrupted supply during the signing and highlighting a state policy that prioritizes operation and maintenance responsibility being handled by local panchayats (Deccan Chronicle, 2026d; New Kerala, 2026). This decentralization of operation and maintenance responsibility to the panchayat level, formalized through a comprehensive state policy introduced in September 2025, represents a deliberate institutional design choice intended to improve the long-term sustainability of rural water infrastructure, since a persistent challenge across Indian states implementing the Jal Jeevan Mission has been ensuring that newly constructed tap connections continue to function reliably after initial installation, rather than falling into disrepair once the construction phase concludes and routine maintenance responsibility becomes unclear. This challenge is not merely theoretical: a recurring theme in citizen commentary on the mission nationally has centered on precisely this concern, with reports from various municipalities noting that while new taps were installed under the programme, water quality and supply consistency have not always matched the pace of physical infrastructure rollout, a gap between construction completion and genuine service quality that mirrors the broader pattern this report has documented across multiple sectors, where headline infrastructure or programme announcements do not always translate cleanly into consistently reliable service delivery on the ground.

Notably, however, national workshop documentation from the National Water Mission's October 2025 thematic session on water conservation and recharge specifically noted that Andhra Pradesh has adopted what it described as a centralised water management strategy, transitioning from a decentralised model to improve efficiency and coordinate local solutions, a characterization that appears to sit in some tension with the panchayat-level decentralization

emphasis described in the Jal Jeevan Mission 2.0 MoU signing coverage discussed above (International Business Equity Foundation, 2026a). This report flags this apparent tension explicitly rather than resolving it, since it may reflect a distinction between centralized strategic planning and monitoring on one hand, consistent with the comprehensive water database the state's Water Resources Department received a National Water Mission Award for maintaining, and decentralized day-to-day operational and maintenance responsibility on the other, a combination that would not necessarily be contradictory but that this report was unable to verify definitively given the limited detail available in the sources consulted for this chapter (International Business Equity Foundation, 2026a).

District-level implementation data illustrates both the scale of progress achieved and the remaining gap. In Chittoor district, of a total 3,65,655 rural households, 3,07,183, or approximately 84 percent, had already received tap connections as of April 2026, with 147 specific works costing an estimated Rs. 2,936.16 lakh planned to cover the remaining 58,472 households, and six water quality testing laboratories operating within the district to ensure ongoing water quality monitoring, including regular testing within hostel facilities under Rural Water Supply authority supervision (The Hans India, 2026a). In NTR district, 337 drinking water works worth Rs. 2,000 crore were reported underway as of May 2025 and expected to complete by August 2025, with specific supply arrangements including Krishna river water delivery from Gollapudi to cover ten mandals in Eluru district and twenty four mandals in Krishna district, and drinking water supply planned for Nandigama and Jaggaiahpet constituencies sourced from the Pulichintala project (The Hans India, 2026b).

The Union budget's allocation of Rs. 5,936 crore specifically for the Polavaram irrigation project, discussed further in section 10.2, was explicitly designed to serve a dual drinking water and irrigation function, reflecting the broader principle, also evident in the NTR district example above, that in Andhra Pradesh, major river-linked irrigation infrastructure and rural drinking water supply schemes are frequently planned and financed as integrated systems rather than as entirely separate infrastructure categories, given the practical reality that both draw on the same underlying river and reservoir water sources, principally the Godavari and Krishna systems discussed in Chapter 1, section 1.1 (India Water Portal, 2026). Chief Minister Naidu explicitly connected the completion of the Polavaram project to the sustainability of the state's broader drinking water ambitions, urging central government support for the project's timely completion specifically ahead of the upcoming Godavari Pushkarams festival referenced in Chapter 8, section 8.2 (Deccan Chronicle, 2026d).

This integrated planning approach carries an important implication for how this report interprets the state's rural water supply targets more broadly. A drinking water supply commitment that depends structurally on the completion of a single, long-delayed multi-purpose project is inherently more fragile than one built on a more diversified portfolio of smaller, independently completable water sources, since delay or cost escalation in the anchor project can cascade into delay across every downstream commitment that depends on it, including the specific NTR district supply arrangements sourced from the Pulichintala project and Krishna river diversions documented above, and the broader 2028 universal

coverage target the state has committed to under Jal Jeevan Mission 2.0. This report recommends that subsequent editions specifically track the extent to which the state's rural water supply achievement toward its 2028 target depends on Polavaram completion specifically, versus the extent to which it can be achieved through the more geographically distributed set of smaller works, such as the 337 NTR district works and 147 Chittoor district works documented above, that do not carry the same single-point-of-failure risk.

At the implementation level, Union Minister for Jal Shakti C.R. Patil specifically commended Chief Minister Naidu's proactive efforts in personally securing the mission's timeline extension through direct representations to the Prime Minister, and suggested that DWACRA women's self-help groups, discussed further in the rural livelihood context of Chapter 12, section 12.4, could play a role in water quality testing at the community level, an approach that would extend the state's existing women's self-help group infrastructure into a new functional domain beyond its traditional livelihood and microfinance focus (Deccan Chronicle, 2026d). Whether this water quality testing role for DWACRA groups has been formally adopted and implemented at scale, or remains at the level of ministerial suggestion, was not verified from the sources available for this chapter, though the six water quality testing laboratories documented above for Chittoor district alone suggest the state already maintains at least some dedicated technical laboratory capacity for this function independent of any community-based testing model.

The national picture underlying Andhra Pradesh's own rural water supply progress is itself instructive. Union Finance Minister Nirmala Sitharaman noted that 15 crore rural households nationally, representing 80 percent of India's rural population, had already gained access to potable tap water through the Jal Jeevan Mission's first phase, with future efforts under the extended mission specifically concentrating on infrastructure quality, operation and maintenance of rural piped water supply schemes through what the mission terms the Jan Bhagidari, or citizen participation, approach, and the signing of separate reform-linked memoranda of understanding between the Centre and individual states (India Water Portal, 2026; India Brand Equity Foundation, 2026c). Andhra Pradesh's own September 2025 comprehensive policy for operation and maintenance, and its subsequent Jal Jeevan Mission 2.0 memorandum of understanding, fit squarely within this broader national shift from a construction-focused first phase toward a sustainability and service-quality-focused second phase, a transition this report notes recurs as a pattern across multiple infrastructure and welfare domains examined throughout this report, including the ODF Plus transition in rural sanitation discussed in section 10.3, where the national programme has similarly shifted focus from initial infrastructure construction toward longer-term sustainability of that infrastructure's continued functionality.

## **10.2 Irrigation Infrastructure: Command Area, Efficiency and Water-Use Productivity**

Irrigation infrastructure investment in Andhra Pradesh centers substantially on the long-delayed Polavaram Irrigation Project, a multi-purpose national project on the Godavari

river intended to provide both irrigation command area expansion and drinking water supply, and which received a Union budget allocation of Rs. 5,936 crore for fiscal year 2025-26 (India Water Portal, 2026). The project's continued significance to the state's broader water security strategy is underscored by its recurring mention across multiple policy contexts examined in this chapter, from the drinking water supply discussion in section 10.1 to its role as a foundational piece of infrastructure the state government has repeatedly flagged as a prerequisite for realizing the fuller ambitions of its rural water supply commitments.

Andhra Pradesh's water bodies serve a genuinely diversified set of functions beyond irrigation alone, including industrial use, pisciculture, domestic and drinking water supply, and groundwater recharge, and a national assessment of water body utilization patterns found that Vizianagaram, Srikakulam, and Visakhapatnam districts in Andhra Pradesh ranked among the nation's top five districts specifically for water body utilization in irrigation, alongside Purulia and Bankura districts in West Bengal (Journal of Water and Climate Change, 2025). West Godavari district similarly ranked among the nation's top five districts for water body utilization in pisciculture, alongside four West Bengal districts, reflecting the intersection between the state's irrigation infrastructure and its substantial aquaculture sector documented in Chapter 3, section 3.3 (Journal of Water and Climate Change, 2025). Perhaps most notably, Anantapur district in Andhra Pradesh ranked as the nation's single leading district for water body utilization in groundwater recharge, ahead of districts in Maharashtra and Uttar Pradesh, a distinction of particular significance given Anantapur's location within the drier Rayalaseema region discussed in Chapter 1, section 1.1, where groundwater recharge infrastructure plays an outsized role in agricultural water security precisely because surface water and canal irrigation infrastructure remains comparatively less developed than in Coastal Andhra (Journal of Water and Climate Change, 2025).

The state's institutional capacity for water resource planning received formal national recognition when the Andhra Pradesh Water Resources Department, alongside the Water Resources Department of Maharashtra, won the National Water Mission Award for promotion of basin-level integrated water resources management, and separately, alongside Telangana's Irrigation and Command Area Development Department, won the award for maintaining a comprehensive water database in the public domain (India Brand Equity Foundation, 2026d). These twin national recognitions suggest the state's water resource planning institutions have developed genuine technical capacity in both integrated basin-level planning and public data transparency, two capabilities that, if effectively leveraged, could meaningfully support the kind of evidence-based irrigation efficiency improvements that Indian agricultural water management increasingly requires given the water-use productivity challenges documented in national water policy literature more broadly.

Comprehensive, current, quantitative data on the specific command area coverage, irrigation efficiency ratios, and water-use productivity metrics for Andhra Pradesh's major and medium irrigation projects beyond Polavaram was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the state's Water Resources Department's own

project-wise performance reporting, which, given the department's demonstrated public data transparency capability noted above, should in principle be more readily accessible than equivalent data has proven to be for several other infrastructure sectors examined throughout this report.

The connection between irrigation infrastructure and the state's agricultural performance documented in Chapter 3, section 3.3, deserves explicit emphasis here. The record food grain production and strong growth in staples such as rice and maize documented in that chapter did not occur in a vacuum, but rest fundamentally on the irrigation command area and water availability that the infrastructure discussed throughout this section provides. Given that Coastal Andhra's deltaic plains along the Godavari and Krishna rivers have historically benefited from more extensive and mature canal irrigation infrastructure than the Rayalaseema interior, discussed in Chapter 1, section 1.1, and Chapter 1, section 1.7, it is likely that the state's strong recent agricultural growth figures are disproportionately concentrated within these better-irrigated coastal districts, a pattern consistent with the broader regional growth concentration this report has documented repeatedly across transport in Chapter 8 and energy in Chapter 9. Anantapur district's leading national ranking for groundwater recharge utilization, noted above, can be understood in this context as a partial adaptive response to Rayalaseema's comparative disadvantage in surface canal irrigation, since groundwater recharge infrastructure allows drier interior districts to build up a water reserve buffer against the rainfall variability discussed in Chapter 1, section 1.1, that surface canal-fed districts do not require to the same degree.

The Polavaram project's persistent delay, a recurring theme across multiple sections of this chapter and referenced again in the Preface's discussion of the state's post-bifurcation institutional rebuilding, illustrates a broader pattern in Indian large-dam and multi-purpose irrigation project execution, where projects spanning multiple decades from initial conception to completion frequently encounter escalating costs, environmental and resettlement complications, and shifting political priorities across successive state governments. Given the project's explicit dual mandate covering both irrigation command area expansion and drinking water supply, documented in section 10.1, its continued delay carries compounding costs across both domains simultaneously, a consideration this report recommends weighing heavily in any subsequent assessment of the state's overall water security planning priorities for the remainder of this decade.

### **10.3 Sanitation and Open Defecation Free Status: Post-ODF Sustainability**

Andhra Pradesh's sanitation programming operates under the Swachh Andhra Mission, established by the state government in alignment with the national Swachh Bharat Mission, with the Swachh Andhra Corporation created in 2015 as the state's nodal implementing agency, tasked with eliminating open defecation, eradicating manual scavenging, and managing solid and liquid waste to maintain cleanliness and hygiene across the state's urban spaces (National Faecal Sludge and Septage Management Alliance, 2026). The Swachh Andhra Corporation played a central role in managing the rapid construction of individual

household toilets, community toilets, and public toilets across the state during the mission's initial rollout phase, and subsequently collaborated with international organizations and engineering firms as technical knowledge partners to support continued implementation (National Faecal Sludge and Septage Management Alliance, 2026).

At the national level, the Swachh Bharat Mission Grameen's second phase, running from fiscal year 2020-21 through fiscal year 2026-27, has shifted its central focus from the initial phase's toilet construction and open defecation elimination objective toward sustaining Open Defecation Free status and progressing villages toward ODF Plus Model status through solid and liquid waste management infrastructure, and as of the most recent national assessment, over 83 percent of India's villages had achieved ODF Plus status, with more than 5.27 lakh villages having solid waste management arrangements and 5.41 lakh villages having liquid waste management arrangements in place (New Kerala, 2026b). The national Swachhata Hi Seva 2025 campaign, conducted during September and October 2025, drew participation from over 18 crore citizens nationally, including more than 13 crore from rural areas specifically, illustrating the continued scale of citizen mobilization the mission has been able to sustain into its second phase (New Kerala, 2026b).

The Department of Drinking Water and Sanitation's Swachh Survekshan Grameen 2025 assessment framework, finalized in May 2025, introduced a formal national ranking methodology for states and districts based on quantitative and qualitative sanitation parameters under the second phase framework, incorporating direct field-based observation and survey of village-level sanitation status, worth up to 540 marks, alongside self-reported district performance data worth up to 240 marks, and specific assessment of the functionality of district and block-level solid and liquid waste management plants (Department of Drinking Water and Sanitation, 2025). Comprehensive, current data on Andhra Pradesh's specific ranking or performance under this Swachh Survekshan Grameen 2025 assessment framework was not available among the sources consulted for this chapter, though historical precedent from the prior Swachh Survekshan Grameen 2022 assessment, in which Telangana secured the top position among large states, with Haryana and Tamil Nadu following, suggests that Andhra Pradesh has not historically ranked among the very top-performing large states on this particular national rural sanitation assessment, a finding this report recommends verifying directly against the 2025 assessment results once published (India Brand Equity Foundation, 2026e).

On manual scavenging specifically, an issue of particular social justice significance given its historical association with caste-based occupational discrimination discussed in Chapter 7, section 7.1, 2011 Census data for the undivided state found that approximately 0.02 percent of urban households relied on manual night soil removal, with the corresponding rural and urban combined figure for the state as a whole standing at 0.35 percent of households, figures that, while indicating manual scavenging's continued presence in the state as of the last census, also suggest reliance on this practice had already become a comparatively marginal phenomenon relative to the scale of the challenge some other Indian states have historically faced (Commissioner and Director of Municipal Administration, 2026). Updated, more recent

state-specific data on manual scavenging prevalence and rehabilitation programme coverage for affected workers was not available among the sources consulted for this chapter, representing a further documented gap this report recommends addressing given the continued national policy priority attached to complete elimination of this practice.

This connection between manual scavenging elimination and broader sanitation infrastructure investment deserves further emphasis, since the persistence of manual scavenging in any Indian context is directly linked to the adequacy of mechanized faecal sludge management infrastructure of precisely the kind discussed in section 10.5. Where sewage treatment plants and mechanized faecal sludge emptying services are unavailable or insufficiently accessible, particularly in smaller towns and peri-urban areas beyond the state's major cities, informal and often caste-linked manual removal practices tend to persist as a de facto substitute, notwithstanding their formal illegality under the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act. The state's continued expansion of faecal sludge co-treatment infrastructure documented in section 10.5, if extended successfully beyond the six cities currently covered under the Hybrid Annuity Model partnership, would therefore carry direct relevance not only to environmental and public health outcomes but to the complete elimination of manual scavenging as a livelihood practice within the state, connecting this chapter's infrastructure focus directly back to the social justice themes examined in Chapter 7.

#### **10.4 Solid Waste Management: Municipal, Biomedical and Hazardous Waste**

Municipal solid waste management in Andhra Pradesh's urban areas falls under the broader Swachh Bharat Mission Urban framework, whose second phase, launched October 1, 2021, targets full garbage-free status for all Indian cities through scientific treatment of municipal solid waste, reduction of air pollution arising from waste management activities including improved construction and demolition waste handling and mechanical sweeping, and a phased decline in single-use plastic consumption (India Brand Equity Foundation, 2026f). At the national level, approximately 70 percent of municipal solid waste processing had been achieved under this mission as of the most recent comprehensive assessment, and by September 2025, of 2,492 lakh tonnes of legacy waste accumulated at dumpsites nationwide, 1,437 lakh tonnes, or 58 percent, had been remediated, reclaiming more than 7,600 acres of previously waste-occupied land for other uses (India Brand Equity Foundation, 2026f; India Brand Equity Foundation, 2026e).

Comprehensive, current, Andhra Pradesh-specific data on municipal solid waste processing rates, legacy dumpsite remediation progress, and biomedical or hazardous waste management infrastructure was not available among the sources consulted for this chapter, representing a documented gap given the evident national policy prominence of this sector. Given the state's substantial urban population growth trajectory discussed in Chapter 11, section 11.1, and the concentration of that growth within the Visakhapatnam and Amaravati-Vijayawada corridors discussed throughout this report, the adequacy of municipal solid waste processing infrastructure specifically within these rapidly growing urban centres represents a priority

area this report recommends for direct investigation in subsequent editions, ideally drawing on the state's Municipal Administration and Urban Development Department's own city-wise solid waste management performance data.

Hazardous and biomedical waste management, distinct from conventional municipal solid waste in both regulatory framework and handling requirements, carries particular relevance to Andhra Pradesh given the scale of the state's pharmaceutical manufacturing sector documented in Chapter 4, section 4.3, including the Nakkapalli Bulk Drug Park project, since pharmaceutical manufacturing characteristically generates hazardous chemical waste streams requiring specialized treatment and disposal infrastructure well beyond standard municipal solid waste processing capability. Comprehensive, current data on the state's hazardous waste treatment, storage, and disposal facility capacity relative to its growing pharmaceutical and broader chemical manufacturing base was not available among the sources consulted for this chapter, and given the potential public health and environmental consequences of inadequate hazardous waste management in a state actively courting substantial pharmaceutical manufacturing investment, this report recommends this be treated as a priority area for direct verification in subsequent editions, ideally drawing on Andhra Pradesh Pollution Control Board reporting on hazardous waste authorization and disposal facility capacity, and cross-referenced against the pollution regulatory themes examined further in Chapter 13, section 13.5.

The evolving Swachh Survekshan urban assessment methodology for the 2025-26 cycle has also shifted its evaluative emphasis considerably, moving beyond the historical focus on door-to-door waste collection and civic beautification toward placing substantial weight on liquid waste management and sewage treatment metrics specifically, examined further in section 10.5, a shift the Ministry of Housing and Urban Affairs has explicitly framed as a transition from simple Open Defecation Free status recognition toward more comprehensive Water Plus urban resilience certification (Water Today, 2026). This methodological evolution suggests that future assessments of Andhra Pradesh's urban sanitation performance will increasingly hinge on sewerage and wastewater treatment infrastructure adequacy, examined in the following section, rather than solid waste collection and processing metrics alone, a shift this report recommends tracking closely given its implications for how the state's urban sanitation investment priorities may need to adjust going forward.

## **10.5 Liquid Waste and Sewerage: Urban and Peri-Urban Treatment Infrastructure**

Andhra Pradesh's sewerage and wastewater treatment infrastructure has historically lagged considerably behind its solid waste management and toilet construction achievements, a pattern consistent with broader national trends in Indian urban sanitation development. Historical state sanitation strategy documentation for the undivided thirteen-district post-bifurcation state found that formal sewerage facilities existed in only three towns, Guntur, Narasaraopet, and Nellore, at the time that documentation was prepared, illustrating how limited centralized sewerage infrastructure remained even in the state's more established

urban centres relative to the near-universal individual household toilet coverage achieved through the Swachh Bharat Mission's first phase (Commissioner and Director of Municipal Administration, 2026).

More recent efforts to close this gap have centered on the Atal Mission for Rejuvenation and Urban Transformation, commonly known as AMRUT, under which the Andhra Pradesh government proposed a plan covering 31 cities and towns at an estimated cost of over Rs. 28,756 crore, intended to provide basic infrastructure related to water supply, sewerage, urban transport, and green spaces (Commissioner and Director of Municipal Administration, 2026). Within this framework, the state has specifically identified 14 sewage treatment plants across six cities, Visakhapatnam, Vijayawada, Rajahmundry, Tadipatri, Pulivendula, and Yemmiganur, for implementation of co-treatment of faecal sludge alongside conventional sewage, delivered through a public-private partnership structured under an innovative Hybrid Annuity Model spanning ten years, comprising six months for design and construction followed by nine and a half years of private operation (National Faecal Sludge and Septage Management Alliance, 2026). This co-treatment approach, integrating faecal sludge management with conventional sewage treatment plant infrastructure, represents a technically sophisticated response to a specific challenge common across Indian cities, namely that most household toilets, even where present, rely on septic tanks or pit systems requiring periodic faecal sludge emptying rather than being connected to a continuous sewer network, making faecal sludge co-treatment a practical bridge solution pending fuller sewer network expansion.

Beyond this faecal sludge co-treatment initiative, the state government is separately establishing 24 sewage treatment plants under the broader AMRUT scheme across its designated mission cities, and the state's Public Health and Engineering Department, operating under the Municipal Administration and Urban Development Department, has worked in coordination with the Andhra Pradesh Urban Finance and Infrastructure Development Corporation and technical support advisors to recommend that private developers revise proposed sewage treatment plant designs specifically to incorporate faecal sludge co-treatment provisions, reflecting an institutional learning process in which the state's sewerage infrastructure planning has evolved iteratively based on technical assistance recommendations rather than following a single static blueprint from the programme's inception (National Faecal Sludge and Septage Management Alliance, 2026).

Given the Swachh Survekshan assessment methodology's evolving emphasis toward sewage network coverage and wastewater reuse metrics documented in section 10.4, and given the historically limited baseline sewerage coverage documented above, Andhra Pradesh's urban centres, including its most populous cities such as Visakhapatnam and Vijayawada, examined throughout this report in the context of the state's growth corridor strategy discussed in Chapter 3, section 3.9, face a substantial infrastructure gap to close in order to perform well under this shifting national assessment framework. The state's continued reliance on public-private partnership financing structures for sewerage infrastructure, paralleling the public-private partnership approaches documented across the road sector in Chapter 8,

section 8.1, and the power generation sector in Chapter 9, section 9.1, reflects a broadly consistent state government financing philosophy across infrastructure sectors, leveraging private capital and operational expertise to accelerate infrastructure delivery rather than relying solely on direct public capital expenditure, though whether this consistent approach will prove sufficient to close the state's sewerage infrastructure gap at a pace matching its urban population growth, documented further in Chapter 11, remains an open question this report recommends monitoring closely in subsequent editions.

Drawing together the findings of this chapter as a whole, Andhra Pradesh's water, sanitation, and solid waste management sector exhibits a now-familiar pattern that recurs throughout this report: genuine, well-documented institutional ambition and policy sophistication, evident in the state's national award-winning water resource database and basin planning capabilities discussed in section 10.2, its innovative faecal sludge co-treatment public-private partnership model discussed in section 10.5, and its explicit 2028 target commitment for universal safe rural drinking water discussed in section 10.1, coexisting with substantial documented and inferred infrastructure gaps, particularly in urban sewerage coverage, and with a persistent lack of granular, current, publicly available performance data across several sub-sectors examined in this chapter, most notably irrigation efficiency and municipal solid waste processing rates specific to the state. This pattern, evident across health in Chapter 6, social welfare in Chapter 7, transport in Chapter 8, and energy in Chapter 9, appears to constitute a genuine structural characteristic of Andhra Pradesh's broader governance and infrastructure development model, rather than a coincidental feature specific to any single sector, and this report's concluding assessment in Chapter 21 returns to this recurring pattern as a central theme in evaluating the credibility of the state's longer-term Vision 2047 ambitions, alongside the parallel structural patterns already documented across fiscal management in Chapter 2 and industrial investment in Chapter 4.

Three specific recommendations emerge from this chapter for prioritization over the remainder of this decade. First, accelerating completion of the Polavaram project, given its compounding significance across both irrigation and drinking water supply objectives documented in sections 10.1 and 10.2. Second, extending the faecal sludge co-treatment model documented in section 10.5 beyond its current six-city footprint to a broader set of the state's smaller towns, where manual scavenging risk, discussed in section 10.3, and sewerage infrastructure gaps are likely most acute given the historically limited baseline coverage documented in this chapter. Third, establishing more consistent, granular, and publicly accessible performance reporting across irrigation efficiency, municipal solid waste processing, and rural water supply quality metrics, building on the water resource database transparency the state has already demonstrated at the basin-planning level, to allow the kind of district-level accountability and monitoring that the Swachh Survekshan Grameen assessment framework discussed in section 10.3 is itself designed to encourage. A fourth, closely related priority concerns hazardous waste management capacity, discussed in section 10.4, which this report recommends receiving dedicated attention commensurate with the scale of chemical and pharmaceutical manufacturing investment the state is actively pursuing under its industrial anchor strategy documented in Chapter 4, since infrastructure gaps in this

specific domain carry disproportionate downside risk relative to their comparatively modest profile within current state sanitation policy discourse. A fifth and final priority, cutting across all of the sub-sectors examined in this chapter, concerns closing the substantial data availability gaps this report has repeatedly flagged, since credible long-term planning for the state's water security, sanitation, and waste management future depends on the same kind of granular, verifiable, and regularly updated performance data that this report has found available for only a subset of the sub-sectors reviewed here, most notably basin-level water resource planning, and conspicuously less available for irrigation efficiency, municipal solid waste processing, and hazardous waste management specifically.

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## Chapter 11: Urban Development, Housing and Smart Cities

### 11.1 Urbanisation Trends and Urban Governance Architecture

Andhra Pradesh's urbanisation rate, at approximately 29.6 percent as documented in Chapter 1, section 1.3, remains considerably below the national trajectory, where India's urban population, already the second largest in the world at 498 million in 2021, is projected to grow at a high average annual rate of 2.01 percent, reaching approximately 600 million by 2030 and 876 million by 2050 (Asian Development Bank, 2026). This gap between the state's current urbanisation level and the pace of national urban growth suggests Andhra Pradesh retains substantial headroom for further urbanisation over the coming decades, a trajectory this report has already flagged in Chapter 8, section 8.5, as carrying direct implications for the state's urban mass transit planning.

Urban governance in the state operates through a layered institutional structure spanning Urban Local Bodies of varying size and status, Development Authorities such as the Andhra Pradesh Capital Region Development Authority discussed in section 11.4, and Special Area Development Authorities established for specific planning contexts, with the Municipal Administration and Urban Development Department serving as the overarching state department responsible for coordinating urban policy across this institutional landscape (Commissioner and Director of Municipal Administration, 2026). This layered governance structure, combining general-purpose municipal bodies with specialized development authorities for particular urban planning contexts, most notably the Amaravati capital city project, reflects a broadly conventional Indian state urban governance model, though the specific addition of a dedicated capital region development authority represents an institutional feature unique to Andhra Pradesh's particular post-bifurcation circumstance of needing to construct an entirely new capital city, discussed in detail in section 11.4.

The concentration of the state's urbanisation specifically within the Visakhapatnam and Amaravati-Vijayawada growth corridors, a pattern this report has documented repeatedly across transport in Chapter 8, energy in Chapter 9, and water infrastructure in Chapter 10, means that urban governance capacity and infrastructure investment have similarly concentrated within these same geographic areas, a pattern examined further in the context of urban local body financial health in section 11.2 and in the broader regional disparity themes this report returns to throughout its concluding chapters.

This urbanisation headroom carries a dual character worth emphasizing explicitly. On one hand, a lower current urbanisation rate relative to the national trajectory means Andhra Pradesh faces less immediate pressure on its existing urban infrastructure than more heavily urbanized states such as Maharashtra, Tamil Nadu, or Karnataka, providing the state a genuine planning advantage, discussed already in Chapter 8, section 8.5, in the specific context of sequencing metro rail construction ahead of rather than behind urban growth. On the other hand, the same headroom implies that the bulk of the state's urban population growth, and the accompanying demand for housing, water, sanitation, and transport

infrastructure documented throughout this report, still lies ahead rather than behind, meaning that decisions made now regarding urban planning frameworks, land use zoning, and infrastructure sequencing will have outsized influence over the quality and sustainability of the state's urban environment for decades to come. The Amaravati capital city project, examined in detail in section 11.4, represents the most visible example of the state attempting to plan proactively for this anticipated urban growth rather than reactively accommodating it after the fact, though whether this proactive planning approach can be extended more broadly to the state's existing urban centres, including Visakhapatnam and Vijayawada, which face growth pressures of a more incremental, retrofit-oriented nature than Amaravati's greenfield development, remains a further open question this report examines throughout the remainder of this chapter.

Urban governance capacity in the state also intersects with the decentralized rural governance themes examined in Chapter 12, since the boundary between rural and urban administrative classification is not static, and villages experiencing rapid population growth or economic transformation frequently transition from panchayat governance to municipal governance as they cross specific population or economic activity thresholds defined under state municipal law. The pace at which such rural-to-urban administrative reclassification occurs across the state's twenty eight districts, and whether the newly reclassified urban local bodies receive adequate capacity building support to manage their expanded municipal service delivery responsibilities, represents a further dimension of the state's urban governance architecture that this report was unable to examine in detail given the absence of specific reclassification data among the sources consulted for this chapter.

## **11.2 Urban Local Bodies: Financial Health, Capacity and Service Delivery**

Comprehensive, current, quantitative data specifically on Andhra Pradesh's Urban Local Body revenue mobilization, own-source revenue share, and overall fiscal health relative to other Indian states was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the state's Municipal Administration and Urban Development Department's consolidated financial reporting for its constituent Urban Local Bodies. Given the broader state-level fiscal architecture documented in Chapter 2, including the persistent gap between budgeted and executed expenditure discussed in Chapter 2, section 2.2, it would be reasonable to expect Urban Local Bodies within the state to face at least comparable execution and revenue mobilization challenges, though this inference should be treated as a plausible hypothesis rather than a verified finding given the absence of Urban Local Body-specific data for this chapter, and this report recommends future editions seek out the Comptroller and Auditor General's local body audit reports as a potential source of this currently missing detail.

What can be established with greater confidence is the substantial scale of central government funding channeled through Urban Local Bodies for specific infrastructure missions, discussed further in section 11.4, and the corresponding institutional capacity these

bodies must develop to plan, execute, and report on mission-linked infrastructure spending in order to remain eligible for continued central assistance. The Atal Mission for Rejuvenation and Urban Transformation's proposed Rs. 28,756 crore investment across 31 Andhra Pradesh cities and towns, documented in Chapter 10, section 10.5, represents a funding flow of a scale that considerably exceeds what most of the state's Urban Local Bodies would likely be able to mobilize independently through their own revenue base, underscoring the continued centrality of centrally sponsored scheme funding to the state's urban infrastructure development trajectory, a pattern consistent with the broader Centre-State fiscal relationship themes examined in Chapter 2, section 2.9.

The financial sustainability of Urban Local Bodies carries particular significance for the smart city and AMRUT-funded infrastructure discussed in sections 11.4 and 11.5, since infrastructure assets constructed under time-limited central missions require ongoing operations and maintenance funding well beyond the mission's own funding window, typically falling back onto the Urban Local Body's own recurring revenue base once mission funding concludes. Whether Andhra Pradesh's Urban Local Bodies possess adequate own-source revenue capacity to sustainably maintain the substantial infrastructure investments documented throughout this chapter over their full operational lifespan, rather than experiencing the kind of post-construction maintenance funding gap this report has already flagged as a risk in the rural water supply context in Chapter 10, section 10.1, represents an important open question this report recommends prioritizing for direct investigation in subsequent editions.

The Fifteenth Finance Commission's broader recommendations regarding local body grants, discussed in Chapter 2, section 2.6, in the context of tribal welfare funding specifically, also extend to Urban Local Bodies more generally, with the Commission's award period allocating tied grants for water and sanitation infrastructure to Urban Local Bodies alongside their rural Panchayati Raj Institution counterparts. The extent to which Andhra Pradesh's Urban Local Bodies have successfully utilized these Fifteenth Finance Commission tied grants, relative to both their allocated entitlement and their demonstrated capacity to absorb and deploy such funding effectively, represents a further dimension of urban local body financial health this report was unable to assess given the absence of Urban Local Body-disaggregated utilization data among the sources consulted for this chapter. Given the broader pattern of underspending relative to budgeted allocations documented at the state government level in Chapter 2, section 2.2, it would not be surprising if a similar underspending pattern were found to characterize Urban Local Body-level grant utilization as well, though this report emphasizes this as a plausible hypothesis requiring direct verification rather than an established finding.

### **11.3 Housing: Demand Assessment, Affordability and Flagship Schemes**

Andhra Pradesh's urban housing programming operates through a combination of state-specific schemes and the national Pradhan Mantri Awas Yojana-Urban framework. The state's own NTR Housing Scheme, an urban housing initiative, targets construction of 7 lakh

houses, operating alongside the AP YSR Jagananna Colonies urban housing programme and the national PMAY-Urban scheme, all coordinated through the Andhra Pradesh State Housing Corporation Limited's urban housing portal and the AP HOMES housing portal (AIM India, 2026). Cumulatively, PMAY-Urban implementation in Andhra Pradesh has utilized Rs. 11,273 crore across in-situ slum redevelopment and other housing project categories, and the state has articulated an explicit target of achieving a slum-free state by 2047 under its broader Swarnandhra Vision 2047 framework, discussed further in Chapter 21 (AIM India, 2026).

At the national level, PMAY-Urban has been implemented since June 25, 2015, through four distinct delivery verticals tailored to different beneficiary circumstances: Beneficiary-led Individual House Construction or Enhancement, providing central assistance of Rs. 1.5 lakh to individual eligible families; In-situ Slum Redevelopment, providing a slum redevelopment grant of Rs. 1 lakh per house for eligible slum dwellers using land as a resource in partnership with private developers; Affordable Housing in Partnership, providing similar per-unit central assistance for Economically Weaker Section families purchasing homes; and the Credit Linked Subsidy Scheme, providing interest subsidies of 6.5, 4, and 3 percent respectively on home loans up to Rs. 6 lakh, Rs. 9 lakh, and Rs. 12 lakh for Economically Weaker Section and Low Income Group, Middle Income Group-I, and Middle Income Group-II borrowers respectively (PMAY-Urban, 2026).

Andhra Pradesh's implementation performance under the original PMAY-Urban mission has been recognized nationally, with the state securing third position in the Large State Category at the PMAY-U Awards 2021, presented by the Prime Minister at the Indian Urban Housing Conclave in Rajkot, Gujarat, behind Uttar Pradesh in first position and Madhya Pradesh in second (PMAY-Urban, 2026). More broadly, Andhra Pradesh ranks among the top states nationally by total houses sanctioned under PMAY-Urban's original phase, alongside Maharashtra, Tamil Nadu, and Madhya Pradesh, with the scheme having sanctioned over 1.18 crore houses nationally, grounded construction on more than 88 lakh, and fully completed over 70 lakh by 2024 (Anantam IAS, 2026). Following the launch of PMAY-Urban 2.0 on September 1, 2024, targeting 1 crore additional urban houses nationally over the 2024 to 2029 period at an outlay of Rs. 2.30 lakh crore, Andhra Pradesh was among ten states and union territories included in a subsequent Central Sanctioning and Monitoring Committee approval covering construction of over 3.52 lakh houses under the Beneficiary-Led Construction and Affordable Housing in Partnership verticals (Bajaj Finserv, 2026; Anantam IAS, 2026).

Beyond the EWS and LIG-focused verticals discussed above, the state has also pursued Middle Income Group and Higher Income Group housing through smart township projects in Kurnool and Kadapa districts, though these projects have experienced comparatively slow market absorption, with only approximately 29 percent of plots sold as of the most recent reporting available, a finding that stands in some contrast to the evidently strong demand for the state's EWS and LIG-focused schemes, and that may reflect either broader affordability constraints among the state's middle-income urban population or location-specific demand factors particular to the Kurnool and Kadapa sites specifically (AIM India, 2026). The state

has also introduced streamlined regulatory processes intended to accelerate urban housing supply more broadly, including a self-certification building permission system introduced in 2025 that enables rapid approval of plots up to 4,000 square meters, a regulatory simplification measure intended to reduce the administrative delay that has historically constrained urban housing construction timelines across many Indian states (AIM India, 2026).

This contrast between strong demand-side uptake for the state's affordable housing verticals and comparatively weak uptake for its middle and higher income smart township offerings in Kurnool and Kadapa is worth situating within the broader regional disparity framework this report has applied throughout its preceding chapters. Both Kurnool and Kadapa are Rayalaseema districts, discussed in Chapter 1, section 1.7, as comparatively less economically dynamic than the state's Coastal Andhra and capital region districts, and it is plausible that middle and higher income housing demand in the state remains concentrated within the Visakhapatnam and Amaravati-Vijayawada growth corridors identified throughout this report, rather than in the Rayalaseema interior, even where the state has made a deliberate effort to develop planned township supply in the latter locations specifically. If this interpretation holds, the underperformance of the Kurnool and Kadapa smart townships would represent a further, housing-sector-specific manifestation of the broader regional economic concentration pattern this report has documented across transport, energy, and industrial investment throughout the preceding chapters, rather than an isolated housing market anomaly, though this report was unable to verify this interpretation definitively given the absence of comparative demand-side data from equivalent projects located within the state's more economically dynamic coastal districts.

#### **11.4 Smart Cities Mission and AMRUT: State-Level Implementation Review**

Andhra Pradesh's Smart Cities Mission implementation covers four cities, Kakinada, Visakhapatnam, Tirupati, and Amaravati, which had collectively completed over 85 percent of their planned urban development projects, amounting to Rs. 5,657 crore out of a total planned investment of Rs. 6,620 crore, as of the most recent comprehensive assessment (PropNewsTime, 2026). Performance varied considerably across the four cities, with Kakinada and Tirupati each completing approximately Rs. 2,000 crore worth of projects and Visakhapatnam completing Rs. 1,575 crore, while Amaravati lagged considerably, having completed only Rs. 746 crore of its more modest Rs. 930 crore total planned investment, a completion rate below that of its three counterpart cities (PropNewsTime, 2026). This disparity in smart city project execution between Amaravati and the state's three other participating cities is notable given Amaravati's status as the state's flagship capital city development project, discussed in greater detail below, and suggests that the scale and complexity of building an entirely new capital city from undeveloped agricultural land has presented distinct execution challenges relative to the comparatively more incremental infrastructure upgrades pursued in the state's three established urban centres.

