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Towards Inclusive and Sustainable Smart Cities: The Case of Ranchi

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ABSTRACT

Cities are pivotal to India’s growth and economic development. However, the rapid horizontal and vertical expansion in what many call the “messy and hidden” process of urbanisation compels scholars and policymakers to look for concrete solutions to the various problems brought about by urbanisation. This report studies the case of the city of Ranchi, the administrative capital of Jharkhand, one of the cities selected under the Government of India’s ‘Smart Cities Mission’ (SCM). The report provides an overview of Ranchi and evaluates the city vis-à-vis the vital dimensions of a smart city. It discusses the challenges in developing Ranchi into a smart city and the initiatives by the state government to make the city vibrant, viable, habitable, inclusive and sustainable. The report concludes with policy prescriptions that should facilitate Ranchi’s transformation into an inclusive and sustainable smart city.

(This report is part of ORF’s series, ‘Urbanisation and its Discontents’. Find other research in the series here: <https://www.orfonline.org/series/urbanisation-and-its-discontents/>)

INTRODUCTION

Cities in India are the agglomerations of national and regional prosperity and have been the epicentres of opportunities.¹ However, in the era of globalisation and rapid urbanisation, it is a challenge to make cities centres of growth and development that include the poorest populations. A rapidly growing urban population and significant migration from small towns and villages towards the cities have contributed to the deterioration of the built and non-built environment and a decline in the quality of life in urban spaces. These factors, in addition to the wide gap between the liveability conditions and aspirations of different stakeholder groups within a city, exert tremendous pressure on the socioeconomic, physical, institutional and cultural infrastructure of the cities. To address these issues, the GoI initiated a flagship programme in 2015—the Smart Cities Mission (SCM)—for the smarter development of cities.

The SCM plans to create lighthouses of area-based development and pan-city solutions in selected cities, focusing on the intersection between competitiveness, capital and sustainability, with the help of technology and specialised institutions. The SCM’s objective is to promote cities that provide core infrastructure, a decent quality of life to its citizens, a clean and sustainable environment, and the application of ‘smart’ solutions. The goal is sustainable and inclusive development, by focusing on compact areas and creating a replicable model to act as a lighthouse to other cities that are working

towards the same goals. The strategic components of area-based development in the SCM are city improvement (retrofitting), city renewal (redevelopment), and city extension (greenfield development), as well as a pan-city initiative that will apply smart solutions to cover larger parts of the city. The SCM embodies an ambitious urban renewal and renaissance programme to develop 100 cities across the country as lighthouses, making them both citizen- and environment-friendly, economically strong, and sustainable.

RANCHI CITY: AN OVERVIEW

Basic Facts

The Ranchi district of the south-eastern Indian state of Jharkhand was formed on 15 November 2000, by carving out the tribal divisions of Chotanagpur and Santhal Parganas from the state of Bihar. Ranchi is the administrative capital of Jharkhand and is in the southern part of the Chotanagpur Plateau, with the Tropic of Cancer passing through it. The city has a hilly topography with an average elevation of 651 m /2,140 ft above sea level. Also called “the city of lakes and waterfalls,” Ranchi’s main river system is Subarnarekha, South Koel and its tributaries, and dams such as the Rukka, Kanke and Hatia, which cater to the water requirements of the city’s population.

The official languages used in Ranchi are Hindi (the most prominent being the Nagpuri dialect) and English. Ranchi’s diverse reserves of forest and mineral resources make the city suitable for setting up medium- and large-scale industries. The sale and purchase of land in the state are guided by the Chotanagpur Tenancy (CNT) Act, 1908, which provides that tribal land is non-transferable from a tribal community to any non-tribal entity.

Jharkhand is well-known for its rich green ecology.² Ranchi has a rich mineral resource and industrial base and is also fast developing into a major economic and commerce centre. The national highways, NH-23, NH-31, NH-2, NH-33 and NH-75; two railway junctions, Ranchi and Hatia; and the Birsa Munda Airport connect the city to the rest of the country. Ranchi has also developed an elaborate ring road around the city.

Heavy Engineering Corporation Ltd. (HECL),³ a public-sector undertaking— established in Ranchi in 1958—is one of the leading suppliers of capital equipment in India for steel, mining, railways, power and strategic sectors. It is one of the largest integrated engineering complexes in India, sprawling over 7,200 acres. After Ranchi was named the capital of Jharkhand,

the state government used some part of the HECL land and physical infrastructure to set up its important premises, such as the Legislative Assembly and the Secretariat. This was partly due to the non-performance of HECL over the past few decades. The greenfield site selected under the area-based development for the Ranchi smart city is also a part of the HECL.

