

Provisions for an Efficient Parking Management System in Kanpur



A Case Study prepared as part of the cooperation with Kanpur Nagar Nigam under EU funded International Urban and Regional Cooperation Program

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December 2023



Funded by the
European Union



*This Case Study has been prepared with the financial support from the European Union.
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1 Executive summary

This case study highlights the pressing need for an efficient parking management system in Kanpur, amidst a growing reliance on personal vehicles and a shortage of designated parking spaces. The current scenario presents challenges such as limited parking spaces, illegal parking, mixed land use conflicts, inadequate infrastructure, and increasing vehicle ownership. These issues demand a strategic and multi-pronged approach to reshape urban land usage and promote sustainable transportation alternatives.

The proposed solutions encompass revising parking tariffs to reflect land occupancy costs, encouraging greater use of public transport, ensuring adequate parking provision within buildings, integrating parking solutions into pedestrian initiatives, and adopting smart parking technologies. These strategies aim to optimize parking utilization, reduce congestion, and enhance the overall urban experience.

Drawing inspiration from successful global practices, like the smart parking solutions in Dubrovnik, Barcelona and Stockholm, Kanpur can benefit from technology-driven parking solutions and efficient multi-level parking structures. Public awareness campaigns and effective public-private partnerships are also vital components of a comprehensive parking management approach.

Implementing these proposals can transform Kanpur's parking landscape, promoting sustainable urban mobility, reducing pollution, and creating vibrant, walkable neighborhoods that prioritize the needs of the community. A holistic and collaborative effort is essential to address Kanpur's parking challenges and move towards a more sustainable and accessible urban environment.

2 Introduction

In growing urban centers across the globe, the ever-increasing reliance on personal vehicles has ignited a parking crisis, a direct consequence of abundant free parking spaces. This case study delves into the imperative of establishing an efficient parking management system in Kanpur, emphasizing the urgent need to realign urban land usage and promote sustainable transportation alternatives. The persistent surge in vehicle ownership, compounded by the availability of free parking, lack of suitable policies, technology, capacity within the relevant staff and budget constraints necessitates a transformative solution that neither demands more valuable urban land for widespread car parking nor contributes to the explosion of vehicular congestion.

2.1 Parking Crisis and its Ramifications

The escalating dependency on cars and the usual culture of free parking have dire implications for urban landscapes. An astonishing 8-10% of urban land in Delhi is consumed by car parking, a figure that continues to grow exponentially with the daily addition of new vehicles, requiring land equivalent to more than 300 football fields (Source – [Enabling Shared Mobility in India](#)). This encroachment of valuable land compromises the potential for crucial urban infrastructure, such as schools, affordable housing, commercial centers, and public green spaces. Additionally, the disparity between the space allocated for car parking and that available to needy families is unambiguous, highlighting the pressing need for a paradigm shift in parking policies.

2.2 Evolving Parking Policies Globally

Internationally, progressive cities are redefining parking policies to align with sustainable urban development goals. Strategies encompass making car parking prohibitively expensive, restricting car infrastructure, and bolstering public transportation alternatives. However, Indian cities continue to incentivize private car usage through minimal charges for road usage and parking, perpetuating an unsustainable trend. The introduction of paid parking and parking restraints, coupled with efficient management, can significantly benefit both car and non-car users, leading to reduced congestion, enhanced public health, and better urban mobility.

2.3 Toward a Sustainable Future

Recognizing the invaluable role that parking management plays in shaping urban landscapes and transportation patterns, cities in India are now investing in parking structures. However, effective parking policies extend beyond infrastructure to encompass pricing strategies and efficient utilization. This case study advocates for the provision of innovative parking policies including stringent enforcement by law, adoption of advanced solutions such as – smart parking, multi-level parking, integration of parking policy with multimodal transportation strategies, revenue reinvestment, and a concerted effort to reduce parking subsidies. By carefully aligning these elements, cities like Kanpur can pave the way for sustainable urban mobility, reduce congestion, curb pollution, and create vibrant, walkable neighborhoods that prioritize the needs of the community.

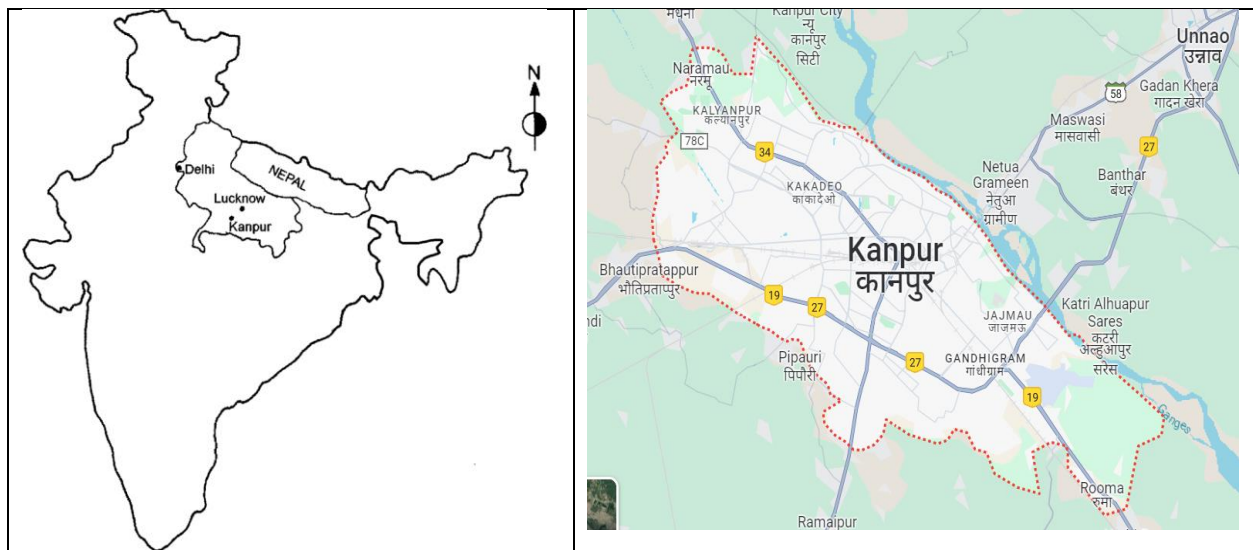
3 The City of Kanpur

Kanpur, located in the state of Uttar Pradesh, India, is a significant industrial and commercial center. It is one of the major urban areas in the region. The city faces a multitude of urban challenges including limited parking spaces, illegal parking, mixed land use conflicts, inadequate parking management strategies, and air quality concerns.

Despite the challenges, Kanpur is actively engaged in various Indian government programs and initiatives aimed at urban development and improvement of infrastructure. These programs include the **Smart Cities Mission** - <https://mohua.gov.in/cms/smart-cities.php>, **AMRUT** - <https://mohua.gov.in/cms/amrut.php>, **Swachh Bharat Mission** - <https://mohua.gov.in/cms/swachh-bharat-mission.php> and initiatives for sustainable urban planning and mobility. Kanpur is constantly striving to address its challenges and work towards a more sustainable and efficient urban environment

3.1 Location and Demographics

Kanpur is a prominent city situated in the state of Uttar Pradesh, in the northern part of India. Geographically, it is positioned on the banks of the Ganges River. With an estimated population of around 2.9 million people (2023), Kanpur is one of the major urban centers in Uttar Pradesh and the country.



