ABSTRACT

EcoTrack – Smart Waste Collection Management System is a comprehensive and intelligent web- based solution designed to modernize and optimize urban waste management. By seamlessly integrating citizens, waste collectors, and administrators into a unified platform, the system enhances operational efficiency, ensures accountability, and promotes sustainable environmental practices.

Citizens can conveniently request waste pickups by specifying the type of waste and preferred date and time, reducing delays and manual intervention. Administrators have full control over the waste management workflow, enabling them to assign collectors to requests, monitor task completion in real time, manage citizen complaints, and generate detailed performance and analytical reports. Collectors can efficiently manage daily assignments, update task statuses, track their work history, and evaluate their performance, thereby improving productivity and service quality.

The system is built using **Python Django** for a robust backend, **MySQL** for secure and scalable data storage, and **HTML, CSS, and JavaScript** for an interactive and responsive frontend. EcoTrack also incorporates **Leaflet.js for interactive mapping**, allowing precise geolocation of pickup points and improving logistical planning. Its **role-based access control, intuitive dashboards, and automated notifications** ensure seamless communication and coordination among all stakeholders.

By automating manual processes, providing real-time insights, and enabling data-driven decision- making, EcoTrack significantly reduces operational inefficiencies, enhances transparency, and fosters civic engagement in waste management. This system serves as a critical tool for smart city initiatives, facilitating environmentally responsible practices, sustainable urban living, and improved quality of life for residents.