Techno-industrial facilities in Ranchi include MECON (formerly known as Metallurgical and Engineering Consultants Limited), R&D Facility of Steel Authority of India Ltd. (SAIL), Central Coalfields Limited (CCL), Central Mine Planning and Design Institute (CMPDI), Indian Institute of Coal Management (IICM), Usha Martin, and Usha Beltron Shipping Corporation of India. In Jharkhand, Ranchi alone has six industrial areas, with Jamshedpur and Bokaro being the other important industrial districts of the state. They mainly specialise in the field of general engineering, foundry, electrical, steel casting, electronics, chemical, refractory, and ancillary.

Ranchi is known for its institutions of higher education, including the Birla Institute of Technology, Mesra; National Institute of Foundry and Forge Technology; Indian Institute of Natural Resins and Gums; Central Institute of Psychiatry; Ranchi Institute of Neuro-Psychiatry and Allied Sciences; Rajendra Institute of Medical Sciences; Birsa Agricultural University; Central University of Jharkhand; Indian Institute of Management; National University of Study and Research in Law; and Ranchi University. Ranchi is also home to sports venues that have been used in prestigious tournaments. These include events for the National Games of India, the cricket World Cup, as well as the Indian Premier League.

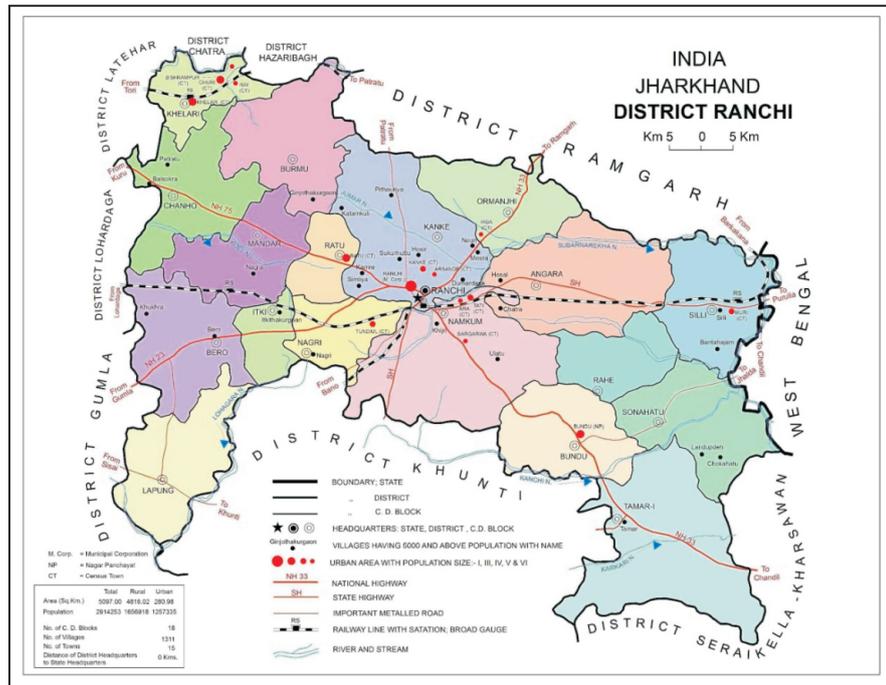
A number of notable figures call Ranchi home: Shaheed Birsa Munda, who gave up his life fighting against the British and was the chief architect of the agrarian revolution in the area; the famous hockey player Jaipal Singh Munda, who led the Indian field hockey team to clinch gold in the 1928 Summer Olympics in Amsterdam and was a member of the Constituent Assembly convened in 1946 to write a Constitution of the Indian Union; and the former captain of Indian cricket squad Mahendra Singh Dhoni, under whose captaincy India won two cricket world cups.

Demography

Ranchi district is divided into Ranchi and Bundu subdivisions, and each subdivision is further divided into blocks, *panchayats* and villages. It consists of

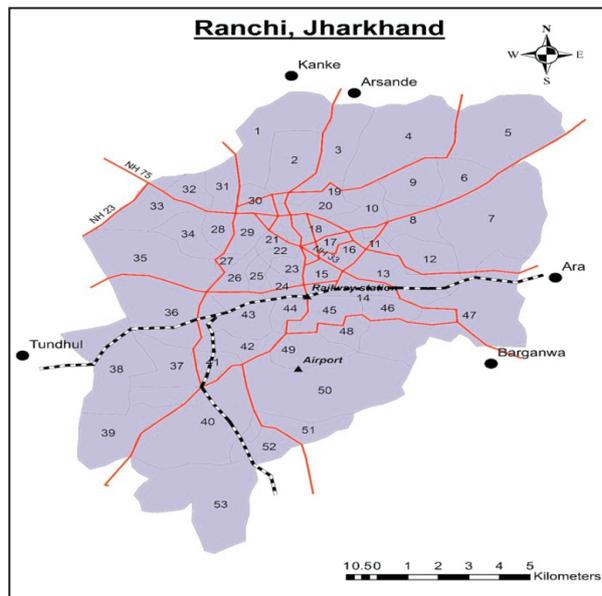
18 blocks and 305 panchayats. The Ranchi subdivision consists of 14 blocks, while the Bundu subdivision consists of four (see Figure 1).

