

Re-Appropriating The Economic Site To Improve Socially Sustainable Living

A THESIS

Submitted in partial fulfillment of the requirements for the award of Master of
Architecture degree in Sustainable Architecture

By

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BONAFIDE CERTIFICATE

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DECLARATION

I, **Gopika J** hereby declare that the Thesis Report entitled "Re-appropriate the economic site into social sustainable living" done by me under the guidance of **Dr.Ebin Horrison S** (Internal Guide), **Ar.Catherine Selvaraj** (Internal Review Member) and **Ar.Krithikha Muthukrishnan** (External Guide) at Sathyabama Institute of Science and Technology is submitted in partial fulfillment of the requirements for the award of Master of Architecture degree in Sustainable Architecture.

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ABSTRACT

In an era marked by pressing environmental concerns and social inequality, the imperative for sustainable development has never been more pronounced. This thesis explores the transformative potential of repurposing commercial zones into dynamic hubs that facilitate socially sustainable communities. Through a combination of theoretical analysis and case studies, this research investigates the multifaceted dynamics of such transformations, considering the intersection of economic, social, and environmental factors.

In the wake of escalating environmental degradation and widening socioeconomic disparities, the imperative for sustainable urban development has become increasingly urgent. This thesis delves into the transformative potential of reimagining commercial zones as vibrant centers for fostering socially sustainable communities. Through a comprehensive examination of the process of economic site reappropriation, this research aims to elucidate strategies for revitalizing urban spaces to promote equitable access to resources, enhance community cohesion, and elevate overall well-being. Central to this exploration is the recognition of commercial zones as pivotal loci where economic activity intersects with social life. By reconceptualizing these spaces as more than mere engines of commerce, but as potential catalysts for community empowerment and resilience, this thesis advocates for a paradigm shift in urban planning and development practices. Key considerations include the equitable distribution of resources, the cultivation of inclusive public spaces, and the promotion of sustainable business models that prioritize social and environmental responsibility. Through its rigorous examination of economic site reappropriation, this thesis not only contributes to advancing scholarly understanding of sustainable urban development but also offers actionable insights for policymakers, urban planners, and community stakeholders.

Keywords: Equitable, Social sustainable, The cultivation of inclusive public spaces, Economic Site Re-appropriation.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE PROJECT

In an era marked by pressing environmental concerns and social inequality, the imperative for sustainable development has never been more pronounced. This thesis explores the transformative potential of repurposing commercial zones into dynamic hubs that facilitate socially sustainable communities. By examining the process of economic site reappropriation, this study seeks to illuminate strategies for revitalizing urban spaces to promote equitable access to resources, foster community cohesion, and enhance overall quality of life. Through a combination of theoretical analysis and case studies, this research investigates the multifaceted dynamics of such transformations, considering the intersection of economic, social, and environmental factors. By elucidating the opportunities and challenges inherent in this endeavor, this thesis aims to contribute to the discourse on sustainable urban development and offer insights for policymakers, urban planners, and community stakeholders alike.

Urbanization trends worldwide have led to the proliferation of commercial zones that, while driving economic growth, often neglect the social and environmental dimensions of sustainability. Traditional urban development practices have prioritized profit-driven ventures over community well-being, resulting in the marginalization of certain populations, the degradation of natural ecosystems, and the erosion of social cohesion.

The project is situated within the broader context of sustainable development discourse, which increasingly emphasizes the interconnectedness of economic prosperity, social equity, and environmental stewardship.

1.2 NEED OF THE PROJECT

The urgent need for this project stems from several interconnected challenges facing contemporary urban environments:

Social Inequity: Many urban areas are plagued by stark social inequalities, with marginalized communities often lacking access to essential services, economic opportunities, and quality public spaces. Transforming commercial zones into hubs for socially sustainable communities offers a promising avenue for addressing these disparities by creating inclusive environments that cater to the needs of all residents.

Environmental Degradation: Conventional urban development practices have often prioritized economic growth at the expense of environmental sustainability, leading to pollution, habitat destruction, and resource depletion. Reappropriating commercial sites for socially sustainable purposes presents an opportunity to integrate green infrastructure, promote eco-friendly transportation options, and foster a more harmonious relationship between urban areas and the natural world.

Community Well-being: The erosion of social cohesion and a sense of belonging in urban neighborhoods has detrimental effects on residents' mental and physical health. By revitalizing commercial zones as vibrant community hubs, complete with gathering spaces, cultural amenities, and locally-owned businesses, this project aims to enhance residents' quality of life and strengthen social ties within neighborhoods.

Economic Resilience: The COVID-19 pandemic has underscored the vulnerability of many commercial establishments to external shocks, leading to widespread closures and economic hardship. Repurposing commercial zones to accommodate a diverse array of uses, including affordable housing, co-working spaces, and community gardens, can help build economic resilience by diversifying local economies and reducing dependence on a single sector.

Urban Livability: As cities continue to grow and densify, there is a growing recognition of the importance of creating livable, human-scale environments that

prioritize people over cars and commerce. By reimagining commercial zones as pedestrian-friendly, mixed-use districts that prioritize human-scale design and placemaking, this project aims to contribute to the creation of more vibrant, resilient, and sustainable urban communities.

In light of these pressing challenges, the need for innovative approaches to urban development that prioritize social sustainability, environmental stewardship, and community well-being has never been more urgent. This project seeks to fill this gap by exploring the transformative potential of economic site reappropriation as a means to create more inclusive, resilient, and livable urban environments for all residents.

1.3 RESEARCH QUESTIONS

The major research questions for the project to develop the framework are

What are the underlying economic, social, and environmental drivers prompting the reappropriation of commercial zones for socially sustainable purposes?

How do urban planners and policymakers navigate the complexities of balancing economic viability with social and environmental considerations in the process of reimagining commercial spaces?

What are the key challenges and barriers encountered in the transformation of commercial zones into hubs for socially sustainable communities, and how can these obstacles be effectively addressed?

What are the underlying drivers and challenges of economic site reappropriation in the context of urban development?

How can the repurposing of commercial zones contribute to the creation of socially sustainable communities?

What strategies and best practices can be gleaned from successful case studies of economic site reappropriation around the world?

1.4 AIM OF THE STUDY

The primary aim of this thesis is to investigate the potential of transforming commercial zones into hubs for socially sustainable communities through the process of economic site reappropriation. contribute to the advancement of knowledge in the field of sustainable urban development and provide valuable guidance for stakeholders seeking to harness the potential of economic site reappropriation as a catalyst for positive change in urban communities.

By delving into the multifaceted dynamics of this phenomenon, the study seeks to:

- Explore Opportunities
- Examine Challenges
- Evaluate Strategies
- Engage Stakeholders
- Inform Policy and Practice

1.5 OBJECTIVES OF THE STUDY

- The objectives of this thesis are multifaceted, aiming to comprehensively explore the potential, challenges, and strategies involved in the transformation of commercial zones into hubs for socially sustainable communities through economic site reappropriation.
- Firstly, it seeks to identify and analyze the driving forces behind this phenomenon, encompassing economic, social, and environmental factors that motivate such transformations.
- Secondly, the study endeavors to delve into the various challenges and barriers encountered throughout the reappropriation process, including regulatory complexities, financial viability concerns, and potential resistance from stakeholders.

1.6 SCOPE & LIMITATIONS OF THE STUDY

Despite the comprehensive scope outlined above, it is important to acknowledge certain limitations of this study:

Geographic Focus: The study may primarily focus on case studies and examples from specific geographic regions, potentially limiting the generalizability of findings to other contexts.

Time Constraints: Due to time constraints inherent in academic research, the study may not be able to comprehensively cover all aspects of economic site reappropriation and its implications.

Data Availability: Availability of data and information on economic site reappropriation initiatives may vary, potentially limiting the depth of analysis for certain case studies.

Stakeholder Perspectives: While efforts will be made to engage with a diverse range of stakeholders, there may be limitations in capturing the full spectrum of perspectives and experiences related to economic site reappropriation.

Policy Context: The study may not be able to fully account for the nuanced policy contexts within which economic site reappropriation initiatives operate, potentially impacting the feasibility and effectiveness of recommended strategies.

Despite these limitations, the study endeavors to provide valuable insights and recommendations for advancing the discourse on sustainable urban development through economic site reappropriation.

CHAPTER 2

LITERATURE REVIEW

2.1 LITERATURE REVIEW ON JOURNALS

2.1.1 STREET VENDORS AND URBAN AND PERI-URBAN AGRICULTURE: SCENARIOS FROM MUMBAI METROPOLITAN REGION (MMR), INDIA

Prem Jose Vazhacharickal

ABSTRACT: Rapid urbanization in India creates social problems where urban and peri-urban agriculture (UPA) has a role of in reducing urban poverty and ensuring environmental sustainability. Mumbai Metropolitan Region (MMR) is a fastest growing region in India with a population of 21 million where high proportion of urban poor along with higher migration to MMR makes the region vulnerable to food crisis. This paper focuses on the current situation street vending and UPA production systems in MMR with special attention towards their contribution towards the local services. An over view about the various concepts of street vending were also presented

Research Methodology: Qualitative Method – Literature Study and Case Study

Inference: The affordability and availability of vegetables and fruits plays a major role in sustainable developing process which improves nutritional balances and macroeconomic stability. Relationships among street vendors and customers are a key component of the social activity. Bribery as well as lack of financial credit may hamper the wellness of street vending business in MMR. Urban planning with the incorporation of street vendors may improve their livelihood and working conditions.

2.1.2 HAWKERS AND THE URBAN INFORMAL SECTOR: A STUDY OF STREET VENDING IN SEVEN CITIES

Bhowmik S (2006)

Aim: This report is based on a study of hawkers and street vendors conducted in seven cities in India. It was initiated by the National Alliance of Street Vendors of India (NASVI) and as such it is not merely an academic exercise in understanding the problems of this section of the work force. The purpose of this study is two-fold. Firstly, it tries to objectively understand the problems of street vendors in urban areas. Its scope is not restricted to street vendors alone but it tries to relate the profession in the wider urban context by examining the legal status of hawkers, their contribution to the urban economy, the problems they face, the perceptions of the urban population towards them, and the their position in urban society.

Research Methodology: Qualitative Method – Literature review, Case Study and Interviews

Inference: Recognition of hawking as a profession would also benefit the municipalities. They would be able to officially enforce levies on hawkers. For example, in Imphal, which is perhaps the only place where hawkers are included in the urban plan, the municipality not only provides space for them but also charges a fee for garbage collection and sweeping, besides collecting license fees. In most cities these fees could amount to several hundred crores of rupees annually. This would provide additional revenue for cash strapped municipalities. Instead the hawkers land up paying more than this amount as bribes to prevent harassment. For the hawkers recognition would mean that they have a right to their profession, which would in turn loosen the stranglehold of corrupt officials, policemen and gangsters over them.

