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City Level Applied Research Project – A Summary

DEVELOPMENT OF LOW EMISSION ZONE (LEZ) IN OLD CORE CITY AREAS: A CASE OF VIJAYAWADA CITY

1. OVERVIEW

Urban areas worldwide face escalating levels of air pollution primarily attributed to vehicular traffic, which typically contributes 20-30% of particulate matter. Vehicular activities are often concentrated in core city areas due to more economic opportunities, exacerbating air quality issues worsened by poor infrastructure in these areas. To address these concerns and support national initiatives like the National Clean Air Programme (NCAP), strategies such as implementing Low Emission Zones (LEZs) have gained prominence.

Initially introduced in Sweden in 1996, LEZs have been adopted globally under various names such as "environment zones" in Germany, "restricted traffic zones" in France, "clean air zones" in London, and "electric vehicles-only areas" in India. Each implementation tailors' criteria to local needs, specifying designated regions, operational times, permissible vehicle types, and plans for gradually expanding restrictions.

In India, where air pollution is a serious concern, adopting an LEZ strategy in old core city areas holds significance. These zones would restrict access to vehicles with higher emissions, improve infrastructure to promote active mobility, and reduce pollutants harmful to public health and the environment. This strategy not only aligns with national efforts but also addresses regulatory mandates aimed at enhancing local air quality and fostering a healthier environment and better quality of life for residents, thereby supporting long-term sustainable development goals.

2. Project Major Milestones

(Timeline: December 2024 to September 2024)

Stage 1: Literature Study

This stage will involve a comprehensive review of the existing norms, byelaws, and policies relevant to the implementation of Low Emission Zones (LEZ). It will also include a review of



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current initiatives related to LEZ implementation, best practices, and transport plans that focus on LEZ, Low Carbon Mobility (LCM), and Non-Motorized Transport (NMT) and other relevant literatures.

Stage II: Stakeholder Consultation

During this stage, consultations will be conducted with key stakeholders, including relevant line departments, to gather their insights and viewpoints regarding the LEZ concept. These discussions will help in formulating the project vision and identifying critical focus areas. Additionally, the selection of potential sites for LEZ implementation in Vijayawada will be finalized in this phase.

Stage III: Primary Surveys and Secondary Data Collection

This stage will involve the collection of primary data through transportation surveys, land use surveys, and climatic data collection. Secondary data related to traffic patterns, air quality, and other relevant metrics will also be gathered to support the analysis in the next stages of the project

Stage IV: Interpretation of Primary and Secondary Survey Data

During this stage, the collected data will be analysed using transportation modelling and environmental modelling techniques. The results will inform the development of alternative strategies and potential scenarios for the implementation of a Low Emission Zone (LEZ).

Stage V: Report Compilation and Submission

The final stage will involve the compilation of all findings, analyses, and recommendations into a comprehensive report summarizing the methodologies, data interpretations, and proposed strategies.