Figure 1: Administrative Map of Ranchi District



Source: District Ranchi, Government of Jharkhand, accessed 5 December 2018, <https://ranchi.nic.in/map-of-district/>.

Figure 2: Ward Map of the Ranchi Municipal Corporation



Source: R.B., Bhagat, "Demographic Dynamics and City Planning," Presentation made at the Indo-German Workshop on Smart Cities: Sustainable Urban Development, Ranchi, 19–20 November 2018.

The total area of Ranchi's Urban Agglomeration (UA) is 197.36 sq. km, which includes the Ranchi Municipal Corporation (RMC), Kanke Census Town

(CT), Arsande CT, Ara CT, Bargarwa CT and Tundiul CT. The total area of the RMC is 175.12 sq. km, with a population of 1.07 million and a population density of 6,129 persons/sq. km. The RMC was established as an Urban Local Body (ULB) on 15 September 1979. The mayor is the presiding officer of the RMC, and the mayor's seat is reserved for women from the scheduled caste, scheduled tribe and other backward classes.

Currently, Ranchi is a million-plus city. It has one circle office and 55 administrative wards⁴ (see Figure 2). While earlier, there were 37 wards (Ranchi: 1–24 and Doranda: 25–37), now, there are 55 wards (Ranchi: 1–38, 48,49 and Doranda: 39–47 and 50–55). Additionally, the city has a floating population of over 60,000. The RMC has prepared a Master Plan-2037.

According to the 2011 Census of India, the overall population of Ranchi district was 2.91 million, an increase from 2.35 million in 2001. The 2011 populations of Ranchi UA and the RMC were 1.13 million and 1.07 million, respectively, having increased from 0.86 million and 0.84 million in 2001.

The annual population growth rate for both Ranchi UA and the RMC decelerated during 2001–11. However, compared to 1991–01, the Ranchi UA have witnessed higher annual growth as compared to the RMC, mostly due to the rapid growth in the CTs. The number of households in Ranchi stood at 0.21 million in 2011, which was around 0.15 million in 2001.

In 2011, the sex ratio of Ranchi city was 921 females per 1,000 males. However, the child sex ratio was comparatively lower at 899 girls per 1,000 boys. The literacy rate of the city in 2011 was 87.37 percent, where male and female literacy rate were 91.7 percent and 82.7 percent, respectively. The percentages of SC and ST population were 4.7 percent and 20.2 percent, respectively, and the religious composition of population was 64.3 percent, 16.4 percent and 8.5 percent for Hindus, Muslims and Christians, respectively and 11.8 percent for the others.

Administrative Structure

The RMC is governed by the Jharkhand Municipal Act, 2011. In 1976, the Ranchi Regional Development Authority (RRDA, previously the Ranchi Improvement Trust) was established for the consolidated and balanced development of Ranchi within its controlled area as per Master Plan-2037. The total area under the RRDA is 612,149 hectares and consists of four circles and 129 villages from the Ranchi district and three circles from the Lohardaga

district. The RRDA is tasked with providing physical and social amenities to the citizens—e.g. roads, drains, water, electricity, transportation, health, education, and community infrastructure such as a theatre and a stadium—and controlling unplanned construction activities in the city. The RRDA has the primary authority to control haphazard urbanisation and make adequate arrangements for the planned construction of buildings as per the town-planning standards. The RRDA formulated its own Ranchi Planning and Building By-Laws, which came into force on 1 June 2002.

The city also has an area development body—the Ranchi Industrial Area Development Authority (RIADA)—whose functions include generating ample employment opportunities, providing infrastructural and institutional amenities for the citizens, and making the region attractive for entrepreneurs.

Ranchi Smart City Corporation Limited

Ranchi was selected as one of the 13 fast-track cities in 2016. The Ranchi Smart City Corporation Limited (RSCCL), a special purpose vehicle (SPV), was incorporated on 30 September 2016, by the Urban Development and Housing Department, Government of Jharkhand, to execute Ranchi's smart city projects. The two consultants working for the RSCCL are TracteBel and KPMG.⁵ The RSCCL will plan, design, develop, implement, manage, maintain, operate and monitor the smart city development projects for the city. It also plans to build and transfer resources in the form of financial and physical assets, based on the Build-Operate-Transfer (BOT) Model.⁶

The goal is to make the city a knowledge hub for educational excellence along with an efficiently managed traffic and transportation system-based city aided by information technology. The development of the Ranchi Smart City will rely primarily on the area-based development (ABD) of 656.30 acres, catering to a design population of 1.50 lakh approximately, including the floating population. It will be a greenfield development within the municipal core of the RMC.