2.1.3 Inclusive Design for Street Vendors in India

Centre of Urban Equity

Aim: This Design Guide explores the challenges of managing street vending in modern India, and explores how inclusive urban design can generate imaginative use of space. The Design Guide adopts a 'rights-based approach' to development, building on the paradigm of the right to the city, which argues for a right for all urban inhabitants to access the benefits of urban life, including street vendors.

Research Methodology: Qualitative Method – Literature review, Case Study and Interviews

Inference: In this Paper, a simple case study is addressed and all the laws and norms respectively with respect to the state and national law. The proposed Bill is aimed at protecting the livelihood rights and social security of street vendors and regulation of urban street vending in the country and ensuring uniformity in the legal framework for street vending across States and Union territories.

2.1.4 STREETS AS PUBLIC SPACES: A CASE STUDY OF MANEK CHOWK

Ar.Amrita Shukla and Prof. Neeraj Desai Navratra

Aim: The main objective of this research where Streets is be defined as artery in a built environment, a public parcel of land connecting various built-up mass in urban context which can be candidly accessed, assembled and interacted. Streets are many times miss understood with roads. The main function of road is transportation, while of street is public interaction and to provide safe commutation to pedestrians.

Research Methodology: Quantitative Method.

Inference: Based on the research findings, few recommendations have been made to the Directorate of Urban Land and Transport and to the authorities of Municipal Corporation of Bangalore to develop Commercial Street into a pedestrian-friendly zone by making it car free.

2.1.5 Pedestrianisation a great necessity in urban designing to create a sustainable city in developing countries

Nasim Iranmanesh – urban designer - Iran

Aim: First of all, pedestrianisation aims to improve pedestrian's safety and mobility. Another important benefit is related to the environment. These schemes can help to reduce both noise and pollution by discouraging or restricting access of non-essential vehicles. Furthermore it helps to promote walking as a transport mode by making the walking experience more enjoyable. The last one means that pedestrianisation creates a pleasant environment that people can involve in different social, cultural and tourism activities as well. We will also notice that pedestrianisation can improve the economical growing of that district **Research**

Methodology: Qualitative Method – Literature Study and Case Study

Inference: urban growth with sprawl is completely unpleasant and unwanted and the correct solution is “intermediate cities” to integrate all of the suitable aspects in a city. As you considered, this article discusses about pedestrianisation and its benefits. In a city with large growth especially in developing countries, one of the cases that usually are neglected is pedestrianisation and attendance of citizens in urban spaces. I hope that with promoting the human's life we could be able in respecting humans' needs in cities as much as possible especially in developing countries. Selecting the Optimum Delay analysis Method for building construction project.

CHAPTER 3

DATA COLLECTION & ANALYSIS

3.1 INTRODUCTION

For generations, street vending has provided vibrancy, colour and a market outlet in Indian cities. However, as the 21st century progresses, the dynamic growth of city populations, the scale of physical development, and globalising economies create new challenges for street vendors, who face changing political, economic and social contexts and increasing competition for space. Today, modern street vending plays a vital role in the urban economy, as a source of jobs, revenue and 'value added' to the economy. Street vending provides a flexible link in economic supply chains, gives vitality to urban streets, and provides affordable goods for many urban residents. Yet street vending exacerbates congestion at busy sites (eg: city centres where competition for space is acute) and vendors lack the facilities for 'decent work'.



Figure - 1 Triple Constraint Theory

HAPPY STREETS

About the initiative

Most of India's cities now have a congested urban setting – a setting which has gradually squeezed out pedestrian space, with pedestrians not able to use encroached pavements and roads that are bursting at the seams with vehicular traffic. The objective of the Happy Streets initiative, thus, has been to work towards getting citizens to 'reclaim their streets' for their own use once more, at least once every week. TOI believes that this will promote a better, stress free environment, community building and use of non- motorized

Figure - 2 Initiatives For Happy Street

3.2 ISSUES AND CHALLENGES

Street vending provides many opportunities: goods and services at convenient locations, and affordable prices; self-employment for large numbers of people; links formal sector with clients; keeps streets clean, busy and safe, creates an interesting city environment.



Figure - 3 Poor Maintenance and Child Labour



Interesting city environment



Employment for many people



Keeps street busy



Outlet for formal sector goods



Provides affordable goods



Goods available at convenient locations

Figure – 4 Issues and Challenges

3.3 Problem For Street Vendors

Lack of space (eg: surfaced pavements and secure vending sites) and lack of facilities (eg: shelter, street drainage, water and toilets, or storage) cause major problems for vendors.



No street furniture



No space for street vendors



No stormwater run-offs



No utilities

Figure – 5 Problem State

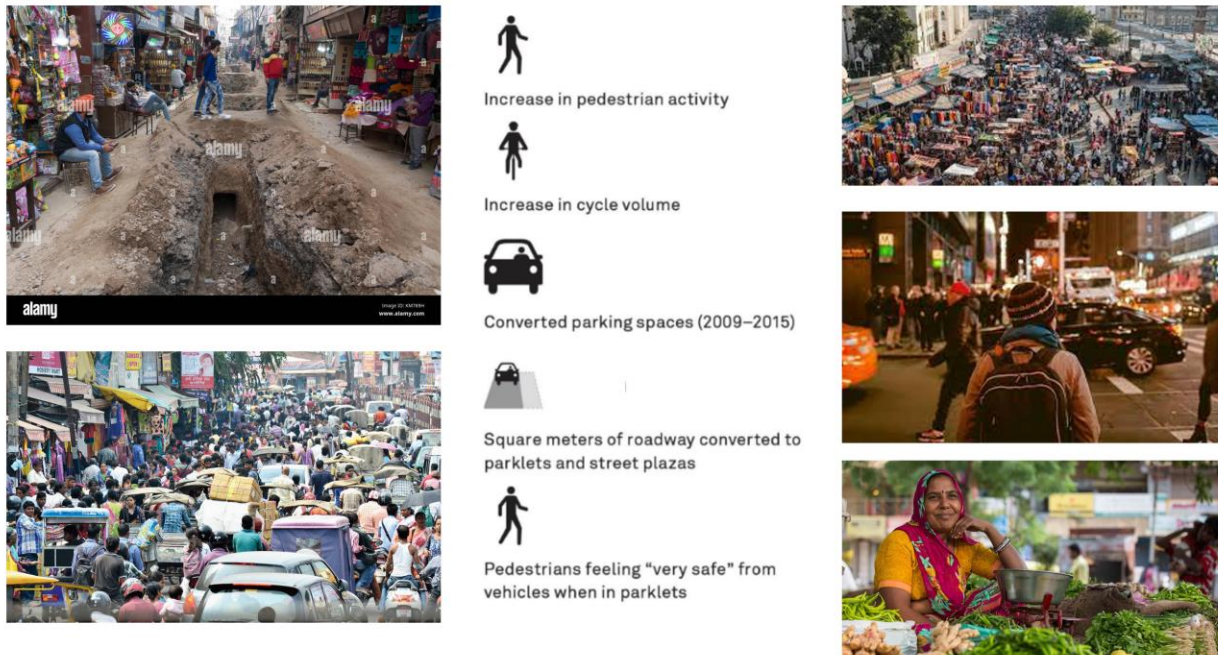


Figure – 6 Problem State and Solutions

3.4 GREEN NEIGHBOURHOOD

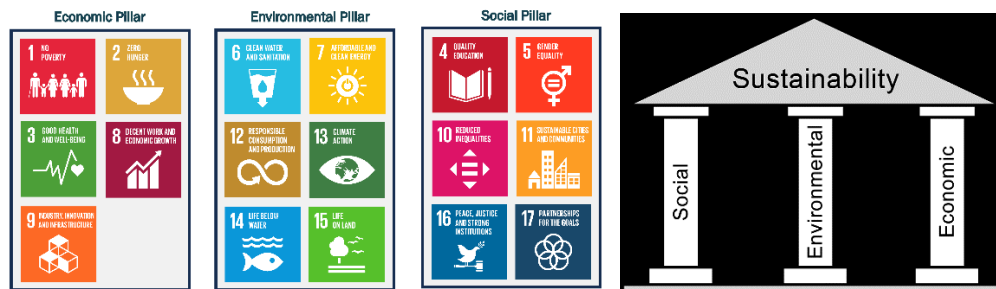


Figure – 7 Sustainable Pillars

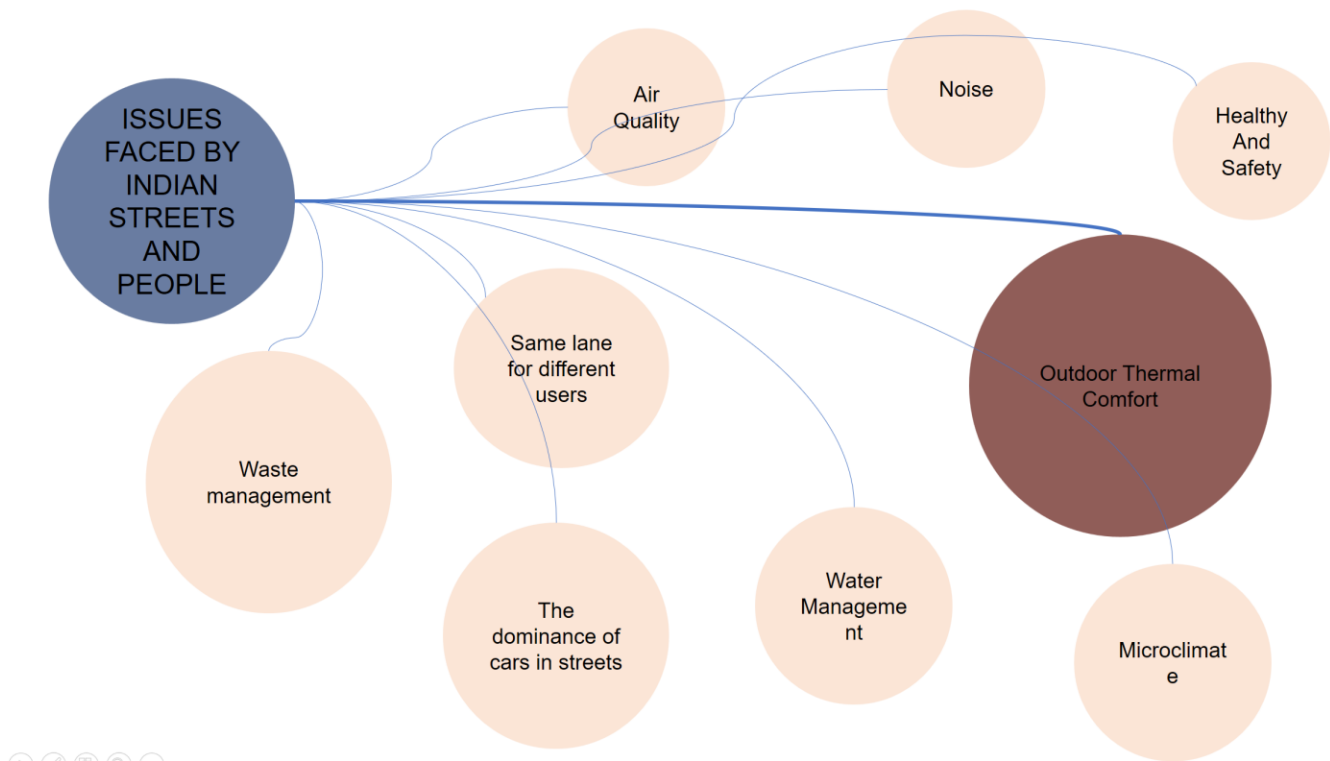


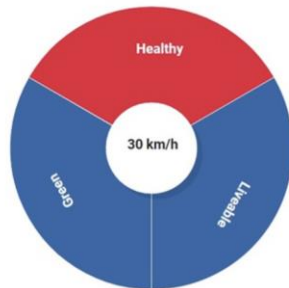
Figure – 8 Factors to maintain a sustainable pillar