3. Study Area

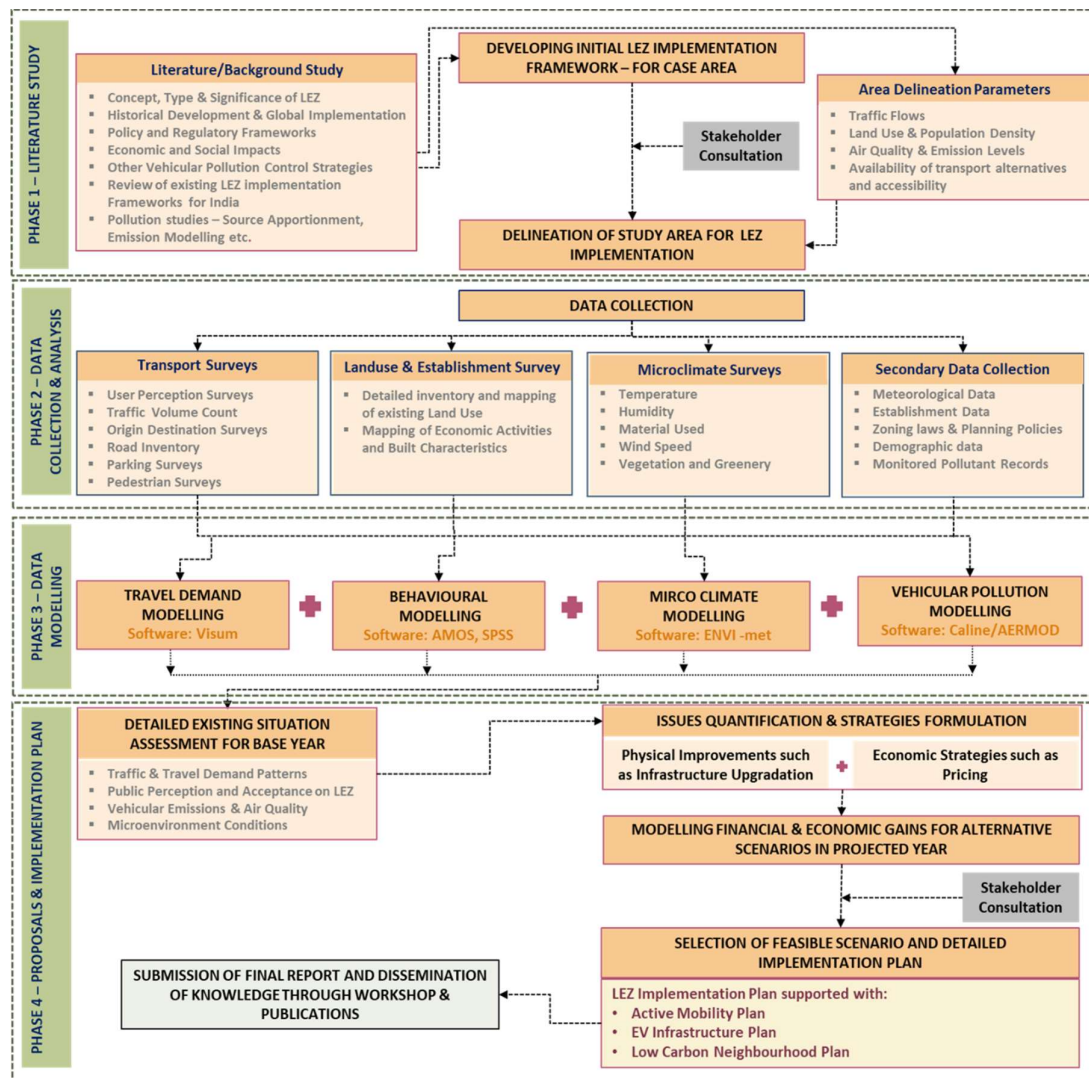
Vijayawada, has been selected as the case area for implementing a Low Emission Zone (LEZ). Since the city is experiencing rapid population growth and urbanization, and is poised for further expansion. As the commercial hub of the state and the second-largest city after Visakhapatnam, Vijayawada Municipal Corporation spans an area of 61.88 km² and serves as a crucial rail and road link between North and South India. Its strategic location connects the

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three regions of Andhra Pradesh and functions as a major transit point, attracting substantial vehicular traffic daily.

The old city area of Vijayawada features a dense urban fabric characterized by narrow streets and a mix of residential, commercial, and institutional buildings which is clustered around these key transportation nodes. Given these factors, identifying and delineating specific zones for the implementation of LEZs is crucial. Such zones will aim to restrict access for polluting vehicles, thereby improving overall air quality.

4. At a Glance: The Project Methodology Flowchart





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5. Tools & Techniques

Software and Statistical Tools and Techniques to be used include, (but not limited to) are as follows:

- **VISSUM:** This software will be employed to simulate traffic conditions and assess the impact of various transportation strategies.
- **CALINE or AERMOD:** These software's will be used for environmental modelling, focusing on the dispersion of pollutants in urban areas.
- **SPSS, AMOS, or XLSTAT:** These tools will be used for conducting advanced statistical analysis.
- **ENVIMET:** It will be used to simulate urban microclimate.
- **ArcGIS:** This tool will be utilized for spatial mapping and spatial analysis.

6. Deliverables and Outcomes:

- Establishment of clearly delineated LEZ zones where access is restricted or regulated based on vehicle emissions criteria with specification of boundaries, operational hours, and permissible vehicle types
- Active mobility plan for delineated LEZ
- Engagement with locals and all stakeholders to ensure understanding and support for LEZ implementation
- Outline a phased implementation plan with timelines, responsibilities, and required resources.

For more details, please contact:

Dr. Prashanti Rao

(Co-Principal Investigator),
Assistant Professor, SPA Vijayawada
Email: prashanti.swe@spav.ac.in

Dr. Naina Gupta

(Principal Investigator)
Assistant Professor, SPA Vijayawada
Email: nainagupta@spav.ac.in

OR

OR Write to: projects.acupcb@spav.edu.in

OR Visit: www.acupcb.spav.ac.in