3.2 Connectivity

Kanpur's strategic location is underscored by its robust connectivity. The city is well-connected through rail and road networks, with major highways facilitating seamless travel. The Kanpur Central Railway Station is a vital junction, enhancing both regional and national connectivity.

3.3 Industrial and Commercial Activities

Renowned as the "Manchester of the East," Kanpur has historically been an industrial powerhouse. The city's industrial landscape encompasses leather, textiles, and chemicals, contributing significantly to India's economic fabric. Thriving commercial zones and markets further amplify Kanpur's economic vitality.

3.4 Education and Innovation

Kanpur is a prominent educational hub, housing esteemed institutions such as the Indian Institute of Technology Kanpur (IITK) and the Harcourt Butler Technical University. These institutions foster a culture of innovation and academic excellence, positioning Kanpur as a center for cutting-edge research and education.



Source: Business Today



Source: Times of India

3.5 Cultural Heritage

Rich in cultural heritage, Kanpur embraces historical landmarks like the Kanpur Memorial Church, in memory of lives lost during the Indian Rebellion of 1857. The city's cultural tapestry is woven with festivals, events, and a vibrant culinary scene, reflecting the diversity of its inhabitants.

3.6 Green Spaces and Recreation

Amidst its urban expanse, Kanpur offers green spaces like the Allen Forest Zoo, providing a tranquil retreat for nature enthusiasts. Green Park Stadium stands as a sporting icon, hosting cricket matches and fostering a fervent sports culture.

3.7 Ongoing Development and Future Prospects

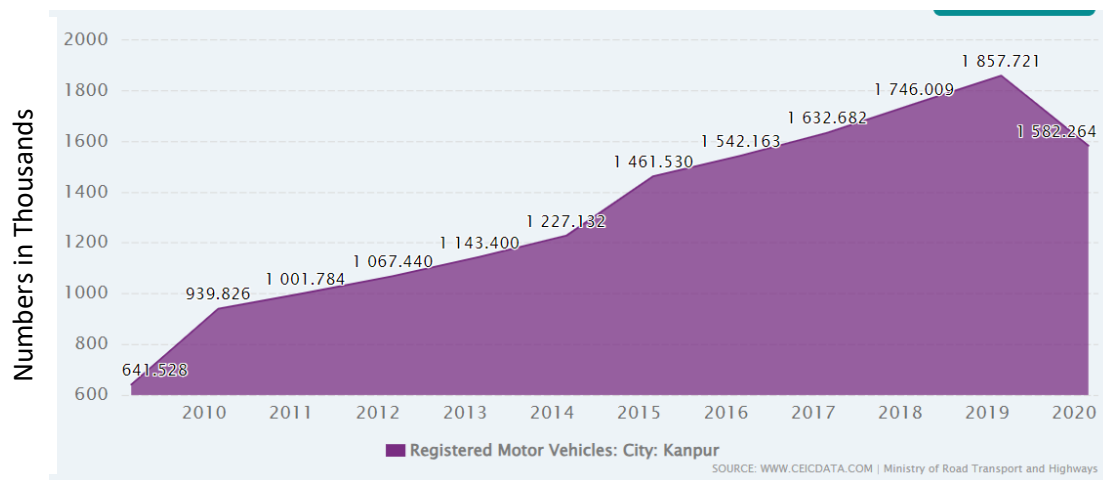
Kanpur continues to evolve with ongoing infrastructural developments, augmenting its status as a key player in Uttar Pradesh's economic landscape. The city's unique blend of historical charm, industrial prowess, educational excellence, and cultural vibrancy paints a compelling portrait of Kanpur as a city on the cusp of innovation and growth.

4 Challenges

The city of Kanpur faces several significant parking challenges that impact both residents and visitors alike. These challenges arise due to rapid urbanization, a growing population, and increasing vehicle ownership.

4.1 Growing Vehicle Ownership

The increasing affluence and accessibility to loans have resulted in a surge in vehicle ownership. However, the growth in parking infrastructure has not kept pace with this rise in vehicle numbers, amplifying the parking problem. As per data published by CEIC ([CEIC Data](#)), the vehicle ownership in Kanpur has increased by more than 146% in 2020 compared to 2010. This, coupled with inadequate parking facilities and infrastructure add woes to the ever-increasing challenges of parking management.



4.2 Limited Parking Spaces and Illegal Parking

Kanpur, like many rapidly growing urban centers, faces a shortage of designated parking spaces compared to the increasing number of vehicles. The ratio of vehicles to available parking spots is disproportionate, leading to congestion and illegal parking. As per the information published in [Rentech Digital](#), there are a total of 55 public parking lots in Kanpur as of September 2023.

Due to the limited availability of formal parking spaces, illegal parking has become a prevalent issue. Vehicles are often parked in no-parking zones, on footpaths, and in front of residences or businesses. This not only obstructs traffic flow but also poses safety hazards. As per a report titled – [Pampering How To Manage Urban India's Parking Needs Cities](#) published by Centre for Science and Environment in 2018, a very high share of the road network in most cities is used for parking. This problem is more serious in smaller cities with close knit compact urban design. In Delhi, with the largest road network in the country, about 14 per cent of roads are used for parking. In Jaipur, this share is 56% while in Kanpur it is 45%. The limited availability of off-street car parking facilities further exacerbates the problem.



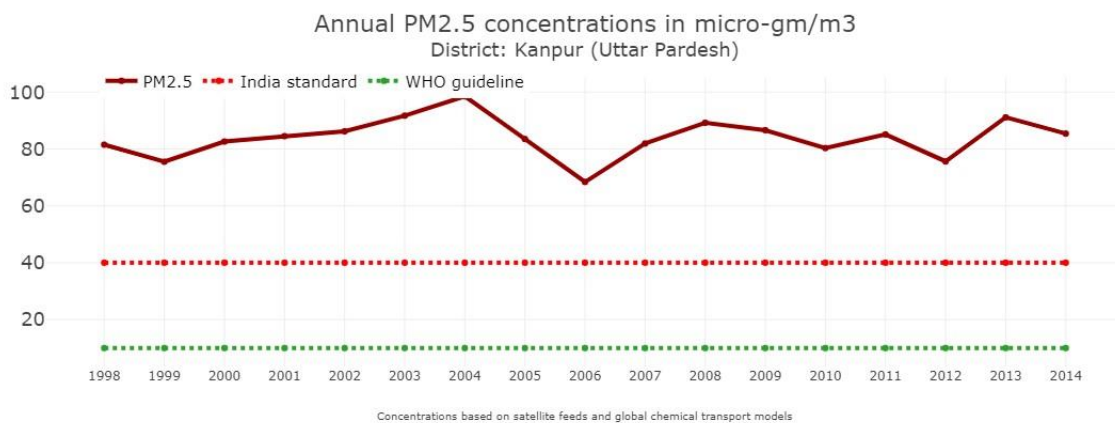
Source: [Dainik Bhaskar](#)



Source: [Jubilee Post](#)

4.3 On-Street (Median) Parking Inside the CBD Area Leading to Congestion and Poor Air Quality

The practice of on-street parking, particularly in the Central Business District (CBD) area, is contributing to chronic traffic congestion. Vehicles parked on the streets, including median parking, disrupt traffic flow and cause congestion, impacting the smooth movement of vehicles throughout the day. This problem is especially prevalent in the busy commercial zones. The air quality in Kanpur is a serious concern due to high PM2.5 levels, reaching almost three times the national standard and over 11 times the WHO guidelines. The city lacks sufficient air monitoring stations, hindering effective pollution reporting. Urgent steps and policies are needed to address this critical issue and improve air quality in Kanpur. Mitigating pollution is a critical aspect of urban planning and development in the city.¹



Source: <https://urbanemissions.info/india-apna/kanpur-india/>

¹ For more information on Kanpur's air quality, visit www.urbanemissions.info/india-apna.

