

Case Study – Agra

Agra is an ancient city on the banks of the river Yamuna. It is situated on the Golden Triangle tourist circuit with Delhi and Jaipur. Agra is famous for its Mughal architecture and is home to one of the Seven Wonders of the World, the Taj Mahal - a monument of incredible elegance and architectural perfection.

The Issues and challenges faced by the Municipal Corporation of Agra, Uttar Pradesh

*Agra's cleanliness and sanitation have been problematic for the city, which ranked 263 in 2017's Swachh Survekshan. Agra produces a massive 960 tonnes of waste daily, and the irregularity of waste collection has already resulted in the city witnessing garbage heaps on the roads. Open waste causes the release of fine particles and other toxic gases that penetrates deep into human lungs and bloodstreams, resulting in multiple health concerns. Out of Agra's 90 wards, some witnessed irregular waste collection compared to others.

The city's sanitation department cannot work to its total capacity to remove debris or garbage from city roads and roadsides, collect waste from households, mechanically clean and maintain public toilets and urinals, and clean statues and signboards. Agra also has little mounds of garbage that can be seen across Agra's roads. Some of the other massive challenges faced by Municipal Corporation, Agra, Uttar Pradesh are:

- Little attention to detail in cleaning activities across the city, road markings, roads, and footpaths.
- Indiscipline amongst sanitation workers, regular absenteeism, non-usage of safety gears and uniforms, lack of accountability, and performance tracking results in inefficient service delivery.
- Illegally dumping waste on roads and irregular cleaning schedules lead to garbage piling up on the street corners or roads.
- Inefficient complaint redressal mechanism leads to delayed action to citizens' complaints.
- Sanitation workers face elevated risks while working on the roads without proper tools and equipment during peak traffic hours.

Our Objectives –

- To bring transparency to Agra's sweeping system.
- To mark beats in Agra through GIS-based mapping to eliminate the possibility of any area being left unexplored for sweeping roads, cleaning toilets, urinals, statues, signboards, door-to-door garbage collection and waste transportation.
- To create Agra's integrated 'wall to wall' and beats-based cleaning model.
- To fix accountability of the workforce who would give proper attention to the assigned area.
- To create a comprehensive monitoring system to keep track of every individual's work and a fleet for operational accuracy.
- Mechanically sweep city roads, manually clean, and sweep roads in the periphery of Taj Mahal, wash city signboards and statues, waste transportation at night using imported machines and manually haul dust off the roads and road dividers.

Advantages We Deliver

With domain expertise for over 57 years, we endeavour to improve the life cycle of municipal infrastructure by integrating technological advancements within the existing system. We are committed to turning Swachh Bharat's dream into a reality. Our wide range of innovative and fully integrated municipal services has made us the preferred choice of municipal bodies across India.

Pioneering innovation in every aspect of the business, LSL offers specialised services, including maintenance of public utilities, solid waste management, and city infrastructure management. We serve Municipal Corporation, Agra, for **GIS-based Door to Door MSW Collection and Transportation, Mechanical and Manual Sweeping of Roads and Cleaning Services** using our best practices and effective decision-making tools.

- **Superior Cleaning** – We use the best-in-class imported machine Dulevo that minimises the dust cloud formation while sweeping the city roads. We use power washing equipment to clean city signboards, statues, public toilets, and urinals to ensure superior city cleaning.
- **Maintain Cleaning Operations Data** – We continuously monitor the routes of sweeping machines and staff attendance using a real-time GIS tracking system to maintain cleaning operations data regularly.
- **Enhance Employee Safety** – While sanitation workers manually sweep the roads using brooms during peak traffic hours, they are more likely to encounter accidents. Mechanically sweeping roads and washing signboards and statues using proper tools and equipment during peak traffic hours reduce the possibility of accidents.
- **Ensure Better Public Health** – Dirty roads, pavements, roadsides, public toilets, and urinals are unsanitary and can become breeding ground for pests that are likely to spread diseases among the city population. We sweep roads and clean public toilets and urinals regularly to ensure better public health.
- **Increase Productivity** – One mechanical sweeper can work equivalent to the human strength of 15-20 manual sweepers and can sweep approximately 10X times the area as compared to a manual sweeper; we ensure increased productivity using our machines while achieving superior performance cleaning.
- **Night-time Operations** – It allows for more efficient road sweeping without disruption to daytime traffic and ensures the safety of the sanitation workers.
- **Improve City Aesthetics** – Keeping the statues, city roads, and signboards clean is necessary for easy manoeuvrability. To contribute to citizens' pride and helps boost the city's tourism, it is essential to keep public toilets and urinals clean and timely collect garbage from households to ensure that residents do not illegally dump waste on city roads.

GIS-Based Tracking System for Mechanical Sweeping

Operation Tracking

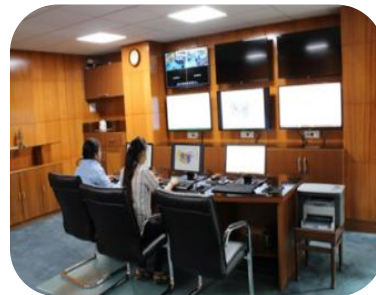


A complete route map of all vehicles is displayed as per working hours to ascertain coverage of all roads.



GPS device on the machine helps to identify speed graphics in case of over-speeding or vehicle standing idle. In case of deviations from the assigned route, SMS alerts are sent to official mobile numbers for immediate rectification.

Monitoring at Operation Command



The entire Cleaning System is monitored and tracked at the Operation Command Centre by LSL executives and MC representatives followed by the submission of reports to authorities.

GIS-Based Tracking System for Manual Sweeping



The entire city is divided into beats with specific colour coding for complete coverage.



All beats are segregated up to street level view and are enabled with colour coding for adequate area knowledge.



Field officers visit all beats and click real-time images, which are then uploaded on the tracking software for the command centre to verify.

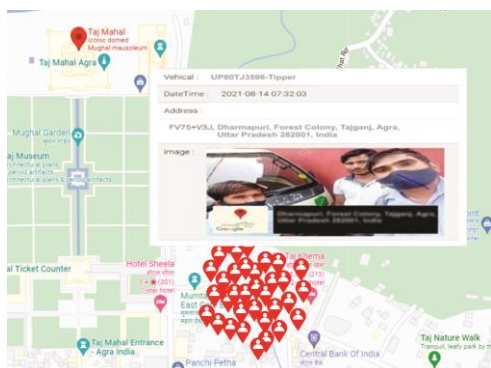


All beats are marked with white balloons to show that work hasn't been commenced for the day.



Once the work is complete, all the white balloons in the respective beats turn green.

Door-to-Door Waste Collection - Staff Attendance



Project Details Agra, Uttar Pradesh

Sr No.	GIS-based Mechanised & Manual City Cleaning Project	Details
1	Name of the Nodal Agency for the Project	Municipal Corporation, Agra
2	Name of the Company	Lion Services Ltd.
3	Work Period Awarded for the Project	Five Years
4	Length of Roads Assigned for Mechanised Sweeping – A Roads	57 KM
5	Length of Roads Assigned for Manual Sweeping – B & C Roads	425 KM (i.e., 469 Beats)
6	Frequency of Mechanised Road Sweeping	Alternate Days
7	Frequency of Manual Road Sweeping	Daily
8	Frequency of Statues and Signboards Washing	Once a week
9	Frequency of Door-to-Door Garbage Collection	Daily
10	Frequency of Waste Transportation	Daily