Under the pan-city component of the Ranchi Smart City, an integrated traffic and transport system—RITTS—is to be developed to incorporate all present and future solutions related to transport and traffic under one umbrella through Information and Communication Technology (ICT). This system will provide a digital platform for the integration of public-transport management, parking management, traffic-corridor management, integrated and intermediated public transport and fare management for the entire city. The

RITTS is to be housed in a central control and command centre, which will act as an epicentre for all traffic- and transport-related decision-making as well as cater to the safety and security of Ranchi. Solid-waste management is also to be incorporated in the RITTS.

The key elements of a smart city project include provision of safe potable water, safety and security for citizens, 24-hour power supply, waste-water recycling, energy efficient street lighting, pedestrian pathways, smart cabling, smart sanitation systems, rainwater harvesting, solar-generated electricity, smart metring, intelligent traffic management, walkability and TOD, riverfront, parks and open spaces, robust IT connectivity and digitisation with an integrated command, control and communication centre (C4). The C4 is currently at the bidding stage, and its major components include a data centre, a smart parking-management system, an intelligent traffic-management system, environmental monitoring sensors, a city web portal and mobile app, an enterprise GIS, wi-fi on city buses with GPS tracking, and integration with existing and proposed ICT systems within the Ranchi ICT landscape.

In developing the greenfield site, infrastructure projects will be taken up: land development / site clearance, transportation and circulation, open spaces and parks, water supply, waste-water management, storm-water drainage, solid-waste management, power-distribution network, solar-power generation, safety and security, transit hubs, EWS housing, social infrastructure, riverfront development and bus rapid transit system.

Some important projects currently being implemented under ABD are:

1. an Urban Civic Tower, with a built-up area of 45,469 sq. m, including basements;
2. a Convention Centre, with a built-up area of 72,523 sq. m, including basements; and
3. the Jharkhand Urban Planning and Management Institute, with a built-up area of 30,230 sq. m.

Other examples include three smart-road projects, spanning almost 17 km across Ranchi; public bicycle-sharing project; Birsa Munda Smriti Park (Phase-1); Rabindra Bhavan; rejuvenation and conservation of the Harmu river; rejuvenation of the Karamtoli pond; Jaipal Singh Stadium; a vendor's market; urban haat in Kanke; and the beautification and conservation of the Ranchi lake or Bada Talab.

For the implementation of the smart city project in Ranchi, the city will receive funding from the central government as well as the state government: INR 500 crores each, over the mission period of five years.⁷ A convergence of projects is also planned, to source funding from other flagship projects such as AMRUT, the Swachh Bharat Mission and the Pradhan Mantri Awas Yojya. The state government has also promised additional funding support by raising finances through the public-private-partnership model. The total cost of the projects planned under the smart city project is estimated to be INR 4,000 crores.

MOVING TOWARDS A SMART CITY: ISSUES AND CHALLENGES IN RANCHI

Urban Economy

Ranchi is one of the most important urban economic centres in Jharkhand and has been instrumental in generating revenue for the state. Jharkhand's net state domestic product at the compound growth annual rate for financial year (FY) 2017–18 was 11.12 percent, increasing at an average rate of 10.81 percent since FY 2011–12. The urban areas of Jharkhand were the biggest contributors to the overall growth in the state's GDP, and Ranchi was at the top.

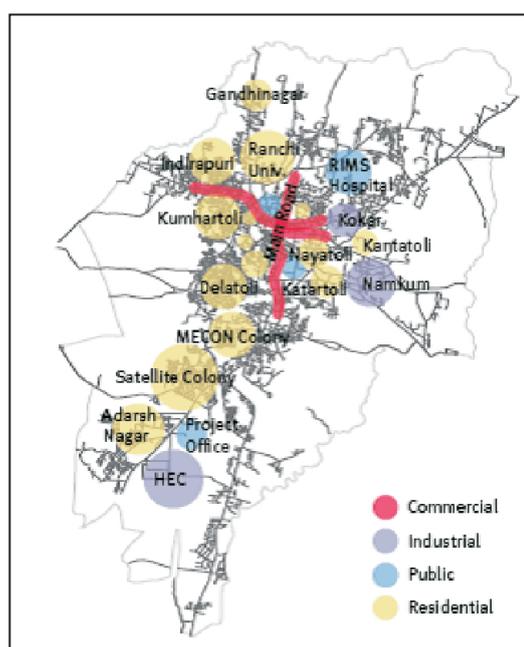
Ranchi has not only experienced industrialisation but also become a major business hub in the region, as well as the centre of a booming multibrand retail sector. In July 2018, Jharkhand was ranked fourth in “ease of doing business” amongst all other Indian states, by the World Bank and the Department of Industrial Policy and Promotion. However, land acquisition has been a challenge in the city, showing down the pace of industrial development and the creation of jobs in this sector. Consequently, a large part of the population remains agrarian.