Visakhapatnam's smart city implementation, overseen by the Greater Visakhapatnam Smart City Corporation Limited established specifically for this purpose, has produced concrete, measurable results including floating solar power installations generating 3,613 megawatt-hours annually while reducing emissions by approximately 3,000 tonnes, alongside smart classroom deployments, enhanced street lighting infrastructure, and an advanced sewage system upgrade (Indiadatamap, 2026b; PropNewsTime, 2026). These Visakhapatnam-specific achievements connect directly to the renewable energy themes examined in Chapter 9, section 9.4, illustrating how the smart cities programme has, in at least this instance, been integrated with the state's broader renewable energy transition strategy rather than operating as an entirely separate infrastructure initiative.

Amaravati's development as the state's capital city represents a far more ambitious undertaking than conventional smart city retrofitting, involving the construction of an entirely new urban settlement across a 217 square kilometer master plan area in Guntur district, on the right bank of the Krishna River, roughly 15 kilometers southwest of Vijayawada (Wikipedia, 2026g). The city's master plan, whose central government complex area was designed by the British architecture firm Foster and Partners, envisions a series of specialized urban nodes, termed Theme Cities, including Justice City, Knowledge City, Health City, and Finance City, each intended to anchor a distinct economic or institutional function, alongside a planned Quantum Valley Tech Park scheduled for 2026 that is intended to host IBM, Tata Consultancy Services, and IIT Madras in developing what is described as India's largest quantum computer (Wikipedia, 2026g). The Andhra Pradesh government formally relaunched the Amaravati project with a groundbreaking event in April 2025, marking a Rs. 65,000 crore capital city construction phase, with the Prime Minister invited to the ceremony, an event that followed a period of substantial project uncertainty and delay following the initial 2014 to 2019 planning phase (Wikipedia, 2026g).

The Asian Development Bank has committed a results-based loan of 788.8 million US dollars, denominated in Japanese yen at a total value of 121.97 billion yen, specifically to support Amaravati's development as a green and smart capital city, delivered in partnership with the World Bank to help bridge financing gaps for trunk infrastructure, public buildings, affordable housing, and land return obligations to farmers who contributed land under the project's Land Pooling Scheme (Asian Development Bank, 2026b). This international development finance institution involvement, combining multilateral development bank capital with domestic state and central government funding, represents a financing model of considerably greater complexity and international visibility than the domestic public-private partnership models documented for other infrastructure sectors throughout this report, including the road, power, and water sectors discussed in Chapters 8, 9, and 10 respectively, reflecting Amaravati's unique status as not merely an infrastructure project but a flagship demonstration of the state's, and to some extent India's, broader capacity to build a major new city from undeveloped land.

State officials have articulated ambitious long-term targets for the completed city, projecting Amaravati will house 3.5 million people, generate 35 billion US dollars in GDP, and create

1.5 million job opportunities by 2050, alongside a physical infrastructure plan including approximately 1,600 kilometers of roads, of which 350 kilometers would be pedestrian-friendly trunk roads with dedicated green cover, and a design commitment that approximately 30 percent of the city's total area be dedicated to water bodies and green spaces, a proportion state officials describe as exceeding what most conventional cities offer and aligning with international sustainable urban design standards (APAC News Network, 2026). The city is also being designed as a zero-discharge city, with fully integrated sewage treatment, water supply, and drainage systems intended to prevent any untreated wastewater discharge, a design ambition directly relevant to the sewerage infrastructure themes examined in Chapter 10, section 10.5, where this report documented the state's broader urban centres' historically limited sewerage coverage (APAC News Network, 2026).

On inclusion specifically, state officials have described a multi-pronged approach to addressing urban poverty and inequality within the new capital, including development of 5,024 affordable housing units for Economically Weaker Section households, establishment of skill development centres intended to integrate marginalized communities into the city's economic fabric, partnerships with the National Skill Development Council and private training partners, and provision of transit accommodation for migrant construction workers with a pathway toward affordable permanent housing for those choosing to settle in the city long term (APAC News Network, 2026). Whether this stated inclusion strategy translates into a genuinely mixed-income, socially integrated capital city, rather than one whose affordable housing components become geographically or socially segregated from its more affluent Theme City districts, a risk common to large-scale planned city developments internationally, is a question this report recommends monitoring closely as Amaravati's construction proceeds through the remainder of this decade.

The disparity in smart city project completion rates between Amaravati and the state's three other participating cities, documented at the start of this section, deserves further analytical attention given its implications for how this report interprets the broader Amaravati development narrative. A capital city construction project of Amaravati's scale and ambition, spanning an entirely new 217 square kilometer urban settlement built substantially from agricultural land acquired through the Land Pooling Scheme, is inherently a fundamentally different undertaking than the incremental smart city upgrades pursued in Kakinada, Visakhapatnam, and Tirupati, which involved retrofitting specific infrastructure improvements into already-established urban fabric. It would therefore be analytically misleading to interpret Amaravati's comparatively lower Smart Cities Mission completion percentage as straightforwardly indicating weaker execution capacity relative to the state's other three cities, since the underlying project types are not directly comparable in scope or complexity. At the same time, the broader pattern of delay that has characterized Amaravati's development since the project's original 2014 conception, including the multi-year hiatus in project momentum prior to the April 2025 relaunch groundbreaking event discussed above, suggests that execution risk specific to the Amaravati project extends well beyond what the comparatively narrow Smart Cities Mission funding component captures, and that this broader execution risk profile should be weighed heavily in any assessment of the project's

credibility going forward, a theme this report revisits in its concluding Vision 2047 assessment in Chapter 21.

The financing structure combining Asian Development Bank and World Bank support alongside state and central government capital, documented above, also reflects a broader pattern in how the state has approached its most ambitious individual infrastructure projects, paralleling the multilateral and bilateral financing arrangements that have periodically supported other major Indian state infrastructure projects. This diversified financing approach, spreading project risk and capital requirements across multiple funding sources rather than relying on a single government budget line, may provide some insulation against the kind of single-source funding disruption that has historically contributed to delays in large Indian infrastructure projects, though it also introduces coordination complexity across multiple financing institutions with potentially differing disbursement conditions, reporting requirements, and risk tolerance, a complexity that itself could plausibly have contributed to the project's historical delays, though this report was unable to verify this specific causal link given the sources available.

### **11.5 Heritage Cities, Cultural Landscapes and Urban Tourism**

Amaravati's own naming and site selection carries deliberate historical resonance, deriving from the nearby historic site of Amaravathi, which served as the capital of the Satavahana Empire nearly two thousand years ago, and the broader region's heritage spans successive historical periods including the Mauryan emperor Ashoka, the Satavahanas, the Kakatiyas, and the Vijayanagara kings, a heritage the state's own capital city promotional materials explicitly invoke in describing Amaravati as a "People's Capital" that combines this deep historical lineage with contemporary visionary planning (The Amaravati City, 2026; Wikipedia, 2026g). This deliberate connection between the new capital's branding and the region's ancient historical significance illustrates a broader pattern relevant to the state's cultural heritage strategy examined in greater depth in Chapter 19, namely an attempt to position new infrastructure development as a continuation of, rather than a rupture from, the state's deeper historical identity.

Beyond Amaravati itself, the state's other major urban centres carry their own distinct heritage and tourism profiles that intersect with the urban development themes examined throughout this chapter. Tirupati's inclusion among the state's four Smart Cities Mission participants, discussed in section 11.4, reflects the city's dual character as both a rapidly growing urban centre and one of the world's most visited religious pilgrimage destinations, a duality examined in greater depth in the tourism-specific discussion of Chapter 19, and one that necessarily shapes Tirupati's urban infrastructure priorities toward accommodating the exceptionally high transient pilgrim population documented in Chapter 8, section 8.3, alongside the needs of its permanent resident population.

Comprehensive, current, quantitative data on heritage building preservation programmes, heritage zoning regulations, or urban conservation area designations within Andhra Pradesh's cities was not available among the sources consulted for this chapter, representing a

documented gap this report recommends addressing in subsequent editions, ideally through direct reference to the state's Department of Tourism and Culture heritage conservation programming, examined further in Chapter 19, section 19.4. Given the deliberate historical framing the state has applied to Amaravati's own branding, discussed above, and given the broader cultural heritage themes examined in Chapter 19, section 19.4, this report recommends that subsequent editions investigate whether comparable heritage conservation attention has been extended to the state's older, more established urban centres, including the historic quarters of Visakhapatnam, Vijayawada, and Rajahmundry, or whether heritage-conscious urban planning has remained concentrated primarily within the new capital city's own narrative framing.

## **11.6 Urban Poverty, Slum Rehabilitation and In-Situ Upgradation**

Andhra Pradesh's approach to urban poverty and slum rehabilitation centers on in-situ slum redevelopment, implemented through the Andhra Pradesh Township and Infrastructure Development Corporation, commonly known as APTIDCO, which uses land as a resource in combination with private sector participation to enable cross-subsidization, whereby commercial development components built alongside rehabilitated slum housing help finance the overall project's viability (AIM India, 2026). Under national PMAY-Urban guidelines, this in-situ slum redevelopment vertical provides a central assistance grant of Rs. 1 lakh per house for eligible slum dwellers, with states and cities empowered to provide additional Floor Area Ratio, Floor Space Index, or Transferable Development Rights incentives to private developers in order to make slum redevelopment projects financially viable, particularly in high-value urban locations such as Visakhapatnam where redevelopable slum land may carry substantial commercial value once formally redeveloped (AIM India, 2026; MyGov, 2026).

The state's slum classification framework distinguishes between tenable and untenable slum locations, with in-situ redevelopment pursued for viable locations where the existing site can support both rehabilitated housing and viable commercial cross-subsidization components, and relocation strategies pursued for slums situated on sites deemed unsuitable for continued residential development, whether due to environmental hazard exposure, infrastructure constraints, or competing land use priorities (AIM India, 2026). This tenable-untenable distinction reflects a broadly standard approach within Indian urban slum redevelopment policy, though the specific criteria and process by which the state classifies individual slum settlements into one category or the other was not documented in detail among the sources consulted for this chapter.

Nationally, an estimated 6 crore people live in informal settlements characterized in national housing policy literature as ranging from pavement dwellers to lower-middle-class families unable to afford formal housing, with India's overall urban housing shortage estimated at 1.87 crore units as of 2022, predominantly concentrated within the Economically Weaker Section and Low Income Group segments (Anantam IAS, 2026). Given Andhra Pradesh's above-average performance in PMAY-Urban implementation documented in section 11.3, including its third-place national ranking in the 2021 PMAY-U Awards Large State Category,

it is plausible that the state's urban poverty and slum rehabilitation programming has proceeded at a comparatively faster pace than the national average, though state-specific data quantifying the current scale of the state's remaining urban housing shortage or informal settlement population was not available among the sources consulted for this chapter.

The state's explicit articulation of a slum-free by 2047 target, discussed in section 11.3, situates urban poverty reduction squarely within the broader Vision 2047 planning framework examined in Chapter 21, and represents one of the more concrete, quantifiable long-term targets this report has encountered across the various sectoral long-term ambitions documented throughout this framework. Whether this target proves achievable within the stated timeframe will depend substantially on the pace of in-situ redevelopment project completion documented in this section, the continued availability of central PMAY-Urban assistance funding beyond the current mission's 2029 horizon discussed in section 11.3, and the state's broader urban economic growth trajectory, since sustained reduction in the flow of new rural-to-urban migrants settling in informal housing typically depends on formal urban housing supply keeping pace with, or exceeding, the rate of new urban population growth documented in section 11.1.

Drawing together the findings of this chapter as a whole, Andhra Pradesh's urban development trajectory presents perhaps the starkest illustration within this entire report of the tension between genuinely transformative ambition and uncertain execution that this report has traced across nearly every sector examined so far. The Amaravati capital city project, in particular, represents an ambition of a different order of magnitude than any other single infrastructure undertaking documented in this report, an attempt not merely to upgrade or expand existing urban infrastructure but to construct, largely from agricultural land, an entirely new city intended to eventually house 3.5 million people and generate 35 billion US dollars in economic output. The scale of this ambition, and the seriousness of the institutional and financial commitment behind it, evidenced by the Asian Development Bank and World Bank co-financing arrangement and the state's own Rs. 65,000 crore capital commitment documented in section 11.4, should not be understated. At the same time, the project's decade-long history of stalled momentum between its original 2014 conception and its April 2025 relaunch illustrates precisely the kind of execution risk this report has flagged repeatedly across fiscal management in Chapter 2, industrial investment in Chapter 4, and infrastructure delivery in Chapters 8 through 10.

For readers seeking to assess the overall credibility of Andhra Pradesh's Vision 2047 ambitions, examined comprehensively in Chapter 21, this chapter's findings suggest that Amaravati's trajectory over the next several years, whether the current relaunch momentum proves durable or whether the project experiences renewed delay, will likely serve as one of the single most informative indicators available, precisely because it is the state's most visible, most heavily resourced, and most institutionally significant infrastructure undertaking, one that intersects directly with the housing, transport, water, and industrial investment themes examined throughout this report's preceding chapters.

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## Chapter 12: Rural Development and Decentralised Governance

### 12.1 Panchayati Raj Institutions: Structure, Devolution and Capacity

Andhra Pradesh's rural governance operates through the standard three-tier Panchayati Raj structure established under the 73rd Constitutional Amendment Act of 1992, which added Part IX, Articles 243 to 243-O, to the Constitution, alongside the Eleventh Schedule listing 29 subjects that state governments may devolve to Panchayati Raj Institutions, spanning agriculture, minor irrigation, health, education, rural housing, and social welfare (PubAdmin Institute, 2026). As documented in Chapter 1, section 1.2, the state's three-tier system comprises 13,324 village panchayats at the base, an intermediate tier known distinctively in Andhra Pradesh as the Mandal Praja Parishad, rather than the Panchayat Samiti terminology used in most other Indian states, and a district-level Zila Parishad, with the Mandal Praja Parishad serving as the crucial coordinating link between village-level panchayats and the district tier, formulating block-level development plans and aggregating village-level needs into coordinated action (PubAdmin Institute, 2026).

The devolution of actual functions, functionaries, and finances, commonly summarized in Indian public administration literature as the "three Fs," to these Panchayati Raj Institutions is not automatic under the 73rd Amendment but rather discretionary, meaning the true operative scope of panchayat authority varies considerably from state to state depending on each state government's own devolution choices (PubAdmin Institute, 2026). Historical assessment of Andhra Pradesh's devolution performance, conducted by the Indian Institute of Public Administration on behalf of the Ministry of Panchayati Raj, classified the state as a "medium scoring" performer, with a composite score between 50 and 55 against a national average of 43.89, placing Andhra Pradesh alongside Himachal Pradesh, Madhya Pradesh, and Odisha in a tier below the very top devolution performers but comfortably ahead of a dozen states and union territories classified as "aspirational" on this metric (Decentralization Net, 2026).

This historical middling position has shifted markedly in more recent assessment cycles. Under the Centrally Sponsored, revamped Rashtriya Gram Swaraj Abhiyan devolution and capacity index, Andhra Pradesh's ranking rose from 24th to 1st position nationally over a 22-month reform period, a transformation state political documentation attributes to a systematic overhaul of the state's Panchayat Raj administration, during which 13,326 Gram Panchayats were made financially and administratively independent and Rs. 9,312 crore was deployed toward this reform agenda (Janasena Meesena, 2026). A more granular, and evidently more conservative, index specific to devolution and accountability sub-components places Andhra Pradesh 11th overall nationally, with a composite score of 54.43, while ranking considerably higher on specific sub-indicators, 5th nationally in Capacity Building, with a score of 76.69, and 6th nationally in Accountability, with a score of 60.49 (Janasena Meesena, 2026). This report flags the discrepancy between the headline rank-1 claim and the more granular rank-11 composite score explicitly, since both figures originate from the same source and the more granular breakdown likely reflects a fuller multi-indicator assessment methodology than whatever narrower index produced the rank-1 result, a distinction this

report recommends verifying directly against the official Ministry of Panchayati Raj devolution index publication in subsequent editions, ideally cross-checked against the independent academic devolution literature that historically classified the state as a middling performer rather than a national leader.

Notwithstanding this measurement ambiguity, the state's Panchayat Raj reform effort has received tangible external validation through national recognition. Andhra Pradesh secured five National Panchayat Awards in 2025, presented by the Union Ministry of Rural Development and Panchayati Raj on National Panchayati Raj Day, April 24, including a Women-Friendly Panchayat award worth Rs. 1 crore for Bokkasampalem in Tirupati district, a Good Governance award of equal value for Sringavaram in Anakapalli district, a second-place Poverty-Free Panchayat award worth Rs. 75 lakh for Chemmullapalli in YSR Kadapa district, a third-place Self-Sufficient Infrastructure award worth Rs. 50 lakh for Gundamala in Prakasam district, and a Block-Level award for Kuppam Mandal in Chittoor district, together totaling Rs. 4.75 crore in prize recognition (Janasena Meesena, 2026). The geographic spread of these five awards across Tirupati, Anakapalli, YSR Kadapa, Prakasam, and Chittoor districts, spanning both Coastal Andhra and Rayalaseema regions rather than clustering exclusively within the state's most economically dynamic districts, offers at least a modest counterpoint to the broader regional concentration pattern this report has documented repeatedly across infrastructure sectors in Chapters 8 through 11.

## **12.2 VB G-Ram-G (MGNREGA): Coverage, Wage Trends and Livelihood Outcomes**

A defining legislative development affecting Andhra Pradesh's rural employment guarantee architecture occurred in 2025, when Parliament repealed the two-decade-old Mahatma Gandhi National Rural Employment Guarantee Act and enacted the Viksit Bharat-Guarantee for Rozgar and Ajeevika Mission (Gramin) Act, commonly abbreviated VB-GRAMG, which replaced MGNREGA's statutory guarantee of 100 days of wage employment per rural household per year with an enhanced guarantee of 125 days, alongside a mandated shift to fortnightly, rather than the previous less frequent, wage disbursement cycles (Janasena Meesena, 2026; Wikipedia, 2026h). The new legislation restructured central-state funding responsibility to a 60:40 split, with a more favorable 90:10 split retained for northeastern and Himalayan states, and introduced two new institutional mechanisms, the Viksit Bharat National Rural Infrastructure Stack and Viksit Gram Panchayat Plans, both explicitly designed to integrate rural employment guarantee planning with the broader PM Gati Shakti national infrastructure planning platform (Janasena Meesena, 2026).

This legislative transition represents a substantial structural change to the rural employment guarantee framework this report's chapter template originally anticipated under the MGNREGA name, and this report addresses the transition directly rather than continuing to describe a programme that, as a matter of formal law, no longer exists in its original form. The enhanced 125-day guarantee, if fully implemented and funded, would represent a meaningful expansion of the rural safety net beyond the historical 100-day standard that had

applied since the original Act's 2006 implementation, though whether the enhanced guarantee will translate into a proportionate increase in actual person-days worked, as opposed to remaining a nominal statutory ceiling that many eligible households do not fully claim in practice, a pattern that characterized the original MGNREGA's 100-day guarantee in many states and years, is a question this report recommends monitoring closely in subsequent editions.

On wage rates specifically, Andhra Pradesh recorded one of the lowest MGNREGA wage increases of any Indian state for the 2025-26 financial year, with the state's daily wage rate rising by just Rs. 7, placing it alongside Arunachal Pradesh, Assam, Nagaland, and Telangana as the states with the smallest nominal wage adjustments, notably lower than Haryana's revised rate of Rs. 400 per day, the highest nationally, and even below Chhattisgarh's more modest uniform rate of Rs. 261 per day (Galaxy Classes, 2026; HR Informative, 2026). Given that MGNREGA and its VB-GRAMG successor wages are indexed to the Consumer Price Index for Agricultural Labourers, a persistently small nominal wage increase in a given state typically reflects either a comparatively modest cost-of-living increase recorded for that state's agricultural labour price index over the preceding year, or a wage rate that was already comparatively high relative to other states entering the revision cycle, and this report was unable to determine definitively which of these two explanations better accounts for Andhra Pradesh's comparatively small increase given the sources available for this chapter.

At the national level, several structural features of the rural employment guarantee programme carry direct relevance to Andhra Pradesh's own implementation. Nationally, women's participation in the scheme rose from 48 percent in 2014 to 58 percent in 2025, exceeding the statutory minimum one-third women's participation requirement by a considerable margin, and aggregate person-days generated nationally rose from 265.4 crore in fiscal year 2019-20 to 309.2 crore in fiscal year 2023-24, while the share of individual beneficiary works undertaken on land, as opposed to shared community assets, rose dramatically from 9.6 percent in fiscal year 2014 to 73.3 percent in fiscal year 2024, reflecting a substantial national shift toward asset creation directly benefiting individual landholding households (UnderStand UPSC, 2026; Drishti IAS, 2026b).

Andhra Pradesh's own implementation of the rural employment guarantee framework has historically been documented through numerous village-level case studies illustrating the programme's practical application within the state's specific ecological and social context. In the state's northern districts, where extreme summer temperatures and scarcity of irrigation tank water present particular hardship, avenue plantation combining teak and fruit-bearing trees has emerged as a preferred work category, generating both shade infrastructure and ongoing fruit revenue for participating households (MGNREGA Success, 2026). In Thadakanapalli village, near Kurnool town, Self Help Group members engaged in animal rearing successfully petitioned their Gram Panchayat to expand their livelihood activities, illustrating the practical convergence between the Self Help Group architecture discussed in section 12.4 and the employment guarantee scheme's community-level implementation infrastructure (MGNREGA Success, 2026). In Padheru, an Integrated Tribal Development

Agency area spanning 11 mandals in Visakhapatnam district, socio-economic conditions and livelihood opportunities have historically remained particularly poor, with agricultural landholdings frequently situated on uneven forest terrain that limits productive use, illustrating the continued relevance of the employment guarantee scheme's land leveling and forestry-linked work categories specifically within the state's tribal districts discussed throughout Chapter 7, section 7.2 (MGNREGA Success, 2026).

Andhra Pradesh's implementation has also been documented in academic literature as an early adopter of technology-enabled measurement and verification systems, including the Electronic Muster Measurement System, under which Village Assistants record daily measurements transmitted via mobile phone, Technical Assistants conduct weekly verification measurements, and Engineering Consultants perform check measurements, with a Mandal Program Officer serving as the final verification authority, a layered technological verification architecture the state adopted specifically to address minimum wage compliance concerns identified through earlier work-time-motion studies commissioned by the state government (International Crops Research Institute for the Semi-Arid Tropics, 2026). Comparative field research examining implementation across Andhra Pradesh, Rajasthan, and Bihar found that Andhra Pradesh and Rajasthan both maintained state-sanctioned weekly rest days at worksites, and that Andhra Pradesh workers, unlike their Bihar counterparts, were generally provided with work tools by the implementing authority, though not always in adequate numbers, with non-supply compensated through an additional Rs. 2 per person-day allowance (International Crops Research Institute for the Semi-Arid Tropics, 2026).

Academic research examining the relationship between political dynamics and MGNREGA implementation in Andhra Pradesh specifically has found a more nuanced picture than a straightforward narrative of political capture might suggest, with one study concluding that while politics may influence programme expenditure allocation in some localities to a limited extent, this pattern does not hold universally and does not undermine the scheme's effective targeting and overall implementation quality across the state as a whole (Wikipedia, 2026h). This finding is analytically significant within the broader context of this report's recurring concern with the gap between programme design and effective implementation, since it suggests that Andhra Pradesh's employment guarantee implementation, notwithstanding the kind of localized political influence that has been documented in numerous Indian states' public works programmes, has generally avoided the more severe capture or diversion patterns that have undermined programme effectiveness elsewhere in the country, a comparatively favorable finding relative to the execution gaps this report has documented in other sectors, including the welfare scheme underspending discussed in Chapter 7, section 7.9, and the capital expenditure shortfalls discussed in Chapter 2, section 2.3.

The transition from MGNREGA to VB-GRAMG also carries direct implications for the technology-enabled verification infrastructure documented above, since the new Act's integration requirement with the Viksit Bharat National Rural Infrastructure Stack suggests a further evolution toward centralized digital infrastructure planning that builds upon, rather than replaces, the state-level technological innovations Andhra Pradesh had already

pioneered under the original MGNREGA framework. Whether Andhra Pradesh's existing Electronic Muster Measurement System infrastructure will be integrated into, or superseded by, this new national digital infrastructure stack represents a specific implementation question this report recommends monitoring closely in subsequent editions, given the state's demonstrated institutional investment in its own home-grown verification technology architecture over the preceding decade.

### **12.3 Rural Housing: PMAY-Gramin and State Schemes**

Pradhan Mantri Awas Yojana-Gramin, the national rural housing scheme complementing the urban PMAY framework discussed in Chapter 11, section 11.3, has continued to make substantial progress toward its housing construction targets, with 39,82,764 houses sanctioned nationally against a total target of 84,37,139 houses as of February 2, 2025, and Andhra Pradesh named among the states receiving allocation under an additional 46,56,765 house target distributed across nine states in December 2024 and January 2025 (Press Information Bureau, 2026d). The scheme's implementation architecture emphasizes financial transparency and anti-fraud safeguards, with assistance disbursed directly into beneficiary bank or post office accounts through the Aadhaar Payment Bridge System or Direct Benefit Transfer mechanism, construction-stage-linked installment payments verified through geo-referenced, time-stamped photographs at each fixed construction stage, and mandatory annual social audits conducted in every Gram Panchayat (Press Information Bureau, 2026d).

This PMAY-Gramin financial safeguard architecture, and its emphasis on direct account transfer combined with photographic and geo-tagged verification, mirrors closely the digital delivery and verification mechanisms this report has documented across multiple other welfare domains, including the NTR Bharosa Pension Scheme discussed in Chapter 7, section 7.6, and the Talliki Vandanam education scheme discussed in Chapter 5, section 5.1, reinforcing this report's earlier observation in Chapter 7, section 7.9, that Andhra Pradesh's broader welfare delivery philosophy consistently favors Aadhaar-linked direct transfer mechanisms with built-in verification safeguards across virtually every welfare domain examined throughout this report, whether centrally or state administered.

Complementing PMAY-Gramin, the state's own housing schemes extend rural coverage through mechanisms discussed in relation to the state's broader urban housing architecture in Chapter 11, section 11.3, including the NTR Housing Scheme and AP YSR Jagananna Colonies programme, both of which maintain parallel rural components alongside their urban implementation, coordinated through the state's housing portal infrastructure. Comprehensive, current, Andhra Pradesh-specific data on the state's precise PMAY-Gramin sanctioned house count, completion rate, and state-specific top-up assistance beyond the central per-unit grant was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the state's Rural Development Department's own PMAY-Gramin implementation reporting.

The rural housing programme's implementation architecture also intersects meaningfully with the Panchayati Raj governance reforms documented in section 12.1, since Gram Panchayats serve as the frontline administrative unit responsible for beneficiary identification, construction progress verification, and social audit conduct under PMAY-Gramin guidelines. A Gram Panchayat system that has genuinely achieved greater financial and administrative independence, as the state's Panchayat Raj reform documentation claims, would in principle be better positioned to exercise more effective oversight of rural housing construction quality and beneficiary targeting accuracy than a system still heavily dependent on higher administrative tiers for basic operational decisions. Whether this theoretical connection between panchayat autonomy and improved housing scheme implementation quality has manifested in practice within Andhra Pradesh specifically, through metrics such as reduced construction delay, improved beneficiary satisfaction, or lower rates of documented irregularity, was not verifiable from the sources consulted for this chapter, though national PMAY-Gramin reporting does track state-wise complaint volumes related to fund irregularities and misappropriation, a data source this report recommends consulting directly in subsequent editions to assess Andhra Pradesh's specific standing on this dimension relative to other states.

Beyond new construction, rural housing policy in India increasingly emphasizes housing quality and resilience alongside basic unit provision, reflecting lessons learned from the earlier Indira Awaas Yojana programme that preceded PMAY-Gramin, under which unit assistance levels were often too low to support genuinely durable pucca construction and beneficiary selection processes were criticized as insufficiently transparent. PMAY-Gramin's reliance on the Socio-Economic and Caste Census 2011 as its primary beneficiary identification database, discussed in the national housing policy literature reviewed for Chapter 11, section 11.6, represents a deliberate design choice intended to replace the more discretionary, patronage-vulnerable beneficiary selection processes that characterized earlier rural housing schemes with a more standardized, data-driven approach, though the continued reliance on 2011 data, now well over a decade old, raises the same census currency concerns this report has flagged repeatedly throughout its demographic analysis in Chapter 1.

## **12.4 Livelihood Promotion: SHGs, Cooperatives and Rural Enterprise**

Self Help Groups represent one of the most deeply embedded institutional features of Andhra Pradesh's rural livelihood architecture, with the state's Self Help Group movement, historically supported through what is commonly referred to as the DWACRA framework, referenced already in Chapter 10, section 10.1, in the context of proposed water quality testing roles, forming a dense network of women's community-based savings and livelihood groups extending into virtually every village across the state. The village-level case study documented in section 12.2, in which Self Help Group members in Thadakanapalli village near Kurnool successfully petitioned their Gram Panchayat to expand from animal rearing into broader farming-linked livelihood activities, illustrates the practical institutional linkage between Self Help Group organizational capacity and formal Panchayati Raj governance

structures that characterizes the state's rural livelihood promotion model more broadly (MGNREGA Success, 2026).

At the national level, this Self Help Group-based livelihood promotion architecture operates under the Deendayal Antyodaya Yojana National Rural Livelihoods Mission, through which all eligible rural poor households are identified and mobilized into Self Help Groups, with complementary programmes including the Lakhpati Didi initiative, aimed at helping Self Help Group members achieve annual household incomes exceeding Rs. 1 lakh, and the Deen Dayal Upadhyaya Grameen Kaushalya Yojana, focused on rural youth skill development and placement (Drishti IAS, 2026b). Given Andhra Pradesh's historically pioneering role in Self Help Group-based rural livelihood promotion, a model the state helped popularize nationally well before the National Rural Livelihoods Mission's own national rollout, it is reasonable to expect the state's Self Help Group network has achieved comparatively mature institutional depth relative to states where the model has been introduced more recently, though comprehensive, current, quantitative data on the specific number of active Self Help Groups, their aggregate savings and credit linkage volume, and their measured contribution to household income specifically within Andhra Pradesh was not available among the sources consulted for this chapter.

This gap in current, state-specific Self Help Group performance data is particularly notable given Andhra Pradesh's historical significance as one of the original testing grounds for the Self Help Group model within India, predating the model's subsequent adoption as a national rural livelihoods strategy by well over a decade. The state's early Self Help Group programming, historically branded under the DWACRA acronym referenced in Chapter 10, section 10.1, and subsequently expanded through successive state government rebranding efforts, established many of the institutional design features, including group-based savings, internal lending, and graduated bank credit linkage, that later informed the National Rural Livelihoods Mission's own national design template. Given this pioneering role, the absence of readily available current performance data specific to Andhra Pradesh's Self Help Group network represents a somewhat more consequential gap than an equivalent data absence would represent for a state with a shorter institutional history in this domain, since Andhra Pradesh's own experience arguably carries particular value as a long-run natural experiment in Self Help Group-based rural livelihood promotion sustained over multiple decades rather than a single funding cycle, one that development economists and rural livelihoods researchers both within and outside India have drawn upon extensively when designing subsequent Self Help Group programming for other states and, indeed, other countries.

The intersection between Self Help Groups and formal Panchayati Raj governance, illustrated by the Thadakanapalli case documented above, also connects to the broader gender equity themes examined in Chapter 7, section 7.4, since Self Help Groups in Andhra Pradesh, as in most Indian states, are overwhelmingly composed of women members, meaning that the institutional channel through which many rural women interact with formal village governance structures runs substantially through Self Help Group representation, including the Village Organisation structures referenced in the technical documentation on Electronic

Muster Measurement System implementation discussed in section 12.2, where a Vice President of a village-level Self Help Group federation was noted to play a specific verification role in MGNREGA wage measurement processes. This layering of women's Self Help Group leadership roles onto formal government administrative functions represents a further concrete mechanism, beyond the mandated one-third women's representation in Panchayati Raj Institutions discussed in Chapter 7, section 7.4, through which rural women in the state have gained functional influence over local governance and resource allocation decisions.

The state's cooperative sector, encompassing agricultural credit cooperatives, dairy cooperatives, and marketing cooperatives, represents a further institutional pillar of rural livelihood promotion that intersects with the agricultural credit and insurance themes examined in Chapter 18, section 18.8, and the dairy and livestock economic contribution documented in Chapter 3, section 3.3, and Chapter 18, section 18.5. Comprehensive, current, state-specific data on cooperative sector membership, credit disbursement volume, and financial health was similarly not available among the sources consulted for this chapter, representing a further documented gap this report recommends addressing in subsequent editions through direct reference to the state's Cooperation Department reporting.

## **12.5 Rural Infrastructure: PMGSY, Connectivity and Market Linkages**

Rural infrastructure connectivity in Andhra Pradesh, examined in detail through the Pradhan Mantri Gram Sadak Yojana framework in Chapter 8, section 8.1, forms a foundational precondition for the effective functioning of the livelihood promotion, employment guarantee, and rural housing programmes documented throughout this chapter, since Self Help Group market access, MGNREGA and VB-GRAMG worksite material transport, and PMAY-Gramin construction material delivery all depend fundamentally on adequate last-mile road connectivity of the kind discussed in Chapter 8. Rather than repeating that infrastructure-specific analysis in full here, this section focuses specifically on the market linkage dimension of rural infrastructure, namely the extent to which rural connectivity investment translates into improved agricultural output market access and price realization for the state's rural producers.

The Gram Panchayat Development Plan framework, discussed further in section 12.6, explicitly incorporates rural infrastructure planning as one of its core components, drawing on convergent funding from the rural employment guarantee scheme, PMAY-Gramin, and Finance Commission grants to support locally prioritized infrastructure investment beyond what the centrally directed PMGSY road construction programme alone provides (IMPRI, 2026). This convergence-based planning approach, combining multiple centrally sponsored scheme funding streams within a single locally determined annual plan, represents a meaningfully different planning philosophy than a purely top-down, centrally sequenced infrastructure rollout, since it allows individual Gram Panchayats, at least in principle, to prioritize the specific combination of road, water, and other infrastructure investments most

relevant to their own local economic circumstances, rather than receiving a uniform infrastructure package determined entirely by state or central planners.

Market linkage infrastructure specifically, as distinct from basic road connectivity, encompasses rural haats, agricultural produce collection centres, cold storage facilities, and the last-mile logistics infrastructure connecting individual farm gates to the broader agricultural marketing system examined in Chapter 18, section 18.3. The effectiveness of rural road connectivity investment documented in Chapter 8, section 8.1, in translating into genuinely improved farmer market access and price realization depends substantially on the presence of this complementary market linkage infrastructure, since a well-paved rural road that terminates without adequate storage, aggregation, or market access infrastructure at its endpoint delivers only partial economic benefit relative to a fully integrated connectivity and market access system. Comprehensive, current, state-specific data on the extent to which Andhra Pradesh's substantial rural road investment, documented in Chapter 8, has been complemented by equivalent investment in rural market infrastructure specifically was not available among the sources consulted for this chapter, representing a further documented gap this report recommends addressing in subsequent editions, ideally through direct reference to the state's Marketing Department and Agricultural Produce Market Committee infrastructure reporting, examined further in Chapter 18, section 18.3.

## **12.6 Community-Based Development Institutions and Participatory Planning**

The Gram Panchayat Development Plan, mandated under Article 243G of the Constitution and requiring every Gram Sabha to formulate a comprehensive annual action plan addressing the 29 subjects listed in the Eleventh Schedule, represents the central participatory planning mechanism through which Andhra Pradesh's village-level rural development priorities are formally established (IMPRI, 2026). This planning framework operates on an annual cycle incorporating local data collection, identification of development gaps, and creation of both annual action plans and longer-term development visions, with funding drawn from a consolidated Resource Envelope merging rural employment guarantee scheme funds, PMAY-Gramin allocations, Finance Commission grants from both the central and state governments, and each Gram Panchayat's own source revenue (IMPRI, 2026).

Digital infrastructure supporting this participatory planning process includes the eGramSwaraj platform for plan preparation and fund tracking, and the Public Financial Management System for real-time expenditure monitoring, both intended to enhance transparency and enable more effective oversight of how convergent scheme funding is actually deployed at the village level (IMPRI, 2026). National assessment of the Gram Panchayat Development Plan framework has found that its participatory nature has meaningfully widened the base of local decision-making participation, particularly benefiting women and marginalized community representation in village-level planning discussions, though the same assessment cautions that transformative outcomes from this participatory framework depend fundamentally on genuine devolution of the "three Fs," functions, functionaries, and finances, discussed in section 12.1, being paired with the participatory

planning process itself, since a well-designed participatory planning exercise cannot substitute for actual administrative and financial authority at the local level (IMPRI, 2026).

This caveat connects directly to this report's broader analytical framework developed across the preceding chapters. Just as this report has repeatedly found genuine institutional sophistication coexisting with underlying execution and capacity gaps across health in Chapter 6, energy in Chapter 9, and water infrastructure in Chapter 10, the Gram Panchayat Development Plan framework's own national assessment explicitly acknowledges that its impact "has varied across states due to differences in administrative capacity, technical expertise and resource availability," a finding directly relevant to interpreting Andhra Pradesh's own recent, and evidently substantial, Panchayat Raj reform effort documented in section 12.1 (IMPRI, 2026). The state's move from a historically middling devolution ranking to a claimed top national position over a 22-month reform period, while representing a genuinely significant institutional achievement if the underlying methodology is sound, should be read alongside the broader national caution that devolution rankings alone do not guarantee that genuine functional, financial, and personnel authority has been transferred to the village level in practice, a distinction this report recommends verifying through direct examination of specific Gram Panchayat own-source revenue growth and functional authority exercise in subsequent editions, rather than relying on ranking improvements alone as evidence of substantive decentralization.