4.4 Mixed Land use and Commercial Activities:

Many areas in Kanpur have a mix of residential and commercial establishments. This creates a challenge as commercial establishments require parking spaces for customers, but the availability of such spaces is limited. It results in conflicts between residents and businesses over parking. The findings from the 2022 review on "[Parking Issues and Challenges in CBD Area](#)" by Kumar et al substantiates the pressing issues stemming from poor parking management, emphasizing the challenges faced in Central Business Districts. These insights provide a foundation for exploring effective smart parking solutions in the context of urban growth, congestion, and environmental impact in urban areas.



Source: [Dainik Bhaskar](#)



Source: [Dainik Bhaskar](#)



Source: [Dainik Bhaskar](#)



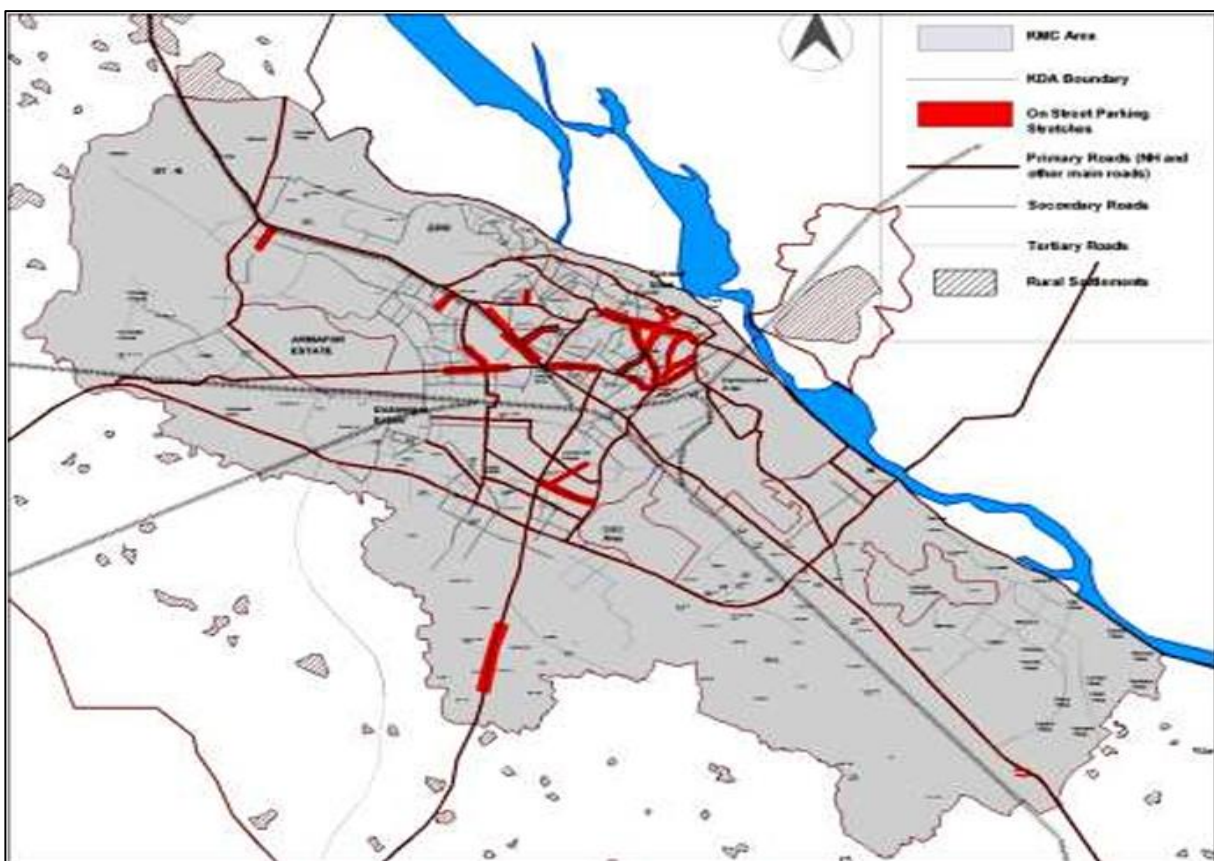
Source: [The Great Indian Road Traffic](#)

Addressing these parking challenges in Kanpur requires a multi-faceted approach that involves urban planning, investment in parking infrastructure, enforcement of parking regulations, public awareness campaigns, and integration of technology for efficient parking management. It is essential to balance the needs of residents, businesses, and commuters while striving for sustainable and accessible parking solutions. Given the