3.5 POLICIES AND GOALS BY UN HABITAT AND SDG

FIVE PRINCIPLES OF UN HABITAT FOR SUSTAINABLE NEIGHBOURHOOD LIVING

- a) **Adequate space for streets and an efficient street network:** The street network should occupy at least 30 per cent of the land and at least 18 km of street length per km².
- b) **high density:** At least 15,000 people per km², that is 150 people/ha or 61 people/acre.
- c) **Mixed land-use:** At least 40 per cent of floor space should be allocated for economic use in any neighbourhood.
- d) **Social Mix:** The availability of houses in different price ranges and tenures in any given neighbourhood to accommodate different incomes; 20 to 50 per cent of the residential floor area should be for

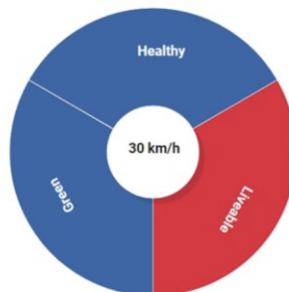
low cost housing; and each tenure type should be not more than 50 per cent of the total.



Healthy

30 km/h (20 mph) streets save lives and protect all who use them, especially the most vulnerable, like pedestrians, cyclists, children and older people and people with disabilities.

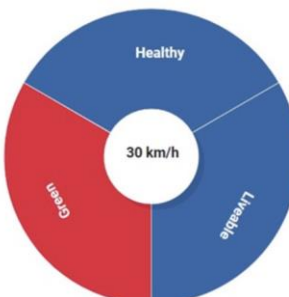
30 km/h streets where people and traffic mix help prevent road traffic deaths and promote physical activity because when streets are safe, people walk and cycle more.



Liveable

Liveable streets, made possible by low speeds, are at the heart of the 2030 Agenda for Sustainable Development and can facilitate many of its targets.

As we build back better from the COVID-19 pandemic, everyone should benefit from low-speed streets, so that they not only survive but also thrive. 30 km/h (20 mph) streets where people and traffic mix are streets for life.



Green

30 km/h (20 mph) streets are vital in efforts to shift to zero-carbon mobility. Streets that promote safe walking and cycling can reduce car dependency and harmful vehicle emissions that contribute to climate change.

To protect the environment, people need safe, low-speed streets that encourage sustainable transport choices.



Figure – 9 SDG GOALS

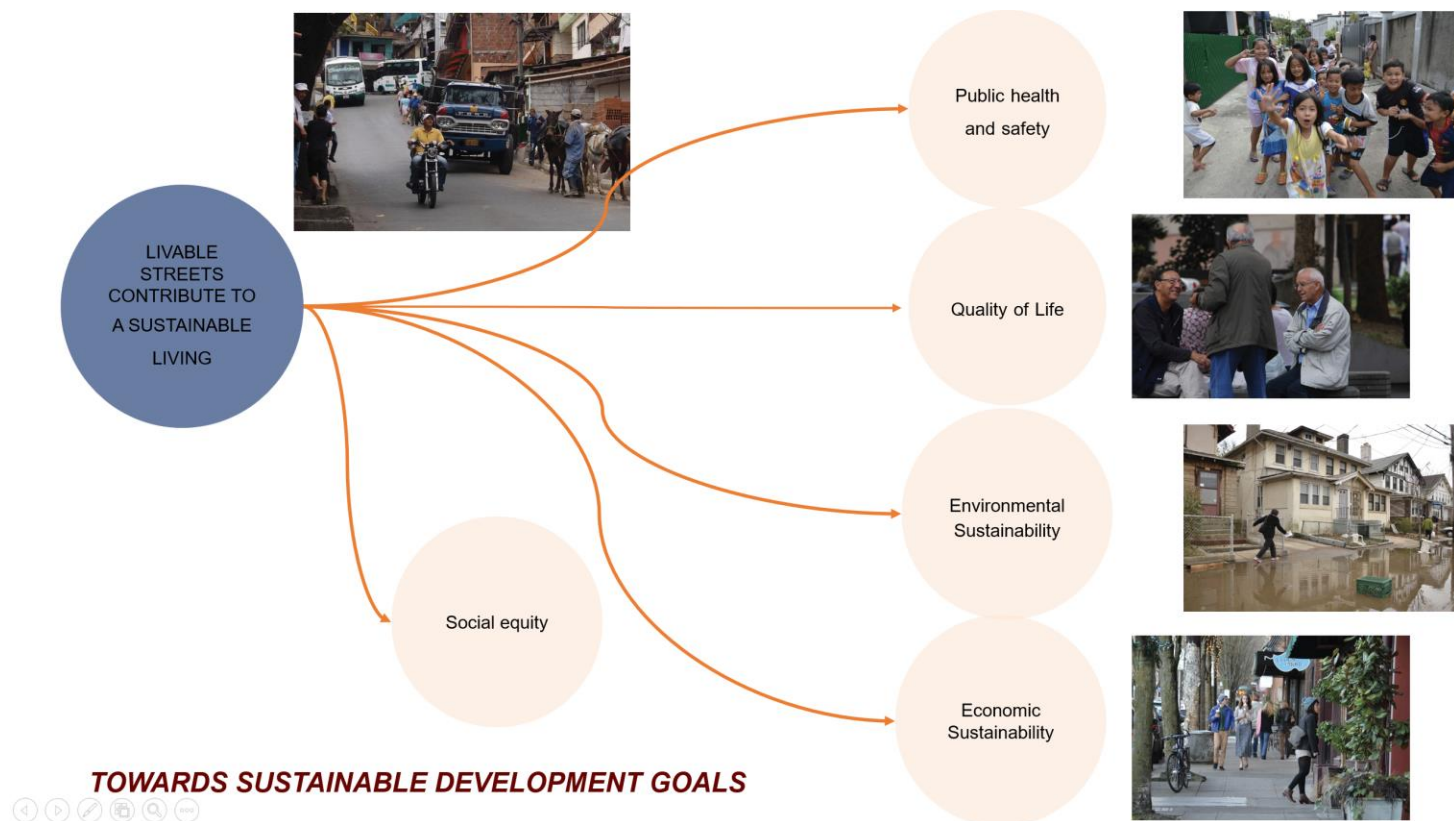
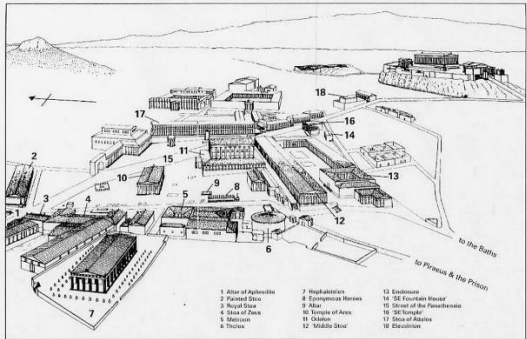
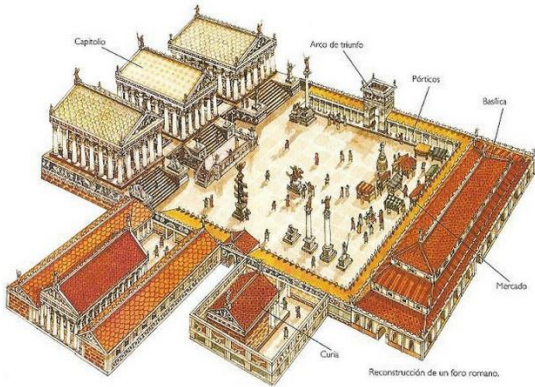
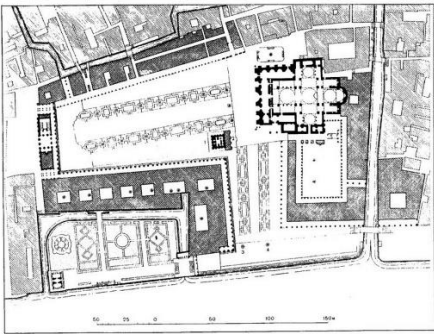


Figure – 10 Towards Sustainable Development Goals

3.6 HISTORY OF MARKET SQUARE

Market Square	Description	Images
Ancient Greek Agora	The Greek Agora was the beginning of the public space which was located in the center of the polis and was also the focal point of the town which functioned as a market as well as gathering space for the political assembly. It also acted as a formal and informal meeting space for the citizens. In the beginning, the Agora was surrounded by private houses but temples and sanctuaries were later built bordering it along with the stoas, porticoes, and covered walkways.	 A detailed black and white architectural reconstruction of the Athenian Agora. The drawing shows a central open square surrounded by various structures. A legend at the bottom identifies 18 numbered locations: 1. Area of Apollonides, 2. Planted Grove, 3. Royal Stoa, 4. Stoa of Zeus, 5. Stoa of Eponomeia, 6. Tholos, 7. Propylaea, 8. Epistemonia Stoa, 9. Basilica, 10. Temple of Athena, 11. Stoa of Attalos, 12. Middle Stoa, 13. Basilica, 14. SE Fountain House, 15. Stoa of the Pnyx, 16. SE Temple, 17. Stoa of Apollo, 18. Stoa of Dionysos. A compass rose is in the top left, and a note 'to the Piraeus & the Port' is in the bottom right. ▲ Fig. 1.1. Reconstruction of the Agora in Athens
Roman Forum	The forum was a public space dominated by the citizens in the same way as Agora. Forums were rectangular in shape, in the proportion of 2 to 3, which was surrounded by Porticoes. The forums contained temples, basilicas, shops, and markets which resulted in the blend of civic as well as religious fabric.	 A colorful architectural reconstruction of a Roman forum. It shows a large rectangular central area (Forum) surrounded by two-story porticoes (Pórticos). At the top left is the Capitolo (Capitol). At the top right is the Arco de triunfo (Triumphal Arch). At the bottom right is the Basilica. At the bottom left is the Curia. At the bottom center is the Mercado (Market). The caption at the bottom right reads 'Reconstrucción de un foro romano.'