Taken together, the findings of this chapter position Andhra Pradesh as a state that has pursued an unusually active and well-documented rural governance reform agenda over the recent reform period, evidenced by the scale of the Gram Panchayat independence reform, the national panchayat award recognition, and the state's historically pioneering role in Self Help Group-based livelihood promotion. At the same time, consistent with the pattern this report has traced across nearly every preceding chapter, the precise depth and durability of this reform agenda, measured through genuine functional and financial devolution rather than composite index rankings alone, remains an area requiring closer verification than the sources available for this chapter permit, and this report recommends this verification be a specific priority for subsequent editions of this framework.

This chapter's findings also carry direct relevance for the intra-state regional disparity theme this report has traced consistently since Chapter 1, section 1.7. The geographic distribution of the state's 2025 National Panchayat Awards, spanning Tirupati, Anakapalli, YSR Kadapa, Prakasam, and Chittoor districts, documented in section 12.1, suggests that rural governance excellence, at least as recognized through this particular national award mechanism, is not confined exclusively to the state's Coastal Andhra growth corridor districts but extends into Rayalaseema districts as well. This finding offers a genuinely encouraging counterpoint to the pattern of infrastructure and economic growth concentration this report has documented repeatedly across transport, energy, water, and urban development in the preceding chapters, suggesting that governance quality and institutional reform capacity, unlike physical infrastructure investment, may be somewhat more evenly distributed across the state's three constituent regions, even where economic outcomes themselves remain unevenly distributed.

Whether this governance-level convergence across regions eventually translates into more evenly distributed economic outcomes as well, or whether governance quality and economic outcome remain structurally decoupled within the state's development trajectory, represents a question of considerable significance for the state's Vision 2047 ambitions examined in Chapter 21, and one this report recommends tracking closely as both the state's rural governance reforms and its broader regional development strategy continue to unfold over the remainder of this decade.

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## Chapter 13: Environment and Natural Resource Governance

### 13.1 Forest Cover, Biodiversity and Wildlife Conservation

Andhra Pradesh is recognized as one of India's biodiversity-rich states, its natural vegetation and wildlife shaped substantially by the interplay of climate, relief, and soil across the Deccan Plateau, Central Plateau, Eastern Highland, and East Coastal Plains biotic provinces that together define the state's ecological geography (Wikipedia, 2026i). As per the India State of Forest Report 2019 assessment, Andhra Pradesh's forest cover stood at 29,137.40 square kilometers, equivalent to 17.88 percent of the state's total geographical area, based on interpretation of satellite data from November 2017 to October 2018, while the state's Recorded Forest Area, a distinct administrative category encompassing land formally notified as forest regardless of actual current tree cover, totaled 37,258 square kilometers, ranking the state 8th nationally on this measure (Forest Survey of India, 2026). This recorded forest area breaks down into 31,959 square kilometers of Reserved Forest, 5,069 square kilometers of Protected Forest, and 230 square kilometers of Unclassed Forest, corresponding to 85.78 percent, 13.60 percent, and 0.62 percent of the total recorded forest area respectively (Forest Survey of India, 2026).

Encouragingly, the state's forest cover increased by 990.40 square kilometers relative to the previous ISFR 2017 assessment, an increase state forest officials attributed primarily to plantation and conservation activities, with canopy density breaking down into 1,994.22 square kilometers of Very Dense Forest, 13,938.36 square kilometers of Moderately Dense Forest, and 13,204.82 square kilometers of Open Forest (Forest Survey of India, 2026). More recent India State of Forest Report 2023 data specifically registered Andhra Pradesh among the states recording an increase in mangrove cover, at 13.01 square kilometers, alongside Maharashtra, in contrast to Gujarat, which recorded the largest national mangrove decline over the same assessment period (SPM IAS Academy, 2026). The state's mangrove ecosystems, concentrated substantially around the Godavari and Krishna river estuaries discussed in Chapter 1, section 1.1, cover approximately 3,188.74 hectares according to the state's own Forest Department reporting, a comparatively modest but ecologically significant coastal ecosystem that provides both biodiversity habitat and natural coastal protection functions relevant to the climate vulnerability themes examined in Chapter 14 (AP Forest Department, 2026).

The state's forest biodiversity assessment, conducted as part of a national forest type mapping exercise between September 2018 and May 2019, documented 242 plant species, 64 shrub species, and 58 herb species across the state's varied forest types, which are classified under the Champion and Seth Classification of Forest Types into five broad type groups further divided into 20 distinct forest types, predominantly dry deciduous vegetation featuring Teak alongside species of the Terminalia, Dalbergia, Pterocarpus, and Anogeissus genera (Forest Survey of India, 2026; Wikipedia, 2026i). Red Sanders, scientifically *Pterocarpus santalinus*, endemic specifically to Andhra Pradesh and highly valued internationally for its distinctive red coloration and grain pattern, represents a species of particular conservation and economic

significance, one whose illegal harvesting and smuggling has historically posed a persistent enforcement challenge for the state's forest protection apparatus (Andhra Pradesh Forest Department, 2026).

The state's network of protected areas spans a diverse set of ecosystems and conservation priorities. Papikonda Wildlife Sanctuary, spanning 591 square kilometers across East and West Godavari districts, hosts tigers, leopards, gaur, and elephants among a rich mammalian assemblage, while Coringa Wildlife Sanctuary, covering 235.70 square kilometers in East Godavari district, protects the rare smooth Indian otter, fishing cat, and estuarine crocodile within its mangrove ecosystem (Wikipedia, 2026i). Sri Penusila Narasimha Wildlife Sanctuary in Nellore district and Gundla Brahmeswara Wildlife Sanctuary spanning Kurnool and Prakasam districts, the latter preserving the last surviving pristine forests of the ecologically significant Nallamalai tract with its rich ethnobotanical plant diversity, represent the state's major Rayalaseema-region protected areas, while Koundinya Wildlife Sanctuary in Chittoor district hosts the state's only Asian elephant reserve (Wikipedia, 2026i). Among the state's wetland conservation sites, Atapaka Bird Sanctuary, also known as Kolleru Wildlife Sanctuary, protects the largest freshwater lake in the region across 308.55 square kilometers as a designated Ramsar Convention wetland site, while Pulicat Lake Bird Sanctuary, India's second largest brackish-water ecosystem, spans 481 square kilometers jointly managed across the Andhra Pradesh and Tamil Nadu borders, with 327.33 square kilometers under Andhra Pradesh Forest Department jurisdiction and a 108 square kilometer core national park area (Wikipedia, 2026i). Telineelapuram and Telukunchi Bird Sanctuaries in Srikakulam district host a remarkable annual migration of over 3,000 pelicans and painted storks arriving from Siberia between September and March, illustrating the state's significance within broader trans-continental migratory bird conservation networks (Wikipedia, 2026i).

Forest fire risk represents a documented and non-trivial management challenge for the state's forest resources, with departmental categorization finding 1,148 square kilometers, or 4.26 percent of total forest cover, classified as extremely fire-prone, a further 3,785 square kilometers, or 13 percent, as very highly fire-prone, and 5,017 square kilometers, or 15 percent, as highly fire-prone, together indicating that close to a third of the state's forest cover carries elevated fire vulnerability (The Hans India, 2026c). National reporting on the 2024 fire season specifically identified Andhra Pradesh, alongside Karnataka, Telangana, and Madhya Pradesh, among the sub-regions recording large numbers of forest fires resulting in significant losses of both life and livelihood, underscoring that this fire risk classification reflects a genuine and materially significant operational challenge rather than a purely theoretical hazard category (Climate Scorecard, 2026). The state's forests also represent a meaningful carbon sequestration asset, with total carbon stock, including Trees Outside Forest patches exceeding one hectare in size, estimated at 219.53 million tonnes, equivalent to 804.94 million tonnes of carbon dioxide equivalent, representing 3.08 percent of India's total forest carbon stock (Forest Survey of India, 2026).

The state's response to this documented fire risk has increasingly incorporated satellite-based remote sensing and geographic information system tools, part of a broader national

deployment of early warning systems for fire-prone areas, real-time fire monitoring, and post-event affected-area estimation, technologies that connect the state's forest management practices to the broader digital governance and geospatial systems themes examined in Chapter 16, section 16.6 (Climate Scorecard, 2026). India's Nationally Determined Contributions under the Paris Agreement framework include a national target of creating an additional carbon sink of 2.5 to 3 billion tonnes by 2030 through expanded forest and tree cover, a target to which Andhra Pradesh's own forest cover expansion of 990.40 square kilometers since the ISFR 2017 assessment, documented above, makes a meaningful, if modest, contribution at the national level (Climate Scorecard, 2026). Whether the state's forest fire vulnerability, with close to a third of forest cover classified as highly to extremely fire-prone, poses a material risk to the durability of this carbon sequestration gain over time, given that severe fire events can rapidly reverse decades of accumulated forest carbon storage, represents an important consideration this report recommends weighing alongside the more straightforwardly positive headline forest cover expansion figures, particularly as the climate vulnerability themes examined in Chapter 14 suggest fire risk may intensify under projected warming and rainfall variability scenarios.

The Andhra Pradesh State Biodiversity Board, a statutory body established to maintain ecological balance across the state's ecosystems, landscapes, and heritage sites, provides the institutional foundation for biodiversity conservation policy beyond the protected area network documented above, and the state's rare and endemic flora, including *Cycas beddomei*, *Terminalia pallida*, *Syzygium alternifolium*, and the Red Sanders species discussed above, alongside endemic fauna such as the Jerdon's courser, golden gecko, and grey slender loris, underscore the genuinely distinctive conservation value the state's ecosystems hold within a broader South Asian biodiversity context (Wikipedia, 2026j). The Jerdon's courser in particular, a bird species long feared extinct before its rediscovery in the state's Eastern Ghats in the 1980s, represents one of the more internationally significant conservation stories associated with Andhra Pradesh's forest ecosystems, and its continued survival depends substantially on the integrity of the specific scrub forest habitat within the state's protected area network.

### **13.2 Land Use Change, Soil Degradation and Land Resource Management**

Land use change in Andhra Pradesh reflects the cumulative effect of several forces documented throughout this report, including the substantial land acquisition undertaken for the Amaravati capital city project through its Land Pooling Scheme, discussed in Chapter 11, section 11.4, ongoing agricultural expansion and intensification documented in Chapter 3, section 3.3, and continued industrial land development through Special Economic Zones and industrial parks documented in Chapter 4, section 4.4. Nationally, forest land diversion for non-forestry purposes under the Forest Conservation Act of 1980 remains a specifically tracked category of land use change, with Andhra Pradesh recording a diversion of 3,474.57 hectares of forest land for non-forestry purposes between January 1, 2015, and February 5, 2019, a figure that, while representing a comparatively small share of the state's overall 37,258 square kilometer recorded forest area, nonetheless illustrates the ongoing tension

between conservation objectives and development pressure that recurs across virtually every infrastructure and industrial theme examined throughout this report (Forest Survey of India, 2026).

Comprehensive, current, quantitative data specifically addressing soil degradation extent, soil erosion rates, or land resource classification and management programming within Andhra Pradesh was not available among the sources consulted for this chapter, representing a significant documented gap given the topic's evident relevance to the state's agricultural productivity themes examined in Chapter 3, section 3.3, and Chapter 18. Given the marked contrast between Coastal Andhra's fertile, well-irrigated deltaic soils and the drier, more erosion-prone terrain of the Rayalaseema interior, discussed in Chapter 1, section 1.1, and Chapter 10, section 10.2, it is plausible that soil degradation risk within the state follows a similar regional gradient to the water resource and irrigation disparities already documented in Chapter 10, with Rayalaseema's comparatively sparse vegetation cover and higher rainfall variability likely exposing the region to greater erosion risk than the more stable, canal-irrigated coastal plains. This report recommends that subsequent editions pursue direct reference to the state's Watershed Development Department and the National Bureau of Soil Survey and Land Use Planning's state-specific soil degradation mapping to substantiate or refine this inferred regional pattern.

Land use change pressures in the state are also shaped by the Amaravati capital city project's distinctive land acquisition model, discussed in Chapter 11, section 11.4, under which the state pursued a Land Pooling Scheme rather than conventional compulsory land acquisition, requiring the state to honor land return obligations to farmers who contributed land to the capital city project, an obligation specifically referenced in the Asian Development Bank's financing rationale for the project discussed in Chapter 11, section 11.4. This land pooling approach, while designed to secure greater farmer buy-in than conventional acquisition, nonetheless represents a substantial conversion of agricultural land to urban use across the project's 217 square kilometer master plan area, a conversion of a scale that, while modest relative to the state's total agricultural land base, illustrates the kind of land use trade-off between urban expansion and agricultural land preservation that recurs as a tension throughout rapidly developing Indian states more broadly.

The cumulative effect of forest land diversion documented above, agricultural-to-urban land conversion associated with Amaravati's development, and continued industrial land development through the Special Economic Zones and industrial parks discussed in Chapter 4, section 4.4, together represent a meaningful, if individually modest, ongoing transformation of the state's land use pattern. Whether this transformation is proceeding within a coherent, spatially explicit state land use planning framework that balances these competing demands deliberately, or whether it instead reflects the aggregate, largely uncoordinated outcome of separate sectoral decisions made by different state departments and development authorities, is a question this report was unable to answer definitively given the absence of a consolidated state land use master plan document among the sources consulted for this chapter, and this report recommends direct investigation of the state's land

use planning architecture, if one exists in consolidated form, as a priority for subsequent editions.

### **13.3 Water Bodies, Wetlands and River Ecosystem Health**

The state's river ecosystems, anchored by the Godavari and Krishna systems discussed extensively throughout this report, particularly in Chapter 1, section 1.1, and Chapter 10, sections 10.1 and 10.2, support not only the substantial irrigation and drinking water infrastructure examined in those chapters but also significant aquatic biodiversity, with the Godavari and Krishna estuaries supporting rich mangrove forest ecosystems, as documented in section 13.1, that serve simultaneously as biodiversity habitat, carbon sink, and natural coastal protection infrastructure (Forest Survey of India, 2026). The wetland conservation sites documented in section 13.1, including the Ramsar-designated Kolleru wetland and the internationally significant Pulicat Lake brackish-water ecosystem, represent the state's most ecologically significant standing water bodies beyond the flowing river systems themselves.

As documented in Chapter 10, section 10.2, Andhra Pradesh's water bodies serve genuinely diversified functions beyond conservation value alone, with Vizianagaram, Srikakulam, and Visakhapatnam districts ranking among the nation's top five districts for water body utilization in irrigation, and West Godavari district ranking among the top five nationally for water body utilization in pisciculture, findings that illustrate how the state's wetland and water body resource base functions simultaneously as ecological habitat and as productive economic infrastructure, a dual function that necessarily requires careful management to balance conservation objectives against the economic utilization documented in Chapter 10 (Journal of Water and Climate Change, 2025). The health of the state's river ecosystems is also directly relevant to the inter-state water sharing disputes over the Godavari and Krishna rivers referenced in Chapter 1, section 1.1, since river ecosystem health depends fundamentally on maintaining adequate environmental flow levels even as upstream and downstream states, including Andhra Pradesh's neighbors Telangana, Karnataka, and Maharashtra, continue to expand their own irrigation and drinking water withdrawal from the same shared river systems.

Comprehensive, current, quantitative data on river water quality monitoring results, environmental flow compliance, or freshwater biodiversity population trends specific to Andhra Pradesh's river systems was not available among the sources consulted for this chapter, representing a further documented gap this report recommends addressing in subsequent editions through direct reference to the Andhra Pradesh Pollution Control Board's water quality monitoring network data, discussed further in section 13.5, and the Central Water Commission's river basin health assessments.

The intersection between river ecosystem health and the broader inter-state water sharing tensions referenced above deserves further elaboration given its long-term significance for the state's water security strategy discussed throughout Chapter 10. The Krishna and Godavari rivers both originate well outside Andhra Pradesh's own borders, flowing through Maharashtra and Karnataka in the case of the Krishna, and through Maharashtra, Telangana,

and Chhattisgarh in the case of the Godavari, before reaching Andhra Pradesh's own territory, meaning that river ecosystem health and water availability within the state depend substantially on water management decisions made by upstream states over which Andhra Pradesh has only partial influence, typically exercised through inter-state river water tribunals and negotiated sharing agreements. This upstream dependency represents a structural vulnerability that recurs across both the ecological health themes examined in this section and the water security themes examined in Chapter 10, section 10.2, since any degradation in upstream water quality, whether from industrial pollution, agricultural runoff, or reduced environmental flow release, would directly affect the ecological health and productive utility of the same river systems once they reach Andhra Pradesh's own territory. This report recommends that subsequent editions incorporate more detailed assessment of inter-state river water quality coordination mechanisms, given their evident relevance to both the ecological and economic dimensions of the state's water resource management examined across this chapter and Chapter 10.

### **13.4 Mining and Mineral Resource Governance**

As documented in Chapter 3, section 3.4, Andhra Pradesh possesses a substantial mineral resource base, accounting for approximately 93 percent of India's total barytes production alongside significant deposits of chrysotile, mica, asbestos, and limestone, and hosting further reserves of copper ore, manganese, coal, natural gas, diamond, gold-bearing beach sand, bauxite, ball clay, fire clay, and dolomite (Wikipedia, 2026b). Regulatory oversight of mining operations within the state operates through a dual consent framework administered by the Andhra Pradesh Pollution Control Board, requiring separate Consent for Establishment and Consent for Operation approvals under both the Water (Prevention and Control of Pollution) Act of 1974 and the Air (Prevention and Control of Pollution) Act of 1981, with individual mining consent orders specifying detailed environmental safeguard conditions including dust suppression measures such as water-jacketed drilling and local exhaust ventilation systems, garland drains and siltation ponds to control silt and sediment runoff from mining pits and dump yards, mandatory greenbelt development around mine boundaries, and slope stabilization through vegetation planting on worked-out mine faces (Andhra Pradesh Pollution Control Board, 2026a, 2026b).

The Board's mining consent documentation illustrates the granular, site-specific nature of the state's mineral resource governance framework, with individual consent orders addressing location-specific environmental sensitivities, such as one metal mining operation in East Godavari district whose blasting operations, situated approximately 160 meters from the Polavaram Lift Irrigation Canal discussed in Chapter 10, section 10.2, required specific coordination between the Pollution Control Board's regional office, the Mines and Geology Department, and the Water Resources Department to ensure blasting activity did not compromise the irrigation canal's structural integrity (Andhra Pradesh Pollution Control Board, 2026a). This kind of inter-departmental coordination requirement, linking mining regulatory approval directly to water infrastructure protection, illustrates a practical, operational-level example of the broader institutional coordination this report has found

evidence of across multiple sectors, including the water resource basin planning capability documented in Chapter 10, section 10.2.

Comprehensive, current, aggregate data on the state's total mineral production volumes, mining revenue contribution to state finances, and the specific status of illegal mining enforcement, particularly regarding Red Sanders smuggling discussed in section 13.1, was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the state's Department of Mines and Geology annual reporting, which would allow more precise assessment of how effectively the granular, site-level environmental safeguards documented above translate into aggregate environmental outcomes across the state's mining sector as a whole.

The mining sector's environmental governance also intersects with the broader industrial and infrastructure development themes examined throughout this report, since several of the mineral resources documented in Chapter 3, section 3.4, feed directly into downstream industries the state has actively courted as part of its anchor industry strategy discussed in Chapter 4, section 4.3, including cement, glass, ceramics, and refractory products manufacturing. This creates a direct linkage between the mining sector's environmental compliance record documented in this section and the broader industrial growth ambitions this report has documented throughout Chapters 3 and 4, since sustained access to these mineral resources depends on maintaining a mining sector environmental governance framework robust enough to avoid the kind of regulatory disruption, whether through court intervention or central government enforcement action, that has periodically affected mining operations in other Indian states where environmental compliance has been found inadequate. The specific inter-departmental coordination illustrated in the Polavaram canal blasting example documented above suggests the state's regulatory apparatus is at least capable of this kind of granular, site-specific environmental risk management when the stakes, in that instance protection of critical irrigation infrastructure, are sufficiently high, though whether this same level of coordination capacity extends consistently across the full scope of the state's mining operations, including smaller-scale and more geographically dispersed mining activity, remains a question this report was unable to assess definitively given the sources available.

### **13.5 Pollution: Air, Water, Noise and Soil — Status and Regulatory Response**

The Andhra Pradesh Pollution Control Board, established in 1976 as the State Board for Prevention and Control of Water Pollution under the Water Act of 1974 and subsequently renamed following the 1981 Air Act's enactment, serves as the state's principal environmental regulatory authority, responsible for implementing a progressively expanded portfolio of environmental statutes including the Water Cess Act, the Environment Protection Act, the Hazardous and Other Wastes Management and Transboundary Movement Rules of 2016, the Solid Waste Management Rules of 2016, the Plastic Waste Management Rules of 2022, the Manufacture, Storage and Import of Hazardous Chemicals Rules of 1989, the Battery Waste

Management Rules of 2022, and the E-Waste Management Rules of 2022 (SPSR Nellore District, 2026; SPCB Admin, 2026). This expanding regulatory mandate, accumulated incrementally over nearly five decades since the Board's original 1976 constitution, reflects the broader evolution of India's environmental regulatory architecture as new pollution categories, from plastic waste to electronic waste to battery waste, have received dedicated national regulatory attention over successive decades.

The Board's operational structure includes a network of regional and zonal offices, including dedicated zonal offices in Visakhapatnam and Vijayawada and a regional office in Nellore established in 1994 with jurisdiction extending across both the present-day SPSR Nellore and Prakasam districts, reflecting the pre-2022 district boundaries discussed in Chapter 1, section 1.2, that predate the state's most recent district reorganization (SPSR Nellore District, 2026). Industries seeking regulatory approval apply through a single-desk portal integrated with the national Online Consent Management and Monitoring System, with the Board processing Consent for Operation applications within defined service level agreement periods, and complaints or violations identified during inspection escalated through a Task Force Committee at the Board's head office or an External Advisory Committee at the Vijayawada zonal office (SPSR Nellore District, 2026).

Comprehensive, current, quantitative data on Andhra Pradesh's specific ambient air quality index trends, water quality monitoring results across the state's river and coastal monitoring stations, noise pollution levels in urban centres, or aggregate soil contamination extent was not available among the sources consulted for this chapter, representing a substantial documented gap given the evident institutional maturity of the state's pollution regulatory framework documented above. This gap is particularly notable given the direct relevance of air and water quality data to several other chapters of this report, including the epidemiological profile discussion in Chapter 6, section 6.2, which noted the state's rising non-communicable disease burden without being able to establish a direct empirical link to ambient pollution exposure, and the hazardous waste management discussion in Chapter 10, section 10.4, which flagged the pharmaceutical manufacturing sector's hazardous waste generation as an area warranting closer regulatory scrutiny. This report recommends that subsequent editions prioritize direct engagement with the Andhra Pradesh Pollution Control Board's own ambient air and water quality monitoring network data, which, given the Board's five-decade institutional history and comprehensive regulatory mandate documented above, should in principle provide a considerably richer empirical basis for environmental health assessment than was accessible within the scope of this chapter's research.

The absence of readily accessible aggregate pollution monitoring data, notwithstanding the Board's clearly extensive individual consent order and compliance documentation illustrated in section 13.4, mirrors a pattern this report has now observed repeatedly across multiple sectors: granular, site-specific or transaction-level regulatory documentation exists in genuine abundance, as evidenced by the detailed mining consent orders reviewed for section 13.4, yet aggregated, state-wide performance indicators synthesizing this granular data into a coherent overall picture of environmental quality trends prove considerably harder to locate in a form

suitable for public-facing analysis. This pattern recurs closely enough across the fiscal, health, energy, water, and now environmental domains examined throughout this report that this report considers it a genuine structural characteristic of the state's public data ecosystem rather than a coincidental gap specific to any single sector, one that likely reflects underlying data architecture and public dissemination practices common across many Indian state administrative systems rather than a deficiency unique to Andhra Pradesh specifically. Nonetheless, given the direct relevance of environmental quality data to public health outcomes documented in Chapter 6, and to the industrial growth ambitions documented in Chapters 3 and 4, this report considers closing this specific gap, through improved public dissemination of the Andhra Pradesh Pollution Control Board's existing monitoring data rather than necessarily requiring new data collection infrastructure, one of the more readily achievable transparency improvements available to the state's environmental governance apparatus.

### **13.6 Coastal and Marine Resource Management**

Andhra Pradesh's 974 kilometer coastline, documented extensively in Chapter 1, section 1.1, and Chapter 8, section 8.4, anchors a coastal and marine resource base of considerable economic and ecological significance, spanning the state's substantial fisheries and aquaculture sector discussed in Chapter 3, section 3.3, its major and minor port infrastructure discussed in Chapter 8, section 8.4, and its coastal mangrove and wetland ecosystems discussed in section 13.1 of this chapter. The Coringa Wildlife Sanctuary and the mangrove ecosystems surrounding the Godavari and Krishna estuaries represent the state's most significant protected coastal ecological zones, providing habitat for the rare smooth Indian otter, fishing cat, and estuarine crocodile documented in section 13.1, while simultaneously serving as a natural buffer against the cyclonic activity the state's low-lying coastline faces, a vulnerability examined in greater detail in Chapter 14, section 14.1.

The tension between coastal ecological conservation and coastal economic development is likely to intensify over the coming years given the scale of new port capacity under development at Bhavanapadu, Narsapur, Ramayapatnam, and Duggirajapatnam, documented in Chapter 8, section 8.4, and the state's broader ambition, discussed in Chapter 9, section 9.4, to develop offshore wind capacity along the same coastline under the national Green Energy Corridor framework. Each of these development priorities carries potential implications for coastal ecosystem integrity, whether through dredging and construction activity associated with new port development, the physical footprint and marine habitat disruption potentially associated with offshore wind infrastructure, or the cumulative pressure that continued industrial and urban coastal development places on the state's mangrove and wetland buffer zones. Comprehensive, current, quantitative data on the specific environmental impact assessment findings, mitigation measures, or coastal zone regulation compliance status for these major coastal infrastructure projects was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing directly in subsequent editions, given the material scale of coastal development activity now underway and planned across the state's Bay of Bengal seaboard.

Coastal zone regulation in India operates through the Coastal Regulation Zone notification framework, which classifies coastal land into distinct zones with differing permitted development intensities based on proximity to the high tide line and the ecological sensitivity of specific coastal stretches, including mangrove areas, coral reefs, and turtle nesting beaches of the kind documented for Andhra Pradesh's coastline in section 13.1. Given the scale of new port, industrial, and renewable energy infrastructure development documented throughout this report as either underway or planned along the state's coastline, effective Coastal Regulation Zone compliance and enforcement represents a critical, if under-documented, safeguard against the kind of coastal ecosystem degradation that has affected other rapidly industrializing coastal stretches in India and internationally. This report was unable to verify the specific compliance record of the state's major coastal infrastructure projects against Coastal Regulation Zone requirements given the sources available for this chapter, and recommends this be treated as a priority verification item for subsequent editions, particularly given the scale of concurrent coastal development activity spanning ports, discussed in Chapter 8, section 8.4, offshore wind, discussed in Chapter 9, section 9.4, and the broader Visakhapatnam growth corridor strategy discussed in Chapter 3, section 3.9.

Sea turtle conservation represents a further coastal ecological priority relevant to Andhra Pradesh's marine resource management, given the presence of marine turtles documented among the fauna protected within Coringa Wildlife Sanctuary discussed in section 13.1, and the broader significance of India's eastern coastline, including neighboring Odisha's globally significant Olive Ridley turtle nesting beaches, within international sea turtle conservation networks. Whether Andhra Pradesh's own coastline hosts comparably significant sea turtle nesting activity, and what specific conservation measures, if any, the state has implemented to protect nesting beaches from the coastal infrastructure development pressures documented throughout this section, was not addressed in the sources available for this chapter, representing a further specific area this report recommends for direct investigation in subsequent editions, ideally through engagement with the state's Forest Department and any partner conservation organizations active along the Andhra Pradesh coastline.

The state's marine fisheries sector, discussed in Chapter 3, section 3.3, as contributing over 40 percent of India's total fish production and anchoring the state's position as the country's leading shrimp producer, depends fundamentally on continued marine ecosystem health, including sustainable fish stock management and coastal water quality maintenance, both of which interact directly with the industrial and port development pressures documented above. Balancing the state's evident economic ambitions across fisheries, port-led trade, and offshore renewable energy against the ecological carrying capacity of its coastal and marine ecosystems represents one of the more consequential long-term natural resource governance challenges this report has identified, and one whose resolution will likely shape both the sustainability of the state's marine economy and the resilience of its coastal communities against the climate risks examined in the following chapter.

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## Chapter 14: Climate Change and Ecological Security

### 14.1 State Climate Vulnerability and Risk Profile

Andhra Pradesh ranks among the most climate-vulnerable states in India according to the Council on Energy, Environment and Water's district-level Climate Vulnerability Index, which places Andhra Pradesh, alongside Assam and Maharashtra, among the top three most climate-vulnerable states nationally, and among the five most vulnerable overall alongside Karnataka and Bihar (Council on Energy, Environment and Water, 2026). This assessment, which captures the combined risk of hydro-meteorological disasters and their compounded impact on district-level climate vulnerability, identifies unsustainable landscape management, inadequate infrastructure planning, and human-induced microclimate change as key drivers of this elevated vulnerability, and further finds that more than 40 percent of Indian districts, including several within Andhra Pradesh, exhibit a "swapping trend," meaning the specific pattern of extreme weather events they experience is itself changing over time, complicating efforts to plan disaster preparedness around historical hazard patterns alone (Council on Energy, Environment and Water, 2026).

The state's own Department of Disaster Management estimates that approximately 44 percent of Andhra Pradesh's total territory remains vulnerable to tropical storms and related hazards, with cyclones of moderate to severe intensity striking the state roughly every two to three years (Asian Development Bank, 2026c; NABARD, 2026). The most recent major cyclone event, Cyclone Michaung, struck in December 2023 and caused substantial damage in Vijayawada, while the 2014 Cyclone Hudhud severely affected Visakhapatnam, causing extensive damage to the city's above-ground power distribution infrastructure given its particular vulnerability to high winds, heavy rain, thunderstorms, and storm surge flooding (Asian Development Bank, 2026c; World Bank, 2026b). This latter event's infrastructure damage pattern subsequently informed a World Bank-supported Andhra Pradesh Disaster Recovery Project component specifically designed to reduce the vulnerability of Visakhapatnam's electrical network by undergrounding its power distribution system, implemented through the Eastern Power Distribution Company discussed in Chapter 9, section 9.2, illustrating a direct, traceable link between a specific disaster event and a subsequent infrastructure resilience investment (World Bank, 2026b).

Beyond cyclone risk, heatwaves represent, according to the state's own health-sector climate planning documentation, the most prominent climate change-induced hazard affecting Andhra Pradesh, contributing to more deaths than any other natural disaster category in the state and representing a significant and growing public health risk (National Centre for Disease Control, 2026). This heatwave vulnerability finding, drawn from the state's dedicated State Action Plan on Climate Change and Human Health, connects directly to the non-communicable disease burden and public health infrastructure themes examined in Chapter 6, sections 6.1 and 6.2, since effective heat-related mortality prevention depends substantially on the kind of robust primary healthcare access and emergency response

capacity whose regional disparities this report has already documented across the state's three constituent regions.

A comparative national assessment published as the Climate Risk Index 2026 by Germanwatch specifically identified Andhra Pradesh, alongside neighboring Telangana, among the states most prone to the compounding effects of climate change, including forest fire risk discussed in Chapter 13, section 13.1, within the broader context of India having recorded more than 400 significant weather-related events, spanning recurring floods, cyclones, droughts, and heatwaves, over the preceding three decades (Deccan Chronicle, 2026e). This external, internationally benchmarked assessment corroborates the state's own internal risk assessment documentation discussed above, reinforcing that Andhra Pradesh's climate vulnerability represents a well-established, multiply-corroborated finding rather than an assessment specific to any single methodology or institution.

This convergence of independent assessment methodologies, spanning the Council on Energy, Environment and Water's district-level statistical vulnerability index, the state's own Department of Disaster Management territorial exposure estimate, the health sector's mortality-linked heatwave risk finding, and the internationally benchmarked Germanwatch Climate Risk Index, is analytically significant precisely because these four assessment sources rely on substantially different underlying methodologies, ranging from compound hydro-meteorological hazard statistical modeling to simple territorial exposure mapping to health outcome mortality attribution to historical event frequency counting, yet arrive at a broadly consistent conclusion regarding the severity of Andhra Pradesh's climate vulnerability. Where this report has, in preceding chapters, frequently needed to flag discrepancies between competing data sources on questions ranging from GSDP figures in Chapter 3 to devolution rankings in Chapter 12, the climate vulnerability finding presented in this section instead exhibits an unusual degree of cross-source consistency, a pattern that strengthens this report's confidence in treating the state's high climate vulnerability status as a well-established baseline fact around which the remainder of this chapter's policy analysis can be organized, rather than as a contested or uncertain finding requiring further verification.

The compounding nature of the state's risk profile, spanning cyclone and storm surge exposure along its coast, drought risk in its interior, and heatwave mortality risk statewide, also means that disaster preparedness investment cannot be narrowly targeted at a single dominant hazard type, unlike some Indian states whose climate risk profile is more heavily weighted toward a single hazard category. This multi-hazard exposure profile, examined in greater geographic and sectoral detail in section 14.3, necessarily complicates the state's disaster risk reduction planning relative to a hypothetical single-hazard state, since resources and institutional attention must be allocated across genuinely distinct hazard types requiring different technical expertise, different seasonal timing, and, as documented in section 14.3, different predominant impact across the state's three constituent regions.

## **14.2 State Action Plan on Climate Change: Review and Second Generation Reforms**

Andhra Pradesh's State Action Plan on Climate Change was originally prepared and submitted to the Union Ministry of Environment, Forest and Climate Change under the framework established by India's National Action Plan on Climate Change, released in 2008 as the country's foundational domestic climate strategy document, structured around adaptation to climate change and protection of vulnerable population segments through an inclusive, sustainable development strategy that simultaneously enhances ecological sustainability and innovation (Ministry of Environment, Forest and Climate Change, 2026). The state's original Action Plan document addressed cyclone, flood, and drought risk specifically, alongside adaptation interventions for the forestry and biodiversity sector and for rural and urban habitats, with dedicated budget estimates prepared for the state's Revenue Department covering disaster management functions, the Health, Medical and Family Welfare Department, and the Municipal Administration and Urban Development Department, alongside establishment of a dedicated Climate Change Knowledge Centre at the Environment Protection Training and Research Institute (Ministry of Environment, Forest and Climate Change, 2026).

A significant sectoral evolution beyond this original, comprehensive State Action Plan has been the development of the dedicated State Action Plan on Climate Change and Human Health, prepared by the state's Department of Health and Family Welfare specifically as a long-term vision and planning document applicable through 2027, under the broader National Programme on Climate Change and Human Health (National Centre for Disease Control, 2026). This sector-specific successor plan, discussed further in section 14.1 above regarding its heatwave mortality findings, is explicitly designed to inform the preparation of further district-specific action plans, extending the state's climate adaptation planning architecture down to a more granular administrative level than the original state-wide plan alone provided, and its multi-pronged approach addresses climate-sensitive disease burden while working toward what the plan document terms a climate-responsive and sustainable healthcare ecosystem (National Centre for Disease Control, 2026).

This progression from a single, comprehensive state climate action plan toward sector-specific successor plans, exemplified by the health sector's dedicated 2027-horizon plan, suggests Andhra Pradesh's climate adaptation planning architecture has evolved toward greater sectoral specificity over time, a pattern this report expects may extend to other sectors beyond health, though comprehensive, current documentation of comparable sector-specific climate action plans for agriculture, water resources, or urban infrastructure specifically, beyond the general adaptation interventions referenced in the original 2017-era State Action Plan document, was not available among the sources consulted for this chapter. This report recommends subsequent editions verify whether such sector-specific successor plans exist for these other climate-sensitive sectors, given the health sector precedent documented above.

The rationale for this sectoral specificity, at least as it applies to the health sector, is readily apparent from the specific mortality attribution finding discussed in section 14.1, namely that heatwaves represent the single deadliest climate-linked hazard category the state faces. A generic, state-wide climate action plan covering cyclone, flood, drought, forestry, and habitat

adaptation together, of the kind the original 2017 State Action Plan represented, may struggle to give the heatwave-specific mortality risk the depth of dedicated technical and operational attention that a hazard responsible for more deaths than any other natural disaster category arguably warrants, since a comprehensive multi-hazard plan document necessarily distributes its attention and resource allocation recommendations across several distinct hazard types rather than concentrating exclusively on the single most lethal one. The dedicated health-sector climate plan's explicit district-level successor planning ambition, discussed above, further suggests an intent to translate this heatwave-specific national and state-level policy attention into genuinely localized, actionable heat action plans capable of addressing the specific microclimate and vulnerable population concentration patterns that vary considerably across the state's twenty eight districts, an appropriately granular response to a hazard whose severity, as documented in section 14.1, appears to vary meaningfully by local context rather than applying uniformly across the state's full territory.

### **14.3 Disaster Risk Profile: Hazard, Exposure and Vulnerability Mapping**

Andhra Pradesh's disaster risk profile centers on three principal hazard categories, cyclones, floods, and droughts, each of which the state's original State Action Plan on Climate Change addressed as a dedicated risk category, reflecting the state's distinctive dual exposure to both coastal hazards affecting its 974 kilometer coastline, discussed in Chapter 1, section 1.1, and Chapter 13, section 13.6, and inland drought risk affecting its drier Rayalaseema interior (Ministry of Environment, Forest and Climate Change, 2026). Agricultural sector-specific climate impact assessment conducted in partnership with the National Bank for Agriculture and Rural Development found that increasing disaster risk exposure linked to climate change and variability, manifesting through drought conditions, elevated temperatures, heatwaves, heavy downpour events, and lightning, has produced measurable agricultural impacts including reduction in paddy and maize cultivation area within the state's delta regions, delayed planting of commercial crops such as chilli, reduced cotton productivity, and increased periodicity of drought occurrence alongside heightened pest and disease epidemics specifically affecting chilli, cotton, and tobacco cultivation (NABARD, 2026).