About 22 percent of the total workforce of Ranchi is engaged in wholesale and retail trade, and 19 percent in manufacturing and repairs. According to Census 2011, 0.34 million people in Ranchi (31.3 percent of total population of 1.07 million) were workers or engaged in some business activity. Of the total working population, 85.3 percent and 14.7 percent were engaged in main and marginal work, respectively. About 47.5 percent of the total working population is male (0.56 million) and 13.8 percent is female (0.07 million). With the increase in economic opportunities, the city has gathered a huge floating population of migrant workers from other districts and states. Thus, Ranchi needs a sustainable urban economy that can use its rising population as an asset for long-term sustenance.

Built Environment and Human Settlements

Given its rapid industrialisation, Ranchi has spread outward along radial corridors such as Kanke Road (NH 23), Ratu Road (NH 75) and the Dhurwa–HEC Road. Between these main corridors, the lack of a complete road network has prevented growth (International Transport and Development Policy, 2012). Figure 3 shows the major land-use settlements in the city, which continues to expand both vertically and horizontally, resulting in densification of built environment and population.

Figure 3: Major Land Use in Ranchi by Settlements



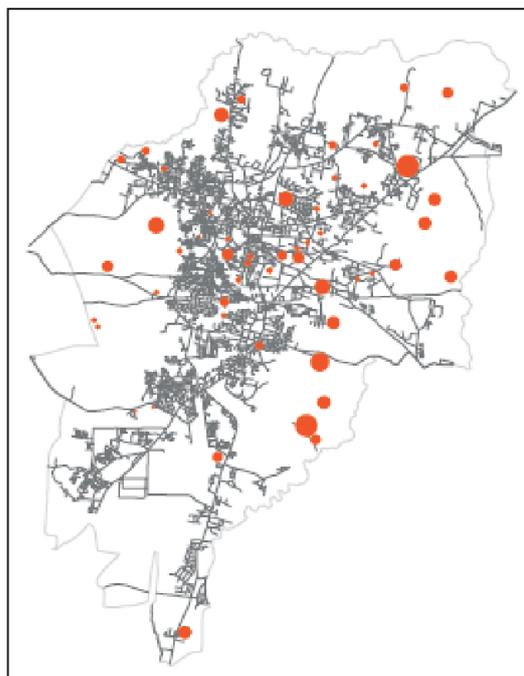
Source: Pre-feasibility study for sustainable transport interventions in Ranchi, August 2012, ITDP.

There is stark spatial inequality in Ranchi.⁸ Neighbourhoods with high SoL are mostly clustered in the central and north-western part of the city, while large peripheries are relatively impoverished. According to the Ranchi Smart City Proposal (SCP), the urban poor constitute 30 percent of the population. There are a number of informal settlements, including slums and squatter settlements, in the city (see Figure 4), which suggests a lack of basic amenities and adequate housing for the poor.

The 2011 Census of India states that 6.92 percent of the total population of Ranchi resides in slums, while according to the Ranchi SCP, there are 95 slum pockets in the city that house around 7.72 percent of the population. Adequate and affordable housing, including the redevelopment of slums and informal settlements with Service Level Benchmarking, remains a challenge for Ranchi. Master Plan-2037 estimates a shortage of 250,000 housing units for the

economically weaker section (EWS) and lower income group (LIG) households in the city, by the year 2037. The Knowledge Smart City under the greenfield area-based development for RSCCL has proposed six acres for affordable housing (i.e. nearly 860 EWS units).