Medieval Market Square	The marketplace was first evolved around the 11th century and became a crucial public space during medieval times. It was mainly located in the center of the town, in front of the castle or cathedral, and also at the intersection of the two main roads.	
The Renaissance Plaza	The Renaissance Plaza contained important buildings like the cathedral, the town hall, etc. The local social order where ethnic, religious, and political identities were revealed in the renaissance plaza. It was mostly planned in a symmetrical geometry. The buildings surrounding the Plaza and squares had a uniform facade that showcased the importance of proportion and harmony in the design. Also, this new way of designing and restricting public access to the square became more popular among developers of new residential areas.	

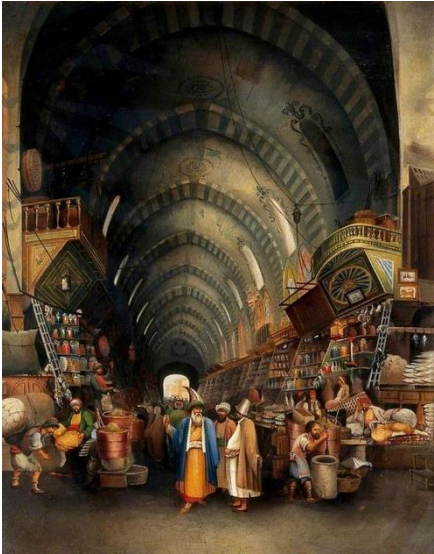
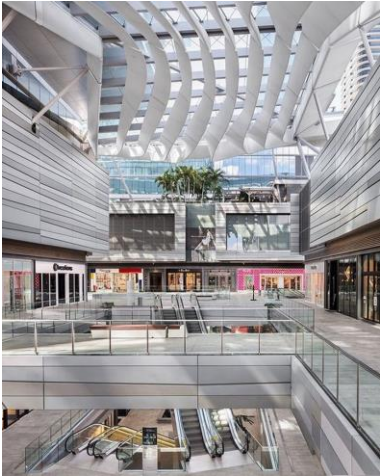
Public Space In Modern Era	But, there was also an increase in the new public spaces for leisure and public entertainment. Also, during the 19th century, new consumption places emerged which were considered important social as well as public spaces, like shopping arcade, shopping street, bazaar, and department store. Generally, the shopping arcades had linear planning with multiple floors, and the exclusively pedestrian spaces were weather protected with glazed roofs.	
Contemporary Public Spaces	Due to globalization, a lot of changes happened around the world resulting in a different characteristic and definition of public space. Also, due to privatization and the pressure of capital along with technological advancements have a greater impact on the form, use, and control of the public spaces.	

Table 1 – Market Square History

3.7 STATEMENT OF PROBLEM

Economic Challenges:

Income Instability: Street vendors often experience significant fluctuations in daily income due to varying customer flow, competition, and seasonality. This unpredictability makes it difficult to achieve financial stability and plan for the future.

Lack of Access to Credit: Many street vendors do not have access to formal banking services or credit facilities. This limits their ability to invest in their businesses, purchase inventory, or expand their operations.

High Operational Costs: Despite their informal nature, street vendors incur high operational costs, including daily fees for space rental, transportation of goods, and sometimes unofficial payments to local authorities or criminal elements for protection.

Social Challenges

Stigmatization and Social Exclusion: Street vendors often face social stigmatization and are perceived as contributing to urban disorder. This stigma can lead to social exclusion and discrimination, affecting their self-esteem and ability to integrate into the broader community.

Harassment and Abuse: Street vendors are vulnerable to harassment and abuse by law enforcement officials and local authorities. This can include demands for bribes, confiscation of goods, or physical intimidation, which undermines their sense of security and safety.

Health Risks: Due to long working hours, exposure to pollution, and lack of access to sanitation facilities, street vendors are at higher risk of health problems. The physical strain of carrying heavy loads and standing for extended periods also contributes to health issues.

Legal and Regulatory Challenges

Lack of Legal Recognition: In many regions, street vending is not formally recognized by law, leaving vendors without legal protection or rights. This lack of recognition makes them vulnerable to evictions, fines, and other punitive measures.

Complex Regulatory Environment: Where regulations exist, they are often complex and not designed with the realities of street vending in mind. Navigating these regulations can be difficult, and compliance may require time and resources that vendors cannot afford.

Inconsistent Enforcement: Enforcement of laws and regulations is often inconsistent, leading to unpredictability and a sense of insecurity among street vendors. This inconsistency can result from corruption, differing local policies, or discretionary power held by individual officials.

Environmental Challenges

Exposure to Weather Conditions: Street vendors work outdoors and are exposed to extreme weather conditions, such as intense heat, rain, and cold, which can adversely affect their health and the quality of their goods.

Lack of Proper Infrastructure: Many street vending areas lack essential infrastructure, such as shelters, waste disposal systems, and clean water. This absence of infrastructure not only impacts the vendors' working conditions but also poses hygiene and environmental issues.

Urban Planning and Space Constraints: Rapid urbanization and gentrification often lead to reduced public spaces available for street vending. Vendors may be forced to operate in less optimal locations, reducing their customer base and income potential.

Name of the city	Population	Street vendors	Proportion of street vendor (percent)
Ahmedabad	5.4 million	100,000	1.85
Bengaluru	6.8 million	100,000	1.47
Bhopal	1.7 million	14,000	1.00
Bhubaneswar	6.5 million (Census 2001)	30,000	0.46
Delhi	15.9 million	300,000	1.89
Guwahati	8.19 million (Census 2001)	15,000	0.18
Hyderabad	6.4 million	100,000	1.50
Jaipur	2.9 million	100,000	3.45
Kanpur	3.2 million	100,000	3.12
Kolkata	14.8 million	100,000	1.01
Lucknow	2.7 million	100,000	3.70
Mumbai	19.0 million	250,000	1.31
Patna	2.2 million	50,000	2.27
Ranchi	1.0 million	35,000	3.50
Vijayawada	1.1 million	7,729	0.71

Source: United Nations Population Division, Department of Economic and Social Affairs, Urban Agglomerations 2007 and Census 2001

Table:2

Environmental Impact	Economic Impact	Social Impact
In terms of environmental objectives, pedestrianisation can help to alleviate and reduce air and noise pollution, as there would be a reduction in the number of cars and reliance on motor vehicles. Nowadays most of large cities are faced with air and sound pollution that it will make them unpleasant and dangerous for their residents. Pedestrianisation can promote walking as a transportation mode without any need to oil, so we can save fuel as well.	About economical impact we should say that there are a number of impacts with pedestrianisation. First of all, for most large cities with heavy motor vehicle traffic, every year both the government and the private sector have to incur large economical losses in term of air pollution rated costs of lost productivity and medical expenses. With less motor vehicle traffic and less pollution after pedestrianisation, there can be a reduction in costs incurred. Physicians have issued various awareness and manifest about air pollution and its danger and many expenses have been spend to cure the diseases which are related to air pollution. So the less air pollution causes the less related medical expenses	The implementation of pedestrianisation would have a number of social impacts. First of all it helps to promote walking as a transport mode. People often do not walk when walking itself doesn't include a good experience with heavy motor vehicle traffic and crowded narrow walkways. Actually with today's urban city life people are walking less than before and rely on their private cars instead of other public transport. In result many people don't have enough physical exercise.

Table:3 Environmental ,Economic and Social impact

4.CHAPTER

LITERATURE CASE STUDIES

4.1 PROJECT – A – Church Street Pedestrianisation, Improved Quality of life:IISC Study



Figure:11

4.1.1 Introduction:

In most urban areas globally, streets comprise roughly 80% of public space, serving as vital arteries for urban life by facilitating cultural interactions, commerce, and safe social gatherings or movement when planned thoughtfully. Unfortunately, many streets have become inhospitable due to car dominance, resulting in noise, air pollution, and hazards for pedestrians.

Recent efforts in cities aim to reclaim these spaces, creating pedestrian-friendly environments that enhance quality of life for residents and visitors alike. One such initiative, Church Street First in Bengaluru, India, led by the Directorate of Urban Land Transport in collaboration with IISc, Bengaluru, Catapult, UK, and Urban Morph Bengaluru, launched a pedestrianization program under the Clean Air Street Initiative, yielding promising results and setting precedents for urban planning.



Figure:12- land Use Map

Church Street, located in Bengaluru's bustling Central Business District, experienced heightened activity during weekends when it was closed to vehicular traffic from 10:00 AM to midnight between November 2020 and April 2021. This transformation, featuring cobblestone pavements, lush greenery, and vibrant shops, bars, and restaurants, garnered significant public interest and participation.

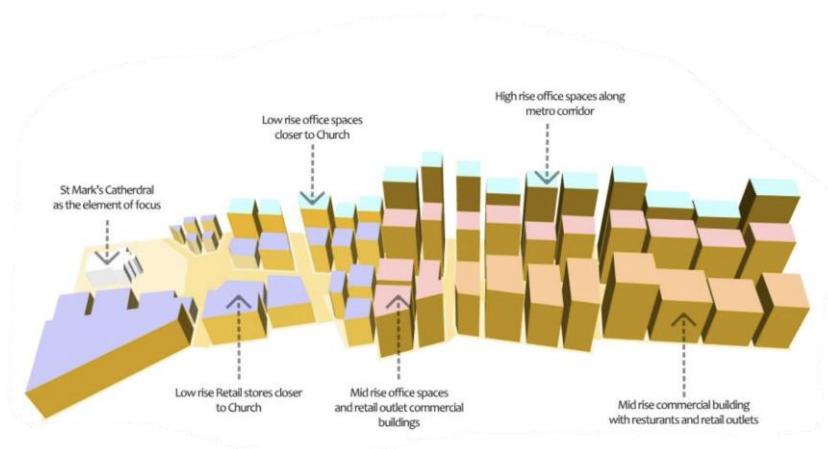


Figure:13- land Use Map-2

A comprehensive study conducted during the initial four months led to the publication of “Church Street First – Impact Assessment of Pedestrianizing an Urban Street in terms of Quality of Life” by Professor Ashish Verma and Ms. Hemanthini Allirani.