This same assessment specifically flagged a declining water availability trend at the Nagarjuna Sagar project, a critical irrigation infrastructure asset serving the Krishna river command area discussed in Chapter 10, section 10.2, with the report noting that the resulting reduced water availability has left the served region facing acute irrigation and drinking water shortages, a finding that connects directly to the water security themes examined throughout Chapter 10 and illustrates concretely how climate-driven changes in river flow patterns translate into the kind of water security challenges this report has already documented as a persistent concern for the state's drier interior districts (NABARD, 2026).

Applying the geographic risk mapping this report has developed across preceding chapters, the state's three constituent regions face materially different dominant hazard profiles: Coastal Andhra faces the most direct and immediate cyclone and storm surge exposure, consistent with the specific Cyclone Hudhud and Cyclone Michaung impacts on

Visakhapatnam and Vijayawada documented in section 14.1; Rayalaseema faces the most acute drought and water scarcity risk, consistent with the Nagarjuna Sagar findings documented above and the broader irrigation infrastructure disparities documented in Chapter 10, section 10.2; and North Andhra's tribal and forested districts face compounding exposure to both forest fire risk, discussed in Chapter 13, section 13.1, and the general infrastructure and service delivery gaps this report has documented repeatedly for this region across health in Chapter 6, energy in Chapter 9, and rural governance in Chapter 12. This regionally differentiated hazard profile underscores that any effective, spatially targeted disaster risk reduction strategy for Andhra Pradesh would need to calibrate its specific intervention priorities to each region's distinct dominant hazard type, rather than applying a uniform statewide disaster preparedness template across all twenty eight districts.

This regional hazard differentiation carries a further important implication that connects directly to the broader regional disparity theme this report has traced since Chapter 1, section 1.7. Because the state's infrastructure and economic investment has concentrated disproportionately within the Visakhapatnam, Amaravati-Vijayawada, and Tirupati growth corridors, documented throughout Chapters 3, 4, 8, 9, 10, and 11, and because Coastal Andhra's cyclone exposure directly threatens precisely this same concentration of infrastructure and economic activity, the state's disaster risk exposure is not evenly distributed relative to its economic asset base either. A severe cyclone event striking the Visakhapatnam or Amaravati-Vijayawada corridors directly would threaten a disproportionately large share of the state's cumulative infrastructure investment documented throughout this report, relative to an equivalent-magnitude event affecting the comparatively less economically developed Rayalaseema interior or North Andhra tribal districts. This asymmetry between where the state's economic value is concentrated and where its most severe and immediate hazard type, cyclone risk, is also concentrated represents a genuine strategic tension this report recommends the state's disaster risk reduction planning explicitly account for, since it implies that even seemingly hazard-appropriate regional targeting, concentrating cyclone preparedness investment in Coastal Andhra, would also happen to further reinforce the existing pattern of infrastructure and economic investment concentration in that same region, a pattern this report has flagged as a concern in its own right throughout the preceding infrastructure chapters.

The agricultural impact findings documented above, particularly the reduction in delta-region paddy and maize cultivation area and the increased pest and disease epidemic periodicity affecting chilli, cotton, and tobacco, also carry direct relevance to the state's food security and farmer income themes examined in Chapter 3, section 3.3, and Chapter 18. Given the state's recent strong agricultural growth performance documented in Chapter 3, including record food grain production figures, this report notes an important interpretive caution: the NABARD assessment's climate impact findings and the strong recent growth figures documented in Chapter 3 are not necessarily contradictory, since strong aggregate growth in a given year can coexist with a longer-term structural climate vulnerability trend that manifests through increased year-to-year volatility and localized crop-specific stress, even as favorable weather in any single reporting year produces strong headline output figures. This report

recommends that subsequent editions specifically examine multi-year agricultural output volatility trends, rather than relying on single-year growth figures alone, to properly assess whether the climate-related agricultural risks documented in this section are measurably intensifying over time within the state's cultivation patterns.

#### **14.4 Disaster Risk Reduction: Institutional Mechanisms and Preparedness**

The Andhra Pradesh State Disaster Management Authority, commonly known as APSDMA, serves as the state's principal institutional mechanism for disaster risk reduction and emergency response coordination. Recent academic case study analysis of the Authority's performance, drawing on purposive sampling across Visakhapatnam, Krishna, and Guntur districts specifically selected for their high exposure to cyclones, floods, and heavy rainfall events and their history of significant past disaster impact, concluded that the Authority occupies a genuinely central position in protecting lives, livelihoods, and development achievements across the state, while simultaneously identifying a clear institutional imperative for APSDMA to transform itself from what the study characterized as a fundamentally reactive posture toward a more genuinely proactive one, better positioned to anticipate and mitigate evolving risks, including the compounding threats of climate change and continued urbanisation (JETIR, 2025).

This academic assessment's specific recommendation, that disaster management institutions require occasional restructuring and performance audits to remain responsive to evolving risk profiles rather than remaining static once initially established, echoes a broader institutional evolution theme this report has traced across multiple sectors, including the Panchayati Raj devolution reforms examined in Chapter 12, section 12.1, and the power sector regulatory evolution examined in Chapter 9, section 9.6. The study's call for APSDMA to serve as "a paradigm for disaster resilience," built on robust institutions, empowered citizens, cutting-edge technology, and participative governance, articulates an aspirational institutional target that, if achieved, would position the state's disaster management capacity considerably ahead of the reactive, response-oriented model that has historically characterized disaster management institutions across most Indian states, including, by this same study's own characterization, Andhra Pradesh's own APSDMA as currently constituted (JETIR, 2025).

International technical cooperation has also played a role in shaping the state's disaster risk reduction institutional framework, with Andhra Pradesh serving, alongside Tamil Nadu, as a pilot implementation site for a climate change adaptation and disaster risk reduction integration framework developed jointly by the German development cooperation agency GIZ, the National Institute of Disaster Management under India's Ministry of Home Affairs, and several partner organizations including a state-specific Welfare Society and the environmental policy institute adelphi (National Institute of Disaster Management, 2026). This pilot framework's underlying premise, that Climate Change Adaptation and Disaster Risk Reduction share substantially overlapping objectives, particularly around protecting development goals through effective risk planning and management given mounting evidence that disasters actively hamper both development progress and poverty alleviation efforts,

reflects an internationally-informed institutional design philosophy that treats climate adaptation and disaster preparedness as a single integrated planning domain rather than as separate, independently administered policy silos, a framing consistent with the state's own progression toward integrated, sector-specific climate action planning documented in section 14.2 (National Institute of Disaster Management, 2026).

This pilot programme's selection of Andhra Pradesh, alongside Tamil Nadu, as one of only two Indian state case studies for this particular international technical cooperation framework, is itself a notable marker of the state's perceived significance within the broader international disaster risk reduction and climate adaptation policy community, suggesting that Andhra Pradesh's disaster and climate risk profile, and its institutional response to that profile, has attracted meaningful international technical attention beyond the domestic academic case study documented above. The specific institutional design principles this pilot framework sought to test and demonstrate, integrating climate adaptation and disaster risk reduction planning within a unified framework rather than maintaining them as separate administrative functions, connects directly to the broader Gram Panchayat Development Plan convergence-based funding model discussed in Chapter 12, section 12.6, where this report noted the state's demonstrated institutional preference for combining multiple funding streams and planning processes within unified local-level frameworks rather than maintaining fully siloed, sector-specific administrative structures.

Whether the specific institutional lessons and recommendations generated through this GIZ-NIDM pilot programme have been subsequently mainstreamed into APSDMA's own standard operating procedures and planning framework, beyond the pilot implementation itself, represents a further specific question this report was unable to answer definitively given the sources available for this chapter, and one this report recommends verifying directly against APSDMA's current institutional planning documentation in subsequent editions, particularly given the JETIR case study's own finding, discussed above, that APSDMA continues to require transformation toward a more genuinely proactive institutional posture notwithstanding this earlier pilot programme engagement, a gap between documented international best-practice engagement and demonstrated institutional outcome that this report considers emblematic of the broader execution theme traced throughout this framework.

#### **14.5 Post-Disaster Response, Relief and Reconstruction Framework**

Post-disaster reconstruction financing in Andhra Pradesh has drawn substantially on international development finance institution support, most notably through the World Bank-financed Andhra Pradesh Disaster Recovery Project, developed specifically in response to the damage documented from Cyclone Hudhud's 2014 impact on Visakhapatnam and the surrounding East Godavari region, an area with an approximate combined population of 13.3 million residents (World Bank, 2026b). As documented in section 14.1, the project's core intervention, undergrounding Visakhapatnam's power distribution network through the Eastern Power Distribution Company, directly targeted the specific infrastructure

vulnerability, above-ground electrical lines exposed to high wind and storm surge damage, that Cyclone Hudhud's impact had most clearly exposed, representing a textbook example of "build back better" post-disaster reconstruction philosophy, in which reconstruction investment is deliberately designed to reduce vulnerability to future recurrence of the same hazard type rather than simply restoring pre-disaster infrastructure to its original, equally vulnerable specification.

This project-specific example connects to the broader pattern of multilateral development finance institution engagement in the state's infrastructure resilience agenda that this report has already documented in the specific context of the Amaravati capital city project's Asian Development Bank and World Bank co-financing, discussed in Chapter 11, section 11.4. The Amaravati project's own climate resilience framing, discussed further in section 14.6 below, extends this same "build resilience in from the start" philosophy from the reactive, post-disaster reconstruction context of the Visakhapatnam power undergrounding project toward a proactive, greenfield urban development context, suggesting a broadly consistent institutional relationship between the state government and international development finance institutions around climate and disaster resilience financing across both reconstruction and new construction contexts.

Comprehensive, current, quantitative data on the state's routine, non-project-specific disaster relief expenditure, including State Disaster Response Fund and National Disaster Response Fund utilization patterns, compensation payment timelines to affected households, and the adequacy of the state's emergency shelter and relief material stockpile infrastructure, was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the state's Revenue Department disaster management wing reporting, which would allow assessment of the state's routine disaster response capability beyond the specific, internationally financed flagship reconstruction projects documented above.

This gap between well-documented, internationally financed flagship reconstruction projects on one hand and comparatively less accessible routine disaster relief expenditure data on the other mirrors a pattern this report has now observed across multiple sectors, including the mining consent order documentation contrasted against aggregate pollution monitoring data gap discussed in Chapter 13, section 13.5. Large, internationally financed, individually significant projects tend to generate detailed, English-language, internationally accessible documentation as a natural byproduct of the due diligence and reporting requirements multilateral development finance institutions typically impose on borrower governments, while the far larger cumulative volume of routine, domestically financed disaster response activity, spread across the State Disaster Response Fund and National Disaster Response Fund mechanisms and processed through standard state administrative channels, generates documentation that, while likely substantial in raw volume, proves considerably less accessible to external researchers working primarily through publicly available English-language sources of the kind this report has relied upon throughout. This report recommends that subsequent editions specifically pursue direct engagement with the state's

Revenue Department to close this gap, since routine disaster response capability, rather than flagship reconstruction project performance alone, likely represents the more consequential determinant of how effectively the state's population experiences protection from the recurring cyclone, flood, and drought risks documented throughout this chapter.

## **14.6 Green Economy Transition: Opportunities and Structural Challenges**

Andhra Pradesh's green economy transition intersects directly with several themes already examined throughout this report, most notably the state's substantial renewable energy resource base and export ambitions documented in Chapter 9, section 9.4, and the climate-resilient design principles being incorporated into the Amaravati capital city project documented in Chapter 11, section 11.4. The Amaravati Inclusive and Sustainable Capital City Development Program, financed through the Asian Development Bank loan discussed in Chapter 11, section 11.4, is explicitly structured as what the financing documentation terms a "Type2a adaptation project," a categorization that requires the program to satisfy five specific guiding principles, including alignment with the Government of India's Nationally Determined Contributions climate strategy, which itself prioritizes climate-resilient urban centres, and integration of climate resilience considerations into six of the project's eight formal Disbursement-Linked Indicators, the specific performance benchmarks that trigger loan disbursement tranches (Asian Development Bank, 2026c). This structural embedding of climate resilience criteria directly into the financing mechanism's own disbursement conditions represents a considerably more binding form of climate accountability than a purely aspirational sustainability commitment would provide, since the state's continued access to loan tranches depends materially on demonstrating measurable progress against these climate-specific indicators.

The broader green economy opportunity for Andhra Pradesh extends beyond the Amaravati project specifically into the renewable energy export ambitions documented in Chapter 9, section 9.4, where the state's Ultra Mega Solar Power Projects and wind capacity position it as an aspiring net exporter of clean power to other Indian states, and into the green hydrogen and energy storage policy architecture discussed in the same section, both of which represent genuine economic diversification opportunities building on the state's underlying natural resource endowment rather than purely defensive climate adaptation measures. This dual character, treating climate action simultaneously as a risk mitigation necessity, given the vulnerability profile documented throughout this chapter, and as a genuine economic opportunity, given the renewable energy resource base documented in Chapter 9, reflects a broadly coherent strategic framing that connects the state's climate and disaster risk management agenda directly to its economic development strategy rather than treating the two as separate, potentially competing policy domains.

Notwithstanding this coherent strategic framing, the structural challenges to a fully realized green economy transition remain substantial, and largely mirror the execution and capacity gaps this report has identified repeatedly across other sectors. The power distribution sector's persistent financial distress, documented in Chapter 9, section 9.2, including the Rs. 12,632

crore revenue gap the state absorbed for fiscal year 2025-26, represents a direct constraint on the pace at which renewable energy integration and grid modernization investment, both essential components of a genuine green economy transition, can proceed without further straining the state's fiscal position, already burdened by the debt sustainability concerns documented in Chapter 2, section 2.4. Similarly, the disaster risk reduction institutional capacity gaps identified in section 14.4, where academic assessment found APSDMA requiring transformation from a reactive to a proactive posture, suggest that the state's capacity to translate climate adaptation planning documents into genuinely embedded, forward-looking institutional practice remains a work in progress rather than a fully realized achievement.

Taken together, this chapter's findings position Andhra Pradesh as a state facing a demonstrably serious, multiply-corroborated climate vulnerability profile, spanning cyclone exposure along its coast, drought risk in its Rayalaseema interior, and heatwave mortality risk statewide, while simultaneously pursuing a genuinely ambitious and, in the specific case of the Amaravati project's financing structure, institutionally binding climate resilience and green economy transition strategy. Whether this strategy's implementation pace can keep sufficient stride with the state's documented climate vulnerability, particularly given the fiscal and institutional capacity constraints this report has traced consistently since Chapter 2, represents one of the most consequential open questions for the state's long-term development trajectory examined in this report's concluding Vision 2047 assessment in Chapter 21.

Three specific findings from this chapter merit particular emphasis heading into that concluding assessment. First, the unusually strong cross-source consistency in the state's climate vulnerability assessment, documented in section 14.1, provides an unusually solid empirical foundation for climate risk planning relative to several other sectors examined in this report where this report has had to navigate materially conflicting source data, meaning the state's climate adaptation planning can proceed with greater confidence in its underlying risk assessment than, for example, the state's devolution ranking discussed in Chapter 12, section 12.1, or its precise GSDP growth figures discussed in Chapter 3, section 3.1. Second, the demonstrated capacity to embed binding climate resilience criteria directly into major infrastructure financing mechanisms, illustrated by the Amaravati project's Disbursement-Linked Indicator structure documented in this section, represents a genuinely sophisticated financing innovation that, if extended to other major infrastructure projects examined throughout this report, including the port expansion projects discussed in Chapter 8, section 8.4, and the broader industrial anchor investment strategy discussed in Chapter 4, could meaningfully strengthen the climate resilience of the state's infrastructure base beyond the flagship Amaravati project alone. Third, the persistent institutional capacity gap identified in APSDMA's continued need for transformation from a reactive to a proactive posture, notwithstanding meaningful international technical cooperation engagement, suggests that translating strong risk assessment and innovative project-level financing structures into genuinely embedded, anticipatory institutional practice across the full breadth of the state's disaster management apparatus remains an unfinished agenda, one whose progress this report

recommends tracking closely alongside the broader institutional execution themes traced throughout this report's preceding chapters.

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## **Chapter 15: Administrative Governance Reform**

### **15.1 Structure of State Administration and Inter-Departmental Coordination**

Andhra Pradesh's state administration operates through the conventional Indian state governance structure of a Council of Ministers headed by the Chief Minister, supported by a permanent civil service bureaucracy led by the Chief Secretary, and organized into functional departments each headed by a Principal Secretary or Secretary-level officer, several of whom have been referenced throughout this report in their specific sectoral capacities, including the Municipal Administration and Urban Development Department discussed in Chapter 11, the Water Resources Department discussed in Chapter 10, and the Tribal Welfare Department discussed in Chapter 7. This report has documented numerous specific examples of inter-departmental coordination throughout its preceding chapters, including the mining consent process requiring coordination between the Pollution Control Board, Mines and Geology Department, and Water Resources Department discussed in Chapter 13, section 13.4, and the rail infrastructure planning requiring coordination across revenue, land acquisition, and transport departments discussed in Chapter 8, section 8.2.

The state's post-bifurcation administrative rebuilding, referenced throughout this report beginning with the Preface, has necessitated establishing numerous administrative institutions essentially from scratch following the 2014 loss of Hyderabad's established bureaucratic infrastructure, a rebuilding effort that recurs as a background theme across virtually every sectoral chapter examined in this report, from the South Coast Railway zone's establishment discussed in Chapter 8, section 8.2, to the state's own distribution company demerger discussed in Chapter 9, section 9.2, to the Andhra Pradesh Capital Region Development Authority established specifically to oversee Amaravati's construction, discussed in Chapter 11, section 11.4. This pattern of institution-building represents a distinguishing structural feature of Andhra Pradesh's administrative governance relative to most other Indian states, which did not face an equivalent need to reconstruct core administrative infrastructure within the past decade.

This report's cumulative findings across its preceding fourteen chapters allow for a more synthetic assessment of the state's inter-departmental coordination capacity than any single sectoral chapter could provide in isolation. Where coordination has clearly succeeded, as in the Polavaram canal blasting safeguard example discussed in Chapter 13, section 13.4, involving genuine, functioning coordination between the Pollution Control Board, Mines and Geology Department, and Water Resources Department, the outcome has been a demonstrably more protective regulatory result than any single department could have achieved acting in isolation. Where coordination has proven more elusive, as in the apparent tension this report flagged in Chapter 10, section 10.1, between centralized water management strategy documentation and panchayat-level operation and maintenance decentralization messaging, the result has instead been a degree of ambiguity regarding the state's actual governing philosophy for a given sector, one this report was unable to fully resolve given the sources available, and one that a stronger, more consistently documented

central coordination function, of the kind this section recommends investigating further, might plausibly help to resolve in future policy cycles.

The state's Chief Secretary's office, as the apex civil service coordination point beneath the political leadership, bears primary institutional responsibility for ensuring these department-level coordination mechanisms function coherently across the numerous sector-specific initiatives this report has documented, from the State Investment Promotion Board's monthly cross-departmental review process discussed in Chapter 4, section 4.1, to the broader Panchayat Raj devolution architecture discussed in Chapter 12. Comprehensive, current, specific documentation of the Chief Secretary's office's own internal coordination mechanisms and performance monitoring systems was not available among the sources consulted for this chapter, representing a further documented gap this report recommends addressing in subsequent editions, given the evident centrality of this coordination function to the successful execution of the ambitious, multi-sectoral reform agenda this report has documented throughout its preceding chapters.

## **15.2 Anti-Corruption Framework: Lokayukta, Vigilance and Enforcement**

Andhra Pradesh maintains three distinct anti-corruption institutions operating in coordination with one another: the Anti-Corruption Bureau, an investigative agency with police powers; the Tribunal for Disciplinary Proceedings, a fact-finding body empowered to summon and examine witnesses and documents; and the Andhra Pradesh Vigilance Commission, which functions as the apex coordinating body within this three-part system, staffed by a single appointed Commissioner who assesses the validity of complaints against civil servants drawn from multiple sources and recommends disciplinary action to the relevant administrative authorities (Office of Justice Programs, 2026). Both the Anti-Corruption Bureau and the Tribunal for Disciplinary Proceedings transmit their findings and recommendations to the state administration through the Vigilance Commission, which occupies what US Department of Justice analysis characterizes as a genuinely valuable public interest protection role, though the same analysis notes the Commission's structural limitation in lacking authority to investigate complaints against high officials and elected representatives, and lacking capacity to comprehensively address all grievances and general complaints reaching it (Office of Justice Programs, 2026).

Separate from this three-part vigilance and disciplinary system, the Andhra Pradesh Lokayukta functions as the state's independent statutory ombudsman, established November 1, 1983, under the Andhra Pradesh Lokayukta and Upa-Lokayukta Act, modeled on the 1966 Administrative Reforms Commission's recommendations, empowered to investigate citizen complaints of corruption, abuse of power, and maladministration through formal inquiries triggered by public petitions, suo motu action, or Governor references, with authority to summon records, conduct raids where necessary, and recommend disciplinary or prosecutorial measures (Grokikipedia, 2026c). The institution comprises a Lokayukta, appointed by the Governor from among serving or retired Chief Justices or High Court Judges, assisted by an Upa-Lokayukta drawn from the District Judge cadre, supported by

dedicated investigation, legal, judicial, and general administrative wings (Grokikipedia, 2026c). Andhra Pradesh is among a comparatively small group of states, alongside Rajasthan, Karnataka, and Maharashtra, that has established both a Lokayukta and an Upa-Lokayukta position, a more elaborate institutional structure than states such as Uttar Pradesh and Himachal Pradesh, which maintain only a single Lokayukta position (PubAdmin Institute, 2026b).

Notwithstanding this comparatively elaborate institutional structure, the Lokayukta position itself remained vacant as of late 2024, according to Grokikipedia's institutional documentation, a vacancy that, if it persisted into the period covered by this report, would represent a significant operational gap in the state's anti-corruption architecture, since the Upa-Lokayukta alone, while still empowered to act, would be operating without the seniority and full statutory authority the principal Lokayukta position carries (Grokikipedia, 2026c). Notwithstanding this leadership vacancy, the Upa-Lokayukta continued issuing substantive enforcement directives through 2025, including a September 8, 2025, order for criminal and departmental action against officials in the High-Level Canal office following complaints alleging large-scale fraud in unauthorized withdrawal of General Provident Fund amounts from employee accounts, and a September 12, 2025, disciplinary action against two revenue officials for land record tampering, following an earlier November 2023 intervention that had similarly targeted revenue record manipulation enabling unauthorized land conversions (Grokikipedia, 2026c).

This pattern of continued Upa-Lokayukta activity notwithstanding the Lokayukta vacancy illustrates a broader finding relevant to this report's overall assessment of the state's institutional capacity: even when a formal leadership position remains unfilled, meaning the institution is operating below its full statutory design specification, the underlying institutional machinery has continued to generate concrete enforcement outcomes, including asset recovery and disciplinary action, rather than lapsing into complete inactivity. Historical data on prosecution follow-through nonetheless indicates persistently low rates of full prosecutorial adherence to Lokayukta recommendations, with many inquiries closing without conviction due to evidentiary hurdles or executive discretion not to pursue the Lokayukta's recommended action, a limitation Grokikipedia's documentation attributes to the fundamentally advisory nature of Lokayukta findings, which depend on government follow-through for both criminal and departmental proceedings to actually materialize (Grokikipedia, 2026c). This advisory-only enforcement model represents a structural limitation common to most Indian state Lokayukta institutions, reflecting the broader national pattern in which, as documented by Transparency International, nine states have not yet amended their Lokayukta Acts to align with the national Lokpal and Lokayukta Act of 2013, and only four states have appointed both judicial and non-judicial members to their anti-corruption ombudsman institutions (Vajiram & Ravi, 2026).

The specific case examples documented above, including the recovery of misappropriated General Provident Fund amounts in the High-Level Canal case and the Polavaram-linked resettlement and rehabilitation compensation cases the Lokayukta has facilitated for

project-displaced families, illustrate a further dimension of the institution's practical function beyond pure anti-corruption enforcement, namely its role in resolving individual citizen grievances against the state administration, including compensation and entitlement disputes arising from major infrastructure projects such as Polavaram, discussed extensively in Chapter 10, sections 10.1 and 10.2. This grievance redressal function, distinct from but complementary to the institution's formal corruption investigation mandate, connects the Lokayukta's work directly to the broader resettlement and rehabilitation challenges this report has flagged as an underlying, if under-documented, cost of the state's major infrastructure development agenda throughout Chapters 8 through 11.

The Andhra Pradesh Vigilance Commission's own periodic reporting has documented what Grokipedia's institutional summary characterizes as a "spurt in public trust" and improved grievance redressal outcomes in recent years, though this report was unable to independently verify the specific metrics underlying this characterization given the absence of the Commission's primary source annual reports among the sources consulted for this chapter (Grokipedia, 2026c). This report recommends that subsequent editions pursue direct reference to the Andhra Pradesh Vigilance Commission's own annual reporting, published under its Right to Information Act Section 4(1)(b) disclosure obligations, to substantiate this claimed improvement with the underlying complaint volume, resolution rate, and disciplinary action statistics that would allow a more rigorous assessment of the anti-corruption framework's actual effectiveness trend over time, beyond the illustrative individual case examples this report has been able to document from available secondary source coverage.

### **15.3 Legal and Judicial Administration: Pendency, Access and Reform**

Andhra Pradesh's judicial administration operates within the broader national context of substantial case pendency, with India's National Judicial Data Grid recording over 5 crore pending cases across all court levels nationally as of early 2025, comprising over 4.5 crore cases pending in district and subordinate courts, approximately 60 lakh pending in High Courts, and nearly 80,000 pending before the Supreme Court, against a judge-to-population ratio of approximately 21 judges per million population, well below the 50 per million ratio the Law Commission of India recommended as far back as its 1987 120th Report and reaffirmed in its 2014 245th Report (Anantam IAS, 2026b; IJRAR, 2026). Government litigation contributes disproportionately to this national pendency burden, with central and state governments collectively party to nearly 46 percent of all pending cases nationally, making government the single largest litigant category in the Indian court system (Anantam IAS, 2026b).

Within this challenging national context, Andhra Pradesh has performed comparatively well according to the India Justice Report 2025, a comprehensive multi-dimensional assessment of state justice delivery systems, which found that southern states dominated the rankings among large and mid-sized states, with Karnataka, Andhra Pradesh, Telangana, Kerala, and Tamil Nadu together securing the top five positions nationally, Karnataka ranking first overall with a composite score of 6.78 out of 10 (Insights on India, 2026). This finding positions

Andhra Pradesh's justice delivery system as a genuine comparative strength relative to most other large Indian states, a finding broadly consistent with this report's earlier observations regarding the state's comparatively strong performance on several other governance and human development indicators, including the maternal mortality outcomes documented in Chapter 6, section 6.3, even as this report has also documented persistent execution gaps across numerous other sectors.

The state has pursued specific judicial modernization initiatives beyond the broader national e-Courts programme, most notably the Andhra Pradesh Electronic Processes (Issuance, Service and Execution) Rules of 2025, published through Government Order Ms.No.107 on May 22, 2026, which modernizes the service of court summons, warrants, and other legal notices through electronic platforms including email and messaging applications, allowing courts and police to deliver these documents digitally to accused persons, witnesses, victims, and other proceeding participants rather than relying exclusively on traditional physical service methods (KP IAS Academy, 2026b). This reform is explicitly framed as intended to reduce delays and improve accountability in support of speedier trials, while its own accompanying policy analysis acknowledges specific implementation risks, including the digital divide affecting citizens without smartphone or internet access, particularly relevant given the rural connectivity disparities this report has documented in Chapter 8, section 8.5, and Chapter 9, section 9.3, the risk of failed delivery due to incorrect contact information, and the need for robust verification standards around screenshot-based proof of service (KP IAS Academy, 2026b).

This specific tension, between the genuine efficiency gains digital court process service can offer and the risk of inadvertently disadvantaging citizens without reliable digital access, mirrors closely a tension this report has identified repeatedly across other digitally-enabled governance reforms examined throughout this framework, including the Aadhaar-linked direct benefit transfer welfare architecture discussed in Chapter 7, section 7.9, and the digital health record integration discussed in Chapter 6, section 6.2. In each instance, the state's evident institutional preference for digital-first service delivery mechanisms offers genuine efficiency and transparency benefits, but carries an inherent risk of differential effectiveness across the state's population depending on digital access and literacy, a risk this report has noted is likely to correlate with the same regional and rural-urban disparities documented throughout this report's infrastructure chapters, since digital connectivity itself, as documented in Chapter 8, section 8.5, and Chapter 3, section 3.5, remains unevenly distributed across the state's three constituent regions.

Beyond the electronic process rules specifically, Andhra Pradesh's judicial administration also participates in the broader national e-Courts Mission Mode Project, now in its third phase covering 2023 through 2027 with a national budget allocation of Rs. 7,210 crore, focused on artificial intelligence-assisted case management tools and a unified digital court ecosystem, building on the National Judicial Data Grid's earlier phases, which had already achieved Wide Area Network connectivity to 99.5 percent of court complexes nationally and computerization of over 14,000 district and subordinate courts (Anantam IAS, 2026b; Press

Information Bureau, 2026e). Given Andhra Pradesh's strong overall India Justice Report 2025 ranking discussed above, and its demonstrated willingness to pursue state-specific digital judicial reforms beyond the baseline national e-Courts framework, exemplified by the Electronic Processes Rules discussed above, it is plausible that the state's courts have achieved above-average integration with this national digital infrastructure relative to other large Indian states, though state-specific National Judicial Data Grid utilization statistics disaggregated for Andhra Pradesh specifically were not directly analyzed among the sources consulted for this chapter, and this report recommends such direct analysis, readily available given the National Judicial Data Grid's public-facing state-specific reporting portal, as a valuable addition to subsequent editions of this framework.

## **15.4 Police Modernisation and Internal Security Management**

Andhra Pradesh's police modernisation efforts are assessed within the same India Justice Report 2025 framework discussed in section 15.3, which evaluates state police forces across dimensions including modernisation fund utilization, per-capita spending, training budget allocation and utilization, human resource vacancy rates across constables, officers, and administrative staff, and diversity representation metrics spanning gender and reserved category officer and constable ratios relative to statutory reservation targets (India Justice Report, 2026). The same national assessment found that no state or union territory had fulfilled its reserved quota for women in police forces nationally, with fewer than 1,000 senior women officers serving across the entire country, a finding that, while not disaggregated specifically for Andhra Pradesh among the sources consulted for this chapter, represents a national pattern this report expects likely extends to the state's own police force composition (Insights on India, 2026).

Given Andhra Pradesh's strong overall India Justice Report 2025 ranking among the top five large states, discussed in section 15.3, it is plausible that the state's police modernisation performance specifically contributes meaningfully to this strong composite standing, though comprehensive, current, Andhra Pradesh-specific data on constable and officer vacancy rates, modernisation fund utilization, and per-capita police spending was not available in disaggregated form among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the India Justice Report's own state-specific data portal, which maintains detailed, disaggregated metrics across all the dimensions listed above for every major Indian state including Andhra Pradesh.

Internal security management in the state also intersects with the tribal welfare and Left Wing Extremism-affected area themes examined in Chapter 7, section 7.2, and Chapter 8, section 8.1, where this report documented the state's participation in the Road Connectivity Project for Left Wing Extremism-Affected Areas, a programme explicitly designed to serve dual anti-insurgency and socio-economic development objectives within the state's most remote tribal districts. Police force deployment and capacity within these specific districts, including Alluri Sitharama Raju and the newly created Polavaram district discussed throughout this

report, likely requires a materially different operational model than policing within the state's more urbanized Coastal Andhra growth corridors, given the distinct terrain, community relations, and security challenge profile these tribal and forested districts present relative to the state's urban centres. Comprehensive, current, district-disaggregated data on police staffing and capacity specific to these Left Wing Extremism-affected districts was not available among the sources consulted for this chapter, representing a further specific gap this report recommends addressing in subsequent editions given its direct relevance to both the internal security and tribal welfare themes this report has traced throughout its preceding chapters.

### **15.5 Regulatory Governance: Quality, Consistency and Independence**

Regulatory governance quality across Andhra Pradesh's various sector-specific regulatory bodies has been examined throughout this report in considerable sector-specific detail, including the Andhra Pradesh Electricity Regulatory Commission's tariff-setting independence and evolving renewable energy regulatory framework discussed in Chapter 9, section 9.6, and the Andhra Pradesh Pollution Control Board's five-decade regulatory mandate evolution and mining consent process discussed in Chapter 13, sections 13.4 and 13.5. Both of these sector-specific regulatory bodies exhibit the same broad institutional pattern this report has identified as a recurring characteristic of the state's governance architecture more generally: a formally independent regulatory structure, established under the standard national legal framework applicable to that specific sector, that in practice must navigate a persistent tension between technical regulatory independence and the state government's own policy and fiscal priorities, illustrated concretely by the tension between APERC's cost-recovery tariff-setting mandate and the state government's preference for consumer-affordability-oriented tariff freezes documented in Chapter 9, section 9.6.

This report has not identified, among the sources consulted across its preceding chapters, evidence of a single, consolidated cross-sectoral regulatory quality assessment framework specific to Andhra Pradesh, of the kind national regulatory quality indices sometimes produce for cross-state comparison purposes. This represents a further documented gap this report recommends addressing in subsequent editions, ideally through reference to any available World Bank Ease of Doing Business-style regulatory quality assessment specific to Andhra Pradesh, beyond the general investment climate and single-window clearance system discussed in Chapter 4, section 4.1, which, while relevant to regulatory quality, addresses primarily the investment approval process rather than the broader universe of ongoing regulatory compliance and oversight this section is intended to cover.

Drawing together the sector-specific regulatory governance findings documented throughout this report, a consistent pattern emerges regarding the relationship between formal regulatory independence and practical regulatory outcomes. In each of the sector-specific regulatory bodies this report has examined in detail, APERC in the energy sector, the Pollution Control Board in the environmental sector, and the various welfare scheme administering bodies discussed throughout Chapters 5 through 7, formal statutory independence coexists with a

documented pattern of the state government exercising substantial practical influence over the regulatory body's resource allocation, appointment processes, or, in APERC's specific case, the fiscal backstopping arrangement that effectively allows the state government to override the regulator's own cost-recovery tariff logic through direct budgetary subsidy. This report considers this pattern a genuine, consistent structural characteristic of Andhra Pradesh's regulatory governance architecture, rather than a coincidental feature specific to any single regulatory domain, one that merits explicit acknowledgment in any comprehensive assessment of the state's regulatory quality and independence.

## **15.6 Reduction of Red-tapism: Simplification and Way Forward**

Andhra Pradesh's efforts to reduce administrative red tape and procedural friction recur as a consistent theme across multiple sectoral chapters examined throughout this report, rather than existing as a single, centrally coordinated red-tape reduction initiative. Examples include the self-certification building permission system for urban housing plots up to 4,000 square meters discussed in Chapter 11, section 11.3, the single-desk investment portal providing instant industrial approvals discussed in Chapter 4, section 4.1, which the state credits with propelling it to the top position nationally in the Department for Promotion of Industry and Internal Trade's Ease of Doing Business rankings, and the electronic court process service rules discussed in section 15.3 of this chapter, intended to reduce the procedural friction and delay historically associated with physical service of legal documents.

Taken together, these sector-specific simplification initiatives suggest a broadly consistent administrative philosophy favoring digital-first, self-certification, or single-window approaches across multiple domains of state administration, rather than a single, named "red tape reduction" programme operating as a distinct policy initiative in its own right. This report considers this distributed, sector-by-sector approach to procedural simplification a reasonable and pragmatic administrative strategy, since different regulatory domains face genuinely different specific friction points requiring tailored solutions, though it does mean that assessing the state's overall red-tape reduction progress requires synthesizing evidence across numerous separate sectoral initiatives rather than evaluating a single consolidated programme, precisely the synthesis this section has attempted to provide by drawing together the scattered examples documented throughout this report's preceding chapters.

A further dimension of red-tape reduction worth noting concerns the state's demonstrated willingness to accept meaningful procedural risk in exchange for speed, exemplified by the self-certification building permission model discussed above, which shifts compliance verification responsibility from upfront government inspection toward post-hoc audit and enforcement. This risk-shifting approach to regulatory simplification, while genuinely effective at reducing approval timelines, of the kind reflected in the state's top national Ease of Doing Business ranking discussed in Chapter 4, section 4.1, also depends fundamentally on robust downstream enforcement capacity to catch and penalize the inevitable minority of self-certifications that prove inaccurate or non-compliant, a downstream enforcement capacity this report was unable to assess given the absence of self-certification audit outcome

data among the sources consulted for this chapter. This represents a further specific area this report recommends for direct investigation in subsequent editions, since the long-term credibility of a self-certification-based simplification model depends substantially on this enforcement backstop functioning effectively, rather than on the simplification itself, which by its nature reduces the state's own upfront visibility into compliance status at the point of initial approval.

### **15.7 Civil Service Strength: Vacancy Rates and Training Institutions**

The Andhra Pradesh Public Service Commission serves as the state's primary civil service recruitment body, publishing recruitment notifications for state government positions across departments through its official recruitment portal (Andhra Pradesh Public Service Commission, 2026). As documented in Chapter 5, section 5.5, the state's Mega Direct Selection Committee recruitment drive of 2025 targeted over 16,000 teacher vacancies specifically within the education sector, one of the largest single recruitment exercises the state has undertaken in recent years, reflecting what state officials and education commentary characterized as a chronic staffing shortage within government schools specifically.

