

Citadel Consulting

<u>Team Member Name</u>	<u>Year</u>	<u>Major</u>
Member 1. Rylee Pearl	3	Accounting
Member 2. Adrianna Timmons	3	Economics
Member 3. Braden Marshall	3	Accounting

Advisor(s): Dr. Miguel Morales

Topic Title: Pouring Pollution Back into Cities: Concrete Solutions for Carbon Capture

Audience: Board of Directors of Mahindra Lifespace Developers Ltd.

Sustainable Development Goals

SDG #9: Build resilient infrastructure, promote sustainable industrialization, and foster innovation.

SDG #11: Make cities and human settlements inclusive, safe, resilient, and sustainable.

Executive Summary

India is currently experiencing one of the highest population growth rates globally, which is driving an increased demand for urban development and new infrastructure. During these projects, concrete— a key material used in the production of urban infrastructure— produces many direct and indirect environmental externalities, such as significant carbon emissions. Since concrete is a key building material, a sustainable solution to reduce these externalities must be developed. By integrating carbon injection technology into concrete production, we can permanently trap harmful carbon emissions within the concrete produced. This approach leverages carbon emissions to create a sustainable building material while simultaneously recognizing the urgent demand for ongoing infrastructure development.

Our team at Citadel Consulting presents an innovative technology to Mahindra’s Board of Directors, proposing the integration of carbon injection into their supply chain. Not only does this process align with sustainable development goals, but the carbon capture process also enhances the resilience of concrete structures, extending the lifespan of infrastructure and creating a more durable product. As such, this cost-effective process reduces long-term maintenance costs and future redevelopment costs by increasing the longevity and resilience of urban infrastructure. India’s rapid growth offers a unique opportunity for Mahindra Lifespace Developers Ltd. to pave the way for more sustainable cities of the future. Through incentives to suppliers incorporating carbon injection into their processes, Mahindra can increase the sustainability and quality of their offerings while pioneering innovation.