Their findings highlighted the positive effects of the pedestrianization pilot, including improved air quality, increased foot traffic and public transport usage, and enhanced urban vitality and well-being for street users. Such pilot programs not only provide valuable insights but also demonstrate the benefits of pedestrian-focused initiatives for broader urban areas.

The impact on air quality and ambient noise reduction was particularly notable. Monitoring ambient PM levels revealed consistent improvements during weekends when traffic was restricted, leading to a more enjoyable and healthier environment. Visitor feedback emphasized reduced traffic noise and improved air quality, significantly enhancing their quality of life.

The initiative not only revitalized Church Street but also invigorated local businesses, with a substantial increase in customer footfall and new establishments opening up. Activities like outdoor dining, cycling courses, art exhibitions, and cultural events further enriched the street's ambiance, attracting diverse demographics and fostering a sense of community.

Pedestrianized streets like Church Street serve as models for urban transformation, prioritizing quality of life, sustainable transportation, and community engagement. This approach aligns with global trends towards pedestrian-friendly initiatives in cities worldwide, promoting healthier, safer, and more vibrant urban environments. Bengaluru's success with Church Street First sets a precedent for future developments, advocating for pedestrian-centric designs across transit zones and neighborhoods, steering the city towards a sustainable, inclusive, and enjoyable urban landscape.

4.1.2 Quantitative indicators:

Clear improvement in air quality:

A clear improvement in air quality, in terms of PM₁₀ and PM_{2.5} concentrations, during most of the pedestrianised weekends as per the Air Quality Index (AQI) CPCB formula. These concentrations were found to be within the limits set by CPCB under the National Ambient Air Quality Standards.

AQI	Associated Health Impacts
Good (0-50)	Minimal Impact
Satisfactory (51-100)	May cause minor breathing discomfort to sensitive people
Moderate (101-200)	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults
Poor (201-300)	May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease with short exposure
Very Poor (301-400)	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases
Severe (401-500)	May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity

Table:2 Health categories of AQI index

Also, the survey responses showed that 83% of visitors and 81% of shop owners were satisfied with the improvement in air quality after pedestrianisation.

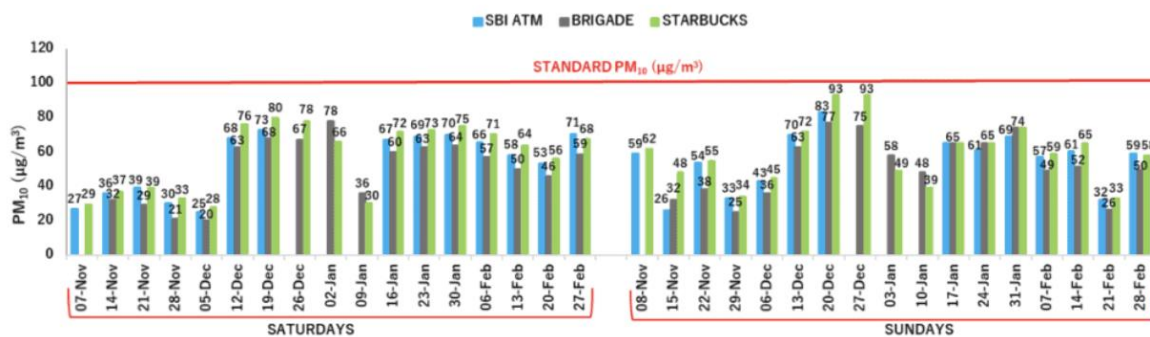


Figure: 14

4.1.3 Comparison of daily average of PM10

In Church Street, ambient PM levels were monitored daily using three Fixed Air Quality Monitoring Sensors (FAQMs) placed at three locations. The data recorded include PM10 and PM2.5 concentrations, as well as meteorological data (temperature, humidity, and pressure).

The averages were observed to be higher near Starbucks Coffee and lower near Brigade Garden. When weekends from November to February were considered, many Sundays had a higher average concentration than Saturdays except during a few weeks in January and February. This variation could have been due to the difference in wind speed, temperature, change in traffic on the nearby roads, and the difference in the number of cleaning and other activities between Saturdays and Sundays.

In Bengaluru, December is observed to be the coldest month. The sudden increase in average daily PM10 concentration in December could have been due to the excavation activities near Brigade Road. However, a decreasing trend in average daily PM10 concentration was observed on weekends during February.

4.1.4 Analysis of Pedestrian Level of Service:

As for pedestrian footfalls, the average daily footfall on Church Street increased by 92% and the average peak duration footfall increased by 117%. The survey on pedestrian level of service during peak and off-peak hours based on the Highway Capacity Manual of India for urban road guidelines showed that 97% visitors and 84% shop owners were satisfied with overall service quality after pedestrianisation.

Further, more than 50% of restaurant owners and gift shop owners on Church Street agreed that pedestrianisation led to an increase in customer footfall, revenue, and had an overall positive effect on business. However, this agreement level was comparatively lower for other types of businesses leaving some scope for future improvements and strategies.

Pedestrian volume was extracted manually on an hourly basis between 10.15 and 10 pm on weekends based on videographic data. Pedestrian count is a quantitative

measure of the number of pedestrians using a particular facility. The pedestrian flow parameters, i.e., speed and density, are extracted using IISc PED SENSE software:

Total number of visitors/pedestrians in Church Street during weekends:

November = total 72,209, peak – 1000/hour

December = total 82,215, peak – 2000/hour

January = total 1,34,706, peak – 3000/hour

February = total 1,35,540 peak – 6000/hour (on February 14th between 7 pm and 8 pm)

Highest pedestrian footfall was observed from 5 pm to 9 pm.

4.1.5 Boarding and Alighting at Public Transit Stations`

The demand impact of public transport was observed at the public transit stations, at Mahatma Gandhi (MG) road Metro station and four bus stops: Chinnaswamy Stadium, Bowring Institute, Mayo Hall, and Brigade Road bus stop.



Figure:15

4.1.6 Assessing the impact of pedestrianisation on Quality of Life

Extensive dependence on motorised vehicles resulted in externalities including traffic congestion, road accidents, difficulties for active transport (walking and bicycling), air pollution, and noise pollution, thus deteriorating one's Quality of Life (QoL) and liveability of the city (Ahmed and Monem, 2020). The transport sector is identified as a major sources of air pollution that adversely impacts citizens' health (Verma et. al., 2020). Consequently, the

benefits of pedestrianisation could be assessed based on environmental, social, and economic aspects, the three pillars of sustainability.

Environmental: The average daily PM10 concentration for all the weekends of all months studied is within the CPCB limit of 100 µg/m³. The daily average PM2.5 concentration was within the CPCB limit of 60 µg/m³ for all weekends of November and February. In terms of noise levels, 94% of visitors interviewed agreed that traffic noise had reduced and air quality had improved due to road closure for traffic contributing to a better QoL.

Social: On health issues, 98% of visitors agreed that walking and cycling because of pedestrianisation was an important health benefit. Also, 92% respondents agreed that improved social interaction contributes to a better QoL, while 94% agreed that access to services was easier pedestrianising urban streets increases the comfort and convenience of road users. The street is also accessible for all age groups, and provides a platform for social interaction thereby enhancing social well-being.

Economic: Assessing shop owners' opinion on impact of pedestrianisation on their businesses showed that 35% of shop owners agreed that pedestrianisation of Church Street resulted in an overall positive effect on their business.

4.2 PROJECT – B – Taj Ganj Redevelopment.

The aim of this report is to build an approach for the development of the Taj Ganj area to benefit not only the visitors who flock there from all over the world and India in millions every year, but also the residents who are part of the living cultural heritage of the Taj Mahal. The strategy employed is one of promoting heritage based development through sustainable tourism by linking the Taj Mahal to its historic setting of the four Katras in Taj Ganj. This report presents an overview of the existing environment in Taj Ganj and specifically the historic Katras with their proud traditions and story of the builders, craftsmen and caretakers of the Taj Mahal. The unique syncretic ethos of the Katras is seen in the built heritage of the Mughal and later structures as well as intangible cultural heritage of crafts, cuisine, leisure sports, fairs and festivals that is practiced even today. This has been severely affected by

the pressures of livelihood and tourism expansion in the past decades. It is essential for the local authorities to re-establish the connection between the historic setting and monument to revitalize the area through knowledgebased tourism that can be a catalyst of growth and contribute to local development. Taj Ganj, although not unique in their built character which can be observed in the Mughal period areas of other important cities like Delhi as well, but are unique in their relationship to the Taj Mahal which has affected their built character and cultural flavour right from the time they were built. Even with their diminished aesthetic value and compromised integrity the Katras historical, associational and evidential (including the multiple layers) value remains quite high.

Through the research that was carried out, it was found that there is an urgent need to plan for upgradation of basic and socio-economic infrastructure that can support and help build tourism infrastructure. This will eventually lead to better quality visitor experience. Documentation and heritage listing are essential tasks that need to be carried out for safeguarding the fast disappearing living cultural heritage of Taj Ganj, including the built environment. The original character of the Katras which served as caravanserais for travelers and visitors though in a degraded condition needs to be urgently evaluated and a plan should be out in place to protect this historic built environment. cultural heritage should be promoted through heritage trails and used as an economic drivers for community based tourism. It is also important to create a heritage value system where the local community has incentive to maintain and conserve the built heritage environment. The main recommendation of this report is to work towards a Masterplan for, a) Modernization of infrastructure, b) Building sustainable heritage based livelihoods, c) Conservation of living cultural heritage, d) Creating unique visitor experiences The masterplan needs to be arrived at through a process of consultation, participatory planning and public monitoring and evaluation that will involve not only the local and central government agencies, but also Taj Ganj community and other experts.