This teacher-specific vacancy figure, while substantial in absolute terms, represents only one component of the state's broader civil service staffing picture, and comprehensive, current, state-wide data on aggregate civil service vacancy rates across all state government departments, beyond the education sector-specific figure documented in Chapter 5, was not available among the sources consulted for this chapter. Given the pattern this report has documented repeatedly across other sectors, including the human resource staffing gaps identified in the health sector in Chapter 6, section 6.1, and the persistent gap between budgeted and executed welfare spending documented in Chapter 2, section 2.2, it would not be surprising if broader civil service vacancy rates across other state government departments follow a broadly similar pattern to the education sector's documented 16,000-position gap, though this report emphasizes this as a plausible inference rather than a verified finding, and recommends direct reference to the Andhra Pradesh Public Service Commission's own aggregate vacancy and recruitment reporting to properly substantiate or refute this inference in subsequent editions.

On civil service training infrastructure specifically, comprehensive, current data on the capacity, curriculum, and throughput of the state's civil service training institutions was similarly not available among the sources consulted for this chapter, representing a further documented gap this report recommends addressing in subsequent editions, given the evident relevance of well-trained civil service capacity to the successful execution of the numerous ambitious reform agendas this report has documented throughout its preceding chapters, from the Panchayat Raj devolution reforms examined in Chapter 12, section 12.1, to the digital governance initiatives examined further in Chapter 16.

This chapter's overall findings on the state's administrative governance architecture, drawing together the anti-corruption framework documented in section 15.2, the judicial administration performance documented in section 15.3, and the civil service capacity gaps

documented in this section, present a genuinely mixed picture consistent with the broader analytical pattern this report has traced since Chapter 2. On the positive side, Andhra Pradesh's India Justice Report 2025 ranking among the top five large Indian states, its multi-institution anti-corruption architecture combining the Anti-Corruption Bureau, Tribunal for Disciplinary Proceedings, Vigilance Commission, and Lokayukta system, and its demonstrated willingness to pursue state-specific digital governance innovations beyond baseline national requirements, together suggest a state administration with genuine institutional sophistication and reform capacity. On the more cautionary side, the persistent Lokayukta leadership vacancy documented in section 15.2, the low historical rate of full prosecutorial follow-through on anti-corruption recommendations, and the education-sector-specific 16,000-position teacher vacancy documented above, which this report infers may plausibly extend to other civil service categories, together suggest that translating strong institutional design into fully realized operational capacity remains an ongoing challenge, one entirely consistent with the execution gap pattern this report has now documented across virtually every sector examined since Chapter 2.

This chapter's findings therefore reinforce, rather than depart from, this report's central analytical thread: Andhra Pradesh's governance architecture, across the specific domain of administrative and anti-corruption institutions examined in this chapter no less than across the health, energy, water, and rural development domains examined in preceding chapters, exhibits a consistent pattern of substantial institutional ambition and design sophistication that has not yet been fully matched by equally consistent operational execution, a gap this report's concluding Vision 2047 assessment in Chapter 21 treats as the single most important cross-cutting theme running through this entire framework.

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## Chapter 16: Technology-Enabled Service Delivery

### 16.1 Digital Infrastructure: Broadband, Optical Fibre and Connectivity Coverage

As documented in Chapter 3, section 3.5, Andhra Pradesh's telecommunications infrastructure has matured considerably, with the Telecom Regulatory Authority of India recording 42.79 million wireless and 3.26 million wireline subscribers within the state as of June 2025, and overall teledensity reaching 86.82 percent as of the same date, a connectivity base this report has previously noted underpins the state's broader digital services and e-governance ambitions (India Brand Equity Foundation, 2026a). This foundational connectivity infrastructure supports the substantial digital governance architecture examined throughout this chapter, spanning e-governance service delivery, data governance, cybersecurity, and emerging technology applications across the state's administrative machinery.

The state's Information Technology, Electronics and Communications Department, commonly referenced by its ITE&C abbreviation, serves as the primary institutional vehicle coordinating this digital infrastructure development, operating alongside Andhra Pradesh Technology Services, the state's designated technical implementation agency responsible for cybersecurity coordination, data centre operations, and State Wide Area Network management discussed further in section 16.5 (ITE&C Department, 2026; Deccan Chronicle, 2026f). The state's Information Technology and Global Capability Centre Policy 4.0, covering 2024 to 2029 and referenced in Chapter 4, section 4.3, as one of the state's sector-specific anchor industry policies, explicitly identifies digital infrastructure and cybersecurity investment, spanning high-speed internet, secure information technology environments, and cloud-based services, as a core policy pillar alongside its industrial and employment objectives, reflecting the state's recognition that robust digital infrastructure functions simultaneously as public governance infrastructure and as private sector investment infrastructure (Nasscom, 2026).

Given the connectivity disparities this report has documented repeatedly across the state's three constituent regions, particularly in Chapter 8, section 8.5, regarding urban mass transit sequencing, and Chapter 9, section 9.3, regarding rural electrification quality, it is reasonable to infer that broadband and digital connectivity infrastructure likely follows a similar regional gradient, with Coastal Andhra's growth corridors enjoying more robust connectivity than the Rayalaseema interior or North Andhra's tribal districts. Comprehensive, current, district-disaggregated broadband and optical fibre coverage data was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions, given its direct relevance to the digital divide risks this report has flagged repeatedly throughout its discussion of the state's digital-first service delivery philosophy, including in Chapter 15, section 15.3, regarding electronic court process service.

This inferred regional connectivity gradient carries particular significance for this chapter's overall analytical thrust, since nearly every digital governance initiative examined in the sections that follow, from the E-Panchayat rural governance system discussed in section 16.2 to the emerging artificial intelligence and geospatial applications discussed in section 16.6, depends fundamentally on adequate underlying connectivity infrastructure to function as designed. A digital governance system that performs excellently within well-connected Coastal Andhra districts but experiences degraded functionality, slower processing, or reduced citizen accessibility within North Andhra's tribal districts or Rayalaseema's more remote areas would, in effect, replicate through a technological medium precisely the same regional service delivery disparity this report has documented through more conventional physical infrastructure channels throughout Chapters 8 through 14. This report considers this connectivity-dependent replication risk a genuinely important, if currently under-documented, consideration for evaluating the equity implications of the state's broader digital governance strategy, one this report recommends receiving explicit, disaggregated attention in subsequent editions rather than being assessed only through aggregate, state-wide connectivity statistics of the kind available for this chapter.

The state's 5G network rollout, part of the broader national 5G deployment that began in 2022, is expected to further transform this connectivity landscape over the coming years, with particular relevance for applications including telemedicine, precision agriculture, and smart city functionality, all of which connect directly to themes examined throughout this report, respectively in Chapter 6's health infrastructure discussion, Chapter 18's agricultural technology themes, and the smart cities discussion in Chapter 11, section 11.4 (IJCRT, 2026). Whether this 5G rollout proceeds at a pace and geographic distribution sufficient to narrow, rather than further widen, the regional connectivity gradient inferred above represents a further specific development this report recommends tracking closely in subsequent editions, given 5G infrastructure's typically capital-intensive deployment economics, which tend to favor dense, high-revenue urban markets over the sparser, lower-revenue rural and tribal districts where connectivity gaps are most likely to persist absent deliberate policy intervention to ensure more equitable rollout sequencing.

## **16.2 e-Governance Architecture and Digital Public Infrastructure**

Andhra Pradesh's most distinctive and long-running digital governance achievement is its E-Panchayat initiative, a state-level application of the national e-Panchayat Mission Mode Project that has, over more than two decades, progressively replaced paper-based rural governance workflows with digital systems spanning planning, budgeting, accounting, and citizen service delivery across the state's Panchayati Raj institutions discussed in Chapter 12 (PubAdmin Institute, 2026c). The initiative's architecture rests on three distinct interface layers: the Panchayat-to-Panchayat interface, connecting Gram Panchayats, Mandal Parishads, and Zilla Parishads to enable data, decisions, and reports to move across governance tiers without paper-based bottlenecks, of particular relevance to multi-tier-dependent projects such as village drainage works requiring higher-tier clearance or funding; the Panchayat-to-Business interface, streamlining trade licence, No Objection

Certificate, and building permit applications for local enterprises, cooperatives, and vendors; and the Panchayat-to-Government interface, which makes Gram Sabha functioning, the constitutional cornerstone of village-level participatory democracy discussed in Chapter 12, section 12.6, more transparent and accessible (PubAdmin Institute, 2026c).

This E-Panchayat system's functional modules extend across water governance, mapping water bodies, watersheds, and irrigation infrastructure to allow panchayats to track usage and maintain assets more systematically, a digital complement to the water resource governance themes examined in Chapter 10; election administration, covering voter roll management, nomination processing, and results reporting for panchayat elections; and social welfare administration, managing pensions, scholarships, and benefit transfers for elderly citizens, widows, persons with disabilities, and below-poverty-line households, directly complementing the welfare architecture discussed throughout Chapter 7 (PubAdmin Institute, 2026c). Independent policy analysis has characterized Andhra Pradesh's E-Panchayat system as offering "a working reference for other states to adapt," citing its demonstrated capacity to function as a cost-effective, stakeholder-driven village-level e-governance system, a characterization that positions the state's rural digital governance achievement as a genuine, externally validated model rather than a purely self-reported success (PubAdmin Institute, 2026c).

Notwithstanding this genuine achievement, the same independent analysis flags persistent integration challenges, noting that while the Ministry of Panchayati Raj has worked to integrate national applications including PRIASoft, PlanPlus, NREGASoft, and CPSMS to enable single-point information uploading, states maintaining their own legacy systems, a category that plausibly includes Andhra Pradesh given its two-decade head start on this digitization effort, sometimes struggle with full integration into this evolving national framework (PubAdmin Institute, 2026c). This finding illustrates a nuanced version of the pattern this report has documented repeatedly throughout its preceding chapters: Andhra Pradesh's early and comparatively sophisticated investment in a particular governance technology can, somewhat counterintuitively, create its own distinct integration friction when later, nationally standardized systems attempt to interoperate with the state's already-mature, purpose-built legacy architecture, a genuinely different challenge than the more familiar pattern of states lacking digital infrastructure altogether.

Beyond the E-Panchayat system, Andhra Pradesh's broader digital public infrastructure extends through the Village and Ward Secretariat system referenced throughout this report's welfare chapters, particularly Chapter 7, section 7.9, which functions as the common frontline administrative delivery mechanism for the state's Aadhaar-linked direct benefit transfer architecture spanning education, pension, and health insurance programming. This Secretariat system's role as a unifying delivery channel across so many otherwise distinct welfare domains, documented throughout Chapters 5, 6, and 7, positions it as arguably the single most consequential piece of digital public infrastructure examined throughout this entire report, given the sheer breadth of citizen interaction it mediates, from education cash transfers to pension disbursement to health insurance enrollment, all channeled through a

common frontline administrative architecture rather than through separate, siloed delivery systems for each individual welfare domain. This consolidation likely generates genuine administrative efficiency, since citizens and frontline staff alike need to master only a single administrative interface point rather than navigate separate systems for each distinct welfare programme, though it also concentrates a correspondingly large share of the state's citizen-facing digital governance risk within this single institutional channel, a concentration this report recommends weighing carefully alongside the cybersecurity themes examined in section 16.5.

### **16.3 Citizen Service Delivery: CSCs, Service Portals and Mobile Governance**

Citizen-facing digital service delivery in Andhra Pradesh has increasingly extended beyond rural panchayat administration into urban governance contexts, illustrated by recent reforms within the Municipal Administration and Urban Development Department covering all 123 Urban Local Bodies discussed in Chapter 11. These reforms include implementation of the Capital Value System for property tax assessment, aligning taxation with current market rates to improve transparency, and Auto-Mutation of property ownership titles, already implemented in 17 Municipal Corporations with planned expansion to remaining Urban Local Bodies, enabling faster, more transparent property transaction service delivery (Elets eGov, 2026). Each Urban Local Body now operates under a unified chart of accounts integrated with the Comprehensive Financial Management System referenced in Chapter 2, section 2.8, ensuring auditable expenditure and receipt tracking, part of a broader transition state officials describe as moving from a grant-dependent financing model toward a blended model combining own-source revenue, Finance Commission grants, and structured public-private partnership mechanisms (Elets eGov, 2026).

Water service delivery has similarly incorporated digital tracking mechanisms, with an enterprise resource planning system integrating water billing with property tax administration, and Smart Water Management interventions under the AMRUT 2.0 scheme discussed in Chapter 10, section 10.5, aligned with real-time consumption tracking and reuse monitoring intended to reduce non-revenue water losses (Elets eGov, 2026). These digital service delivery improvements connect directly to the urban local body financial sustainability concerns this report raised in Chapter 11, section 11.2, since more accurate, technology-enabled property tax assessment and water billing collection represent precisely the kind of own-source revenue mobilization improvement that could help address the Urban Local Body fiscal capacity gaps this report flagged as inadequately documented in that earlier chapter.

Mobile governance applications, providing citizens direct smartphone-based access to government services, welfare scheme status checking, and grievance submission, represent a further dimension of citizen service delivery this report has referenced implicitly throughout its welfare chapters, including the Talliki Vandanam status checking functionality discussed in Chapter 5, section 5.1, though comprehensive, current, consolidated data on the state's mobile governance application portfolio, user adoption rates, and service completion rates

was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the ITE&C Department's own citizen service delivery performance reporting.

The specific 123 Urban Local Body figure documented above, referenced consistently across the property tax, water billing, and financial management system reforms discussed in this section, provides a useful cross-check against the broader urban governance architecture discussed in Chapter 11, section 11.2, where this report noted the absence of comprehensive Urban Local Body-specific financial data. The digital reforms documented in this section, particularly the unified chart of accounts integration with the Comprehensive Financial Management System and the transition toward blended, own-source-revenue-oriented financing, represent precisely the kind of institutional capacity building this report recommended in Chapter 11, section 11.2, as necessary to properly assess and, ultimately, improve Urban Local Body fiscal sustainability. The fact that these digital financial management reforms appear to be actively underway across all 123 Urban Local Bodies simultaneously, rather than being piloted in only a small subset of the state's cities, suggests a genuinely systematic, state-wide implementation approach, though this report was unable to verify the actual completion status and functional maturity of this system-wide rollout given the promotional framing of the source material consulted for this chapter, and recommends subsequent editions seek more independently verified assessment of actual implementation progress relative to the ambitious scope described.

Citizen grievance redressal mechanisms more broadly connect this chapter's digital service delivery themes to the anti-corruption and administrative governance themes examined in Chapter 15, sections 15.2 and 15.6, since digital grievance submission and tracking systems, where genuinely functional, can provide exactly the kind of transparent, auditable citizen interaction record that supports both individual grievance resolution and broader institutional accountability. Whether Andhra Pradesh's digital citizen service delivery architecture, spanning the E-Panchayat system discussed in section 16.2 and the urban service delivery reforms discussed in this section, incorporates a correspondingly robust digital grievance redressal and escalation mechanism, comparable in sophistication to the property tax and water billing systems documented above, was not addressed in the sources available for this chapter, and represents a further specific area this report recommends for direct investigation in subsequent editions.

## **16.4 Data Governance, Open Data Policy and Privacy Framework**

Data governance in Andhra Pradesh operates within the broader national legal framework established by India's Digital Personal Data Protection Act of 2023, enacted following the landmark Puttaswamy judgment that recognized privacy as a fundamental right, which establishes a framework for personal data processing, creates rights for individual data subjects, termed data principals, and imposes corresponding obligations on data fiduciaries, the entities processing that data (IJCRT, 2026). National academic analysis of this framework has raised sustained concerns regarding the limited independence of the Act's proposed Data

Protection Board and the broad exemptions the Act accords to government entities specifically, concerns directly relevant to Andhra Pradesh's own extensive government data holdings spanning the welfare, health, education, and land record systems documented throughout this report (IJCRT, 2026).

At the state level, Andhra Pradesh has established a formal data access governance protocol requiring all secretariat departments, heads of departments, public sector undertakings, societies, and other institutional entities under the state government to request security audit and SSL/TLS certification from Andhra Pradesh Technology Services or a CERT-In empanelled organization before enabling organizational data access through Application Programming Interfaces, with a formal online indent form process requiring source department authority approval before any inter-departmental data sharing is permitted (Government of Andhra Pradesh, 2026). This structured API governance protocol represents a genuinely more formalized data-sharing control mechanism than many Indian states have publicly documented, suggesting the state has invested meaningfully in establishing procedural safeguards around its extensive cross-departmental data integration architecture, discussed throughout this report in the context of Aadhaar-linked welfare delivery systems.

Notwithstanding this data access governance protocol, broader academic analysis of India's digital governance landscape identifies persistent structural challenges directly relevant to Andhra Pradesh's own data architecture, including significant interoperability challenges arising from state-level land records, health registries, and social protection databases frequently being maintained in different formats across different legacy systems, and the centralized architecture common to many digital governance systems creating concentrated points of failure that, while efficient, carry inherent cybersecurity risk (IJCRT, 2026). Given this report's earlier documentation of Andhra Pradesh's own legacy E-Panchayat system integration challenges in section 16.2, these national-level interoperability concerns plausibly apply with particular force to the state's own data architecture, one built up over more than two decades and therefore likely comprising a heterogeneous mix of legacy and more recently modernized systems rather than a single, uniformly architected data governance platform.

The Digital Personal Data Protection Act's broad government entity exemptions, noted above, carry particular relevance for Andhra Pradesh given the sheer scale and sensitivity of the personal data the state's welfare architecture processes, documented throughout Chapters 5, 6, and 7 of this report, spanning education enrollment and attendance records under Talliki Vandanam, health records under the Ayushman Bharat Digital Mission integration discussed in Chapter 6, section 6.2, and pension and disability status under the NTR Bharosa scheme discussed in Chapter 7, section 7.6. A citizen enrolled across multiple of these state welfare schemes simultaneously, a plausible scenario given the state's extensive cross-category welfare architecture documented in Chapter 7, section 7.9, would have a correspondingly extensive digital footprint spanning education, health, and financial welfare data, all nominally protected under the same overarching Digital Personal Data Protection Act framework but potentially processed across the heterogeneous, legacy-system-dependent data

architecture this section has identified as a genuine, documented national and plausibly state-specific concern. This report considers the practical robustness of data protection specifically for this kind of multiply-enrolled welfare beneficiary, whose data traverses several distinct departmental systems, a meaningful open question meriting closer examination in subsequent editions, ideally through direct engagement with the state's Data Protection Officer function, if one has been formally established, or with the ITE&C Department's own data governance compliance reporting.

## **16.5 Cybersecurity: State-Level Institutional Mechanisms**

Andhra Pradesh's cybersecurity governance received significant institutional attention through a State-level Cyber Security Workshop that Andhra Pradesh Technology Services organized at the state Secretariat, explicitly themed around strengthening cyber security frameworks across government systems to secure state data (Deccan Chronicle, 2026f). APTS Chairman Mannava Mohana Krishna framed the initiative's urgency in terms of the expanding scope of citizens' personal information the state now holds digitally, spanning health records, education data, land records, welfare databases, and financial information, precisely the categories of sensitive data this report has documented flowing through the state's Aadhaar-linked direct benefit transfer architecture throughout Chapters 5, 6, and 7 (Deccan Chronicle, 2026f). The workshop's stated objectives included establishing uniform cyber security standards across state departments, aligning the state's cybersecurity framework with global best practices, and building a more resilient overall digital governance ecosystem (Deccan Chronicle, 2026f).

This state-level workshop was conducted in coordination with a national cybersecurity assessment exercise, with the central government's National Cyber Security Team reviewing cybersecurity standards across Andhra Pradesh's government departments specifically ahead of a scheduled National Cyber Security Conference in August, illustrating that the state's cybersecurity posture is subject to external, centrally coordinated verification rather than relying solely on internal self-assessment (Deccan Chronicle, 2026f). Specific reform priorities identified through the workshop process included protection of critical digital infrastructure, implementation of uniform security standards across the previously heterogeneous departmental landscape discussed in sections 16.2 and 16.4, strengthening of the State Data Centres and State Wide Area Network infrastructure referenced in section 16.1, modernisation of legacy applications, precisely the integration challenge this report identified in the E-Panchayat context in section 16.2, enhancement of data privacy protections, and the appointment of dedicated Chief Information Security Officers within individual state departments (Deccan Chronicle, 2026f).

This last specific reform priority, department-level Chief Information Security Officer appointment, is analytically significant because it suggests the state's cybersecurity governance model is evolving toward a distributed responsibility structure, with dedicated security accountability embedded within each individual department rather than centralized exclusively within Andhra Pradesh Technology Services, a design choice that could, if

implemented effectively, help address the departmental data governance fragmentation concerns raised in section 16.4, though whether these Chief Information Security Officer positions have been fully staffed across all state departments, and with what level of dedicated budget and authority, was not documented in the sources available for this chapter. The workshop's participatory structure, dividing participants into six thematic working groups tasked with identifying challenges and recommending measures for incorporation into a comprehensive action plan, suggests the state approached this cybersecurity strengthening exercise as a genuine, still-evolving planning process rather than treating it as a symbolic or purely ceremonial event, though the concrete outcomes and implementation timeline of this comprehensive action plan were not available among the sources consulted for this chapter.

The timing of this cybersecurity strengthening initiative, coinciding with the state's simultaneous pursuit of the ambitious artificial intelligence and geospatial governance roadmap discussed in section 16.6, and its continued expansion of Aadhaar-linked welfare data integration documented throughout Chapters 5 through 7, suggests a reasonably coherent recognition within the state administration that expanding digital governance capability necessarily requires commensurate investment in the security infrastructure protecting that expanded capability, rather than treating digital service expansion and cybersecurity investment as separate, sequentially ordered priorities. This coordinated timing, whether the product of deliberate strategic sequencing or simply coincidental scheduling, represents a more prudent approach than the alternative pattern, observed in some other rapidly digitizing government contexts internationally, in which service expansion substantially outpaces security investment, creating extended windows of elevated vulnerability. Whether Andhra Pradesh's cybersecurity investment has, in practice, kept pace with the sheer scale and sensitivity of the data holdings this report has documented accumulating across its welfare, health, education, and land record systems throughout this framework remains a question this report was unable to answer definitively given the absence of specific cybersecurity budget allocation or incident response performance data among the sources consulted for this chapter, and this report recommends this specific question receive priority attention in subsequent editions, given the potentially severe consequences, both for individual citizens and for public trust in the state's broader digital governance architecture, that a significant data breach affecting the welfare, health, or financial systems documented throughout this report could produce.

## **16.6 Emerging Technologies: AI, Geospatial Systems and Smart Governance**

Andhra Pradesh's most technically ambitious emerging technology initiative concerns AI-powered spatial governance, with the state's Directorate of Town and Country Planning outlining specific artificial intelligence priorities for the 2026 to 2031 period aimed at transforming spatial planning and regulatory compliance through geographic information system-enabled analytics and predictive modelling (Elets eGov, 2026b). This strategy proposes integrating artificial intelligence with geographic information system-generated maps to forecast land value shifts, flood vulnerabilities, and Floor Space Index optimisation, drawing on satellite, drone, and Internet of Things sensor data, and specifically proposes

automating and integrating the state's existing Unauthorised Constructions Identification and Monitoring System and Unauthorised Layouts Identification and Monitoring System to enable real-time detection of illegal developments accompanied by AI-generated alerts and penalisation notices (Elets eGov, 2026b).

The state's flagship Andhra Pradesh Development Permission Management System, in its planned 2.0 iteration, envisions full automation of building plan scrutiny by 2031, intended to significantly reduce approval timelines while simultaneously improving compliance analytics, an ambition directly relevant to the red-tape reduction themes examined in Chapter 15, section 15.6, and specifically to the self-certification building permission risk management concerns this report raised in that section regarding downstream enforcement capacity, since an AI-automated plan scrutiny and compliance monitoring system of the kind proposed here would represent precisely the kind of enhanced downstream enforcement backstop this report identified as necessary to support the credibility of a self-certification-based simplification model (Elets eGov, 2026b). The roadmap further recommends localising the national IndiaAI Mission through a dedicated urban and town planning vertical, investing in municipal computing infrastructure, training 50,000 planners in combined artificial intelligence and geographic information system tools by 2028, and establishing a national urban geographic information system repository incorporating privacy safeguards to support predictive zoning and climate-resilient planning (Elets eGov, 2026b).

Beyond spatial and urban planning applications, the Municipal Administration and Urban Development Department has identified additional priority artificial intelligence application areas addressing genuine, currently unmet governance needs, including real-time water quality monitoring to replace the current reliance on infrequent manual sampling and delayed laboratory results, a gap this report has already flagged as contributing to slow contamination detection and elevated public health risk from waterborne diseases including cholera and typhoid, connecting directly to the water and sanitation infrastructure themes examined throughout Chapter 10 (Elets eGov, 2026b). A proposed artificial intelligence-powered demand forecasting framework would analyse ward-level demographic data, utility consumption records, rainfall patterns, hydrology, drainage density, elevation, and land-use changes to project water supply, sanitation, stormwater drainage, and solid waste management demand across short, seasonal, and medium-term horizons, with decision-support dashboards intended to help planners prioritise tanker deployment, desludging schedules, and infrastructure upgrades, directly addressing the municipal solid waste and sewerage infrastructure planning gaps this report identified in Chapter 10, sections 10.4 and 10.5 (Elets eGov, 2026b).

On infrastructure asset monitoring specifically, a pilot programme in Visakhapatnam covering approximately 200 infrastructure assets, including roads, bridges, and government buildings, aims to integrate LiDAR, drone, and satellite datasets to generate high-resolution three-dimensional maps capable of automatically detecting structural deformations, subsidence, surface wear, and encroachments, targeting at least 95 percent accuracy in structural risk detection (Elets eGov, 2026b). This pilot's specific location within

Visakhapatnam connects directly to the disaster resilience themes examined in Chapter 14, section 14.1, particularly the city's documented vulnerability to cyclone-related infrastructure damage illustrated by the Cyclone Hudhud power distribution damage discussed in that chapter, suggesting this AI-powered infrastructure monitoring pilot may be understood, at least in part, as a further layer of the state's broader disaster resilience strategy for its most cyclone-exposed major urban centre, extending the infrastructure hardening approach exemplified by the post-Hudhud power undergrounding project into a more general, technology-enabled infrastructure health monitoring capability. Whether this pilot's ambitious accuracy targets are achieved in practice, and whether the programme is subsequently extended beyond Visakhapatnam to the state's other major urban centres, represents a specific development this report recommends tracking closely in subsequent editions, given its potential significance for the broader infrastructure resilience themes traced throughout this report's transport, energy, and disaster management chapters.

Drawing together the findings of this chapter as a whole, Andhra Pradesh's technology-enabled service delivery architecture exhibits the same core analytical pattern this report has now identified consistently across nearly every sector examined since Chapter 2: substantial, genuinely sophisticated institutional ambition, evidenced by the two-decade-old, externally validated E-Panchayat system discussed in section 16.2, the systematic cybersecurity strengthening exercise discussed in section 16.5, and the forward-looking artificial intelligence and geospatial governance roadmap discussed in this section, coexisting with documented and inferred execution gaps, spanning the legacy system integration friction identified in section 16.2, the plausible regional connectivity gradient inferred in section 16.1, and the data interoperability challenges discussed in section 16.4. This chapter's findings differ somewhat from the pattern traced in several preceding chapters, however, in one important respect: rather than reflecting primarily a gap between announced ambition and demonstrated execution, several of this chapter's most significant findings, particularly the AI-powered spatial governance roadmap discussed in this section, represent genuinely forward-looking, multi-year planning documents whose success or failure cannot yet be assessed, since their target implementation dates, 2028 and 2031 respectively for the planner training and full automation targets discussed above, remain several years in the future relative to this report's own 2026 vantage point.

This distinction matters for how this report's concluding Vision 2047 assessment in Chapter 21 should weigh this chapter's findings. Where earlier chapters have generally been able to compare announced targets against already-elapsed implementation timelines to assess execution credibility, several of this chapter's central technology initiatives are still sufficiently early in their planned implementation horizon that this kind of retrospective execution assessment is not yet possible. This report recommends that subsequent editions of this framework treat the specific milestones documented throughout this chapter, including the 50,000 planners trained by 2028 target and the full plan scrutiny automation by 2031 target discussed in this section, as concrete, trackable benchmarks against which the state's digital governance execution credibility can be more rigorously assessed once these target dates approach or pass, providing a valuable forward-looking complement to the more

retrospective execution assessment this report has been able to conduct across its other sectoral chapters.

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## Chapter 17: Innovation, Research and Knowledge Economy

### 17.1 State Innovation Ecosystem: Startups and Accelerators

Andhra Pradesh's innovation and startup promotion architecture centers on the Andhra Pradesh Innovation and Startup Policy 4.0, covering 2024 to 2029, which explicitly articulates a vision of establishing a world-class technology startup ecosystem within the state, built on five foundational pillars: shared infrastructure, incubators and accelerators, human capital development, funding access, and good governance (IndiaFilings, 2026b). The policy sets concrete, quantified targets, including mobilization of Rs. 1,000 crore in venture capital specifically for innovation activity within the state and the explicit ambition of producing at least one home-grown, billion-dollar technology startup, often referred to in startup ecosystem terminology as a "unicorn" (IndiaFilings, 2026b).

The policy's institutional architecture follows what its own documentation terms a "Hub and Spoke" model, with the Ratan Tata Innovation Hub, referenced elsewhere in this report in Chapter 4, section 4.2, in the context of MSME entrepreneurship promotion, functioning as the central hub, and a distributed network of Spoke Centers, incubators, accelerators, fablabs, and prototyping labs extending this innovation infrastructure across the state (Government of Andhra Pradesh Innovation and Startup Policy, 2026). Startups seeking incentives under this framework can apply directly through the AP Startup One portal, already referenced in Chapter 4, section 4.2, or have their applications facilitated and forwarded with a formal recommendation letter by the Ratan Tata Innovation Hub or its constituent Spokes and incubators, an institutional design that positions the Hub and Spoke network as an active gatekeeping and quality-assurance layer within the incentive disbursement process, rather than a purely passive coworking or mentorship function (Government of Andhra Pradesh Innovation and Startup Policy, 2026).

The state's 2025 flagship innovation and entrepreneurship promotion event, Avishkandhra 2025, operated under the explicit theme "One Family, One Entrepreneur," directly echoing the household-level entrepreneurship ambition articulated in the state's broader MSME and Entrepreneurship Development Policy discussed in Chapter 4, section 4.2, and offered skill development courses, mentorship, and acceleration support, with the Ratan Tata Innovation Hub specifically tasked with nurturing the programme's top-performing ideas through to further development (Analytics India Magazine, 2026). Comparative national coverage of state startup policy developments through 2025 characterized Andhra Pradesh's specific approach as distinctively focused on advancing skills and next-generation research ecosystems rather than pursuing the kind of short-term startup incentive competition several other Indian states emphasized during the same period, with the same coverage noting the state's introduction of quantum technology and advanced computing courses within its school curriculum, positioning artificial intelligence as a core component of digital skills development beginning at the school level rather than deferring such exposure to tertiary education alone (Analytics India Magazine, 2026).

This distinctive strategic positioning, favoring long-horizon frontier technology capacity building over short-term startup incentive competition, represents a notably different approach than several of the state's peer competitors pursued over the same policy cycle. Karnataka and Gujarat, the two states explicitly referenced in the comparative national analysis this report has drawn upon throughout this section, have historically pursued more incentive-intensive startup promotion strategies, leveraging their already-established status as India's leading and second-tier startup hub states respectively to compete primarily on deal flow volume and incentive generosity. Andhra Pradesh's comparative disadvantage in this specific competitive dimension, given its lack of an already-established startup hub reputation comparable to Bengaluru or Ahmedabad, plausibly explains its strategic pivot toward a differentiated, capacity-building-first positioning rather than attempting to directly out-compete more established startup ecosystems on their own terms.

The policy's five foundational pillars, shared infrastructure, incubators and accelerators, human capital development, funding access, and good governance, collectively represent a reasonably comprehensive innovation ecosystem design framework, addressing both the physical and institutional infrastructure side of innovation promotion, through the Hub and Spoke model documented above, and the human capital and financing side, through the skill development and venture capital mobilization targets discussed above. Whether this comprehensive design translates into a genuinely differentiated and internationally competitive innovation ecosystem, or whether it remains primarily an ambitious policy framework whose practical impact is constrained by the same execution gaps this report has documented across virtually every other sector examined throughout this framework, represents the central open question this chapter's subsequent sections examine in greater depth.

## **17.2 Research and Development: Academic-Industry Linkages**

Andhra Pradesh's most ambitious research and development infrastructure initiative is the planned Quantum Valley Tech Park at Amaravati, discussed in Chapter 11, section 11.4, in the context of the capital city's broader development, which is intended to host IBM, Tata Consultancy Services, and IIT Madras in a collaborative effort to develop what has been described as India's largest quantum computer (Wikipedia, 2026g). This project represents a distinctive academic-industry-government partnership model, bringing together a leading Indian Institute of Technology, two major multinational and domestic technology corporations, and the state government within a single physical research infrastructure hub, an institutional configuration considerably more ambitious in its specific technology focus than the more general-purpose innovation hub and incubator infrastructure discussed in section 17.1.

The state's broader talent-first strategy, as characterized by comparative national analysis of 2025 state innovation policy developments, positions this Amaravati Quantum Valley initiative as the anchor of a longer-term quantum computing and artificial intelligence-adjacent research vision, aimed at attracting global research institutions and deep

technology startups to the state, with the analysis noting that the state's emphasis rests less on short-term startup incentive schemes and more on building foundational capacity for frontier technology research over a longer time horizon (Analytics India Magazine, 2026). This strategic emphasis distinguishes Andhra Pradesh's approach from several peer states examined in the same comparative analysis, including Tamil Nadu's focus on workforce upskilling in advanced manufacturing, robotics, and Internet of Things applications, and Himachal Pradesh's IIT Mandi Catalyst-administered seed funding programme, suggesting Andhra Pradesh has made a deliberate strategic choice to compete on frontier research infrastructure depth rather than on breadth of near-term startup incentive generosity (Analytics India Magazine, 2026).

Beyond the flagship Quantum Valley initiative, the Andhra Pradesh Innovation Society, operating under the supervision of the state's Ministry of Information Technology, Electronics and Communications, has established more sector-diversified research and development infrastructure, including an Internet of Things Centre of Excellence developed in collaboration with the National Association of Software and Service Companies, hosting a physical laboratory and incubation centre specifically focused on prototyping solutions addressing needs across the health, agriculture, water, transport, and energy sectors, and a Drone Manufacturing and Innovation Center incorporating a dedicated Reverse Engineering Laboratory to support both drone manufacturing capability and applied research and development (IndiaFilings, 2026c). This IoT Centre of Excellence's explicit sectoral focus areas, health, agriculture, water, transport, and energy, map closely onto the specific sectoral chapters examined throughout this report, particularly Chapter 6, Chapter 18, Chapter 10, Chapter 8, and Chapter 9 respectively, suggesting the state's research and development infrastructure has been deliberately oriented toward generating applied technological solutions for the state's own documented sectoral challenges rather than pursuing research activity disconnected from the state's specific developmental priorities.

This deliberate sectoral alignment between the IoT Centre of Excellence's prototyping focus areas and the specific developmental challenges this report has documented throughout its preceding chapters merits further emphasis, since it represents a genuinely coherent linkage between the state's research and development infrastructure investment and its broader sectoral policy priorities, a linkage this report has not always found equally explicit across other domains examined throughout this framework. For instance, the water sector prototyping focus documented above connects directly to the real-time water quality monitoring gap this report identified in Chapter 16, section 16.6, in the context of the state's emerging artificial intelligence and geospatial governance roadmap, suggesting the IoT Centre of Excellence's applied research output could plausibly feed directly into the specific AI-powered water monitoring systems that chapter documented as under active development, a concrete illustration of how the state's innovation ecosystem infrastructure, documented in this chapter, and its digital governance modernization agenda, documented in Chapter 16, may be mutually reinforcing rather than operating as entirely separate policy tracks.

The Drone Manufacturing and Innovation Center's specific inclusion of a Reverse Engineering Laboratory also merits particular attention, since reverse engineering capability represents a technically distinct and strategically significant research function relative to conventional forward-engineering product development, typically associated with efforts to understand, adapt, or improve upon existing technology designs, whether for import substitution purposes, defense-adjacent applications, or broader technology sovereignty objectives. Comprehensive, current, specific documentation of this Reverse Engineering Laboratory's actual research output, partnership structure, or connection to any broader national technology sovereignty or import substitution policy agenda was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions, given the potentially significant strategic implications such a facility could carry if its research programme proves substantive rather than primarily nominal.

### **17.3 Intellectual Property: Awareness, Registration and Commercialisation**

Andhra Pradesh has established a dedicated Intellectual Property Facilitation Center, developed in partnership with the National Research Development Corporation under the Union Ministry of Science and Technology, providing startups, MSMEs, industrial enterprises, and academic institutions across the state with services spanning patent filing, copyright registration, trademark registration, technology transfer, and broader commercialisation support across multiple science and technology domains (IndiaFilings, 2026c; European Commission Intellectual Property Helpdesk, 2026). This institutional infrastructure is complemented by direct financial incentives under the Innovation and Startup Policy 4.0, which reimburses patent filing costs for eligible startups up to a limit of Rs. 5 lakh per domestic patent application and Rs. 10 lakh per international patent application, alongside reimbursement of 20 percent of expenses incurred in obtaining quality certifications from Capability Maturity Model Level 2 upward, capped at Rs. 5 lakh (IndiaFilings, 2026b).

This patent cost reimbursement structure represents a direct, quantifiable financial intervention specifically targeting one of the most commonly cited barriers to intellectual property registration among small and early-stage technology enterprises, namely the substantial upfront cost of patent filing and prosecution, particularly for international patent protection, which frequently exceeds what early-stage startups can readily absorb without external support. By explicitly setting a considerably higher reimbursement ceiling for international patents, Rs. 10 lakh compared to Rs. 5 lakh for domestic filings, the policy design implicitly signals the state's ambition for its innovation ecosystem output to achieve international market relevance and protection, rather than being oriented primarily toward domestic market applications alone.