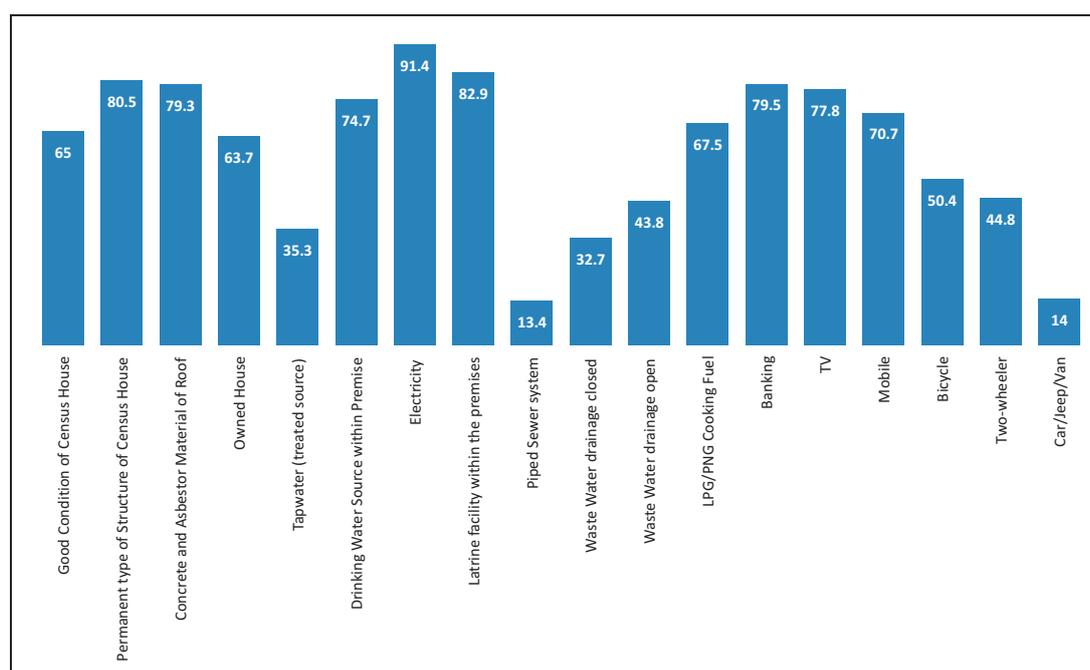
Figure 4: Location of Informal Settlements in Ranchi



Source: Pre-feasibility study for sustainable transport interventions in Ranchi, August 2012, ITDP.

The Houselisting and Housing Census data from the 2011 Census of India provides insights into Ranchi's household amenities and assets (see Figure 5). About 80.5 percent of the households had a permanent-structure house. Only 65 percent of houses were in good condition. Of all households, 63.7 percent owned a house, while the rest lived in rented houses. In terms of water availability, 74.7 percent of the households had accessible drinking water in the premises, and only 35.3 percent were connected to treated tap water. Electricity as a source of lighting was available to 91.4 percent of the households and 82.9 percent of the households had indoor toilers. Only 13.4 percent of the households were connected to the piped sewer system. For waste water, 32.7 percent of the households had closed drainage connectivity and 43.8 percent reported open drainage. For cooking fuel, 67.5 percent of the households used LPG/PNG. Almost 80 percent of the households availed banking facilities. Households with TV, mobile, bicycle, two-wheelers and four-wheelers were 77.8, 70.7, 50.4, 44.8 and 14 percent respectively. The RMC (2016) listed the availability of civic amenities for public use. It included 60 public toilets, 12 public urinals and 11 parks.

Figure 5: Household Amenities and Assets, Ranchi City, Census 2011
(in percentage)



Source: *Houselisting and Housing Census, 2011*.

Resource Management

Due to flourishing urbanisation, Ranchi faces the challenges of deforestation, rising pollution levels and depleting groundwater. Management of solid and liquid wastes remains a challenge. The sustainable development of the city demands the harnessing of non-conventional energy sources and a focus on strengthening the natural environment.

The densification of the built environment and the expansion of urbanisation—requiring the construction of new housing units—has led to the extinction of numerous water bodies (roughly 300), such as lakes and river streams and serious groundwater depletion. Water insecurity becomes acute during summers (lack of water, depletion of water table) and in the rainy season (flooding and contamination). According to the Ranchi SCM, the city has a cumulative dam capacity of 417 million litres of water per day (MLD). As per the RMC, in 2016, the average per-capita supply of water was 98 litres per capita per day (LPCD), as against Ministry of Urban Development’s recommended benchmark of 135 LPCD. In addition to inadequate supply, poor water quality plagues the city. The RMC (2016) mentioned an improvement in the water-connection application and water-tax collection with the online mechanism, improving the collection efficiency to 30 percent for water-related charges.

While the availability of electricity has improved, challenges remain, such as frequent power outages and transmission and distribution losses. The state has an installed capacity of 3049 MW. Ranchi has a solar index of 300 days of clear sun, which provides an opportunity to harness solar energy. Under the Jharkhand State Solar Policy, 2015, the Jharkhand Renewable Energy Development Agency has prepared a framework for a State Rooftop Solar Power Policy, 2018. The objective is to produce 500 MW of power through grid-connected rooftop solar plants by 2022 in Ranchi and Jamshedpur.