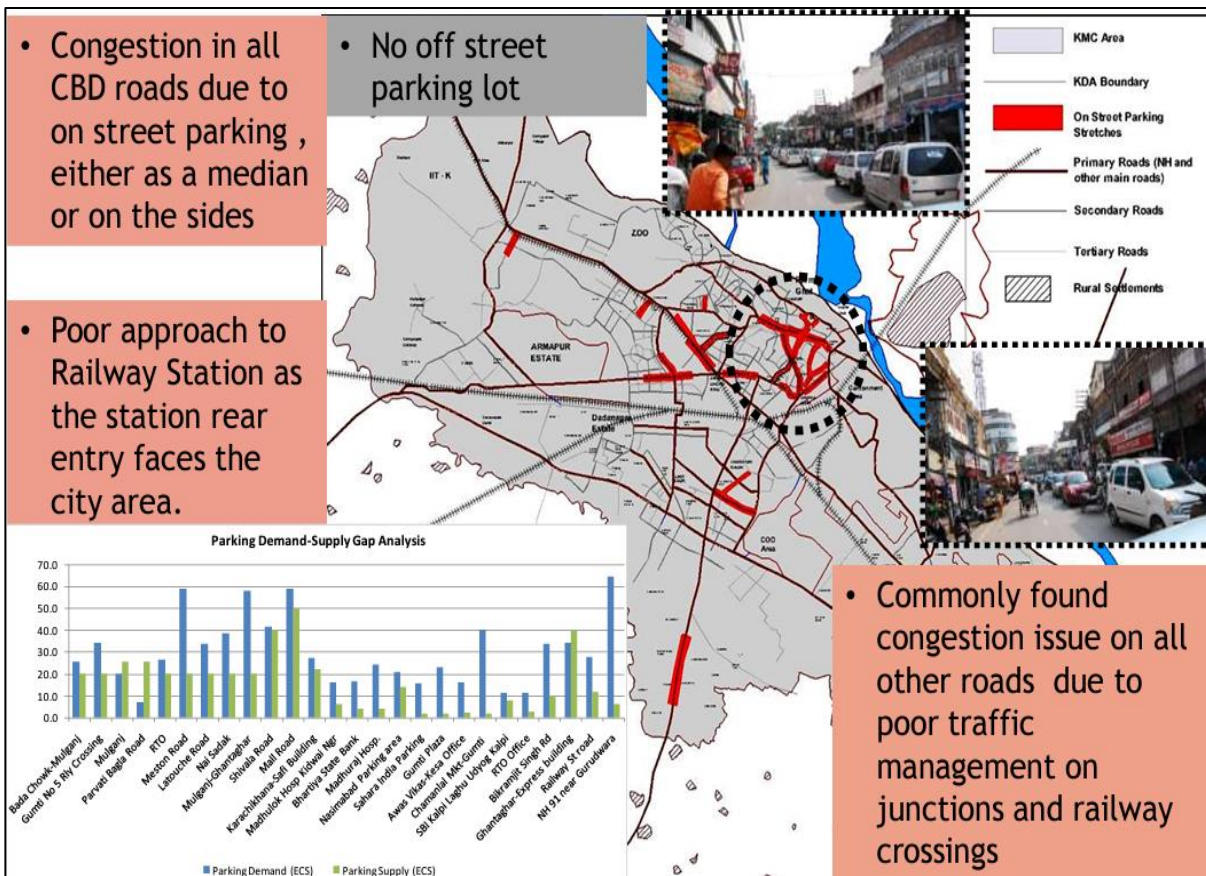
pollution levels in the city, stringent checks on polluting vehicles and the implementation of effective pollution control measures are imperative. Encouraging the adoption of eco-friendly vehicles and promoting public transport can contribute to reducing pollution.

5 Existing Policies and Projects

Kanpur has adopted appropriate policies and projects to improve the traffic congestion and parking facilities in the city. As part of the preparation of a [Comprehensive Mobility Plan](#), 21 critical stretches were identified for assessment of parking demand and supply survey. Below mentioned graphs reveal the findings of the survey where there is a clear mismatch between demand and supply for parking needs.



Source: [Comprehensive Mobility Plan for Kanpur](#)



Source: [Comprehensive Mobility Plan for Kanpur](#)

5.1 Public Parking Facilities, Regulations and Fees

Kanpur designated public parking lots and multi-level parking structures. These facilities are meant to alleviate on-street parking and provide organized parking options for the public. According to information published by [Rentech Digital](#), there are a total of 55 public parking lots in Kanpur as of September 2023. As per the [Kanpur City Development Plan](#), in order to maintain the parking lots and to provide proper parking service, parking is outsourced on Public Private Partnership (PPP) basis. Selected contractors pay a certain royalty to Kanpur Nagar Nigam (KNN), which is the source of revenue for KNN and the contractors charge user fees from the citizens for various parking facilities in the city.

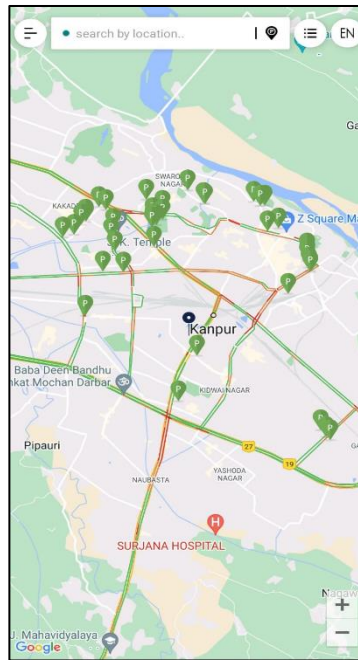
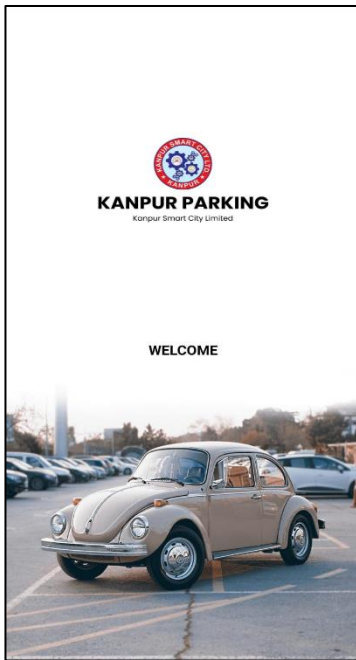
Kanpur has also implemented parking regulations to manage parking effectively. This includes parking time limits, designated parking zones, and parking fees to discourage long-term parking in high-demand areas. Regular enforcement activities are conducted to address parking violations. The system is continually monitored for improvements and adaptations to enhance efficiency.

5.2 Smart Parking Solutions

Kanpur has also explored adopting smart parking solutions that utilize technology to guide users to available parking spaces, optimize parking space usage, and facilitate cashless payments for parking. In September 2021, Kanpur inaugurated Uttar Pradesh's first smart parking site, a collaborative effort by Smart City Kanpur Limited and Kanpur Nagar Nigam. The site, located near Kargil Park, is a pilot project in a series of 43 sites, with an investment of about INR 14 crore.

Out of these, 29 parking spaces are dedicated to two-wheeler vehicles while the remaining 13 are for 4-wheeler automobiles. With a parking capacity of around 1,500 cars & 2,500 two-wheelers and equipped with sensor-based parking, QR code-based fee systems, and LED displays for real-time vacancy information, these sites integrate seamlessly with the Integrated Command and Control Centre, ensuring efficient parking management and real-time updates. The initiative is set to redefine urban parking experiences. A mobile-generated option to book a parking space is available at all these places. The number of vehicles parked, and vacant spaces is updated at the Integrated Control and Command Centre, after each booking is made. All other information and details about the digital system is appraised to the public by means of display boards, across 400 locations. (Source: [Knock Sense](#))





	Gastro Institute & Research Centre Plana Apartments, Vijay Nagar - Kalyanpur 150ft Road, Neveen 12.00 AM - 11.59 PM Updated at 12-02-2020	387.82 Km
	Akash Institute ICICI Bank, Kakadevi Nagar 12.00 AM - 11.59 PM Updated at 12-02-2020	387.82 Km
	Sahara India Sahara India, Kanpur 12.00 AM - 11.59 PM Updated at 28-01-2022	387.83 Km
	Dwivedi Hospital Cheer Chauraha, Pandu Nagar 12.00 AM - 11.59 PM Updated at 12-02-2020	387.84 Km
	Asthana Tower Deoki Palace, Pandu Nagar 12.00 AM - 11.59 PM Updated at 12-02-2020	387.87 Km

Source: [Mobile based application for Smart Parking in Kanpur](#)

5.3 Arrangement of Multilevel Parking Facilities

As per the projects proposed in the Action Plan for The Control of Air Pollution in Kanpur City under the National Clean Air Program of Government of India, the proposed actions involve setting up multilevel parking facilities in Kanpur. Multilevel parking structures help optimize parking space by utilizing vertical space efficiently. By providing additional parking slots, it aims to alleviate the parking pressure in the city. This initiative is a collaboration between Nagar Nigam (Municipal Corporation) and the Kanpur Development Authority and signifies a step towards improving parking infrastructure. Source: [Kanpur City Development Plan \(CDP\)](#)

The creation of multilevel parking facilities provides a practical solution to parking scarcity, while the enforcement of regulations against parking in non-designated areas ensures that parking is organized and compliant with city regulations. These efforts will collectively contribute to improving the overall parking situation in Kanpur.