Comprehensive, current, quantitative data on the actual utilization rate of this patent cost reimbursement incentive, the aggregate number of patents filed by Andhra Pradesh-based startups and enterprises benefiting from this support, or the state's overall patent filing

volume relative to other major Indian states, was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the Andhra Pradesh Innovation Society's own programme utilization reporting and the Indian Patent Office's state-disaggregated filing statistics, which would allow a more complete assessment of whether this financial incentive structure has translated into measurably increased intellectual property registration activity within the state.

The Intellectual Property Facilitation Center's partnership with the National Research Development Corporation also merits attention for what it suggests about the state's approach to technology transfer and commercialisation specifically, as distinct from the patent registration process itself. The National Research Development Corporation, as the Union Ministry of Science and Technology's dedicated technology transfer organization, brings institutional experience specifically in bridging the gap between publicly funded research output and commercially viable products, a gap that, in the Indian innovation policy context more broadly, has historically proven a persistent weakness, with a substantial share of publicly funded academic and government laboratory research failing to translate into commercialized products or licensed technology. By structuring its own Intellectual Property Facilitation Center around a partnership with this specific national technology transfer institution, rather than building an entirely independent state-level commercialisation capability from scratch, Andhra Pradesh has adopted a resource-sharing approach that leverages existing national institutional expertise, a pragmatic design choice this report considers likely to prove more immediately effective than attempting to build equivalent specialized technology transfer capability entirely within the state's own institutional apparatus, particularly during the comparatively early stage of the state's innovation ecosystem development that this chapter has documented throughout its preceding sections.

## **17.4 Knowledge Institutions as Engines of Development**

As documented in Chapter 5, section 5.3, Andhra Pradesh maintains a comparatively dense higher education institutional base, with a college density of 49 per 100,000 eligible population, ranking fifth nationally, a legacy institutional advantage that this chapter's innovation and research ecosystem discussion builds upon directly. The Rajiv Gandhi University of Knowledge Technologies system, discussed in Chapter 5, section 5.4, as a distinctive integrated six-year undergraduate engineering education model unique among Indian states, represents a further foundational knowledge institution whose graduates plausibly feed directly into the state's broader innovation and startup ecosystem discussed in section 17.1, though this report was unable to verify the specific rate at which RGUKT graduates subsequently engage with the state's startup and innovation infrastructure given the sources available for this chapter.

National academic research on the role of Higher Education Institutions in fostering entrepreneurial ecosystems situates Andhra Pradesh's institutional efforts within the broader context of India's position as the world's third-largest startup ecosystem, comprising over

98,000 officially recognized startups nationally, a substantial share of which originated from student-led initiatives at institutions including the Indian Institutes of Technology, Indian Institutes of Management, and leading state universities, all of which have pioneered entrepreneurship development cells, innovation councils, and incubators as standard institutional infrastructure (International Journal of Innovative Research in Science, Engineering and Technology, 2026). This same research specifically identifies the Andhra Pradesh Innovation Society and the state's broader innovation policy architecture as playing a further, state-specific role in promoting student-led entrepreneurship, complementing the institution-level entrepreneurship infrastructure that individual universities and technical institutes have developed independently (International Journal of Innovative Research in Science, Engineering and Technology, 2026).

The success stories this national research cites as exemplars of student-driven entrepreneurial scaling, including RedBus, Practo, and OYO, none of which originated specifically in Andhra Pradesh, illustrate a broader national pattern this report considers relevant context for assessing the state's own innovation ecosystem ambitions: India's most prominent student-founded startup success stories have historically clustered disproportionately around a small number of established technology hub cities, principally Bengaluru, rather than being evenly distributed across states with strong underlying higher education infrastructure. Given this national pattern, Andhra Pradesh's explicit strategic choice, discussed in section 17.2, to compete on frontier research infrastructure depth through initiatives such as the Amaravati Quantum Valley, rather than attempting to directly replicate the Bengaluru-style broad-based consumer technology startup ecosystem, may represent a more differentiated and potentially more achievable positioning strategy than attempting to compete head-on in a startup category where established hub cities already enjoy substantial network effect advantages.

This report's broader analytical framework, developed across its preceding sixteen chapters, suggests a further consideration relevant to assessing the credibility of Andhra Pradesh's knowledge institution-based innovation strategy specifically. The state's college density advantage, documented in Chapter 5, section 5.3, at 49 institutions per 100,000 eligible population, reflects substantially the legacy institutional infrastructure inherited from the undivided state prior to the 2014 bifurcation discussed throughout this report, rather than infrastructure built anew during the post-bifurcation period specifically covered by this report's more recent policy analysis. Whether this inherited institutional density has, in the years since bifurcation, been effectively leveraged to generate the kind of academic-industry research linkages and student entrepreneurship outcomes that comparable institutional density has generated in more established innovation hub states, or whether the state's comparatively strong Education Index performance gap relative to its higher education institutional density, discussed in Chapter 1, section 1.5, and Chapter 5, section 5.8, extends into weaker-than-expected translation of institutional density into innovation ecosystem output specifically, represents a question this report was unable to answer definitively given the sources available, but one that connects directly to the broader tension this report identified in Chapter 5 between the state's strong tertiary institutional base and its comparatively weaker foundational education outcomes.

## 17.5 Building a Youth Innovation and Research Ecosystem

The state's introduction of quantum technology and advanced computing courses within school curricula, discussed in section 17.1, represents a deliberate attempt to extend innovation ecosystem exposure downward into the K-12 education system rather than concentrating such exposure exclusively at the tertiary level, connecting this chapter's innovation themes directly to the digital education discussion in Chapter 5, section 5.6, where this report noted a documented gap in comprehensive data regarding the state's broader ICT infrastructure penetration within government schools. The specific pairing of quantum technology and advanced computing curriculum content with artificial intelligence positioned as a core digital skills component suggests the state's youth innovation strategy is deliberately anticipatory, oriented toward preparing students for technology domains that remain at a comparatively early stage of broader economic deployment even within India's more established technology hub states, rather than focusing curriculum content exclusively on already-mature digital skill categories.

The Avishkandhra 2025 programme's explicit "One Family, One Entrepreneur" framing, discussed in section 17.1, and its mentorship and acceleration support structure, channeled through the Ratan Tata Innovation Hub, represents the state's primary youth-oriented entrepreneurship promotion vehicle, complementing the more infrastructure-focused Quantum Valley and IoT Centre of Excellence initiatives discussed in section 17.2 with a programme more directly oriented toward individual participant skill-building and venture formation support. Comprehensive, current, quantitative data on Avishkandhra 2025's actual participation numbers, the demographic and geographic distribution of participants across the state's twenty eight districts, and the subsequent venture formation or employment outcomes for programme graduates was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions, particularly given the regional disparity themes this report has traced consistently since Chapter 1, section 1.7, since a youth innovation programme's ultimate developmental impact depends substantially on whether its participation base extends meaningfully into the state's Rayalaseema and North Andhra regions, or remains concentrated primarily within the state's already more economically dynamic Coastal Andhra growth corridors.

The school-level quantum technology and advanced computing curriculum introduction discussed in section 17.1 raises a further specific implementation question relevant to this report's broader analytical framework: the effective delivery of genuinely rigorous quantum technology and advanced computing education at the school level depends fundamentally on teacher capacity and training, a resource this report has already documented as facing significant strain in the state's broader education system, including the 16,000-position Mega DSC 2025 teacher recruitment drive discussed in Chapter 5, section 5.5, addressing a chronic government school staffing shortage. Introducing genuinely novel, technically demanding curriculum content such as quantum computing fundamentals into a school system already managing significant teacher vacancy and staffing quality challenges represents an ambitious undertaking that this report was unable to assess for implementation feasibility given the

absence of specific data on teacher training programmes, curriculum delivery quality, or student learning outcomes for this specific curriculum initiative among the sources consulted for this chapter. This report recommends that subsequent editions treat this specific curriculum initiative's practical delivery quality, rather than its mere existence as an announced policy, as the appropriate benchmark for assessing whether the state's youth innovation ecosystem ambitions are translating into genuine foundational capacity building or remaining primarily aspirational in nature.

## **17.6 Skill Development, Employability and Workforce Alignment**

As documented in Chapter 3, section 3.7, and Chapter 5, section 5.4, national Periodic Labour Force Survey data reveals a persistent and significant vocational training gap, with only 4.2 percent of India's workforce aged 15 to 59 having received formal vocational or technical training as of the 2025 survey round, alongside a concerning finding that approximately 25.0 percent of national youth aged 15 to 29 fall into the NEET category, meaning not in employment, education, or training. This chapter's findings regarding Andhra Pradesh's innovation and knowledge economy infrastructure must be read against this sobering national workforce readiness backdrop, since even a technically sophisticated innovation ecosystem of the kind documented throughout this chapter can only generate broad-based economic benefit if it is matched by a workforce possessing the foundational skills necessary to participate in the resulting economic opportunities, whether as innovation ecosystem employees, entrepreneurs, or downstream beneficiaries of the technology-enabled sectoral applications discussed in section 17.2.

The state's Future Skills Credit Scheme, referenced in Chapter 4, section 4.3, in the context of the Information Technology and Global Capability Centre Policy 4.0, explicitly targets lifelong learning support in artificial intelligence, cybersecurity, cloud computing, and data analytics, representing a direct attempt to bridge the gap between the state's ambitious technology sector investment strategy, documented throughout Chapter 4 and this chapter, and the current workforce skill base, which, consistent with the national pattern documented above, likely requires substantial upskilling investment to fully capitalize on the employment opportunities these technology investments are intended to generate. Whether this scheme's actual reach and effectiveness is sufficient to meaningfully close the gap between the state's technology investment ambitions and its current workforce skill profile represents a question this report was unable to assess definitively given the absence of scheme-specific enrollment and outcome data among the sources consulted for this chapter.

This workforce alignment challenge carries particular weight when considered alongside the specific technology domains the state has chosen to prioritize throughout this chapter, quantum computing, artificial intelligence, and advanced computing more broadly, all of which require a considerably more specialized and advanced skill base than the more conventional information technology services skills that have historically anchored India's broader technology sector employment growth. A workforce gap of the kind documented in the national vocational training statistics discussed above is arguably more consequential for

a state pursuing frontier technology specialization of the kind Andhra Pradesh has chosen to emphasize than it would be for a state pursuing more conventional, lower-skill-threshold technology sector employment growth, since frontier technology domains by definition require a narrower, more specialized talent pipeline that cannot be readily supplied through generic vocational upskilling alone, but instead requires sustained investment in advanced STEM education pathways beginning well before the workforce entry stage, connecting this workforce alignment challenge directly back to the youth innovation ecosystem themes examined in section 17.5, particularly the school-level quantum technology curriculum initiative discussed there.

Given this heightened talent pipeline specificity requirement, the credibility of Andhra Pradesh's frontier technology specialization strategy, examined throughout this chapter, depends even more heavily than a more conventional technology sector development strategy would on the state's capacity to build a genuinely deep, specialized STEM talent pipeline over a sustained multi-year horizon, beginning with the foundational education quality themes examined in Chapter 5 and extending through the higher education and applied research infrastructure examined throughout this chapter. This report considers the alignment, or potential misalignment, between the state's frontier technology ambitions and its underlying talent pipeline development capacity one of the single most consequential open questions for assessing the long-term credibility of the innovation and knowledge economy strategy this chapter has documented, a question this report's concluding Vision 2047 assessment in Chapter 21 returns to directly.

Drawing together this chapter's findings as a whole, Andhra Pradesh's innovation, research, and knowledge economy strategy exhibits a genuinely distinctive strategic positioning relative to other Indian states, characterized by a deliberate emphasis on frontier technology research infrastructure, exemplified by the Amaravati Quantum Valley initiative, combined with a comparatively strong underlying higher education institutional base documented in Chapter 5. This combination provides a plausible foundation for the state to develop a meaningfully differentiated innovation economy niche over the coming decade, distinct from the more consumer technology-oriented startup ecosystems that have historically concentrated in Bengaluru and other established hub cities. At the same time, consistent with the analytical pattern this report has traced across virtually every preceding chapter, the credibility of this strategic positioning depends substantially on execution factors this report was unable to fully verify given the sources available, including the actual utilization rates of the state's various financial incentive programmes documented in sections 17.1 and 17.3, the workforce skill development progress necessary to support the ambitious technology investment agenda documented throughout this chapter, and the geographic distribution of innovation ecosystem participation across the state's persistently uneven regional development pattern, a theme this report's concluding Vision 2047 assessment in Chapter 21 returns to as a defining consideration for the credibility of the state's broader long-term development strategy.

Three specific findings from this chapter merit particular emphasis heading into that concluding assessment. First, the state's deliberate strategic choice to compete on frontier technology research depth rather than short-term startup incentive volume, discussed in sections 17.1 and 17.2, represents a genuinely differentiated positioning that, if successfully executed, could allow Andhra Pradesh to establish a meaningful innovation economy niche without needing to directly out-compete already-entrenched hub cities on their own terms, though this differentiated strategy also carries correspondingly higher execution risk given its dependence on a narrower, more specialized talent pipeline, discussed in section 17.6. Second, the state's research and development infrastructure, exemplified by the IoT Centre of Excellence's explicit sectoral alignment with the health, agriculture, water, transport, and energy challenges examined throughout this report's earlier chapters, demonstrates a genuinely coherent linkage between innovation policy and broader sectoral development priorities, a coherence this report has not always found equally explicit across other domains of state policy examined throughout this framework. Third, and most consequentially, the persistent data gaps this chapter has documented regarding actual programme utilization, participant outcomes, and geographic distribution of innovation ecosystem participation mean that this chapter's assessment necessarily rests more heavily on evaluating the coherence and ambition of the state's announced strategy than on verified evidence of that strategy's realized impact, a limitation this report recommends future editions address directly through engagement with the Andhra Pradesh Innovation Society's own detailed programme performance reporting, once such reporting becomes available in a form suitable for the kind of rigorous, evidence-based assessment this report has attempted to provide across its other, more data-rich sectoral chapters.

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## Chapter 18: Agriculture, Allied Sectors and Food Security

### 18.1 Cropping Pattern, Agricultural Productivity and Input Use

As documented extensively in Chapter 3, section 3.3, Andhra Pradesh's agricultural sector recorded growth of 15.86 percent at current prices for 2024-25, contributing Rs. 5.19 lakh crore to state output, driven by record food grain production of 161.86 lakh tonnes, a 12.94 percent increase over the prior year, alongside enhanced agricultural credit disbursement of Rs. 1.70 lakh crore (Grokikipedia, 2026). For the most recent 2025-26 period, agriculture and allied sectors grew by 10.14 percent, with rice output rising 15.3 percent and maize rising 18.9 percent (Mission Andhra, 2026). Agriculture directly and indirectly employs approximately 62 percent of the state's population, a dependency ratio considerably higher than the sector's roughly 30 to 37 percent contribution to state output, underscoring the productivity gap between agricultural and non-agricultural employment discussed throughout Chapter 3.

The state's cropping pattern reflects the regional agro-climatic divide this report has traced since Chapter 1, section 1.1, with Coastal Andhra's Godavari and Krishna deltaic plains supporting intensive paddy and horticulture cultivation under mature canal irrigation infrastructure, while Rayalaseema's drier plateau supports a cropping pattern weighted more heavily toward drought-tolerant commercial crops including cotton, groundnut, and chilli. Input use intensity, including fertilizer and pesticide application rates, mechanization levels, and certified seed adoption, was not documented with current, disaggregated state-specific data among the sources consulted for this chapter, representing a gap this report recommends addressing in subsequent editions through direct reference to the state's Agriculture Department input use statistics, which would allow a more complete assessment of whether the state's strong recent output growth reflects area expansion, yield improvement through intensified input use, or some combination of both mechanisms.

This distinction between area expansion and yield improvement as alternative pathways to the strong output growth documented throughout Chapter 3 carries meaningful policy significance, since these two growth pathways carry quite different long-term sustainability implications. Growth driven primarily by area expansion, bringing previously uncultivated or fallow land into production, faces an inherent ceiling once the state's cultivable land reserve is exhausted, and may also carry environmental costs if the newly cultivated land includes marginal or ecologically sensitive areas of the kind discussed in Chapter 13. Growth driven primarily by yield improvement through more intensive input use, improved seed varieties, or better irrigation efficiency, by contrast, can in principle continue indefinitely as agricultural technology and management practices continue to advance, though it may also carry its own sustainability concerns if intensified input use, particularly of chemical fertilizers and pesticides, proceeds without adequate attention to long-term soil health, a concern this report raised in the specific context of the state's currently undocumented soil degradation extent in Chapter 13, section 13.2. Without the district-level or crop-specific yield trend data this report was unable to access for this chapter, distinguishing between these two growth

pathways, and therefore assessing the underlying sustainability of the state's recent strong agricultural growth performance, remains an open analytical question this report recommends prioritizing in subsequent editions.

Mechanization levels within the state's agricultural sector also carry direct relevance to the labor market themes examined in Chapter 3, section 3.7, since increased mechanization, while generally associated with productivity gains, can simultaneously reduce the agricultural sector's capacity to absorb labor, a consideration of particular importance given that agriculture continues to employ approximately 62 percent of the state's workforce, as documented above, a share this report has previously noted is disproportionately high relative to the sector's GSDP contribution. Whether the state's agricultural mechanization trajectory is proceeding in a manner that manages this labor absorption trade-off deliberately, for instance through complementary investment in non-agricultural rural employment opportunities of the kind discussed in Chapter 12, or whether mechanization is proceeding without corresponding attention to the displaced agricultural labor's alternative employment prospects, represents a further specific question this report recommends investigating directly in subsequent editions.

## **18.2 Irrigation and Water Use Efficiency in Agriculture**

As documented in Chapter 10, sections 10.1 and 10.2, agricultural irrigation in Andhra Pradesh depends substantially on the Godavari and Krishna river systems, with the long-delayed Polavaram Irrigation Project representing the state's most consequential pending irrigation infrastructure investment, and with Anantapur district in the drier Rayalaseema region ranking as the nation's leading district for water body utilization in groundwater recharge, a finding this report interpreted in Chapter 10, section 10.2, as a partial adaptive response to the region's comparative disadvantage in surface canal irrigation relative to Coastal Andhra. This chapter does not repeat that irrigation infrastructure analysis in full, but emphasizes its direct bearing on the cropping pattern and productivity themes discussed in section 18.1, since irrigation water availability represents the single most consequential determinant of which crops a given district can viably cultivate and at what yield level.

Water use efficiency in agriculture, measured through metrics such as crop water productivity or irrigation efficiency ratios, was not documented with current, state-specific quantitative data among the sources consulted for this chapter, representing a further documented gap. Given the national policy emphasis on micro-irrigation expansion, including drip and sprinkler irrigation technologies, as a water use efficiency improvement strategy under the Pradhan Mantri Krishi Sinchayee Yojana framework, and given Andhra Pradesh's demonstrated institutional capacity for water resource planning documented in Chapter 10, section 10.2, including its National Water Mission Award for basin-level integrated water resources management, this report recommends subsequent editions verify the specific pace of micro-irrigation adoption within the state relative to its irrigated agricultural area, a metric that would provide a more direct measure of agricultural water use efficiency than the broader basin-level planning capability this report has already documented.

The connection between agricultural water use efficiency and the broader energy sector themes examined in Chapter 9 also merits explicit note here, since, as discussed in Chapter 9, section 9.5, the state's feeder-level agricultural solarization initiative, approved under the national PM-KUSUM programme framework, is specifically designed to reduce the state's agricultural power subsidy burden by substituting solar-generated power for grid power at agricultural feeders, an initiative that, while primarily framed as an energy sector and fiscal intervention in Chapter 9, also carries direct relevance to agricultural water use patterns, since the reliability and cost of electric irrigation pump power directly shapes farmer irrigation scheduling behavior, as this report noted in the rural electrification discussion in Chapter 9, section 9.3. A more reliable, lower-cost agricultural power supply, whether achieved through feeder-level solarization or through the 24-hour three-phase rural supply initiative discussed in that same section, could plausibly support more efficient irrigation scheduling and reduced water wastage relative to a less reliable power supply that forces farmers to irrigate opportunistically whenever power happens to be available, rather than according to optimal crop water requirement timing, though this report was unable to verify this specific causal linkage given the absence of irrigation scheduling behavior data among the sources consulted for this chapter.

### **18.3 Agricultural Marketing, Price Realisation and Farmer Income**

Agricultural marketing infrastructure in Andhra Pradesh operates through the state's network of Agricultural Produce Market Committees, referenced in Chapter 12, section 12.5, in the context of rural market linkage infrastructure, where this report noted a documented gap regarding the extent to which the state's substantial rural road investment has been complemented by equivalent investment in market linkage infrastructure specifically, including rural haats, produce collection centres, and cold storage facilities. This gap in market infrastructure documentation persists for this chapter as well, and this report recommends subsequent editions pursue direct reference to the state's Marketing Department and Agricultural Produce Market Committee infrastructure reporting to properly assess farmer price realisation outcomes.

Farmer income support in the state operates primarily through the national PM-KISAN direct income support scheme, providing Rs. 6,000 annually to eligible farmer households nationally, and through state-specific top-up mechanisms where applicable, though comprehensive, current, Andhra Pradesh-specific PM-KISAN beneficiary counts and disbursement data were not available among the sources consulted for this chapter. The broader farmer income realisation challenge in the state connects directly to the climate-related agricultural impact findings documented in Chapter 14, section 14.3, where NABARD assessment found that increasing climate variability had produced reduced cotton productivity, delayed chilli planting, and heightened pest and disease epidemics affecting chilli, cotton, and tobacco cultivation specifically, impacts that translate directly into farmer income volatility even where aggregate state-level agricultural output figures, discussed in section 18.1, show strong growth in a given reporting year.

This tension between strong aggregate output growth and underlying farmer-level income volatility deserves particular emphasis given its centrality to how this report's readers should interpret the otherwise consistently positive agricultural growth figures documented throughout Chapter 3 and this chapter. Aggregate state-level agricultural GSDP figures, by their nature, average across the state's full population of farming households, meaning a strong aggregate growth figure can coexist with, and indeed partially mask, significant income volatility and hardship among specific sub-populations of farmers, particularly those cultivating the specific commercial crops NABARD's assessment identified as most exposed to climate-related productivity decline. A smallholder farmer specializing in chilli or cotton cultivation in a climate-exposed district, for instance, may experience a genuinely difficult income year even as the state's aggregate agricultural output figures, driven substantially by the state's strong rice and maize performance documented in section 18.1, show robust overall growth. This report considers this potential divergence between aggregate sectoral performance and individual farmer income experience a significant interpretive caution that should accompany any reading of this report's otherwise positive aggregate agricultural growth findings, and recommends subsequent editions pursue farmer income survey data, distinct from aggregate output statistics, to properly assess this dimension of agricultural sector performance.

Price realisation specifically, meaning the actual market price farmers receive for their produce relative to the Minimum Support Price the central government announces for major crops, represents a further dimension of farmer income this report was unable to assess given the absence of state-specific Minimum Support Price procurement volume and market price comparison data among the sources consulted for this chapter. Nationally, Minimum Support Price procurement coverage varies considerably by crop and by state, with rice and wheat typically enjoying more robust procurement infrastructure than other crops, and this report recommends subsequent editions specifically investigate whether Andhra Pradesh's procurement infrastructure for its major crops, particularly rice given the state's strong recent rice output growth documented in section 18.1, provides farmers with reliable access to Minimum Support Price-linked procurement, or whether farmers frequently must sell at open market prices that may fall below the announced Minimum Support Price level, a common challenge across many Indian states' agricultural marketing systems.

#### **18.4 Food Processing Industry and Value Chain Development**

Andhra Pradesh's food processing policy framework, referenced in Chapter 4, section 4.3, offers capital subsidies for new food processing enterprises, technology upgrades, waste processing infrastructure, and quality certification support, rounding out the state's sector-specific anchor industry framework alongside pharmaceuticals, semiconductors, and leather and footwear manufacturing. This food processing policy connects directly to the state's underlying agricultural and fisheries production base documented in Chapter 3, section 3.3, and throughout this chapter, since a state with Andhra Pradesh's scale of raw agricultural, horticultural, and marine output stands to capture considerably greater economic value by developing domestic food processing capacity, capturing the value addition from raw

commodity to processed food product, rather than exporting or selling raw, unprocessed agricultural output alone.

Comprehensive, current, quantitative data on the state's food processing sector's actual scale, including installed processing capacity, capacity utilization rates, and the specific share of the state's agricultural and fisheries output that currently passes through formal food processing value chains as opposed to being sold as raw or minimally processed commodities, was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the state's Ministry of Food Processing Industries-linked state nodal agency reporting.

This gap is particularly consequential given the specific composition of the state's primary sector output documented throughout this chapter, since food processing value addition potential varies considerably across the fisheries, livestock, and horticulture sub-sectors that together dominate the state's non-foodgrain agricultural output. Fisheries and aquaculture output, at Rs. 77,085 crore and examined further in section 18.6, typically commands a particularly large potential value addition multiplier through processing, given the substantial price premium internationally processed and packaged shrimp and other seafood products command relative to raw catch, a premium the state's substantial marine export volumes documented in Chapter 4, section 4.5, suggest the state is already capturing to some meaningful degree, though the specific extent to which the state's marine exports consist of processed versus minimally processed raw product was not documented in the sources available for this chapter. Similarly, the state's horticulture output, examined further in section 18.7, offers substantial processing value addition potential through fruit and vegetable canning, juice production, and dehydration, applications that could meaningfully reduce the substantial post-harvest losses that characterize unprocessed horticultural produce supply chains across most of India, given the perishability of fresh fruits and vegetables absent adequate cold chain and processing infrastructure.

## **18.5 Animal Husbandry, Dairy and Poultry: Economic Contribution**

As documented in Chapter 3, section 3.3, Andhra Pradesh's livestock sector generates approximately Rs. 1.69 lakh crore in income and sustains roughly 4.2 million families as of 2025, accounting for 11.23 percent of the state's GSDP (Grokipedia, 2026). The state's Socio-Economic Survey for 2024-25 recorded livestock sector output specifically at Rs. 66,456 crore at constant 2011-12 prices, a figure that, alongside the broader income estimate cited above, illustrates the sector's substantial scale relative to other Indian states' livestock economies (Government of Andhra Pradesh Planning Department, 2025). This scale reflects the sector's dual role as both a significant contributor to state GSDP and a critical household-level income diversification mechanism for the roughly 4.2 million families whose livelihoods it supports, a diversification function of particular importance for smallholder and marginal farming households whose primary crop income, as discussed in section 18.3, remains exposed to the climate-related volatility documented in Chapter 14.

Comprehensive, current, sub-sector-disaggregated data specifically separating dairy and poultry output, processing capacity, and cooperative structure within this broader livestock sector total was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the state's Animal Husbandry, Dairy Development and Fisheries Department's own sub-sector reporting, which would allow a more granular assessment of the relative contribution and growth trajectory of dairy versus poultry versus other livestock categories within the sector's overall Rs. 1.69 lakh crore income estimate.

## **18.6 Fisheries: Inland, Marine and Aquaculture**

Andhra Pradesh contributes over 40 percent of India's total fish production and has long been recognized as the country's leading producer of shrimp, a position anchored by extensive vannamei shrimp hatchery infrastructure along the coastal belt, as documented in Chapter 3, section 3.3 (India Brand Equity Foundation, 2026a; Wikipedia, 2026b). The state's Socio-Economic Survey recorded fishing and aquaculture output specifically at Rs. 77,085 crore at constant 2011-12 prices for 2024-25, the largest single sub-sector within the state's broader primary sector output breakdown, exceeding even the livestock sector output of Rs. 66,456 crore and horticulture output of Rs. 60,527 crore documented in the same survey (Government of Andhra Pradesh Planning Department, 2025). For the most recent 2025-26 period, fisheries output specifically rose 12.4 percent, among the strongest sub-sectoral growth rates recorded within the state's primary sector (Mission Andhra, 2026).

As documented in Chapter 10, section 10.2, West Godavari district ranks among the nation's top five districts for water body utilization in pisciculture, reflecting the intersection between the state's irrigation and water resource infrastructure and its substantial aquaculture sector. This fisheries strength connects directly to the state's port infrastructure discussed in Chapter 8, section 8.4, and its marine export performance discussed in Chapter 4, section 4.5, where marine products constituted approximately 15.45 percent of the state's total merchandise exports for fiscal year 2025, underscoring that the state's fisheries sector functions simultaneously as a major domestic food security contributor and as a significant international export earner. The sector's environmental sustainability, including coastal ecosystem health and marine resource management, is examined in detail in Chapter 13, section 13.6, where this report flagged the tension between continued coastal aquaculture and port expansion on one hand and mangrove and coastal ecosystem conservation on the other as a consequential, if under-documented, long-term natural resource governance challenge.

The specific finding that fishing and aquaculture output, at Rs. 77,085 crore, exceeds both livestock output and horticulture output within the state's primary sector, documented above, represents a genuinely distinctive characteristic of Andhra Pradesh's agricultural economy relative to most other major Indian agricultural states, where livestock or horticulture more typically constitute the largest non-foodgrain primary sector component. This fisheries-led primary sector composition reflects the state's unusual combination of the long coastline documented in Chapter 1, section 1.1, extensive brackish-water aquaculture infrastructure

suited to vannamei shrimp cultivation, and the substantial freshwater aquaculture opportunity the state's water body utilization patterns, documented in Chapter 10, section 10.2, provide, particularly in West Godavari district. This distinctive economic structure carries implications for how this report assesses the state's exposure to sector-specific risk, since a state whose primary sector leans this heavily on fisheries and aquaculture is correspondingly more exposed to the specific risks this sub-sector faces, including disease outbreaks affecting shrimp populations, a recurring challenge in vannamei shrimp aquaculture internationally, export market access disruptions, and the coastal ecosystem degradation risks discussed in Chapter 13, section 13.6, relative to a state whose primary sector risk is more evenly distributed across foodgrain, horticulture, livestock, and fisheries in more balanced proportion.

Aquaculture-specific disease and biosecurity management, a critical risk factor for the shrimp farming operations that anchor much of the state's aquaculture output documented above, was not addressed with current, state-specific data among the sources consulted for this chapter, representing a further documented gap this report recommends addressing in subsequent editions, given the potentially severe economic consequences a major disease outbreak could carry for a sector contributing the single largest share of the state's primary sector output.

## **18.7 Horticulture, Floriculture and Medicinal Plants**

Horticulture output in Andhra Pradesh reached Rs. 60,527 crore at constant 2011-12 prices for 2024-25, according to the state's Socio-Economic Survey, representing a substantial contribution to the state's primary sector output alongside the livestock and fisheries sub-sectors discussed in sections 18.5 and 18.6 (Government of Andhra Pradesh Planning Department, 2025). As documented in Chapter 8, section 8.6, the state's horticulture sector produces approximately 225 lakh metric tonnes annually according to recent state government project review documentation, a sector specifically cited as requiring improved railway connectivity to reach national markets efficiently, illustrating a direct, concrete linkage between the state's strong horticultural production base and the rail infrastructure investment priorities discussed throughout Chapter 8 (Amaravati News24, 2026).

Comprehensive, current, crop-specific data disaggregating this aggregate horticulture output figure into its constituent categories, including fruits, vegetables, spices, floriculture, and medicinal and aromatic plants specifically, was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the state's Horticulture Department's own crop-wise production reporting. Given the climate impact findings documented in Chapter 14, section 14.3, specifically noting delayed chilli planting and reduced productivity in commercial crops, and given chilli's status as a major horticultural commercial crop within the state, this report recommends particular attention to chilli-specific production trend data in subsequent editions, given the crop's evident vulnerability to the climate variability this report has documented as an increasing concern for the state's agricultural sector more broadly.

Floriculture and medicinal and aromatic plant cultivation, while likely representing a comparatively modest share of the state's overall horticulture output relative to fruits and vegetables, warrant specific mention given their distinctive economic characteristics relative to conventional food horticulture. Floriculture typically serves urban and export flower markets rather than food security objectives directly, while medicinal and aromatic plant cultivation increasingly intersects with the state's pharmaceutical manufacturing anchor industry strategy discussed in Chapter 4, section 4.3, since several pharmaceutical and nutraceutical production processes depend on plant-derived raw material inputs that domestic medicinal plant cultivation could, in principle, supply domestically rather than requiring import. Whether Andhra Pradesh's medicinal plant cultivation has been deliberately linked to its pharmaceutical anchor industry strategy as a domestic raw material supply chain, or whether these two sectors, pharmaceutical manufacturing and medicinal plant agriculture, operate as functionally disconnected policy domains within the state's broader economic development strategy, represents a further specific question this report recommends investigating in subsequent editions, given the potential value chain integration efficiency such a linkage could offer if deliberately cultivated.

## **18.8 Agricultural Credit, Insurance and Risk Management**

As documented in section 18.1, agricultural credit disbursement in Andhra Pradesh reached Rs. 1.70 lakh crore in 2024-25, a substantial financing flow supporting the state's strong recent agricultural output growth (Grokopedia, 2026). This credit flow operates alongside the national crop insurance architecture under the Pradhan Mantri Fasal Bima Yojana, which recorded 13.48 crore farmer applications nationally across the Kharif and Rabi seasons of 2025, including 10.68 crore loanee farmer applications and 2.77 crore non-loanee farmer applications, covering 380.86 lakh hectares of insured area, with combined farmer, state government, and central government premium contributions reaching Rs. 17,309.57 crore in gross premium against a total sum insured of Rs. 2,10,35,064.54 crore (India Brand Equity Foundation, 2026g). The scheme's premium structure caps farmer contributions at 2 percent for Kharif food and oilseed crops, 1.5 percent for Rabi food and oilseed crops, and 5 percent for annual commercial or horticultural crops, with the government subsidizing the remaining premium burden, and the scheme has increasingly incorporated satellite imagery, drone-based assessment, and remote sensing technology to improve the speed and accuracy of crop loss claim settlement (Press Information Bureau, 2026f).

A specific and consequential finding relevant to Andhra Pradesh's participation in this national crop insurance architecture emerged from recent agricultural policy news coverage, which referenced Andhra Pradesh's pending inclusion under the PMFBY crop insurance scheme, phrasing that implies the state had, at some point prior to this reporting, either not participated in or had withdrawn from the national crop insurance scheme, consistent with a broader pattern in which several major Indian agricultural states, including West Bengal, Jharkhand, and Bihar at various points, have opted out of PMFBY participation over disputes regarding premium-to-claim ratios and the perceived profitability the scheme's structure affords to empanelled private insurance companies relative to farmers (Global Agriculture,

2026). Given the significance of this finding for assessing the actual crop insurance coverage available to Andhra Pradesh's farmers, this report flags it explicitly rather than treating the state's PMFBY participation as a settled, continuous fact, and recommends subsequent editions verify directly, through the state's own Agriculture Department announcements, the precise history and current status of Andhra Pradesh's PMFBY participation, since a state's re-entry into or exit from this national scheme carries direct, material consequences for the availability of formal crop insurance protection to the state's farming households, a protection mechanism of particular importance given the climate-related agricultural risk this report has documented extensively in Chapter 14, section 14.3.

If this inference regarding a period of non-participation proves accurate upon direct verification, it would represent a significant gap in the state's agricultural risk management architecture precisely during the period this report has otherwise documented as characterized by intensifying climate-related agricultural risk, discussed in Chapter 14, section 14.3, including increased drought periodicity and heightened pest and disease epidemics affecting several of the state's major commercial crops. A farming population facing genuinely intensifying climate risk without the backstop of formal crop insurance coverage would be correspondingly more exposed to the kind of severe, uninsured income shocks that, in the worst cases documented elsewhere in Indian agricultural policy literature, have contributed to farmer distress and, in extreme cases, farmer suicide, a severe social outcome this report has not found specific evidence of within Andhra Pradesh but flags as a theoretically possible consequence of any prolonged gap in formal crop insurance coverage during a period of rising climate risk exposure. This report considers verifying the precise timeline and current status of the state's PMFBY participation one of the more consequential specific research priorities emerging from this entire chapter, given the direct bearing this finding would have on assessing the adequacy of the state's farmer protection architecture.

Beyond formal crop insurance, agricultural risk management in the state also depends on the broader rural financial infrastructure discussed in Chapter 12, section 12.4, including the state's cooperative credit sector and Self Help Group-linked microfinance architecture, both of which provide informal risk-buffering mechanisms complementing the formal PMFBY crop insurance framework discussed above, though, as noted in Chapter 12, section 12.4, comprehensive current data on the state's cooperative sector's specific scale and financial health was not available among the sources consulted for this report, representing a persistent data gap spanning both this chapter and Chapter 12 that this report recommends addressing jointly in subsequent editions, given the evident interconnection between cooperative credit access and effective agricultural risk management for the state's smallholder farming population.

The Rs. 1.70 lakh crore agricultural credit disbursement figure documented at the start of this section, while substantial in absolute terms, warrants further contextualization against the scale of the state's overall agricultural output, at Rs. 5.19 lakh crore for 2024-25 as documented in section 18.1, implying a credit-to-output ratio of approximately one-third, a ratio this report was unable to benchmark against comparable figures for other major Indian

agricultural states given the absence of cross-state comparative credit intensity data among the sources consulted for this chapter. Whether this credit-to-output ratio reflects an appropriately calibrated level of agricultural financing, adequate to support the input-intensive cultivation practices and mechanization investment discussed in section 18.1 without exposing farming households to excessive debt burden risk, represents a further specific analytical question this report recommends investigating in subsequent editions, particularly given the well-documented historical association between agricultural indebtedness and farmer distress in various Indian agricultural contexts, a pattern this report has not found specific evidence of within Andhra Pradesh but has also not been able to definitively rule out given the data limitations acknowledged throughout this chapter.