In sanitation, there has been an improvement in the last few years. The Swachh Sarvekshan, 2018, released by the Union Ministry of Housing and Urban Affairs (MoHUA), national rank of Ranchi was 21 amongst 471 cities. Ranchi was also awarded the best city in citizens' feedback amongst state capitals. As per the RMC (2016), the city generates 580 MT of solid waste per day, of which around three-fourth is domestic waste. In the last few years, door-to-door collection has reached over 60 percent of the households as a result of staff recruitment. The city aims for 100 percent door-to-door collection, proper segregation and disposal and the installation, operations and maintenance of an 11 MW waste-to-energy plant.

Other than MECON, HEC (selected areas) and a few industrial regions, the sewerage system in the city is in poor shape. Most of the households are connected to septic tanks or soak pits, which are cleaned and maintained at intervals. The total sewage generated in the city is approximately 150 MLD. Despite past efforts to improve the sewerage system in the city, the wastewater or sewage from overflowing septic tanks and unconnected households flows into open drains, open *nallahs* (water channels) or nearby water bodies. The sewage gets accumulated in low-lying areas of the city due to the undulating terrain, resulting in unhygienic and unsanitary conditions. This has not only led to severe land and water pollution but also affects the quality of life of the citizens.

Ranchi also lacks a proper drainage facility for storm water disposal and treatment. Under the Service-Level Improvement Plan in AMRUT, the RMC planned to undertake a number of sewerage projects beginning 2016, for which a total outlay of INR 833 crores was outlined. When these projects are completed, the network will cover 100 percent of the total area of the city.

Finally, Ranchi is beleaguered with worsening air quality, due to increase in vehicles, construction activities and dust pollution. The Jharkhand State Pollution Control Board has acknowledged the hazardous levels (greater than 401 ppm) of air pollution and called for immediate action.

Mobility

Ranchi currently faces acute public-transport deficiencies. There are 65 buses carrying around 22,000 passengers daily, which is only five percent of the modal share. Around 155 km (6 percent) of the major arterial roads have been strengthened and widened. The construction of the Outer Ring Road (jointly under the state government and the National Highways Authority of India) is underway. For intra-city mobility, the major transport options are private shared autos, taxis, cycle rickshaws and e-rickshaws, due to the absence of adequate public transport. A flagship system dedicated to women passengers employs “pink autos” (a total of 125) which ply in different parts of the city and are driven by women.

The RMC must move beyond simple road widening and flyover construction and focus on improving the public transport system. Mobility is further restricted due to severe lack of street lighting on the highways and major and minor roads and housing colonies.

Traffic management under RITTS is aimed at providing a digital platform for integrating public transport management, parking management, corridor management (traffic), integration of public transport and fare management along with the integration of transport and traffic needs for ABD.

By 2021, Ranchi aims to increase its public transport by 50 percent, expanding its fleet of buses by more than five times, i.e. from 65 buses to around 375. Additionally, to provide comfortable access to its public transport and to encourage walking and cycling in the city, Ranchi aims to redesign 31.5 km of its streets as ‘complete streets’ with wide, safe and continuous footpaths, safe crossing facilities, clearly demarcated parking bays and uniform carriageways.⁹

The Promise of an ‘Inclusive’ City

An inclusive city is one that creates and maintains its wealth by active participation and interaction of its citizens and avoids marginalisation. The Sustainable Development Goal (SDG) 11 under the 2030 Agenda for Sustainable Development unequivocally calls for the creation of “inclusive, safe, resilient and sustainable” cities.

A New Delhi-based NGO, Jagori, conducted a survey on the safety of public spaces for women and girls in Ranchi.¹⁰ The study found that about 40 percent of women did not feel safe in the public spaces, of which students and workers

constitute the most vulnerable category. While 40–48 percent felt very unsafe, around 50–70 percent ignored incidents of harassment at workplace and public places. This study substantiates the argument for stringent enforcement of law and order, and the incorporation of public safety mechanisms such as city surveillance (using CCTV cameras).

Due to an increase in the migrant population, homelessness has posed a serious challenge for Ranchi.¹¹ National Urban Livelihood Mission norms stipulate one shelter home per one lakh population, each with a capacity of 100 inhabitants. At present, under the RMC, there are 11 shelter homes (including two for women) with a total capacity of only 150 people.¹² Construction of two more shelter homes with a combined capacity of around 100 beds is underway.

In the process of city planning, the government must also consider the challenges faced by the elderly, women, children and the differently abled, to make Ranchi an inclusive city.