Source: [Jagran](#)



Source: [Yappe.in](#)



Source: [World Press](#)



Source: Kanpur Nagar Nigam

Three multi-level car parking facilities are currently operational at Crystal Parking Parade, Panchaki Parking, and Phoolbagh Parking. One additional facility, Darshan Purwa (Under Construction), will further augment the parking infrastructure. The existing facilities provide a total parking capacity of 1,000 vehicles.

5.4 Enforcement

This policy focuses on preventing vehicles from being parked in unauthorized or non-designated areas. Regular monitoring and enforcement are conducted by the Traffic Police and Nagar Nigam. By discouraging parking in undesignated zones, this policy aims to reduce congestion, enhance traffic flow, and ensure that vehicles are parked in designated, organized parking spaces. This helps maintain order on the roads and promotes efficient use of available parking facilities. A robust enforcement strategy is in place to penalize parking violations. For example in 2020, more than 3,000 fines were imposed, leading to revenues of more than INR 4 million.

5.5 Promotion of Public Transportation & Integrated Transport

Encouraging the use of public transportation helps reduce the number of private vehicles on the road and subsequently eases parking demand in the city. Kanpur's robust transport system reflects its business-centric nature. The city offers a well-developed local bus route, alongside auto-rickshaws and taxis for convenient travel. The Kanpur Metropolitan Bus Service, equipped with GPS technology and security features, operates over 300 low floor AC and Non-AC buses, connecting key areas like Mall Road and Kanpur Central. Mini buses serve shorter routes, and the city boasts multiple bus terminals for efficient transit. Other transport options include taxis, tempo rickshaws, auto-rickshaws, and cycle rickshaws, ensuring varied choices for commuters. Integrated planning involves coordinating transport and parking management strategies to ensure a holistic approach to traffic and parking issues within a city.

Kanpur Nagar Nigam (KNN) has taken significant steps to promote battery-operated vehicles, specifically E-rickshaws and E-carts. The municipal body has conducted public awareness programs [public awareness programs](#) to encourage the adoption of these eco-friendly vehicles. As part of the initiative, KNN offers a notable incentive by providing free parking in any Nagar Nigam parking facility for battery-operated vehicles. In April 2020 alone, a total of 18,201 E-rickshaws were reported, demonstrating a proactive

approach to promoting sustainable transportation. The data reflects a substantial contribution to reducing environmental impact through the increased use of battery-operated vehicles in the city.

5.6 Other Ongoing Efforts

Efforts are being made to improve urban planning and mobility in Kanpur. Kanpur is striving to enhance its infrastructure, reduce traffic congestion, and implement sustainable practices. Collaborations with various national programs and urban development initiatives (mentioned above) underscore the city's commitment to tackling its urban challenges and improving the overall quality of life for its residents.

As part of its Micro Plan submitted on behalf of the State of Uttar Pradesh (Uttar Pradesh Pollution Control Board) Kanpur is actively pursuing comprehensive actions to address parking challenges in the city.

In summary, Kanpur, as a major urban center, is working diligently to address its urban challenges through strategic urban planning, infrastructural development, and active participation in national programs. The city's progress is critical for fostering sustainable growth and enhancing the overall well-being of its populace.

6 Best practices

In light of the specific challenges that Kanpur faces regarding public parking, certain [best practices](#) from Indian and European cities have been reviewed and analyzed so that they may be assessed accordingly.

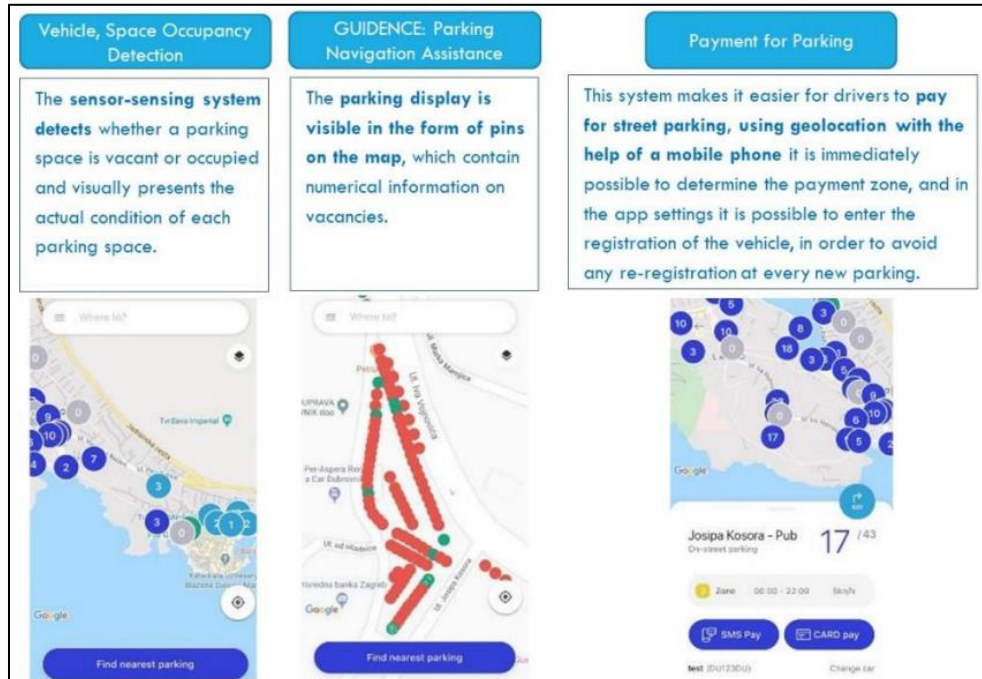
6.1 Dubrovnik, Croatia – Smart Parking Solution

The [Dubrovnik project](#) is one of the largest integrated solutions for smart parking on the Narrowband IoT (NB-IoT) network in the world and the largest project in the segment of smart cities in Croatia.

Sensors are installed at each of the city's parking spaces allowing the system to accurately detect when a space is free or not, the data is sent to a central location and drivers are able to access the information through a free app.

In the city's parking hot spots, a system of twenty public information displays was set up to allow drivers who don't use the app to see real-time parking spaces.

The NB-IoT network from Hrvatski Telekom allowed the project's sensors to be more efficient and cost-effective, and as a result, increase the project's sustainability and futureproofing. This network is based on the global industry standard for mobile networks and enables the connection of an extremely high number of connected IoT devices. It features excellent coverage, low cost, high signal quality, and a high level of security and reliability in line with global telecommunications standards in mobile networks.