Drawing together the findings of this chapter as a whole, Andhra Pradesh's agricultural and allied sector economy presents a genuinely impressive aggregate performance picture, with strong recent growth across foodgrain, horticulture, livestock, and fisheries sub-sectors, and a distinctively fisheries-led primary sector composition that positions the state as a nationally significant contributor to both food security and agricultural export earnings. At the same time, consistent with the analytical pattern this report has traced throughout its preceding seventeen chapters, this positive aggregate performance coexists with substantial documented data gaps regarding input use efficiency, farmer-level price realisation and income volatility, food processing value chain development, and the precise current status of the state's crop insurance participation, gaps that constrain this report's ability to fully assess whether the sector's strong aggregate growth translates evenly into improved welfare for the roughly 62 percent of the state's population whose livelihoods depend, directly or indirectly, on this sector.

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## Chapter 19: Tourism, Culture and Creative Economy

### 19.1 Tourism Asset Inventory: Natural, Heritage, Religious and Adventure

Andhra Pradesh's tourism asset base spans a genuinely diverse portfolio of natural, religious, heritage, and adventure attractions, anchored by the state's 974 kilometer coastline, discussed extensively in Chapter 1, section 1.1, which the state's tourism promotional documentation describes as offering over 900 kilometers of beaches, including the popular Rishikonda and Bheemunipatnam beaches near Visakhapatnam (Cretum Advisory, 2026). Religious tourism represents the state's most globally significant tourism asset by sheer visitor volume, anchored by the Tirumala Venkateswara Temple discussed in Chapter 1, section 1.4, alongside the temples of Srisailem and the historically significant Buddhist heritage sites at Amaravati and Nagarjunakonda, the latter drawing on the region's status as a major centre of ancient Buddhist civilization predating the modern capital city project discussed in Chapter 11, section 11.5 (Cretum Advisory, 2026; Travel Trends Today, 2026).

Beyond religious tourism, the state's adventure and ecotourism assets include the Araku Valley, a hill station region in the Eastern Ghats known for coffee cultivation and tribal culture, and Lambasingi, a village at approximately 1,025 meters elevation in the Eastern Ghats popularly nicknamed the "Kashmir of Andhra Pradesh" for its distinction as the only location in South India to experience occasional snowfall, alongside Gandikota, a dramatic river gorge formation on the banks of the Penner river in Kadapa district, often compared to the Grand Canyon in tourism marketing materials, where the Telugu words "Gandi," meaning gorge, and "Kota," meaning fort, combine to form the location's name (AP Tourism Authority, 2026). The state's tourism policy documentation for 2024-2029 has identified seven anchor tourism destinations for coordinated development, Visakhapatnam, Araku Valley, Rajahmundry, Amaravati, Srisailem, Gandikota, and Tirupati, spanning coastal, hill station, heritage, religious, and geological attraction categories respectively, reflecting a deliberate strategy to develop a diversified tourism portfolio rather than concentrating investment around religious tourism alone (Travel and Tour World, 2026).

This seven-destination anchor strategy is analytically significant when considered alongside the regional growth corridor framework this report has applied consistently since Chapter 1, section 1.2. Five of the seven named anchor destinations, Visakhapatnam, Rajahmundry, Amaravati, Srisailem, and Tirupati, fall within or immediately adjacent to the Visakhapatnam, Amaravati-Vijayawada, or Tirupati growth corridors already identified throughout this report as the state's primary zones of infrastructure and economic investment concentration, discussed extensively in Chapters 3, 4, 8, 9, 10, and 11. Only Araku Valley, situated within the North Andhra tribal belt discussed in Chapter 1, section 1.7, and Gandikota, situated within the Rayalaseema interior, extend the state's tourism development priorities meaningfully beyond its already-established growth corridors. This pattern suggests the state's tourism strategy, much like its broader infrastructure investment strategy documented throughout this report, remains substantially anchored to its existing growth corridors, even as it makes a genuine, if comparatively modest, effort to extend tourism-linked development

benefits into the historically underserved North Andhra and Rayalaseema regions through the specific inclusion of Araku Valley and Gandikota.

The state's ecotourism and wildlife tourism potential also connects directly to the biodiversity and protected area themes examined in Chapter 13, section 13.1, since several of the wildlife sanctuaries documented in that chapter, including Coringa Wildlife Sanctuary's mangrove ecosystem and Papikonda Wildlife Sanctuary's tiger and elephant habitat, represent genuine ecotourism assets that could complement the state's more conventional beach, religious, and heritage tourism categories, provided adequate ecotourism infrastructure and responsible visitor management practices are developed to avoid the kind of ecological degradation risk that poorly managed wildlife tourism can generate in sensitive protected area contexts. Comprehensive, current data on the specific scale of wildlife and ecotourism visitor volume, distinct from the state's broader domestic tourism figures documented in section 19.3, was not available among the sources consulted for this chapter, representing a further documented gap this report recommends addressing in subsequent editions.

## **19.2 Tourism Infrastructure: Hotels, Connectivity and Facilitation**

Andhra Pradesh's tourism infrastructure development has attracted substantial hospitality industry investment, with major national and international hotel brands, including Taj, Marriott, Hilton, Hyatt, Atmosphere Core, Postcard Hotels, Mayfair, Oberoi, and Lemon Tree, establishing properties across the state's priority destinations, spanning Visakhapatnam, Vijayawada, Tirupati, Gandikota, Horsley Hills, and the broader coastal belt (Travel Trends Today, 2026). This scale of branded hospitality investment suggests the state's tourism policy incentive framework, discussed further below, has succeeded in generating genuine private sector confidence in the state's tourism growth trajectory, a favorable signal relative to several of the more aspirational, less externally validated policy ambitions this report has documented in other sectors throughout this framework.

Transport connectivity investment specifically targeting tourism access has proceeded alongside this hospitality investment, including the National Highway 516E upgrade intended to reduce travel time to Araku Valley, a Visakhapatnam-Raipur corridor intended to draw tourists from neighboring states, and destination-specific infrastructure investment including ecotourism development in Araku, a riverfront revitalization project in Rajahmundry branded "Akhand Godavari," and water-based leisure experiences planned at the Polavaram project site discussed extensively in Chapter 10, sections 10.1 and 10.2 (Travel Trends Today, 2026). Urban mobility investment relevant to tourism includes the Visakhapatnam and Vijayawada Metro projects discussed in Chapter 8, section 8.5, alongside a fully operational International Cruise Terminal and planned seaplane links connecting Vijayawada and Hyderabad to Srisailem, infrastructure investments that, if realized as planned, would meaningfully diversify the state's tourism access modes beyond conventional road and rail connectivity alone (Travel Trends Today, 2026).

A particularly significant infrastructure initiative concerns preparation for the 2027 Godavari Pushkaralu, a major periodic Hindu religious festival referenced already in Chapter 8, section

8.2, in the context of the railway network's historical need to operate over 1,000 special trains to accommodate pilgrim traffic during this event. The state has sanctioned Rs. 94 crore specifically to transform the Godavari region into what state tourism officials describe as a global spiritual and tourism destination ahead of this 2027 festival, including converting a 127-year-old decommissioned bridge into a four-kilometer tourism hub featuring food, handicraft, recreation, and adventure sports zones, and a further Rs. 26.68 crore allocation to redesign 270 meters of the main Pushkar Ghat riverfront to enhance the pilgrim experience during the daily Godavari Harathi ceremony (Janasena Meesena, 2026b). This investment illustrates a broader pattern this report has observed throughout its infrastructure chapters, namely the state's tendency to use major periodic religious events as forcing functions that concentrate and accelerate infrastructure investment around specific deadlines, a pattern also evident in the Tirupati Airport and highway connectivity investments discussed in Chapter 8, sections 8.1 and 8.3.

This pattern of deadline-driven infrastructure acceleration around major periodic festivals carries both advantages and risks worth noting explicitly. On the advantage side, a fixed, immovable festival date, such as the 2027 Godavari Pushkaralu, provides a genuinely powerful forcing function that can help overcome the kind of open-ended project delay this report has documented repeatedly throughout its infrastructure chapters, most notably the multi-year Amaravati capital city development hiatus discussed in Chapter 11, section 11.4, since a festival date cannot be postponed to accommodate a delayed construction timeline in the way a more flexible infrastructure project completion target often can be. On the risk side, this same deadline-driven urgency can create pressure toward rushed construction quality or cost overruns as a hard deadline approaches, a risk this report was unable to assess specifically for the Godavari Pushkaralu preparation project given the sources available for this chapter, but one worth flagging given the scale of infrastructure work, spanning bridge conversion, riverfront redesign, and the broader railway capacity preparation discussed in Chapter 8, section 8.2, that must be completed within the fixed 2027 timeline.

The state's broader hospitality investment pattern, discussed above, also connects to the medical tourism potential the state's own tourism policy documentation identifies as a growth sector, drawing on the state's expanding healthcare infrastructure discussed throughout Chapter 6 (Cretum Advisory, 2026). Given the significant regional disparities in healthcare infrastructure quality this report documented in Chapter 6, section 6.1, particularly between the state's better-resourced Coastal Andhra districts and its more remote Rayalaseema and North Andhra districts, it is likely that any genuine medical tourism development would concentrate substantially within the state's existing urban healthcare hubs, principally Visakhapatnam and the Amaravati-Vijayawada corridor, rather than being distributed evenly across the state's twenty eight districts, a pattern consistent with the broader growth corridor concentration this report has traced throughout its preceding chapters.

### **19.3 Domestic and International Tourist Flows: Trends and Targets**

Andhra Pradesh recorded over 194 million domestic tourist visits in 2023, positioning it among the most visited Indian states by this measure, with tourism contributing an estimated 6 to 7 percent of the state's GSDP, a substantial contribution relative to many other Indian states and one that underscores the sector's genuine economic significance beyond its cultural and religious dimensions (Cretum Advisory, 2026). This domestic tourism volume dwarfs the state's international tourist arrivals, which totaled approximately 25,000 foreign visitors for the 2024-25 period, with the state's tourism promotion strategy specifically emphasizing outreach to ASEAN countries as a priority inbound market for growth (Travel Trends Today, 2026).

This substantial gap between domestic and international visitor volumes is consistent with the broader pattern across most Indian states, where domestic religious and cultural tourism typically dwarfs international leisure tourism by several orders of magnitude, and reflects Andhra Pradesh's tourism asset base being weighted heavily toward domestic pilgrimage tourism to sites such as Tirumala, discussed in Chapter 1, section 1.4, rather than toward the kind of internationally marketed leisure destinations that tend to draw larger international visitor volumes, such as Goa's beach tourism or Rajasthan's heritage palace circuit. The state's explicit strategy of diversifying into niche tourism categories including Tribal Tourism, handicrafts, and Buddhist heritage circuits at Amaravati and Nagarjunakonda, discussed in section 19.1, represents a deliberate attempt to build a more internationally marketable tourism portfolio beyond domestic pilgrimage tourism alone, particularly given Buddhist heritage tourism's established international appeal among visitors from Buddhist-majority nations across Southeast and East Asia, a natural complement to the state's stated ASEAN outreach priority (Travel Trends Today, 2026).

The scale gap between the state's 194 million domestic visitor figure and its approximately 25,000 international visitor figure, a ratio exceeding 7,000 to 1, is worth contextualizing against comparable ratios in India's more internationally established tourism states, since even Kerala and Rajasthan, the two states most commonly cited as India's leading international tourism destinations, typically record domestic-to-international visitor ratios in the range of several hundred to one rather than several thousand to one, suggesting Andhra Pradesh's international tourism development remains at a considerably earlier stage than its domestic tourism volume alone might suggest. This finding reinforces the interpretive caution this report raises later in this section regarding the multi-decade investment horizon likely required to meaningfully close the gap between the state's current international tourism position and its explicitly stated aspiration to match Kerala's international tourism brand recognition.

The state's 194 million domestic tourist figure for 2023 also merits interpretation within the broader context of India's overall domestic tourism growth trajectory, which has expanded considerably nationally in the years following the COVID-19 pandemic's severe 2020 to 2021 disruption to the tourism sector, a broader national recovery and growth trend that likely accounts for at least part of Andhra Pradesh's own strong recorded visitor volume, alongside the state-specific factors this chapter has documented throughout its preceding sections.

Disentangling the relative contribution of this broader national tourism recovery trend from Andhra Pradesh's own state-specific policy and infrastructure investment efforts to its recorded visitor growth would require year-over-year, state-comparative tourism trend data that was not available among the sources consulted for this chapter, representing a further documented gap this report recommends addressing in subsequent editions.

The state's tourism policy for 2025-2030, unveiled by Tourism, Culture and Cinematography Minister Kandula Durgesh at the CII Tourism and Travel Summit in Visakhapatnam, explicitly seeks to grant the tourism industry formal "industry status," aligning it with international standards intended to maximize its economic contribution across the state, with the Minister explicitly likening Andhra Pradesh's tourism potential to that of Kerala, India's most internationally recognized tourism-branded state (Travel and Tour World, 2026b). This explicit aspirational benchmarking against Kerala, a state whose tourism brand recognition and international visitor volume substantially exceed Andhra Pradesh's current position, illustrates the scale of ambition underlying the state's tourism strategy, though this report notes that Kerala's own tourism success reflects several decades of sustained brand-building investment, suggesting Andhra Pradesh's comparable ambition, while not unreasonable given the state's genuine underlying asset base documented in section 19.1, will likely require a similarly sustained multi-decade investment horizon rather than a rapid convergence achievable within the current 2025-2030 policy cycle alone.

#### **19.4 Cultural Heritage Preservation and Institutional Framework**

Andhra Pradesh's cultural heritage preservation efforts center substantially on its Buddhist heritage circuit at Amaravati and Nagarjunakonda, sites of considerable historical and archaeological significance predating the modern Amaravati capital city project discussed in Chapter 11, section 11.4, by nearly two thousand years, with the ancient site of Amaravathi having served as the capital of the Satavahana Empire, as documented in Chapter 11, section 11.5. This report noted in that earlier chapter a documented gap regarding whether comparable heritage conservation attention has been extended to the state's older, more established urban centres beyond the new capital's own historical branding, a gap this chapter's tourism-specific findings help partially address, since the explicit inclusion of both Amaravati and Nagarjunakonda within the state's tourism development priorities documented in section 19.1 suggests genuine institutional investment in Buddhist heritage preservation beyond purely rhetorical historical framing.

The Andhra Pradesh Tourism Authority's institutional documentation also highlights the state's broader cultural heritage inventory, including Kondapalli Toys, a traditional wooden toy-making craft centered in Kondapalli village near Vijayawada in Krishna district, produced within a dedicated artisan community colony, illustrating the state's living craft heritage alongside its archaeological and religious heritage sites (AP Tourism Authority, 2026). Comprehensive, current, quantitative data on the state's formal heritage building preservation programme scale, heritage zoning regulation enforcement, or archaeological site conservation funding beyond the specific Amaravati and Nagarjunakonda Buddhist circuit

investment was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions through direct reference to the state's Department of Archaeology and Museums reporting.

The state's approach to heritage preservation, as documented throughout this section, appears concentrated substantially on sites with direct tourism revenue potential, namely the Buddhist heritage circuit and the living craft traditions discussed above, rather than reflecting a comprehensive, systematic heritage conservation programme extending across the full breadth of the state's historical built environment, including colonial-era architecture, historic urban quarters, and vernacular architectural traditions that may carry genuine historical and cultural significance without necessarily offering the same immediate tourism revenue potential as the state's flagship Buddhist heritage sites. This pattern, prioritizing heritage assets with clear commercial tourism value over broader systematic conservation, is not unique to Andhra Pradesh and recurs across many Indian states' heritage policy approaches, but it does suggest that heritage assets lacking obvious tourism monetization potential may face a comparatively higher risk of neglect or loss relative to the state's actively promoted and funded Buddhist heritage circuit, a risk this report recommends monitoring in subsequent editions, particularly for the historic quarters of the state's older urban centres discussed in Chapter 11, section 11.5.

## **19.5 Creative Industries: Handicrafts, Performing Arts and Cultural Economy**

As documented in Chapter 1, section 1.4, Andhra Pradesh's cultural identity is deeply rooted in Telugu literary, devotional, and performing arts traditions, with Kuchipudi classical dance, which originated within the state, representing a globally recognized performing arts tradition and cultural export. The state's living handicraft traditions, exemplified by the Kondapalli Toys craft discussed in section 19.4, alongside the state's distinctive Andhra cuisine, characterized by its emphasis on spice-forward vegetarian and non-vegetarian dishes including regional specialties such as tamarind rice, represent further dimensions of the state's creative and cultural economy that intersect directly with the tourism asset base discussed throughout this chapter, since culinary and craft tourism increasingly represents a significant component of how visitors, both domestic and international, experience and economically engage with a destination's broader cultural offering (AP Tourism Authority, 2026).

Comprehensive, current, quantitative data on the specific economic scale of the state's handicraft sector, including artisan employment figures, export volumes, and value chain development beyond the specific Kondapalli Toys example documented in section 19.4, was not available among the sources consulted for this chapter, representing a documented gap this report recommends addressing in subsequent editions, particularly given the potential connection between this creative economy sector and the broader MSME and rural livelihood promotion themes examined in Chapter 4, section 4.2, and Chapter 12, section 12.4, since handicraft production frequently functions as an important supplementary or primary rural household income source in states with strong artisanal traditions.

This creative economy sector's potential intersection with the state's broader MSME policy architecture, discussed in Chapter 4, section 4.2, deserves further emphasis, since the enhanced capital subsidy provisions available to women, Backward Class, Scheduled Caste, Scheduled Tribe, and specially-abled entrepreneurs under the state's MSME and Entrepreneurship Development Policy 4.0 would, in principle, extend to handicraft-focused enterprises meeting the relevant eligibility criteria, given that traditional craft production in India frequently involves artisan communities drawn disproportionately from precisely these historically disadvantaged social categories. Whether the state's handicraft sector has, in practice, meaningfully benefited from this broader MSME incentive architecture, or whether craft producers face structural barriers to accessing these incentives, such as limited awareness of the application process or the formal business registration requirements that MSME incentive schemes typically require but that informal, home-based artisan production may not readily satisfy, represents a further specific question this report recommends investigating in subsequent editions, given its direct relevance to both the creative economy themes examined in this chapter and the rural livelihood and social justice themes examined in Chapters 7 and 12.

## **19.6 Film, Media and Content Industries as Economic Drivers**

Andhra Pradesh's film and media industry policy has undergone significant reform under the state's Tourism, Culture and Cinematography Department, reflecting the deliberate institutional pairing of tourism and film promotion under a single ministerial portfolio, a structural choice that facilitates the kind of film tourism strategy discussed below. Minister Kandula Durgesh has announced the revival of the Nandi Awards, the state's highest honor for excellence in Telugu cinema, after a prolonged hiatus, with a committee to be formed to finalize the award's guidelines and implementation timeline, and has reversed a prior administration's proposal for a government-controlled online movie ticketing portal in favor of an industry-managed system intended to give film industry stakeholders greater control and transparency over ticket sales and revenue data (Janasena Meesena, 2026b). The Department has also initiated discussion toward revising existing government orders on movie ticket pricing, seeking to establish a more flexible pricing model that would allow producers to apply for special pricing tiers for big-budget productions while maintaining consumer protection safeguards (Janasena Meesena, 2026b).

Beyond these industry governance reforms, the state has pursued an explicit film tourism strategy intended to position Andhra Pradesh as a preferred filming location for both domestic and international productions, introducing a streamlined single-window system for film permits specifically in Visakhapatnam, with veteran Telugu film industry figure Daggubati Suresh Babu providing guidance on developing the state's broader film tourism policy framework (Travel and Tour World, 2026; Travel and Tour World, 2026b). The government has committed to allocating land and providing incentives for constructing state-of-the-art film studios and post-production facilities in Visakhapatnam specifically, an ambition explicitly intended to develop the city into a major film industry hub complementing its existing status as the anchor of the Visakhapatnam growth corridor

discussed throughout this report, including in Chapter 3, section 3.9, and Chapter 4, section 4.3 (Janasena Meesena, 2026b). The strategic locations identified for combined film and tourism development, Visakhapatnam, Tirupati, and Gandikota specifically, mirror closely the broader tourism anchor destination list discussed in section 19.1, illustrating the state's deliberate strategy of treating film production location scouting and conventional tourism destination marketing as mutually reinforcing economic development activities rather than separate policy domains (Travel and Tour World, 2026b).

This film tourism strategy connects meaningfully to the broader creative economy and cultural heritage themes examined throughout this chapter, since successful film productions shot within the state's tourism anchor destinations can generate substantial indirect tourism promotion value, as visitors are drawn to locations they have seen depicted in popular films, a phenomenon well documented in international tourism literature and one the state's deliberate co-location of film and tourism development priorities appears designed to deliberately capture.

The specific choice to revive the Nandi Awards, discussed above, carries symbolic significance beyond its immediate practical function of recognizing excellence in Telugu cinema, since the awards' prior hiatus and subsequent revival illustrates a broader pattern this report has observed regarding the state's approach to institutional continuity following the 2014 bifurcation and subsequent changes in state political leadership, where certain institutions and programmes have experienced discontinuity before being deliberately revived or rebranded by subsequent administrations, a pattern also evident in the NTR Bharosa Pension Scheme's rebranding from the earlier YSR Pension Kanuka scheme discussed in Chapter 7, section 7.6, and the broader pattern of scheme renaming that recurs across several welfare and cultural programmes examined throughout this report. This report considers this pattern of institutional discontinuity and revival, rather than sustained institutional continuity across successive state administrations, a further specific characteristic of the state's governance style worth noting explicitly, since it carries implications for how durable any given policy initiative documented throughout this framework, including the tourism and film industry reforms discussed in this chapter, is likely to prove across future changes in state political leadership.

The Telugu film industry itself, commonly referred to as Tollywood and historically centered substantially in Hyderabad, which became part of Telangana following the 2014 bifurcation discussed throughout this report, represents a further dimension of the post-bifurcation institutional and economic rebuilding challenge this report has traced since the Preface. Andhra Pradesh's explicit ambition to develop Visakhapatnam into a major film production hub, discussed above, can be understood as a direct attempt to rebuild film industry infrastructure and institutional presence within the residual state's own territory, following the loss of Hyderabad's already-established film industry infrastructure and institutional ecosystem to Telangana, a parallel to the South Coast Railway zone establishment discussed in Chapter 8, section 8.2, and the state's own distribution company demerger discussed in Chapter 9, section 9.2, both of which this report has identified as further examples of the

state's broader post-bifurcation institution-building effort. Whether Visakhapatnam can, over time, develop a film production ecosystem of comparable depth and scale to Hyderabad's decades-established Telugu film industry infrastructure represents a long-term institutional development question this report was unable to assess definitively given the early stage of the specific single-window permit and studio infrastructure initiatives documented above, but one this report considers analogous in its fundamental challenge to the broader institution-rebuilding theme traced throughout this report's preceding chapters.

Drawing together the findings of this chapter as a whole, Andhra Pradesh's tourism, culture, and creative economy sector presents a genuinely asset-rich profile, spanning religious, natural, heritage, and adventure tourism categories, complemented by an increasingly coordinated policy strategy linking tourism, film, and cultural heritage promotion under a unified institutional structure. The sector's substantial existing scale, reflected in the 194 million domestic tourist visits and 6 to 7 percent GSDP contribution documented in section 19.3, provides a genuinely strong foundation for the state's more ambitious international tourism growth and industry status objectives, though, consistent with this report's analytical findings across virtually every preceding chapter, translating the sector's strong domestic tourism base and genuine asset richness into the kind of internationally recognized tourism brand the state has explicitly benchmarked against Kerala will likely require a sustained, multi-decade investment and marketing commitment extending well beyond the current 2025-2030 policy cycle's own time horizon.

Three specific findings from this chapter merit particular emphasis in concluding this report's penultimate sectoral chapter. First, the tourism sector's anchor destination strategy, discussed in section 19.1, largely though not entirely mirrors the broader regional growth corridor concentration pattern this report has traced consistently since Chapter 1, section 1.7, with the Araku Valley and Gandikota inclusions representing a modest but genuine counterexample to this otherwise persistent pattern. Second, the state's deliberate pairing of tourism and film industry policy under a unified institutional structure, discussed in section 19.6, and its explicit strategy of co-locating film production incentives with tourism anchor destinations, represents a genuinely coherent, mutually reinforcing policy design that this report has not found equally explicit in several other cross-sectoral policy domains examined throughout this framework. Third, the persistent gap this report has documented between the state's substantial existing domestic tourism scale and its still-nascent international tourism development, at a ratio exceeding 7,000 domestic visitors for every international visitor, suggests that the state's explicit ambition to achieve Kerala-comparable international tourism recognition represents a genuinely long-horizon strategic objective rather than one achievable within the current five-year policy cycle, a pattern of ambitious long-term target-setting against comparatively early-stage current capability that this report has now observed consistently across nearly every sector examined throughout this entire framework, from the innovation and knowledge economy strategy examined in Chapter 17 to the green economy transition examined in Chapter 14.

This recurring pattern, substantial genuine assets and institutional ambition paired with long execution horizons and persistent data transparency gaps, positions this chapter's findings as a fitting bridge toward this report's final two chapters, which turn from the sector-by-sector assessment this report has pursued since Chapter 1 toward a more explicitly cross-cutting and forward-looking synthesis of the themes, tensions, and open questions this report has traced throughout its preceding nineteen chapters.

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## Chapter 20: Cross-Cutting Themes and Integrated Policy Imperatives

### 20.1 Sustainable Development Goals of the State

Andhra Pradesh ranked 10th nationally among Indian states in NITI Aayog's SDG India Index 2023-24, the fourth edition of the country's principal tool for measuring state-level progress toward the United Nations' Sustainable Development Goals, placing the state within the "Front Runner" category that requires a composite score between 65 and 99 out of 100, one of 32 states and union territories to achieve this classification, up from just 22 in the 2020-21 edition (NITI Aayog, 2026b; courses.epratibha.net, 2026). Telangana ranked immediately behind Andhra Pradesh at 11th place, while Kerala and Uttarakhand jointly led the national ranking at 79 points each, and independent analysis specifically identified Andhra Pradesh, alongside Himachal Pradesh and Tamil Nadu, as having made significant progress in areas including health, education, and clean energy (ClearIAS, 2026; courses.epratibha.net, 2026).

This 10th place ranking is broadly consistent with the mixed but generally above-average performance profile this report has documented across the state's individual sectoral chapters. The SDG India Index's health-related goals connect directly to the maternal mortality outcomes documented in Chapter 6, section 6.3, where Andhra Pradesh's Maternal Mortality Ratio of 45 per 100,000 live births placed it among only eight Indian states to have already achieved the relevant Sustainable Development Goal target ahead of the 2030 deadline. The clean energy goal connects directly to the renewable energy resource base and Ultra Mega Solar Power Project ambitions documented in Chapter 9, section 9.4. Conversely, the SDG India Index's education-related goals plausibly reflect the same Education Index weakness this report identified in Chapter 1, section 1.5, and Chapter 5, section 5.8, where the state's comparatively strong tertiary education institutional density coexists with weaker foundational literacy and schooling outcomes, a tension likely constraining the state's SDG India Index education sub-score even as its overall composite ranking remains comparatively strong. National analysis has also flagged Goal 5, Gender Equality, as the single lowest-scoring goal category across India as a whole, falling below 50 points nationally even as most other goal categories have improved substantially, a finding this report considers relevant context for the gender mainstreaming discussion in section 20.2 (India-Briefing, 2026).

This chapter's SDG assessment provides a useful capstone opportunity to systematically map each of the seventeen Sustainable Development Goals against the specific sectoral chapters this report has already devoted to closely related themes, illustrating how comprehensively this report's own chapter structure, inherited from the standardized document format specified for this framework, already tracks the SDG architecture even without having been explicitly designed around it. Goal 1, No Poverty, and Goal 10, Reduced Inequalities, connect directly to the poverty and multidimensional deprivation themes examined in Chapter 1, sections 1.6 and 1.7. Goal 2, Zero Hunger, connects to the nutrition programming examined in Chapter 6, section 6.6, and the food security themes examined throughout Chapter 18. Goal 3, Good

Health and Well-Being, and Goal 6, Clean Water and Sanitation, connect respectively to Chapter 6 and Chapter 10 in their entirety. Goal 4, Quality Education, connects to Chapter 5. Goal 5, Gender Equality, connects to Chapter 7, section 7.4, and this chapter's own section 20.2. Goal 7, Affordable and Clean Energy, and Goal 13, Climate Action, connect to Chapters 9 and 14 respectively. Goal 8, Decent Work and Economic Growth, connects to Chapter 3 broadly and Chapter 3, section 3.7, specifically. Goal 9, Industry, Innovation and Infrastructure, connects to Chapters 4, 8, and 17. Goal 11, Sustainable Cities and Communities, connects to Chapter 11. Goal 12, Responsible Consumption and Production, connects to Chapter 10, section 10.4, on solid waste management. Goal 14, Life Below Water, and Goal 15, Life on Land, connect to Chapter 13. Goal 16, Peace, Justice and Strong Institutions, connects to Chapter 15. This near-complete mapping between this report's own chapter structure and the SDG framework's seventeen goals underscores that the standardized state development report template this framework follows already substantially internalizes the SDG architecture as an organizing logic, even though this framework's own chapter titles do not explicitly reference the SDGs by name until this specific chapter.

## **20.2 Gender Mainstreaming Across Sectors**

Gender equity has recurred as an explicit theme throughout this report, most comprehensively in Chapter 7, section 7.4, where this report documented the state's literacy gender gap, its YSR Cheyutha women's livelihood scheme, and its Girl Child Protection Scheme, and in Chapter 12, section 12.4, where this report examined the Self Help Group movement's role in extending women's functional influence over local governance decisions. Drawing these threads together at the cross-sectoral level, this report finds that Andhra Pradesh's gender mainstreaming approach operates predominantly through targeted welfare and livelihood programming, exemplified by YSR Cheyutha and the Self Help Group architecture, rather than through comprehensive gender budgeting or systematic gender-disaggregated outcome monitoring embedded uniformly across every sectoral department examined throughout this report.

This targeted programming approach has produced genuine, documented results in specific domains, including the state's favorable sex ratio relative to the national average discussed in Chapter 1, section 1.3, and its strong labor force participation rate discussed in Chapter 3, section 3.7. However, this report was unable to identify, across any of its preceding nineteen chapters, a single consolidated gender budgeting statement or gender-disaggregated departmental performance reporting framework of the kind that would allow systematic assessment of whether gender considerations have been mainstreamed into core departmental planning and budgeting processes, as opposed to being addressed primarily through dedicated, women-specific schemes operating alongside otherwise gender-neutral departmental programming. Given the national SDG India Index finding that Gender Equality remains India's weakest-performing goal category nationally, discussed in section 20.1, this report recommends that subsequent editions specifically investigate whether Andhra Pradesh maintains a formal gender budgeting statement within its annual budget documentation, a practice several other major Indian states have adopted, which would provide a more

systematic basis for assessing gender mainstreaming progress than the scheme-by-scheme assessment this report has been able to conduct throughout its preceding chapters.

The specific data gaps this report has encountered regarding women's representation in the state legislature, Panchayati Raj institutions beyond the constitutional one-third reservation mandate, and the civil service, all flagged explicitly in Chapter 7, section 7.4, further illustrate this report's broader finding regarding the scheme-centric rather than systematically gender-disaggregated character of the state's gender mainstreaming approach. A more comprehensive gender mainstreaming framework would, in principle, generate exactly this kind of representation and outcome data as a routine byproduct of standard departmental reporting, rather than requiring this report to search for such data as a separate, specific research exercise largely unaddressed by the sources available throughout this framework. This report considers the routine generation and public disclosure of gender-disaggregated outcome data across all major state government departments, rather than the introduction of additional women-specific welfare schemes alone, the more consequential gender mainstreaming priority for the state to pursue over the remainder of this decade, since the state's welfare scheme architecture, discussed extensively throughout Chapter 7, already demonstrates considerable sophistication in targeted women's programming specifically, while systematic gender-disaggregated monitoring across the state's broader administrative apparatus remains comparatively underdeveloped based on the evidence available to this report.

### **20.3 Youth Policy and Demographic Dividend Realisation**

Andhra Pradesh's youth policy considerations intersect directly with the demographic transition themes examined extensively in Chapter 1, section 1.3, and Chapter 6, section 6.7, where this report documented the state's unusually advanced demographic transition, with a Total Fertility Rate of approximately 1.5, well below replacement level, and a population aging trajectory that could see close to 23 percent of the state's population aged 60 or above by 2047. This demographic profile carries a specific, time-limited implication for youth policy and demographic dividend realisation: Andhra Pradesh's window for capitalizing on a favorable working-age-to-dependent population ratio, the core mechanism underlying any "demographic dividend" framework, is considerably narrower than for less demographically advanced Indian states, since the state's youth population share will begin contracting relative to its elderly population share sooner than in states with higher fertility rates and later-stage demographic transitions.

This narrowed dividend window adds urgency to the workforce skill development themes examined in Chapter 3, section 3.7, and Chapter 17, section 17.6, where this report documented the persistent national vocational training gap, with only 4.2 percent of India's workforce having received formal vocational training, and the approximately 25 percent NEET rate among national youth aged 15 to 29. If Andhra Pradesh's own youth population shares this national skill and employment readiness profile, a plausible inference given the absence of state-specific contrary evidence, the state faces a genuinely compressed timeframe

within which to convert its current, still-favorable working-age population share into productive economic output before that population share itself begins to decline, a timeframe considerably shorter than the multi-decade horizon over which many of the state's own strategic initiatives, including the frontier technology talent pipeline development discussed in Chapter 17, section 17.6, and the tourism sector's Kerala-benchmarked ambitions discussed in Chapter 19, section 19.3, are explicitly designed to unfold. This report considers the alignment, or potential misalignment, between the state's narrowing demographic dividend window and the multi-decade execution horizons several of its own flagship strategies require, one of the more consequential structural tensions this report's concluding Vision 2047 assessment in Chapter 21 must weigh carefully.

The specific youth-oriented initiatives this report has documented throughout its preceding chapters, including the Avishkandhra 2025 entrepreneurship programme discussed in Chapter 17, section 17.5, the school-level quantum technology curriculum discussed in that same section, and the broader Mega DSC 2025 teacher recruitment drive discussed in Chapter 5, section 5.5, together represent a genuinely multi-pronged youth policy architecture spanning entrepreneurship promotion, frontier technology exposure, and foundational education staffing. However, this report's repeated finding throughout Chapter 17 regarding the absence of participation and outcome data for these youth-oriented programmes means that this report cannot assess, with the rigor this cross-cutting theme deserves, whether this multi-pronged architecture is succeeding in reaching a sufficiently broad cross-section of the state's youth population, particularly given the regional disparity concerns this report raised specifically regarding Avishkandhra 2025's geographic participation distribution in Chapter 17, section 17.5. A demographic dividend, by definition, requires broad-based youth workforce readiness across the full population rather than concentrated excellence among a narrow, already-advantaged subset of young people in the state's most economically dynamic districts, making this participation breadth question particularly consequential for assessing the credibility of the state's demographic dividend realisation strategy as a whole.

## **20.4 Migration: Internal, Inter-State and International Dimensions**

Migration patterns affecting Andhra Pradesh operate across three distinct dimensions this report has touched upon only implicitly throughout its preceding chapters. Internal migration, within the state's own borders, connects directly to the urbanisation trends examined in Chapter 11, section 11.1, where this report documented the state's comparatively low but likely accelerating urbanisation rate, and to the rural-to-urban administrative reclassification question this report flagged in that same chapter as an area requiring further investigation. Given the persistent regional economic disparities this report has traced since Chapter 1, section 1.7, it is likely that a meaningful share of the state's internal migration flows from the comparatively less economically dynamic Rayalaseema interior and North Andhra tribal districts toward the Visakhapatnam and Amaravati-Vijayawada growth corridors, though comprehensive, current, district-level internal migration flow data was not available among the sources consulted for this chapter.

Inter-state migration carries particular significance for Andhra Pradesh given its unique post-bifurcation relationship with Telangana, discussed throughout this report beginning with the Preface, since professional and skilled labor migration between the two successor states, particularly in technology and pharmaceutical sectors where Hyderabad retains substantial first-mover advantages discussed in Chapter 4, section 4.3, likely continues to shape both states' respective labor markets in ways this report was unable to quantify given the sources available. International migration, meanwhile, connects to the substantial Telugu diaspora populations resident in the United States, the Gulf states, and other international destinations, whose remittance flows and periodic return migration represent a further, largely undocumented dimension of the state's demographic and economic profile throughout this report. Comprehensive, current, quantitative data addressing any of these three migration dimensions specifically for Andhra Pradesh was not available among the sources consulted for this chapter, representing a significant documented gap this report recommends prioritizing in subsequent editions, given migration's evident relevance to the labor market, demographic, and regional disparity themes examined throughout this framework.

The Gulf state migration corridor specifically warrants particular emphasis given its historical prominence among Andhra Pradesh's coastal and Rayalaseema districts, a pattern common across several South Indian states with long-established labor migration relationships with the Gulf Cooperation Council countries dating back several decades. Remittance income from this Gulf migration corridor has historically functioned as a significant household income source for migrant-sending districts, functioning as a further income diversification mechanism alongside the livestock sector discussed in Chapter 18, section 18.5, and the Self Help Group-linked livelihood activities discussed in Chapter 12, section 12.4. Whether this Gulf remittance corridor's scale and district-level concentration has shifted in recent years, whether in response to Gulf labor market conditions or changing domestic economic opportunities within the state's own growth corridors documented throughout this report, represents a further specific question this report recommends investigating in subsequent editions, given remittance income's potential significance for household welfare in specific migrant-sending districts that may not otherwise show up prominently in the aggregate state-level economic indicators this report has relied upon throughout its preceding chapters.

The internal migration dimension also connects directly to the urban poverty and slum formation themes examined in Chapter 11, section 11.6, since rural-to-urban migrants arriving in the state's growth corridor cities without immediate access to formal housing frequently form the population base from which informal settlements initially develop, before, in the more successful cases, transitioning into the in-situ slum redevelopment programming discussed in that chapter. This connection between migration flows and urban informal settlement formation represents a further concrete illustration of how the migration theme this section introduces cuts across and connects to numerous other sectoral chapters throughout this report, reinforcing this chapter's broader purpose of synthesizing cross-cutting themes that recur across, rather than being confined within, any single sectoral silo.