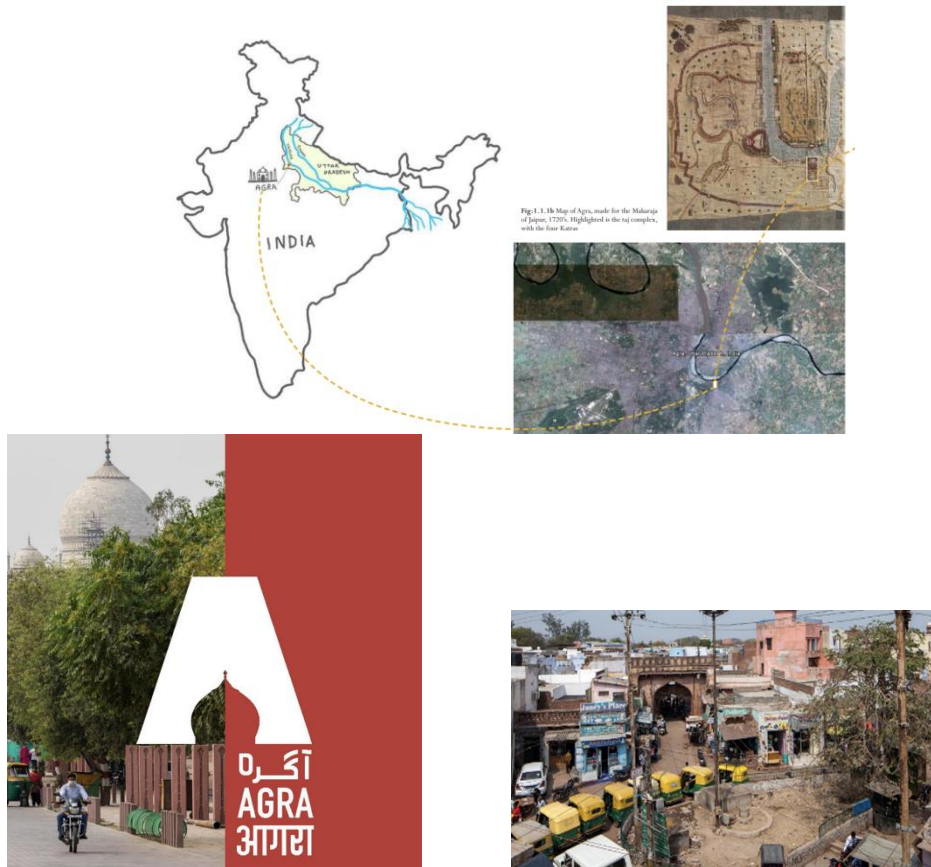


Figure :16

City: Agra

State: India

Client: Uttar Pradesh Rajkiya Nirman Nigam

Completion: 10/2016

Gross Floor Area: 45327.6645 mq

Architects: SOURABH GUPTA

Design team: Siddharth Singh, Sujit Jacob, Mohit Gupta,

Shivani Shastri, Shailesh Pathak, Shriya Aggarwal, Inakshi

Mittal, Kavana, Mariyam Hassan, aniruddh sharma

Main Contractor: RAJ CORPORATION LIMITED

Consultants: Pristine Ideas Consulting Engineers, SSB Tech,

New Delhi



Figure :17 - Taj Ganj Map

Two bustling bazaar streets originate from the east and west gates, respectively, leading towards the jilaukhana. These bazaars were historically intertwined with the complex, contributing financially to its maintenance. Structurally, the bazaars feature individual rooms (hujra) along arcaded verandas with multi-cusped arches supported by slender columns.

Some buildings exhibit distinct Mughal architectural elements, including the use of Mughal bricks, providing evidence of their age. Notably, this area served as the encampment for stone craftsmen during the Taj Mahal's construction in the 17th century, and many present-day residents are direct descendants of these artisans, representing the Living Heritage of the Taj Mahal. The majority of dwellings in this

area have storefronts offering souvenirs, refreshments, and other tourist-oriented services. Budget hotels in the vicinity feature rooftop restaurants with direct views of the Taj Mahal. It is evident that displacement of any residents from this area is not feasible.

4.2.1 Festivals and Cultural Practices

Taj Ganj boasts a richly diverse and inclusive character, reflecting a blend of religious and regional identities. Residents encompass a spectrum of beliefs, including Hindus, Jains, Muslims, and Sikhs, fostering a harmonious coexistence within mixed communities. Notably, Katra Jogidas stands out as a predominantly Hindu and Jain area within Taj Ganj. The locality also attracts individuals from various regional backgrounds, such as Sindhis, Iranians, and Mughals, forming a tapestry of cultural heritage. A significant influx occurred during the 1947 partition, when many families were allocated housing by the custodians of the area.

Historically, craftsmen and laborers, hailing from Central Asia and across India, were instrumental in constructing the Taj Mahal. Moreover, the era of Mughal rule brought in a small contingent of immigrants from Central Asia, some of whom have descendants still residing in Taj Ganj, proudly retaining their Central Asian heritage across generations.

Mr. Akil-ud-din, proprietor of the 'Asian Gems' shop near Kutta Park, traces his family's roots back to Iran, where they settled 450 years ago during the Mughal era. His forebears served as draughtsmen ('nakshe nabizaan'), contributing to the architectural designs of landmarks like the Taj Mahal. Presently, many men in his family pursue draughtsmanship roles with the Public Works Department (PWD) and the Army. He also possesses ancient drawings depicting the Agra Fort and Itmad-ud-Daula, alongside a 'Shijra' document outlining the family's lineage spanning nearly 400 years.

CHAPTER 5

THE DESIGN

Design for social sustainability focuses on creating environments, products, and systems that enhance the quality of life, promote social equity, and foster community well-being. This approach integrates social considerations into the design process, ensuring that the needs of diverse populations are met, and that all individuals have access to the benefits of development. Key elements include participatory design practices that involve communities in decision-making, creating inclusive and accessible public spaces, and promoting economic opportunities through thoughtful urban planning. By prioritizing social interactions, cultural expression, and long-term community resilience, design for social sustainability aims to build more cohesive, inclusive, and sustainable societies.

Improving social sustainability for street vendors involves creating supportive environments that enhance their livelihoods, social inclusion, and overall well-being. Street vendors are a vital part of the urban economy, providing essential goods and services while contributing to the vibrancy of city life. However, they often face significant challenges such as income instability, lack of legal recognition, and exposure to health risks. To foster social sustainability, it is crucial to implement policies and practices that address these challenges, ensuring that street vendors have access to resources, legal protections, and opportunities for growth. This involves a collaborative effort among policymakers, urban planners, community organizations, and the vendors themselves. By focusing on inclusivity, equitable access to resources, and community engagement, we can create a more sustainable and supportive environment for street vendors, benefiting both the vendors and the broader urban community.

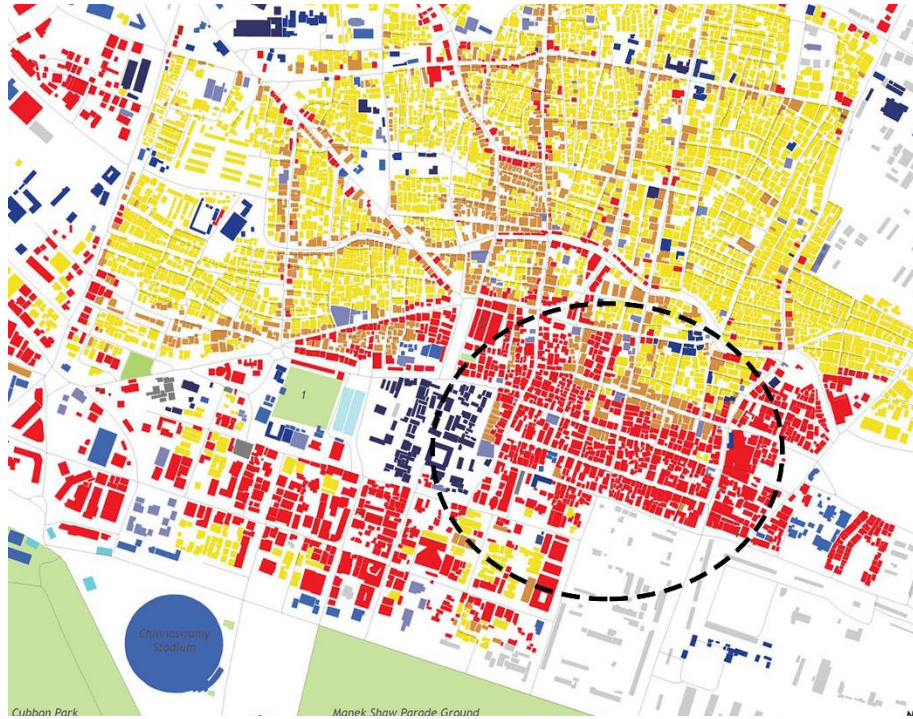


Figure 18- site map

As always been and remains a commercial hub, selling m salvaged automobile parts to wholesale vegetables, clothes, shoes and furniture. The land use by itself is a reason for the movement of a large umber of people and goods, but this coupled with a dense old city fabric with winding narrow lanes, no visible road hierarchy or travel lanes, disorganized parking and a complete lack of pedestrian infrastructure has made any mode of movement within the area a nightmare. The vehicular user faces long traffic jams, unable to move either-ways in narrow lanes and the pedestrian faces the peril of weaving in and out of this traffic and navigating other obstacles such as open manholes and piles of garbage. The mobility issues can be categorized under the following buckets