Source: [IUC Knowledge Products](#)

The aim was to resolve one of the crucial problems of Dubrovnik - traffic especially parking. This problem was constant but highlighted during the summer season when the number of vehicles in the town grew by 100%. Thus, the aim was to reduce traffic congestion and increase the quality of parking on city streets. A total of 2,010 sensors connected to the NB-IoT network were installed.

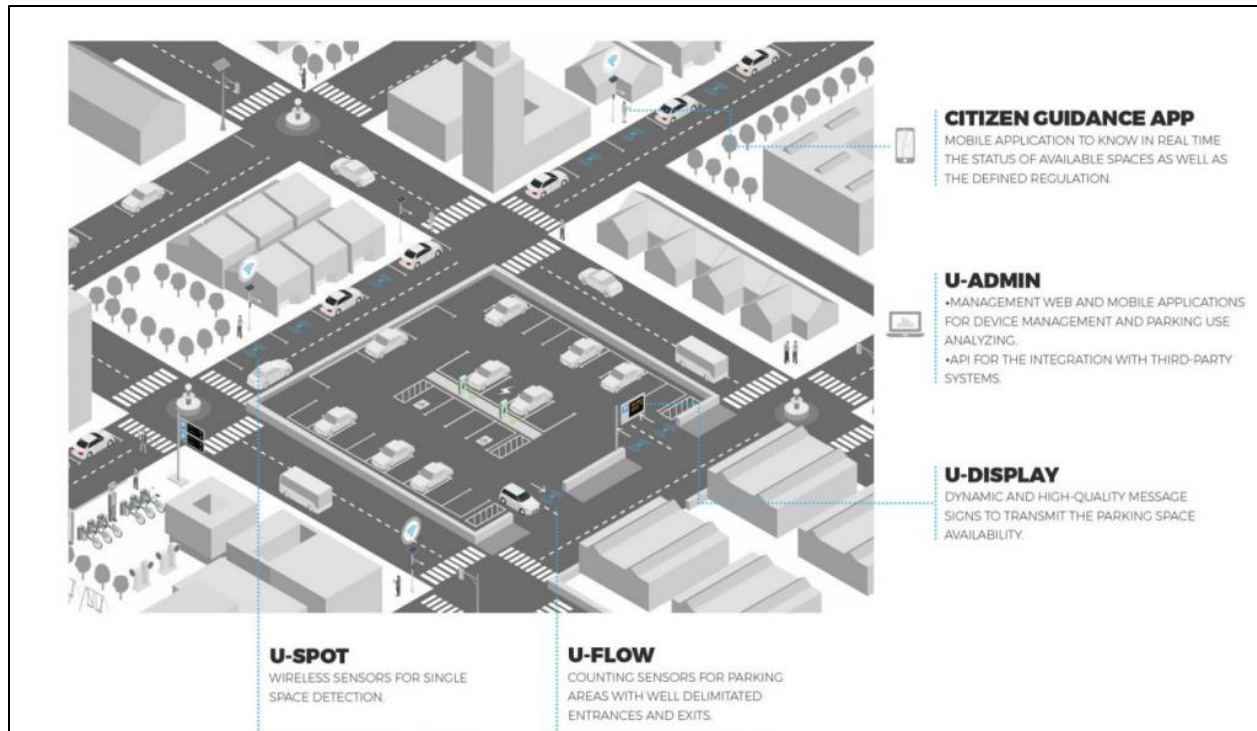
For the citizens of Dubrovnik, the project has made it easier to find a vacancy through the mobile app. It has also allowed the users to navigate to a vacant location, find an alternative vacancy and pay for a parking ticket with the preferred mode of payment.

Considering the number of sensors as well as the fact that they are installed all over Dubrovnik, this is one of the largest integrated smart parking solutions implemented on the Narrowband IoT (NB-IoT) network worldwide and the largest project in the smart cities segment in Croatia and the region. This project is part of a series of activities under the umbrella project "Dubrovnik Smart City".

6.2 Barcelona, Spain – Smart Parking System

The solution for [Park and Ride](#) was installed in 10 areas of Barcelona. The data captured by the installed sensors is transformed into useful information which transmits the availability of free spaces to the users through an app. This way, drivers are informed about the availability of spaces in these parking areas so that they can go directly to the areas with free spaces. The solution is a win-win since it satisfies both the needs of citizens and those of public administrations. Details of the installed system:

- U-Flow14 counting sensors to inform about the availability of free spaces.
- U-Spot15 single space sensors to inform about the availability of reserved spaces (electric vehicles, taxis, etc.)
- Integration with multimodal platforms and user information app for the citizens to know the status of available parking spaces in real time.
- Management web and mobile applications for device management and parking use analyzing.



Source: [IUC Knowledge Products](#)

The system works as follows:

- The driver goes to a parking area and accesses it through a well-defined entrance. The U-Flow sensor installed at this entrance detects that the vehicle drives over it and sends the information to the platform.
- The platform collects the data and recalculates the availability based on the total capacity of the parking vs this new access and sends the updated data to the dynamic message signs and/or the user apps, indicating one less free space in this case.
- When the vehicle exits the area and passes over the U-Flow sensor installed in the exit lane, the process takes place in reverse. The system transmits the updated data indicating one more free space to the total available in the parking area.
- When reserved parking spaces are monitored with U-Spot sensors, they detect vehicles parking over and send the information to the platform. It can be deduced from normal space availability and information is given to the users according to the defined space category.

- At the U-Admin platform, the manager can handle the published information, as well as configure, supervise, and consult all the system's activity.

6.3 Green Parking Index in Stockholm

In response to the space and cost challenges posed by mandatory parking regulations for new homes in Sweden, Stockholm introduced the [Green Parking Index](#). Shifting from the traditional requirement of one parking spot per home, the index rewards builders for promoting alternative transportation methods. With an innovative approach, it suggests starting with 0.3 to 0.6 parking spots per home, considering factors like location and apartment size. The index encourages mobility services and sustainable practices, offering discounts for services that reduce the need for parking. This smart initiative not only addresses parking issues but also contributes to a greener and more efficient urban landscape, making Stockholm a model for cities seeking intelligent solutions for space, cost, and environmental considerations.

Challenge/Goal

In Sweden, rules used to prescribe that every new home must have one parking spot. But that takes up a lot of space and leads to high costs. So, the city changed the approach to an average of 0.57 spots per home. The Stockholm's Green Parking Index however rewards builders who help people use other ways to get around, saving space and money.

Solution

The Green Parking Index suggests to "Start with 0.3 to 0.6 parking spots per home." It depends on where the building is and what's around it. They also consider apartment size, giving a bit more for big ones and a bit less for small ones. If visitors share parking with other homes, they don't need extra space. Builders can get even more discounts (10 to 25 percent) if they provide services to help people move around without a car.

Mobility Services

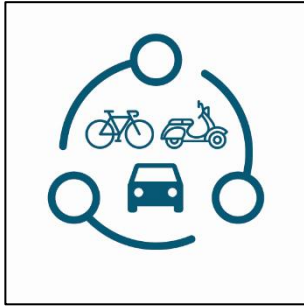
Doing things like giving info to residents, making bike parking easy, and having shared cars can cut down on needed parking. The more services (like bikes, public transport, and delivery boxes) a builder provides, the bigger the discount they get.