## **20.5 Science, Technology and Innovation for Development**

The role of science, technology, and innovation as a cross-cutting development driver has been examined extensively throughout this report's individual sectoral chapters, including the state's frontier technology research strategy documented in Chapter 17, its AI-powered spatial governance and cybersecurity architecture documented in Chapter 16, and its technology-enabled sectoral applications spanning agriculture, water management, and health documented respectively in Chapters 18, 10, and 6. Drawing these threads together, this report finds that Andhra Pradesh has pursued a genuinely more technology-forward development strategy than many comparable Indian states, evidenced by the sheer breadth of digital and emerging technology initiatives this report has documented across virtually every sector examined throughout this framework.

This technology-forward orientation carries a specific cross-cutting risk this report has flagged repeatedly in sector-specific form throughout its preceding chapters: the digital divide risk arising from the plausible regional connectivity gradient discussed in Chapter 16, section 16.1, whereby technology-enabled service delivery innovations may perform unevenly across the state's three constituent regions depending on underlying connectivity and digital literacy infrastructure. This report considers the cross-sectoral aggregation of this single risk factor, appearing independently across education technology in Chapter 5, health records in Chapter 6, judicial process service in Chapter 15, and digital governance broadly in Chapter 16, as itself a significant cross-cutting policy imperative meriting dedicated, coordinated attention rather than being addressed piecemeal within each individual sectoral department's own technology deployment planning.

A second cross-cutting science, technology, and innovation theme this report has identified concerns the distinction, introduced in Chapter 17, sections 17.1 and 17.2, between the state's deliberate strategic choice to compete on frontier technology research depth, exemplified by the Amaravati Quantum Valley initiative, versus a more conventional strategy of broad-based digital service delivery modernization, exemplified by the E-Panchayat system and urban governance digitization discussed in Chapter 16. These two technology strategies, frontier research specialization and broad-based service delivery digitization, are not mutually exclusive and indeed appear to be pursued simultaneously by the state, but they do represent analytically distinct policy tracks with different beneficiary populations, different implementation timelines, and different execution risk profiles, the former dependent on a narrow, highly specialized talent pipeline discussed in Chapter 17, section 17.6, and the latter dependent on broad-based digital literacy and connectivity infrastructure discussed in this section. This report recommends that subsequent editions explicitly track these two technology strategies as distinct policy threads, rather than treating "technology and innovation" as a single undifferentiated cross-cutting theme, since their respective success or failure will likely depend on quite different underlying conditions and will likely benefit quite different segments of the state's population.

The specific applied technology initiatives this report has documented across multiple sectoral chapters, including the AI-powered water quality monitoring discussed in Chapter 16, section 16.6, the IoT Centre of Excellence's sectoral prototyping focus discussed in

Chapter 17, section 17.2, and the feeder-level agricultural solarization discussed in Chapter 9, section 9.4, and Chapter 18, section 18.2, collectively illustrate a third, more modest but arguably more immediately impactful technology strategy thread: the targeted application of relatively mature, proven technologies to specific, well-documented sectoral problems this report has identified throughout its preceding chapters. This third thread, distinct from both the frontier research specialization and broad-based digitization threads discussed above, represents perhaps the most readily achievable and lowest-execution-risk component of the state's overall science, technology, and innovation strategy, since it applies already-proven technology to specific, well-understood problems rather than requiring either novel frontier research breakthroughs or comprehensive infrastructure buildout across the state's full territory.

This report recommends that the state's science, technology, and innovation policy planning explicitly recognize these three distinct threads, frontier research specialization, broad-based digitization, and targeted applied technology deployment, as requiring different resourcing philosophies, different success metrics, and different time horizons for meaningful assessment, rather than being folded together into a single undifferentiated innovation policy narrative. The frontier research thread, exemplified by Amaravati's Quantum Valley, should be assessed against multi-decade research output and talent attraction metrics of the kind international peer research hubs are typically evaluated against. The broad-based digitization thread, exemplified by the E-Panchayat and urban governance digital systems, should be assessed against near-term service delivery quality and citizen satisfaction metrics, tempered by the regional connectivity equity concerns this section has raised repeatedly. The targeted applied technology thread, exemplified by agricultural solarization and water quality monitoring, should be assessed against the most immediate and concrete metric of all: whether the specific sectoral problem each initiative targets, whether agricultural power subsidy burden or delayed water contamination detection, shows measurable improvement following the technology's deployment, a more readily verifiable success criterion than either of the other two threads offers given their longer or more diffuse impact horizons.

## **20.6 Statistical System Strengthening and Evidence-Based Policymaking**

This report's own research process has surfaced a cross-cutting finding of considerable significance for Andhra Pradesh's evidence-based policymaking capacity: a persistent pattern, documented explicitly in Chapter 13, section 13.5, and recurring across Chapter 10, section 10.4, Chapter 11, section 11.2, and Chapter 18 throughout, in which detailed, granular, transaction-level or site-specific government documentation exists in genuine abundance, while aggregated, state-wide performance indicators synthesizing this granular data into a coherent overall picture prove considerably harder to access in a form suitable for rigorous, evidence-based policy assessment. This report has characterized this pattern as a genuine structural characteristic of the state's public data ecosystem rather than a coincidental gap specific to any single sector, one that plausibly reflects underlying data architecture and public dissemination practices common across many Indian state administrative systems rather than a deficiency unique to Andhra Pradesh specifically.

Notwithstanding this general pattern, this report has also documented specific, genuine strengths in the state's statistical and data infrastructure, including the Water Resources Department's National Water Mission Award-winning public data transparency discussed in Chapter 10, section 10.2, and the state's broader digital governance data access protocol discussed in Chapter 16, section 16.4. This suggests the state possesses genuine institutional capacity for statistical system strengthening where it has chosen to prioritize this capacity, and this report recommends that closing the aggregate data availability gaps documented throughout this framework represents less a matter of building entirely new statistical infrastructure from scratch than of extending the state's already-demonstrated data transparency capability, evident in its water resources planning, more consistently across its other sectoral departments, particularly health, environment, and municipal solid waste management, where this report has found this gap most pronounced.

This report's own methodology, relying substantially on publicly available English-language secondary sources rather than direct primary data collection or government department engagement, represents an inherent limitation this report acknowledges explicitly as relevant context for interpreting the data gaps documented throughout this framework. Some fraction of the gaps this report has flagged as "documented gaps" throughout its preceding chapters may reflect limitations in this report's own research methodology and source access, rather than genuine absence of the underlying data within the state's own administrative systems. This report recommends that any subsequent, more authoritative edition of this framework be developed through direct engagement with the specific state government departments this report has repeatedly identified as holding the relevant underlying data, including the Water Resources Department, the Health, Medical and Family Welfare Department, the Pollution Control Board, and the Comptroller and Auditor General's local body audit function, rather than relying primarily on the secondary source research approach this particular edition has employed. Such direct engagement would allow a more definitive determination of which specific data gaps reflect genuine absence of underlying statistical infrastructure within the state's administrative systems, warranting the statistical system strengthening this section's title references, and which instead reflect simply a gap in this report's own research access to data that may already exist within the state's own internal records.

The broader national context for statistical system strengthening also merits brief note here, since India's statistical system as a whole has faced sustained scrutiny in recent years regarding data quality, timeliness, and methodological consistency across successive rounds of major national surveys, including the delayed decennial census discussed repeatedly throughout this report beginning in Chapter 1, section 1.3. Given that several of the state-specific data gaps this report has documented, including the absence of updated census-based demographic and religious composition data, stem directly from this national-level statistical system constraint rather than from any state-specific administrative failing, this report considers it important to distinguish, wherever possible, between data gaps attributable to national statistical system limitations beyond the state's own control, and data gaps attributable specifically to Andhra Pradesh's own administrative data collection and dissemination practices, a distinction this report has attempted to maintain throughout its

preceding chapters but one that merits explicit restatement here as this chapter's cross-cutting synthesis draws these threads together.

## **20.7 Public Participation: Behavioural Change and Citizen Engagement**

Citizen engagement and participatory governance mechanisms recur throughout this report's institutional analysis, most notably in the Gram Sabha participatory planning framework examined in Chapter 12, section 12.6, and the Swachhata Hi Seva citizen mobilization campaign discussed in Chapter 10, section 10.3, which drew participation from over 18 crore citizens nationally during its September and October 2025 iteration. These participatory mechanisms, alongside the digital citizen service delivery and grievance redressal architecture examined in Chapter 16, section 16.3, collectively represent a substantial, if unevenly documented, citizen engagement infrastructure spanning both traditional participatory governance forums and modern digital citizen interface channels.

Behavioural change communication, a distinct policy tool from participatory governance mechanisms, has appeared throughout this report primarily in the context of specific public health and sanitation objectives, including the heatwave mortality risk communication implicit in the state's health-sector climate action plan discussed in Chapter 14, section 14.2, and the broader sanitation behaviour change messaging embedded within the Swachh Bharat Mission framework discussed in Chapter 10, section 10.3. The specific relationship between citizen participation mechanisms and the broader accountability architecture examined in Chapter 15, particularly the Lokayukta and Vigilance Commission grievance redressal functions discussed in Chapter 15, section 15.2, deserves explicit note as a further cross-cutting connection this chapter's synthesis role is intended to surface. A citizen engagement architecture that generates genuine grievances and feedback through participatory forums, digital service delivery channels, and behavioural change campaigns is only as effective as the downstream institutional capacity to actually act upon that citizen input, whether through the Gram Sabha's capacity to translate village-level participatory planning into genuine budgetary allocation, discussed in Chapter 12, section 12.6, or through the Lokayukta's capacity to translate individual citizen grievances into concrete disciplinary or corrective action, discussed in Chapter 15, section 15.2. This report has documented genuine strengths and genuine limitations on both the citizen-facing input side and the institutional response side of this participation and accountability loop throughout its preceding chapters, and considers the overall health of this feedback loop, rather than the sophistication of either its input or response components in isolation, the single most meaningful measure of whether the state's public participation architecture translates into genuine citizen empowerment or remains a largely procedural, consultative exercise without commensurate follow-through.

Drawing together the findings of this chapter and, indeed, this entire report, this report concludes that Andhra Pradesh's public participation and citizen engagement architecture, much like nearly every other cross-cutting and sectoral theme examined throughout this framework, exhibits genuine institutional sophistication and a demonstrated willingness to

invest in both traditional and digitally-enabled citizen engagement channels, while facing the same persistent execution, data availability, and regional equity gaps this report has documented consistently since Chapter 2. This chapter's cross-cutting synthesis, having drawn together threads spanning gender, youth, migration, technology, statistics, and participation from across this report's preceding nineteen chapters, now sets the stage for this report's final, forward-looking assessment in Chapter 21, which evaluates the credibility of Andhra Pradesh's Vision 2047 strategic roadmap against the full body of evidence, strength, and limitation this report has assembled throughout its comprehensive sectoral review. Each of the seven cross-cutting themes examined in this chapter, the state's SDG trajectory, its gender mainstreaming approach, its demographic dividend window, its migration dynamics, its technology strategy, its statistical system capacity, and its citizen participation architecture, recurs as a load-bearing element within the Vision 2047 assessment that follows, since a long-term development vision extending to 2047 can only be as credible as the cross-cutting institutional and demographic foundations this chapter has just surveyed prove durable over the intervening two decades.

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## Chapter 21: State Vision 2047 — Strategic Priorities and Development Roadmap

### 21.1 Long-Term Vision and Flagship Missions

The Swarna Andhra@2047 vision document, unveiled by Chief Minister N. Chandrababu Naidu on December 13, 2024, articulates an explicit ambition to build a "wealthy, healthy, and happy" society, envisioning Andhra Pradesh by 2047 as a state of "Happy, Thriving, and Responsible Telugus," with the top per capita income in India, a "Valley of Innovation," and a global hub for skills and deep technology (IOSR Journal of Humanities and Social Science, 2026; Scribd, 2026). The vision aligns explicitly with the national "Viksit Bharat@2047" framework, targeting a developed India by the centenary of independence, and sets a headline economic target of transforming Andhra Pradesh into a Rs. 308 lakh crore, or approximately 2.4 trillion US dollar, economy by 2047, with per capita income rising to Rs. 55 lakh, or approximately 42,000 US dollars, from a 2023-24 baseline below Rs. 2.66 lakh, or approximately 3,200 US dollars (IOSR Journal of Humanities and Social Science, 2026; Scribd, 2026b).

Achieving this headline target requires a sustained annual GSDP growth rate of 15 percent, a considerably more ambitious pace than the 13.5 percent compound annual growth rate the state recorded between 2014 and 2019, the reference period the state government itself cites as its most relevant recent growth benchmark (KP IAS Academy, 2026c). The vision's implementation architecture rests on ten guiding principles, termed "Padi Sutralu" in Telugu, spanning zero poverty, population management and human resource development, skilling and employment, water security, technology infusion in agriculture, logistics excellence, energy cost minimization, and product quality enhancement, alongside dedicated flagship missions including a Zero Poverty Mission, a Water Security Mission, and a Deep Tech Mission, each supported by dedicated institutional mission cells intended to accelerate GSDP growth and monitor strategic programme delivery (Scribd, 2026; KP IAS Academy, 2026c).

The vision's health-specific sub-strategy, organized around seven distinct health missions, warrants particular attention given this report's extensive health sector findings in Chapter 6. These seven missions target Geriatric Care, explicitly citing the same 23 percent by 2047 elderly population share projection this report documented in Chapter 1, section 1.3, and Chapter 6, section 6.7; Maternal, Child and Adolescent Care; Non-Communicable Diseases, accounting for an estimated 63 percent of the state's Disability-Adjusted Life Years; Mental Health, explicitly citing a suicide rate of 16.8 per 100,000 population against a Sustainable Development Goal target of 3.5, a specific mental health statistic considerably more alarming than anything this report was able to document in its own Chapter 6, section 6.5, mental health discussion, where comprehensive state-specific data was flagged as unavailable; Trauma Care; Pandemic Preparedness; and a cross-cutting focus on improving tribal health outcomes specifically (Scribd, 2026). This suicide rate finding, emerging only through this concluding chapter's vision document research rather than through this report's earlier, dedicated mental health section in Chapter 6, section 6.5, underscores this report's own

repeated finding regarding the state's uneven public data availability, discussed most recently in Chapter 20, section 20.6, since a statistic of this gravity plausibly should have surfaced during this report's initial health chapter research rather than only in its final chapter, a limitation this report attributes to its own secondary-source research methodology rather than to any deliberate withholding of this data by the state.

This late-emerging suicide rate finding carries a further, more specific implication this report considers important to flag explicitly in this concluding chapter. If the state's own vision planning documentation identifies mental health, and suicide prevention specifically, as one of only seven priority health missions selected from the full universe of possible health system priorities, this selection itself constitutes a meaningful signal about the internal severity assessment the state's own health planners have made regarding this issue, a severity assessment considerably starker than the general, structural mental health service gap this report was able to document through publicly available secondary sources in Chapter 6, section 6.5. This report recommends, with particular emphasis given the gravity of the underlying statistic, that any reader of this framework with a specific interest in the state's public health trajectory treat the mental health and suicide prevention component of the Vision 2047 health strategy as a priority area for direct, dedicated follow-up research beyond what this general-purpose development framework has been able to provide, given both the severity of the cited statistic and this report's own acknowledged limitation in surfacing it earlier in its sectoral review.

The vision's explicit citation of current-state baseline statistics, including a female labor force participation rate of approximately 45.8 percent, a life expectancy of approximately 70.6 years, an urbanisation rate cited at approximately 36 percent, an unemployment rate of approximately 4.1 percent, and merchandise exports of approximately 19.3 billion US dollars, provides a further useful cross-check against this report's own sectoral chapter findings (Scribd, 2026b). The urbanisation figure specifically merits explicit flagging, since it diverges meaningfully from the approximately 29.6 percent urbanisation rate this report cited in Chapter 1, section 1.3, and Chapter 11, section 11.1, drawing on separate demographic sources. This report is unable to resolve this discrepancy definitively given the sources available, though it may reflect different reference years, different urban classification methodologies, or the vision document's own more recent or more expansive urban definition, and this report recommends subsequent editions verify the state's current urbanisation rate directly against the next available census or National Sample Survey Office urban-rural classification data, given the material difference between a 29.6 percent and a 36 percent urbanisation baseline for assessing the scale of urban infrastructure investment the state's Vision 2047 roadmap will actually require.

## **21.2 Medium-Term Priority Action Plan (2025–2030)**

The Swarna Andhra 2047 vision's implementation architecture explicitly adopts a macro-to-micro planning approach, breaking the 2047 headline targets down into a 100-day action plan, a one-year plan, and longer-term plans extending to 2047, with policies

additionally being developed at the individual constituency level to translate state-wide targets into locally actionable five-year plans (IOSR Journal of Humanities and Social Science, 2026; JETIR, 2026b). This medium-term planning architecture connects directly to numerous specific policy cycles this report has documented throughout its preceding chapters as already operating on parallel five-year horizons, including the MSME and Entrepreneurship Development Policy 4.0 and Innovation and Startup Policy 4.0 discussed in Chapter 4, section 4.2, and Chapter 17, section 17.1, both covering 2024 to 2029, and the tourism policy covering 2025 to 2030 discussed in Chapter 19, section 19.3.

This report's own chapter-by-chapter review has identified specific, near-term milestones embedded within these parallel sectoral five-year plans that collectively constitute a de facto medium-term action plan for the Vision 2047 roadmap, even where not always explicitly labeled as such. These include the Talliki Vandanam and Mega DSC 2025 education initiatives targeted for the current school-age cohort, discussed in Chapter 5; the Amaravati capital city's Rs. 65,000 crore construction phase and its associated Theme City completion targets, discussed in Chapter 11; the Jal Jeevan Mission 2.0 commitment to universal safe rural drinking water by 2028, discussed in Chapter 10, section 10.1; the state's slum-free by 2047 target discussed in Chapter 11, section 11.6, which, notably, aligns with the full Vision 2047 horizon rather than an intermediate milestone; and the AI-powered spatial governance roadmap's 2028 planner training and 2031 full automation targets discussed in Chapter 16, section 16.6. The state's explicit partnership with the Institute for Financial Management and Research, a constituent institution of Krea University, to establish dedicated mission cells and conduct field-level implementation studies represents a further concrete institutional mechanism intended to translate these broad five-year and longer-term targets into monitored, evidence-based programme delivery (KP IAS Academy, 2026c).

### **21.3 Financing Strategy: Resource Mobilisation, Revenue Enhancement and Expenditure Rationalisation**

The Swarna Andhra 2047 vision's own financing strategy explicitly identifies four parallel resource mobilisation pathways: strengthening traditional revenue sources through digitalization and artificial intelligence, alongside land value capture mechanisms and continued central funding scheme access; promoting public-private partnerships through investor-friendly regulation and collaboration with global investment funds; leveraging Development Finance Institutions for long-term financing; and promoting green finance and sustainability bonds specifically for environmentally oriented projects (Scribd, 2026). Each of these four pathways connects directly and concretely to specific financing mechanisms this report has already documented in operation throughout its preceding chapters, rather than representing purely theoretical or aspirational financing categories.

The digitalization and artificial intelligence-enabled traditional revenue strengthening pathway connects directly to the Capital Value System property tax reform and Auto-Mutation title transfer digitization discussed in Chapter 16, section 16.3, both explicitly framed in that chapter's sources as mechanisms for improving Urban Local Body own-source

revenue mobilization. The public-private partnership pathway connects to the extensive public-private partnership financing this report has documented across the road sector in Chapter 8, section 8.1, the power generation sector in Chapter 9, section 9.1, and the sewerage infrastructure sector in Chapter 10, section 10.5. The Development Finance Institution pathway connects directly to the Asian Development Bank and World Bank co-financing of the Amaravati capital city project discussed in Chapter 11, section 11.4, and the World Bank-financed Andhra Pradesh Disaster Recovery Project discussed in Chapter 14, section 14.5. The green finance and sustainability bonds pathway, while not yet documented in specific operational form anywhere in this report's preceding chapters, connects naturally to the renewable energy export ambitions and green hydrogen policy architecture discussed in Chapter 9, section 9.4.

This report's own fiscal analysis in Chapter 2 provides essential context for assessing the credibility of this financing strategy. The state's debt sustainability concerns documented in Chapter 2, section 2.4, including debt-to-GSDP ratio projections that NITI Aayog and independent economic research institutions both project will rise above 40 percent by 2027-28 absent offsetting revenue growth, represent a direct constraint on the state's capacity to pursue the 15 percent annual GSDP growth rate this vision requires, since a state already approaching or exceeding conventionally prudent debt sustainability thresholds has correspondingly less fiscal headroom to fund the public investment component of any growth acceleration strategy through additional borrowing alone. The vision's explicit emphasis on public-private partnership and Development Finance Institution financing, rather than relying primarily on direct state government capital expenditure, can be read as a deliberate, and arguably necessary, response to this fiscal constraint, since both financing pathways allow the state to mobilize capital investment without directly adding to the state's own sovereign debt burden in the same manner as conventional government borrowing. Whether this financing strategy proves sufficient to fund the scale of infrastructure and social investment the 2047 vision requires, given the persistent revenue mobilization challenges, including the power sector revenue gap discussed in Chapter 9, section 9.2, and the Urban Local Body fiscal capacity gaps discussed in Chapter 11, section 11.2, that this report has documented throughout its preceding chapters, represents perhaps the single most consequential open question for assessing this vision's overall financial credibility.

A further specific fiscal tension this report has documented repeatedly throughout its preceding chapters, and which bears directly on this financing strategy's credibility, concerns the scale of the state's existing and growing welfare and pension commitments, discussed extensively in Chapter 7. The illustrative fiscal projection this report developed in Chapter 7, section 7.6, suggesting the state's pension and disability support commitments alone could plausibly rise to a multiple of their current scale over the coming two decades as the state's elderly population share grows toward the 23 percent by 2047 figure discussed throughout this report, represents a substantial, largely fixed, demographically-driven expenditure commitment that will compete directly with the capital investment financing this Vision 2047 growth strategy requires. A financing strategy oriented primarily toward mobilizing new capital investment resources, as the four pathways discussed above are, does not by itself

resolve this underlying tension between rising committed welfare expenditure and the discretionary capital investment capacity a 15 percent annual growth target would require, unless the state's own revenue base grows fast enough to fund both simultaneously, precisely the growth acceleration this financing strategy is itself intended to help enable, creating a degree of circularity this report considers worth flagging explicitly as a structural risk factor for the vision's overall fiscal credibility, rather than treating the financing strategy and the demographic-driven welfare cost growth as entirely separate considerations.

The specific reference to sustainability bonds and green finance within this financing strategy also connects to a broader international trend in sub-national government financing, wherein state and municipal governments increasingly access dedicated climate-linked capital markets instruments to fund environmentally oriented infrastructure at potentially more favorable financing terms than conventional debt instruments offer, given growing international investor demand for environmentally labeled fixed income products. Whether Andhra Pradesh possesses the specific institutional capacity, including the environmental impact verification and reporting infrastructure such instruments typically require, to successfully access this financing channel at meaningful scale represents a further specific execution question this report was unable to assess given the absence of any documented sustainability bond issuance by the state among the sources consulted throughout this framework, suggesting this fourth financing pathway may remain more aspirational than the other three, more concretely operationalized pathways this section has discussed.

## **21.4 Centre-State Partnership: Centrally Sponsored Schemes and Special Grants**

The Swarna Andhra 2047 vision's alignment with the national Viksit Bharat@2047 framework, discussed in section 21.1, reflects a deliberate strategic choice to position the state's own long-term development trajectory as complementary to, rather than independent of, the central government's parallel national development agenda, a positioning this report has found consistently reinforced throughout its preceding chapters. The Centre-State fiscal relationship examined in depth in Chapter 2, section 2.9, including the tension between the state's improving relative income position reducing its formulaic Finance Commission devolution share even as its genuine capital and welfare financing needs continue to grow, represents a structural feature of this partnership that will persist regardless of the specific Vision 2047 branding under which future Centre-State cooperation proceeds.

The extensive centrally sponsored scheme funding this report has documented throughout its sectoral chapters, including the Jal Jeevan Mission 2.0 discussed in Chapter 10, section 10.1, the PMAY-Gramin and PMAY-Urban housing schemes discussed in Chapter 11, section 11.3, and Chapter 12, section 12.3, and the VB-GRAMG rural employment guarantee successor to MGNREGA discussed in Chapter 12, section 12.2, collectively represent the primary operational channel through which this Centre-State partnership manifests in practice, rather than through the Vision 2047 branding itself, which functions more as an overarching strategic narrative than as a distinct funding mechanism in its own right. The Sixteenth Finance Commission's forthcoming award, referenced in Chapter 2, section 2.9, as the next

major inflection point in this relationship, will materially shape the fiscal resources available to fund the Vision 2047 roadmap's centrally-dependent components over the coming award period, and this report considers the Sixteenth Finance Commission's specific treatment of Andhra Pradesh's devolution share and grant entitlements one of the most consequential near-term developments this report's subsequent editions should track closely.

### **21.5 Inter-State Cooperation: Regional Development Councils and River Boards**

Inter-state cooperation, examined throughout this report primarily in the specific context of Andhra Pradesh's relationship with Telangana following the 2014 bifurcation, recurs as a structural theme across numerous sectoral chapters, including the Krishna and Godavari river water sharing tensions discussed in Chapter 10, section 10.2, and Chapter 13, section 13.3, the competitive dynamic in technology and pharmaceutical investment discussed in Chapter 4, section 4.3, and Chapter 20, section 20.4, and the shared origin of both states' post-bifurcation institutional rebuilding efforts discussed throughout this report beginning with the Preface. This report has found no evidence throughout its preceding chapters of a formal, comprehensive Regional Development Council or equivalent standing institutional mechanism specifically coordinating Andhra Pradesh's relationship with Telangana beyond the river water sharing tribunal mechanisms discussed in Chapter 13, section 13.3, suggesting this specific institutional gap, a formal, broader-mandate bilateral cooperation body beyond narrow river water arbitration, may represent an underdeveloped dimension of the state's inter-state cooperation architecture relative to the sophistication this report has documented across many of the state's other institutional domains.

Broader regional cooperation along the Bay of Bengal seaboard, referenced briefly in Chapter 4, section 4.8, in the context of potential coordination with neighboring Odisha on shared port and logistics corridor development, represents a further inter-state cooperation dimension this report was unable to document in detailed operational form given the sources available throughout this framework. Given the substantial port capacity expansion documented in Chapter 8, section 8.4, and the rail connectivity investments intended to link Andhra Pradesh's ports with hinterland states including Telangana, Chhattisgarh, and Madhya Pradesh discussed in Chapter 8, section 8.2, this report recommends that subsequent editions specifically investigate whether any formal inter-state logistics coordination framework exists or is planned to govern this multi-state port and rail connectivity vision, since effective execution of this multi-state infrastructure vision would plausibly benefit from more formal coordination mechanisms than the state's own unilateral infrastructure planning alone can provide.

### **21.6 International Collaboration: Common Development Agenda and Global Partnership**

International collaboration has featured prominently throughout this report's infrastructure and investment chapters, spanning the Asian Development Bank and World Bank co-financing of the Amaravati capital city project discussed in Chapter 11, section 11.4, the

Google data centre investment in Visakhapatnam discussed in Chapter 4, section 4.3, the GIZ-National Institute of Disaster Management climate adaptation and disaster risk reduction pilot programme discussed in Chapter 14, section 14.4, and the state's explicit ASEAN tourism outreach strategy discussed in Chapter 19, section 19.3. This pattern of substantive, operationally significant international engagement across development finance, private investment, technical cooperation, and tourism promotion domains suggests Andhra Pradesh has pursued a genuinely more internationally engaged development strategy than many comparable Indian states, a finding consistent with this report's broader characterization of the state as pursuing ambitious, often internationally benchmarked development targets throughout this framework.

The specific institutional partnership with the Institute for Financial Management and Research, discussed in section 21.2, while a domestic rather than international institution, nonetheless illustrates the state's broader pattern of seeking external technical and analytical partnership to support its own internal planning capacity, a pattern this report has also documented in the specific international context of the National Research Development Corporation partnership underlying the state's Intellectual Property Facilitation Center discussed in Chapter 17, section 17.3. This report considers this consistent pattern, across both domestic and international partnerships, of the state deliberately seeking external institutional capacity to supplement its own internal planning and technical resources, a genuinely pragmatic approach to addressing the civil service capacity and training infrastructure gaps this report identified in Chapter 15, section 15.7, though the ultimate effectiveness of this externally-supplemented planning capacity in translating into improved on-the-ground execution outcomes remains, consistent with this report's findings throughout, a question requiring continued monitoring rather than one this report can resolve definitively based on the vision documents and partnership announcements alone.

## **21.7 Monitoring, Evaluation and Results Framework**

The Swarna Andhra 2047 vision's monitoring architecture rests substantially on the dedicated mission cells and Institute for Financial Management and Research partnership discussed in sections 21.1 and 21.2, intended to provide ongoing field-level implementation research, programme evaluation, and policy recommendation capacity directly to the state's Planning Department (KP IAS Academy, 2026c). This monitoring architecture is explicitly complemented by the state's broader "Real-time Governance" framework, which the vision documentation describes as utilizing artificial intelligence, drones, and Internet of Things sensors for personalized citizen services and efficient government processes, alongside technology-driven governance re-engineering and real-time monitoring platforms intended to enhance transparency and streamline policy implementation across all levels of government (Scribd, 2026b).

This Real-time Governance framework connects directly to the extensive digital governance architecture this report has documented throughout Chapter 16, including the AI-powered spatial governance roadmap discussed in Chapter 16, section 16.6, and the data access

governance protocol discussed in Chapter 16, section 16.4. This report's own persistent finding regarding the gap between granular, transaction-level government data and aggregated, publicly accessible performance indicators, discussed most comprehensively in Chapter 20, section 20.6, represents the single most consequential risk factor for this Real-time Governance monitoring vision's credibility, since a monitoring and evaluation framework's value depends fundamentally on its outputs being not merely collected internally but also synthesized into actionable, ideally publicly transparent, performance indicators that can inform both internal course correction and external accountability. This report recommends that subsequent editions specifically track whether the Vision 2047 monitoring architecture succeeds in closing this aggregation and public transparency gap, or whether it instead reproduces, at Vision 2047 scale, the same granular-data-abundant but aggregate-data-scarce pattern this report has documented consistently across the water, health, environmental, and municipal governance domains examined throughout this framework.

A further specific monitoring and evaluation design consideration concerns the appropriate cadence at which Vision 2047 progress should be formally assessed and reported. Given the vision's twenty-plus year horizon, annual or even five-year progress assessments, of the kind the state's parallel sectoral five-year policies discussed in section 21.2 already provide, risk either understating genuinely structural, slow-moving progress that only becomes visible over longer intervals, or, conversely, allowing genuinely concerning early warning signs of underperformance to persist unaddressed for years before a sufficiently comprehensive assessment cycle surfaces them clearly. This report recommends that the state's own monitoring architecture, and any subsequent editions of this framework, adopt a nested assessment cadence, tracking near-term, concrete milestones such as the specific dates and targets this report has catalogued throughout its preceding chapters, including the 2027 Godavari Pushkaralu infrastructure completion discussed in Chapter 19, section 19.2, the 2028 Jal Jeevan Mission universal coverage target discussed in Chapter 10, section 10.1, and the 2031 AI-powered plan scrutiny automation target discussed in Chapter 16, section 16.6, on an ongoing basis, while reserving more comprehensive, vision-wide assessment for longer, five-year intervals aligned with the state's broader sectoral policy cycles.

## **21.8 Accountability Architecture: Legislature, Civil Society and Citizens**

Democratic accountability for the Vision 2047 roadmap's implementation ultimately rests on the same institutional architecture this report has examined throughout Chapter 15, including the state legislature's oversight function, the Lokayukta and Vigilance Commission anti-corruption and grievance redressal mechanisms discussed in Chapter 15, section 15.2, and the judicial administration examined in Chapter 15, section 15.3, alongside the citizen participation and behavioural change mechanisms examined in Chapter 20, section 20.7. The vision document's own emphasis on "active stakeholder participation, strong institutional frameworks, and efficient monitoring mechanisms" as critical components for accomplishing the state's goals explicitly acknowledges this accountability dimension as integral to the vision's credibility, rather than treating Vision 2047 as a purely executive-branch planning

exercise insulated from broader democratic and civil society oversight (IOSR Journal of Humanities and Social Science, 2026).

Drawing together the full body of evidence this report has assembled across its preceding twenty chapters, this concluding chapter's assessment of Andhra Pradesh's Vision 2047 roadmap arrives at a consistent, if necessarily provisional, overall finding. The vision's headline ambitions, a 2.4 trillion dollar economy, a 42,000 dollar per capita income, and a 15 percent sustained annual growth rate, are extraordinarily ambitious by any reasonable international or historical benchmark, exceeding even the state's own strong recent 13.5 percent compound annual growth rate achieved between 2014 and 2019. At the same time, this report has documented throughout its preceding chapters a state that possesses genuine, substantive institutional capacity and reform ambition across nearly every sector examined, from the E-Panchayat digital governance system in Chapter 16 to the maternal mortality outcomes in Chapter 6 to the India Justice Report ranking in Chapter 15, capacity that provides at least a plausible, if far from certain, foundation for pursuing growth acceleration of the scale this vision requires.

The recurring analytical pattern this report has traced consistently since Chapter 2, genuine institutional ambition and design sophistication coexisting with persistent execution gaps, regional disparities favoring the state's Coastal Andhra growth corridors over its Rayalaseema and North Andhra regions, and significant public data transparency limitations, represents the central lens through which this report recommends readers, policymakers, and future editions of this framework evaluate the Vision 2047 roadmap's ultimate credibility. Neither uncritical acceptance of the vision's headline targets as achievable given the state's demonstrated institutional strengths, nor dismissive skepticism given the state's documented execution gaps, would accurately represent this report's own findings. Rather, this report concludes that Andhra Pradesh in 2026 stands at a genuine inflection point, possessing many of the institutional building blocks a successful long-term transformation would require, while still needing to demonstrate, over the remainder of this decade and beyond, that these building blocks can be assembled into the kind of sustained, broad-based, regionally equitable execution record that would justify the extraordinary ambition this vision document has articulated.

In closing, this report offers five specific, cross-cutting recommendations distilled from its full twenty-one chapter review, intended to guide both the state's own policy attention and the research priorities of any subsequent edition of this framework. First, regional equity should be treated as an explicit, measured success criterion for every major infrastructure and investment initiative going forward, given this report's consistent finding that the state's Visakhapatnam, Amaravati-Vijayawada, and Tirupati growth corridors have captured a disproportionate share of investment attention relative to the Rayalaseema interior and North Andhra tribal districts across nearly every sector examined. Second, the persistent gap between granular administrative data and publicly accessible aggregate performance indicators, documented most comprehensively in Chapter 20, section 20.6, and recurring across health, water, environment, and municipal governance throughout this report, should

be treated as a first-order transparency priority, since credible long-term planning and external accountability both depend on this gap being closed. Third, the specific fiscal tension between rising demographically-driven welfare and pension commitments and the capital investment financing the Vision 2047 growth strategy requires, discussed in section 21.3, warrants dedicated, explicit fiscal planning attention rather than being addressed only implicitly through general revenue mobilization strategies. Fourth, the mental health and suicide prevention statistic that emerged only in this concluding chapter's vision document research, discussed in section 21.1, warrants urgent, dedicated public health policy attention and further verification, given both its gravity and this report's own finding that it was not readily surfaced through the sectoral health chapter research conducted earlier in this framework. Fifth, and finally, this report recommends that subsequent editions of this framework be developed through direct engagement with Andhra Pradesh's own state government departments, rather than relying primarily on the secondary source research methodology this edition has employed, since such direct engagement would allow both a more definitive resolution of the numerous data gaps and source discrepancies this report has flagged throughout its preceding chapters, and a more rigorous, authoritative assessment of whether the Swarna Andhra@2047 vision's ambitious targets are, in fact, being met as the state proceeds through the critical years ahead.

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## END NOTE

This Comprehensive Development Framework has attempted to provide a rigorous, evidence-grounded assessment of Andhra Pradesh's development trajectory across twenty-one chapters, spanning the state's geography and demography, fiscal architecture, economic structure, human development sectors, infrastructure, environment and climate, governance institutions, technology, innovation, agriculture, tourism, and long-term strategic vision.

Throughout this review, a consistent analytical pattern has emerged: Andhra Pradesh possesses genuine, often internationally or nationally recognized institutional strengths across a remarkably wide range of sectors, from maternal health outcomes and judicial administration to rural digital governance and renewable energy resource endowment, while simultaneously facing persistent execution gaps, regional disparities concentrated against its Rayalaseema and North Andhra regions relative to its Coastal Andhra growth corridors, and significant public data transparency limitations that constrain both this report's own analysis and, plausibly, the state's own capacity for fully evidence-based policymaking.

This framework has aimed throughout to name that pattern honestly wherever the evidence supported it, to flag data gaps, source discrepancies, and outdated baselines (most notably the continued reliance on 2011 Census data pending India's delayed decennial census) explicitly rather than resolving them through unsupported assumption, and to offer specific, actionable recommendations for the state's own departments and for future editions of this report to pursue in closing the evidentiary gaps this review has identified.

Andhra Pradesh's Swarna Andhra@2047 vision represents a genuinely ambitious articulation of what the state's leadership believes the state can become over the next two decades. Whether that vision is realized will depend less on the eloquence of its articulation than on the sustained, unglamorous work of execution, regional equity, and institutional follow-through that this report has found, again and again, to be the decisive variable across every sector it has examined. This report has been prepared using publicly available secondary sources current to mid-2026 and should be read and updated accordingly as newer data, census results, and policy developments become available.

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Council for Comprehensive Development Framework

Youth Peace and Development Forum

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