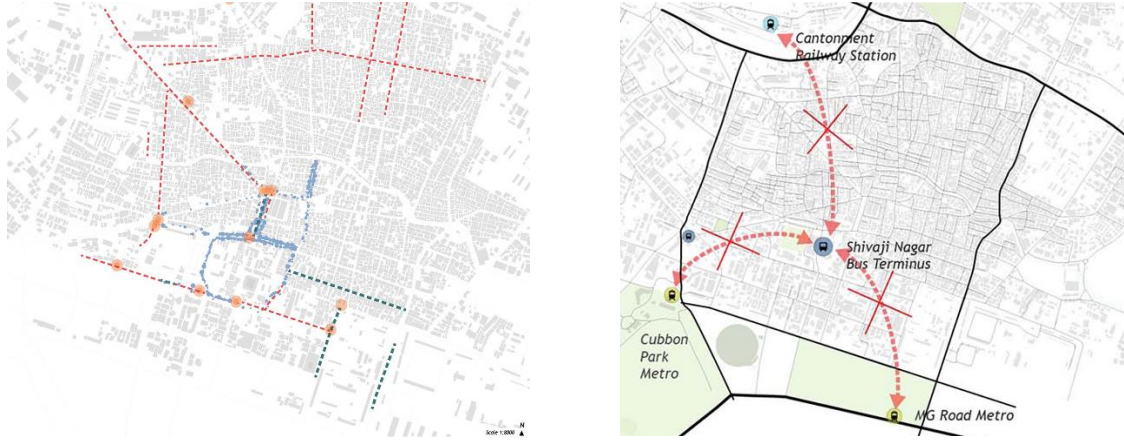


Figure 19- Location Map



Figure 20- Street layout

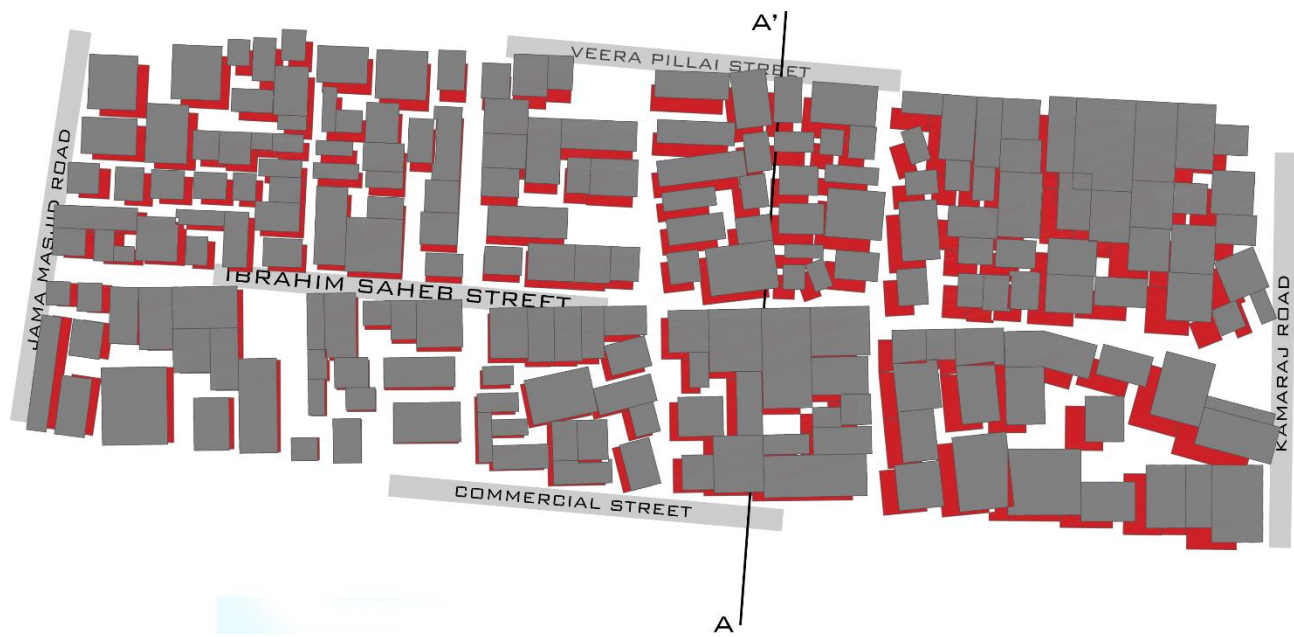


Figure 21-the complete street

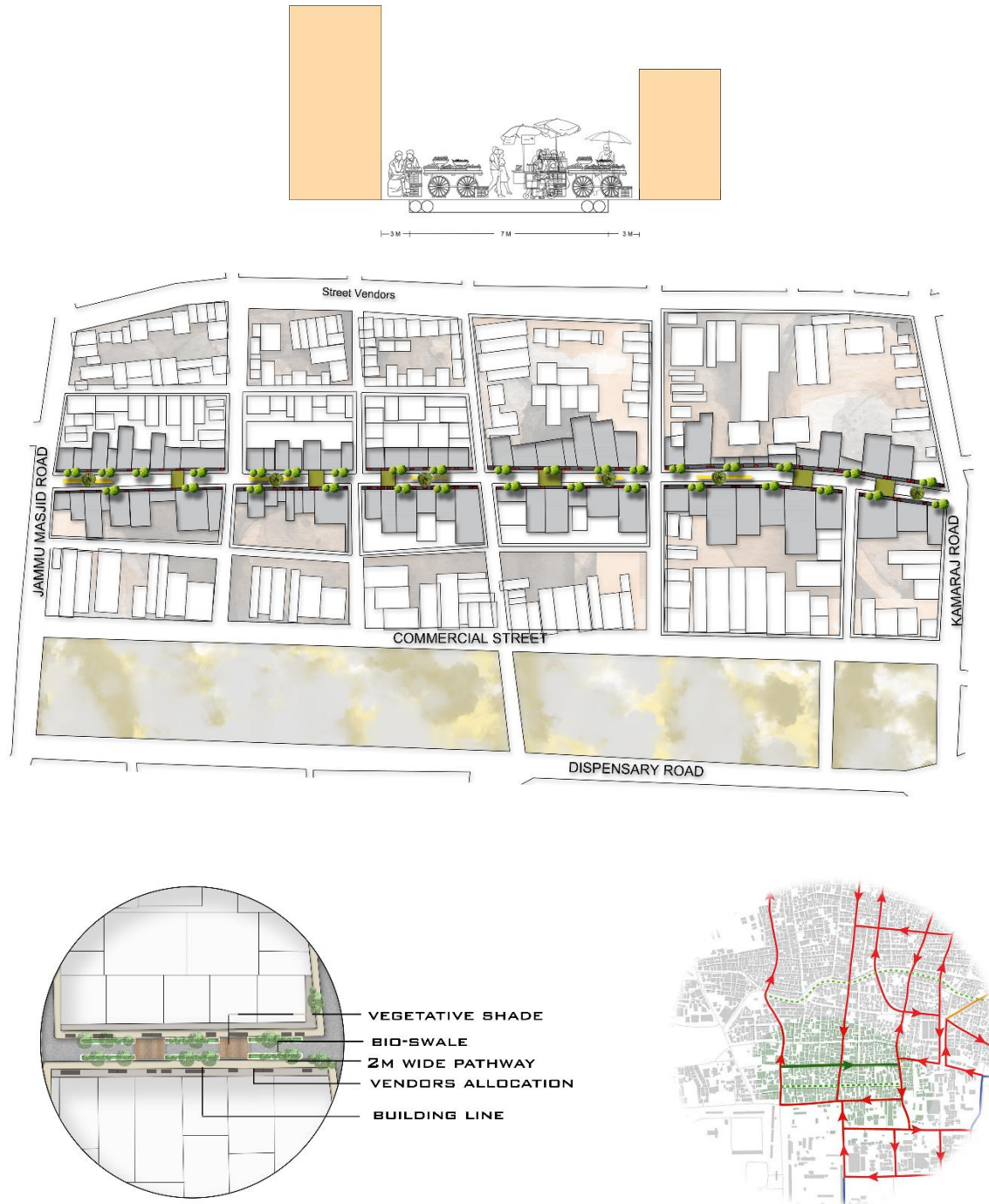


Figure 22- The proposal

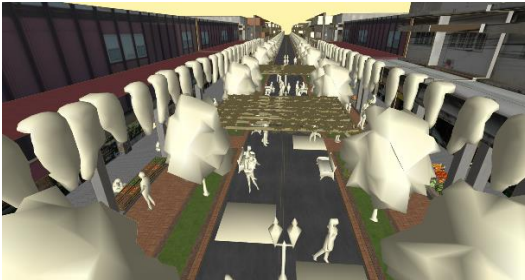


Figure 23-Proposal render

THE COMMERCIAL HUB

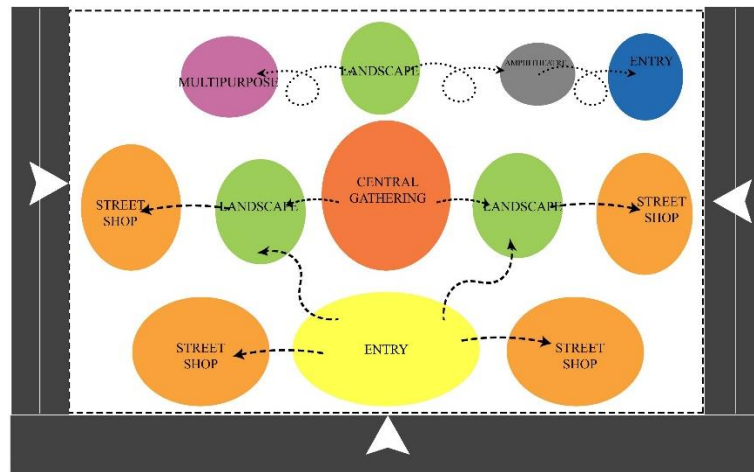


Figure 24-Zoning



Figure 25-Project Site

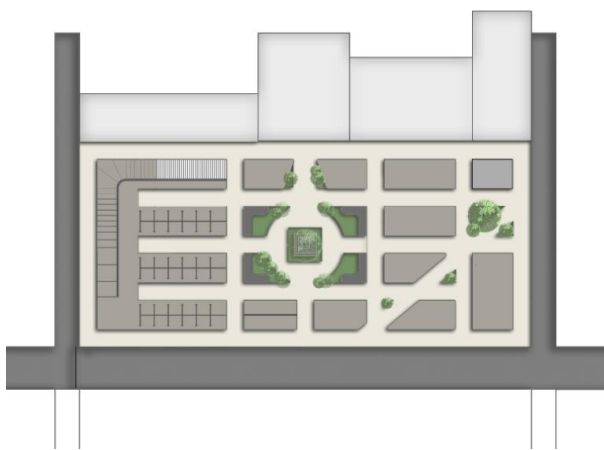
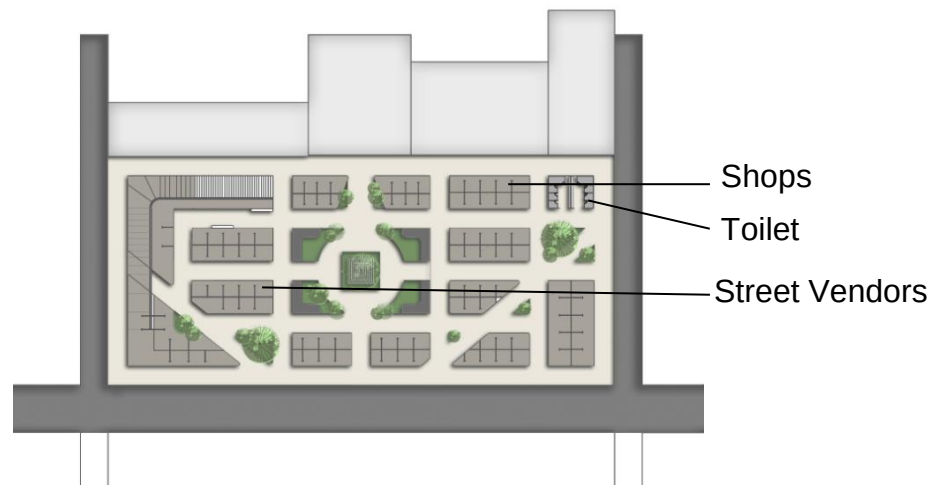
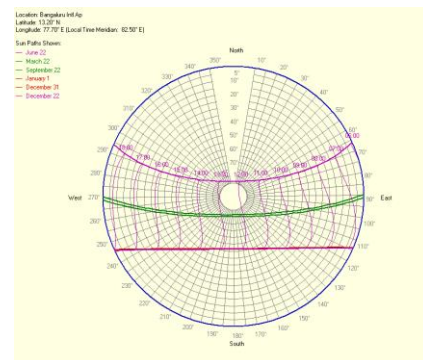
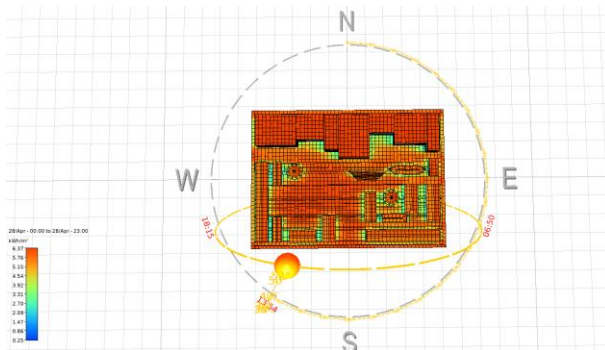
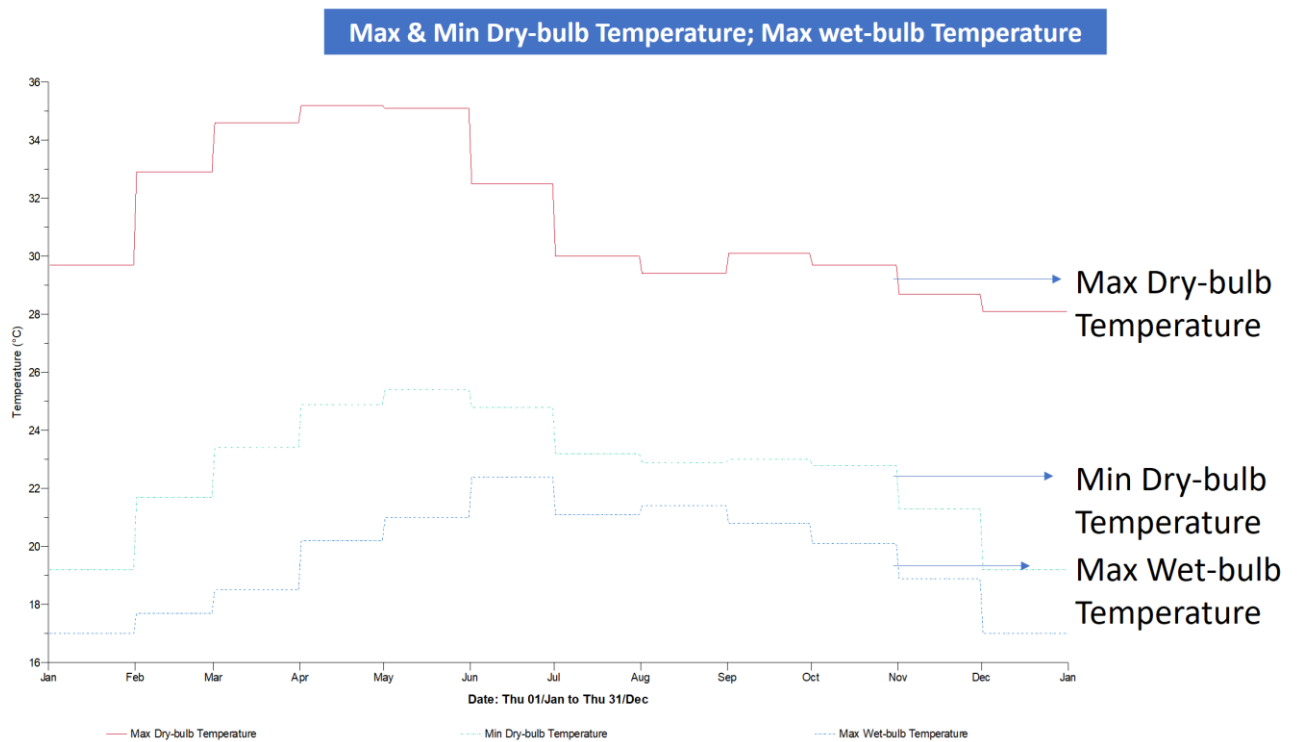


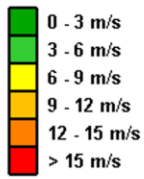
Figure 26-Project Site

SIMULATIONS

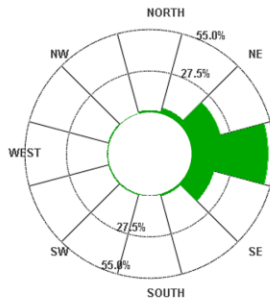


Directions	Worst Case /Maximum Wind speed(m/s)
0 Deg	2.7
90Deg	6.1
180 Deg	3.3
270 Deg	7.8

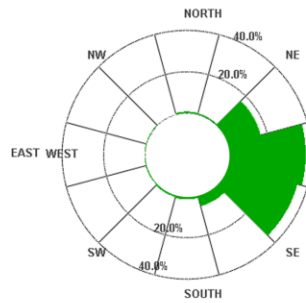




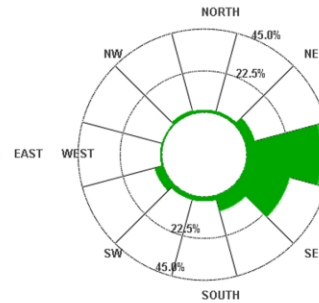
Windrose diagram – Month wise



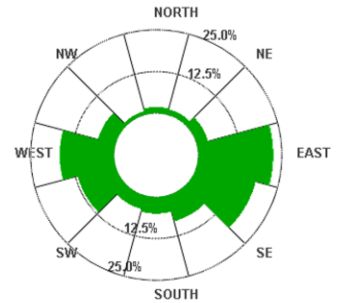
JANUARY



FEBRUARY

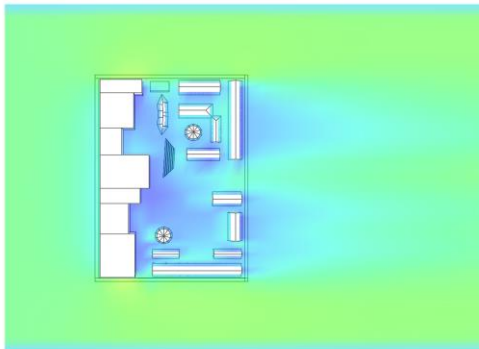


MARCH

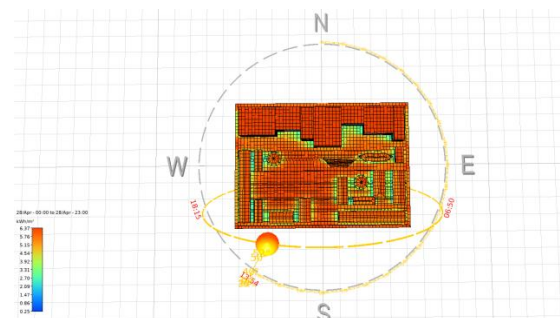
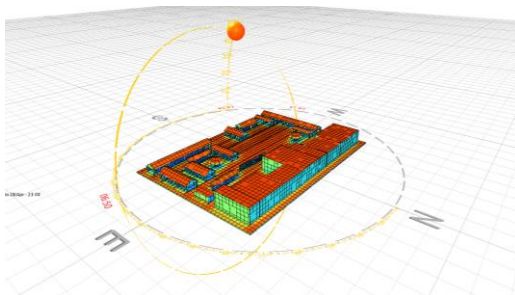
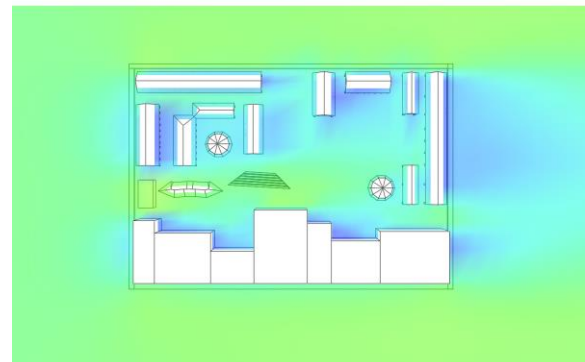


APRIL

SCE 1 No trees 0 deg scenario



SCE 1 No trees 90 deg scenario



CONCLUSION

In conclusion, enhancing social sustainability for street vendors is essential for creating vibrant, equitable, and resilient urban communities. Street vendors play a crucial role in local economies, yet they face numerous challenges that hinder their ability to thrive. Addressing these issues requires a comprehensive approach that includes legal recognition, economic support, inclusive urban planning, and improved social services. By fostering an environment where street vendors are protected, valued, and integrated into the urban fabric, we can ensure their contributions are sustained and their quality of life is improved. Such efforts not only benefit the vendors themselves but also enhance the overall social and economic health of our cities, promoting a more inclusive and sustainable future for all.