Impact and Sustainability

The Green Parking Index not only helps with parking but also encourages better ways to move around. It is win-win. Builders save money, and the city gets greener. It's a cool way for cities to grow without too many parking problems.

Conclusion

Stockholm's Green Parking Index is like a smart way of doing things. It shows how simple changes can make cities better. By encouraging cool ways to get around, Stockholm is a good example for other cities wanting to be smart about space, money, and the environment.



Source: [Bable - The Facilitator for Smart Cities in Europe](#)

6.4 Bangalore Smart Parking Solution

In Bangalore, the government is implementing a '[smart parking](#)' system that helps drivers find parking slots using a smartphone app. In its first phase, it will convert parking stretches on about 85 roads into smart ones. A central server will connect the management of all parking lots. CCTVs will be installed from where employees and municipal officials can check the live status of the parking situation in a bay and oversee all the activities. This step will help make multilevel parking a success. Key features of Bangalore Smart Parking Solution –

- Bengaluru Municipal Corporation has bid out Smart Parking Solution 85 roads in Bangalore (pop. 8.5 mn) on PPP mode to a private company Central Parking Services (CPS) Ltd. The pilot has been implemented on Kasturba Road (~ 800 m stretch) for 100 cars and 300 two wheelers.
- IoT device-based smart parking system with Namma Bengaluru smart parking app, along with parking meters connected to a central command and control centre.
- CCTV surveillance to prevent theft or damage to vehicles.
- 13,600 slots with capacity 3,600 cars and 10,000 two wheelers.
- Central Parking Services (CPS) will invest INR 85 crore ie. INR 850 mn (~ USD 9.7 mn)
- CPS will pay a fixed annual payment for 10 yrs to BBMP.
- Bengaluru is divided the city into A, B and C zones and fixed zone wise parking fees.
- Tariff: Cars: INR 30, 20 & 15 per hr in zone A, B & C.
- Tariff: Two wheelers: INR 15, 10 & 5 in zone A, B & C.
- CPS has also provided the facility of sending an SMS of the payment receipt. The payment can be done by cash or any Unified Payment Interface (UPI) service.



Source: [The Hindu](#)



Source: [International Business Times](#)

7 Proposals

To address the parking challenges faced by Kanpur, a comprehensive parking management system is proposed. Firstly, a revised parking tariff system is suggested, aligning fees with land occupancy costs to optimize space usage and generate revenue for infrastructure improvement. Amendments to existing bylaws should mandate adequate parking provision within buildings, reducing on-street parking and fostering organized parking. Smart parking solutions leverage technology for efficient space utilization and time savings, while multi-level parking structures maximize capacity without excessive ground usage. Encouraging greater use of public transport and integrating parking with pedestrian area initiatives aim to reduce private vehicle usage and ease congestion. Finally, public awareness campaigns educate the community about responsible parking, promoting a sense of responsibility and supporting the adoption of smart parking solutions. This integrated approach promises to make Kanpur's parking system more efficient, sustainable, and community-oriented.


7.1 Revised Parking Tariff to Reflect Land Occupancy Costs

Proposal: Implement a revised parking tariff system that accurately reflects the cost of land occupied by parked vehicles. This system should consider factors such as location, demand, and the value of the land to establish parking fees. Different zones within the city can have varying tariffs based on land values and demand for parking in those areas. Below is an indicative rate chart from Kolkata.


THE PROPOSED RATE CHART

■ For cars/four-wheelers			■ For two-wheelers		
Hours	Existing rate	Proposed rate	Hours	Existing rate	Proposed rate
Up to 1 hour	₹10	₹20	Up to 1 hour	₹5	₹10
Up to 2 hours	₹20	₹40	Up to 2 hours	₹10	₹20
Up to 3 hours	₹30	₹80	Up to 3 hours	₹15	₹40
Up to 4 hours	₹40	₹120	Up to 4 hours	₹20	₹60
Up to 5 hours	₹50	₹160	Up to 5 hours	₹25	₹80

For each additional hour beyond 5 hours, ₹100 will be charged per hour
For each additional hour beyond 5 hours, ₹50 will be charged per hour



It is difficult to find parking space in the New Market area as either hawkers usurp the demarcated zones or there are way too many vehicles for the limited demarcated zones; (top right) the current parking fee chart



Source: [Kolkata Municipal Corporation](https://www.kmc.gov.in/)

Benefits

- Encourages optimal use of parking spaces by pricing them according to the value of the land.
- Generates revenue that can be reinvested into improving parking infrastructure and promoting sustainable transportation.

7.2 Amendments to Existing Byelaws and Adequate Parking Provision within Buildings

Proposal: Revise existing byelaws to make it mandatory for new residential, commercial, and public buildings to provide adequate parking spaces based on their capacity and purpose. The number of parking spaces should be determined by local authorities in collaboration with urban planners.

DISTRICT CONSUMER FORUM RULES

'Only one parking space for each member of a housing society'

Kanchan Chaudhari

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MUMBAI: A co-operative housing society is not bound to provide more than one parking space to a member, a district consumer forum in the city observed while dismissing complaint of a Borivli (East) resident, challenging a penalty levied on him by the housing society for parking two more cars in addition to the one for which parking space has been provided.

Vijay Pandit approached Mumbai suburban district consumer forum complaining about the penalty imposed on him by Dheeraj Enclave Tower IA Co-operative Housing Society.

Pandit, who is a housing society member, was allotted one car parking space on the society premises.

According to his complaint,

he bought a second car in 2011 and, a third one a year later. For both these additional cars, the society charged Rs500 as penalty.

On August 2, 2014, the housing society passed a resolution and enhanced the penalty from Rs500 to Rs2,000, and asked all its members, who owned more than one car, to park the additional cars outside the society premises from August 31, 2014.

Pandit did not move his two additional cars outside the society. So the housing society levied penalty at the rate of Rs500 per car per day.

The member then approached the consumer forum, seeking the cancellation of extra parking charges and penalty.

The suburban district consumer forum rejected

the complaint noting that in compliance of rules the co-operative housing society has provided parking space for one car of the complainant, and it is not bound to provide parking spaces for more than one vehicle for its members.

The forum said that the complainant was using the premises of the society for parking his additional vehicles, without permission of the society and so penalty was levied.

"Thus, the dispute appears to be about the penalty imposed by the housing society, and not about providing any service to the complainant, and therefore the dispute does not fall within the purview of the Consumer Protection Act," said the forum while dismissing the complaint.

Source: Sahakarsutra

Benefits

- Ensures sufficient parking spaces are available, reducing on-street parking and associated traffic congestion.
- Fosters organized parking within premises, promoting a systematic approach to parking management.

7.3 Smart Parking Solutions

Proposal: Implement smart parking systems that utilize technology to guide drivers to available parking spots, enhancing the overall parking experience.

Benefits

- Time Efficiency - Quick identification and guidance to available parking spaces, reducing the time spent searching for a spot. Reservation systems offer convenience and time savings by allowing users to secure parking in advance.
- Space Optimization - Real-time data on parking space occupancy optimizes the use of existing parking infrastructure. Reduces the need for large parking areas, contributing to more sustainable urban planning and potential cost savings.