Planning and Governance

The RMC struggles with numerous challenges, including unorganised spatial development, informal settlements, weak civic and basic infrastructure, service arrangement issues, municipal staff crunch, poor municipal revenue collection efficiency, issues pertaining to the CNT Act, inadequate public transport system, and lack of access to housing and education. Additionally, Jharkhand is perceived to be a Naxal-infested state, which alienates investors, tourists and businesses, thus exacerbating the development challenges. Other obstacles include complex urban governance, including coordination with various stakeholders (e.g. Drinking Water Supply and Sewerage Department), Public Works Department and RRDA.

However, the RMC and the Jharkhand state government have taken several measures to improve the various aspects of governance, e.g. e-governance initiatives (with the use of ICT for easy access to online applications such as property-tax assessment, payment of municipal licence fees, water charges, water connections and auto-DCR for automatic scrutiny of building plans and building plans approval management system) for enhancing efficiency and transparency; developing the ‘core capital area’ and the Ranchi smart city in the HECL area; increasing economic opportunities and improving business ecosystems; approving Master Plan-2037 for planned development; legislations such as the Jharkhand Municipal Development Act, 2011 (amended in 2018), the Jharkhand Unified Building Byelaws, 2016 (amended in 2017), the Affordable Housing Policy, 2016 (amended in 2018), and the

Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Jharkhand Amendment) Act, 2017; establishing specialised institutions and organising thematic interventions to improve infrastructure and support from multilateral agencies.

Ranchi ranks 68th out of 111 cities in the 2018 MoHUA's Ease of Living Index. It measures four pillars: institutional, social, economic and physical.¹³

POLICY RECOMMENDATIONS

1. Technology must be harnessed in various ways to enable all the city services to work seamlessly within a given institutional hierarchy, involving various tiers of government in a variety of socioeconomic contexts.¹⁴
2. To ensure mobility for all, issues such as e-parking/multilevel parking, stakeholder engagement and the lack of proper street policy must be addressed.¹⁵ Ranchi's urban transformation requires greater attention to transport management, mono-rail/suburban light transit, integrated traffic management, additional road construction and widening of existing roads, footpath preservations, pond/water-body management, and waste-water harvesting and sewerage system.¹⁶
3. Solid- and liquid-waste management system must be revamped and handled in a scientific manner, along with a well-planned and well-constructed drainage system. Ranchi must emulate and implement the zero-garbage model of Pune, called the "Katraj Zero Waste Project," based on the idea that the pollution or waste from one ward should be recycled within the same ward.¹⁷
4. In Ranchi, 35 percent of the total housing units should be allocated for EWS and LIG households. The supply of affordable housing will benefit the poor.¹⁸ To ensure the safety of women, authorities must ensure measures such as the installation of CCTV cameras, night patrolling and gender sensitisation programmes.¹⁹ The RMC must be proactive in identifying the number of homeless and must construct separate shelters for them in the city, in the following categories: general, men, women and mentally ill.²⁰ While Ranchi has two psychological aid centres, there are no shelter homes for the disabled. The agencies and contractors involved in running shelter homes in the city must be trained to show sensitivity towards the homeless, and the latter must be linked to social security and welfare schemes.²¹

5. To address the challenges of a rising population in the city, due to an influx of migrant workforce from the neighbouring areas and states, livelihood security measures must be put in place.²²
6. Existing cottage industries such as sericulture, handloom, handicraft, khadi and textile must be promoted and developed to provide livelihood for rural, tribal and migrated populations.²³ The city must ensure adequate and affordable basic rights and amenities for all, e.g. housing, safe drinking water and sanitation; equal rights and participation, especially for the marginalised and vulnerable sections; employment opportunities; and active participation of the citizens in (accountable and transparent) governance.²⁴ Additionally, social audits must be implemented.²⁵
7. The Ranchi Smart City must move away from infrastructure-based development towards citizen-based development.
8. Finally, systemic and reliable real-time data must be used for monitoring and evaluation and for spatial and micro-resource planning. The use of ICT for better service delivery, reducing leakages and future planning should focus on achieving efficiency, accountability and transparency.²⁶

CONCLUSION

Ranchi, a small town established in the 1960s, has grown into a city of a million-plus population in the past two decades. Under the government's Smart Cities Mission, the city has opted for greenfield development (city extension) under the ABD component and RITTS under the pan-city smart-solution component.

There is no uniform model for smart city development, and each city must leverage its unique characteristics. Therefore, the Ranchi smart city must be indigenously rooted, and the development agenda must be tailored according to the city's requirements.²⁷ A smart and empowered RMC must be encouraged to function responsibly in helping urban India achieve the goals of the SCM in a holistic manner and to establish Ranchi as a responsive, inclusive, transparent and sustainable smart city. 

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