RECOMMENDATION

- Based on the research findings, the following recommendations have been made to the Directorate of Urban Land and Transport and to the authorities of Municipal Corporation of Bangalore to develop Commercial Street into a pedestrian-friendly zone by making it car free:
- The conversion could begin on a trial basis, making it pedestrian friendly for a few hours on week days and later extending it to weekends.
- The eventual results should be a completely pedestrian-friendly street free of motorized vehicles.
- A network should be formed with different stakeholders to work through the various steps needed for the conversion. Various awareness programs should be organized targeting different stakeholders, including government departments, pedestrians, and merchants.
- A vendors zone should be created separately as there are many vendors on a regular basis making them to use the street and engage the street all over the day without any insecure spots making the complete street lively.
- A space should be created on the street to engage them while shopping. The safety of pedestrians should be the primary priority of the concerned authorities.

- Local healthy food establishments can be developed, including street stalls. In order to facilitate access by the elderly, children, those of different abilities, and bulk purchasers, pick-up and drop-off facilities should be provided in the premises close to the nearest bus/auto-rickshaw stand.
- Goods delivery to the shop can be made either in the morning or in the night before/after business hours. In promoting the idea of a pedestrian-only street, it could be useful to create an exhibit containing photographs of pedestrian streets in other cities along with artists' renderings of a pedestrian-only Commercial Street.
- To make the exhibit interactive, people could be asked to draw and write up potential activities and other amenities that could be provided if more space were made available by removing the cars.

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APPENDIX

Questionnaire survey: 15 responses