7.4 Multi-level Parking Structures

Proposal: Construct multi-level parking facilities in high-demand areas to maximize parking capacity without occupying excessive ground space.



Source: [BISinfotech](#)



Source: [The New Indian Express](#)

Benefits

- **Reduced Land Usage** - Multi-level parking facilities help conserve valuable land by accommodating more vehicles in a smaller area. This is particularly beneficial in urban settings where available space is limited, allowing for optimized land usage and potentially freeing up land for other purposes.
- **Increased Capacity** - Multi-level parking structures provide a higher overall parking capacity compared to traditional single-level lots. The vertical stacking of parking

spaces allows for more cars to be accommodated, addressing the growing demand for parking in densely populated or urban areas.

7.5 Encourage Greater Use of Public Transport

Proposal: Develop and implement a comprehensive policy that incentivizes and promotes greater usage of public transportation. This can include fare subsidies, improved service quality, enhanced route networks, and last-mile connectivity options to make public transport a more attractive choice for commuters.

Benefits

- Reduces the number of private vehicles on the road, consequently easing parking demand.
- Decreases traffic congestion and associated environmental pollution.

7.6 Parking as a Supplement to Pedestrian Area Initiatives

Proposal: Integrate parking solutions as a part of pedestrian area initiatives, ensuring sufficient parking facilities on the outskirts of pedestrian zones. Implement park-and-ride facilities to facilitate easy transition from private vehicles to non-motorized and public transport options within these zones.



Source: [Academic Accelerator](#)



Source: [CAG Citizen Consumer and Civic Action Group](#)

Benefits

- Encourages the reduction of vehicles within crowded parts of the city, making them more pedestrian-friendly.
- Provides convenient parking options for those transitioning to non-motorized and public transportation modes.

7.7 Public Awareness Campaigns

Proposal: Implement public awareness campaigns in Kanpur to educate the community about responsible parking habits, encourage public transport use, and reduce chaotic parking issues



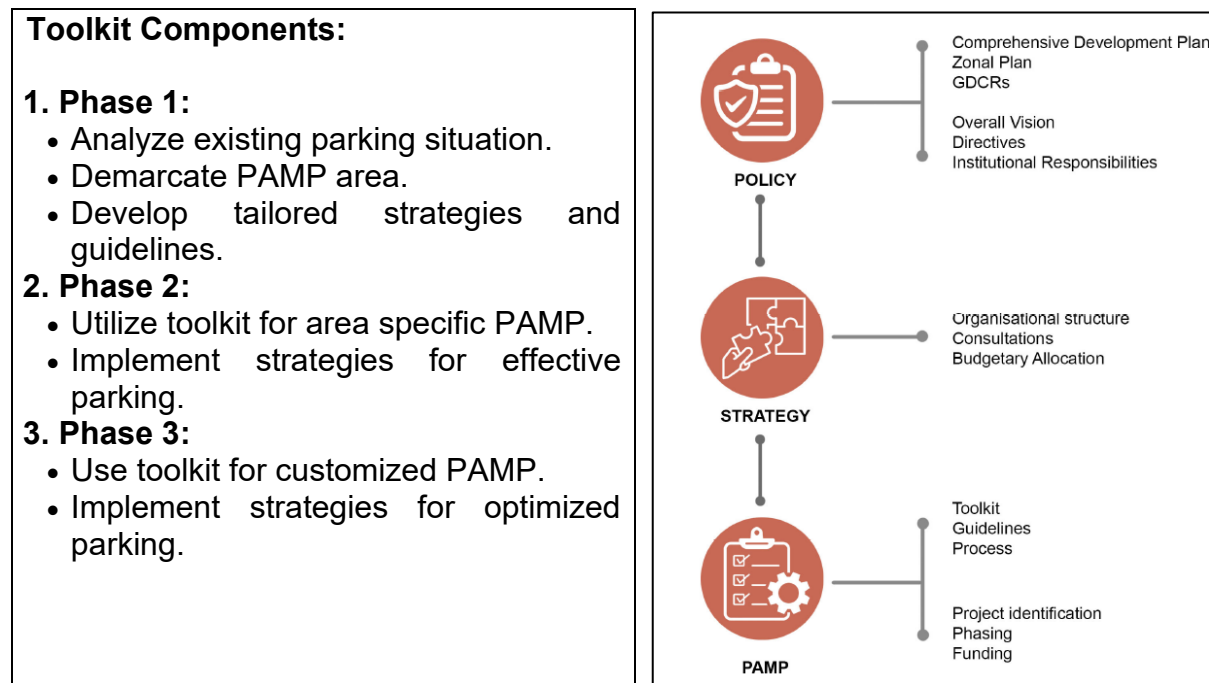
Source: [Tripura Times](#)

Benefits:

- Increased awareness leads to responsible parking, contributing to smoother traffic flow and reduction in traffic congestion.
- It can also ensure community cooperation as Informed communities are more likely to collaborate on solutions, such as supporting new parking facilities and participating in carpooling initiatives.

7.8 Adopt a Parking Area Management Plan (PAMP)

Proposal: Implement a Parking Area Management Plan (PAMP) in Kanpur using the relevant Toolkit developed by CEPT, COE-UT and other institutions to address parking challenges, optimize resource usage, and improve traffic flow.²



Benefits:

- Promotes efficient parking resource use.
- Achieves improved traffic flow.
- Enhances urban mobility.

8 Conclusion

The city of Kanpur is grappling with significant parking challenges stemming from rapid urbanization, a burgeoning population, and an increase in vehicle ownership. The issues are multi-faceted and include limited parking spaces, illegal parking, mixed land use conflicts, absence of a comprehensive parking management strategy, inadequate infrastructure, and a growing number of vehicles. One of the key challenges is the

² <https://crdf.org.in/project/parking-area-management-plan-pamp-for-bhubaneswar-toolkit>

inadequate availability of designated parking spaces in proportion to the increasing vehicle numbers, resulting in illegal and chaotic parking practices. These issues are further exacerbated by the mixed land use pattern, where the demand for parking spaces varies between residential and commercial areas.

The City of Kanpur has taken a number of measures to address the challenges in a comprehensive manner. At the same time additional strategic actions are essential. Proposals include implementing a revised parking tariff system reflecting land occupancy costs, encouraging public transport usage, amending existing byelaws to enforce adequate parking provision within buildings, and integrating parking solutions into pedestrianization initiatives. Drawing from successful global and national examples like the Smart Parking Solutions in Dubrovnik, Barcelona, Stockholm and Bangalore, Kanpur can benefit from adopting technology-driven parking solutions and multi-level parking structures. These measures will not only streamline parking but also contribute to reducing traffic congestion and enhancing the overall quality of life in the city.

Additionally, public awareness campaigns and effective public-private partnerships can play a pivotal role in creating a sustainable and efficient parking ecosystem. A holistic approach considering urban planning, technology integration, policy reforms, and community involvement is essential to effectively mitigate the parking challenges faced by Kanpur and pave the way for a more sustainable and accessible urban environment.

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