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## Making Walled City of Lahore A Bicycle Friendly Precinct: Threat & Opportunities

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### Abstract

*Created during the Mughal rule of the sub-continent in the mid-1600s the Walled city of Lahore, a UNESCO World heritage site faces a plethora of difficulties. To name a few it is clear that the world has become technologically advanced in the last 500 years when the city in its essence was up to date. But now it faces problems such as overcrowding and beyond capacity commercialization, congestion of streets and therefore inadequate facilities to utilize bicycles, no green areas such as parks, and all kinds of pollution due to the difficult upkeep. As all problems have solution these do to. An environment catering more in favor of bicycles can be achieved through tactics like increasing awareness for cycling, carrying out useful and efficient pilot projects, enhancing the capacity of locals, creating well integrated urban plans, and capitalizing on the aspect of the area being a tourist attraction (UTB MENA, 2017). It is imperative that there be collaboration between the private and public stake holders of the area to ensure that schemes pertaining to bicycles are successful. To enable urban development, the idea of social equity and urban sustainability becomes imperative hence prompting the realization for the idea of bicycle centric initiatives (UTB MENA, 2017). In conclusion to materialize the idea of a bicycle friendly zone within the region of the Lahore Walled City it is necessary to understand the strengths, weaknesses, and opportunities and threats that accompanies the idea. Moreover, via private-public partnerships the idea of urban development to accommodate the cause becomes plausible.*

**Keywords:** Sustainability, Urban Development, Low Carbon Initiatives, Private-Public Partnerships, Stakeholders, Activity-Friendly Communities.

### 1. Introduction:

A tandem of strategies such as infrastructural development, communal involvement, and a cultural shift toward public and sustainable transportation, are required to ensure a bicycle-friendly environment. Cities and communities can grow environments that support cycling by enabling laws that protect the cyclists as well as promote a degree of respect for the road user providing both safe passage for all and safety of vulnerable users such as cyclists, bikers and pedestrians. Local laws can enhance the idea of cycle friendly spaces by limiting vehicle access on specific routes, and

establishing bike parking requirements to name a few. Moreover, if incentives are provided the surrounding businesses would also assist and cater commuters prompting in the cause (Atif et al., 2019). These actions would enhance communal sustainability and habitability of the space whilst also improving the cycling experience. Cities can encourage cycling, support sustainable urban mobility, and enhance the quality of life for the people by addressing legal, infrastructure, and community-related issues. Building bicycle-friendly spaces benefits everyone other than commuters as well by contributing in environmental sustainability, and urban resilience.

## **2. Literature Review:**

Research conducted proved a higher cycling rate in areas that contain cycling-specific infrastructure, such as bike lanes and paths (Marshall & Garrick, 2011; Khan, A., 2018; Christopher Monsere, J. D., 2014). A lot of research has been conducted that gives useful insight on the viability of bicycle friendly cities and towns. Literature shows how communal preference is imperative to promote cycling as well as advancing sustainable transport. One of the key factors in this is the effect of the built environment on cycling.

Commuters find cycling to be convenient and safe thanks to the infrastructure provided to assist cyclists (Marshall & Garrick, 2011). Furthermore, to meet the set requirements for cyclists the integration within the transport infrastructure is very important (Kristinsdóttir, 2012). Another important consideration that cannot be omitted when designing towns that welcome bicycles is safety. Studies have proved the importance of applying safety measures for cyclists like protected junctions, improved visibility etc. (Ekblad et al., 2016). These programs create an atmosphere where riding is becomes a crucial form of transport due to the ease of access (Ekblad et al., 2016).

The shift towards cities that are bike-friendly comes down to the factor of finance and implemented laws that can create an environment that is favorable to environmentally friendly forms of transportation (Kristinsdóttir, 2012). The literature review emphasizes how complex the transformation of cities to bike friendly space is. It requires proper cycling infrastructure, safety precautions, community involvement, and legislative support to encourage riding as a practical form of transportation. Through the utilization of empirical research and successful case studies various approaches that help with the motive of both sustainability and cycling can be formulated.

## **3. Research Methodology:**

### **3.1. Data Collection and Analysis:**

Multiple techniques are utilized to compile and arrange pertinent data. The topics focus on the infrastructure and design features—such as designated bike lanes, techniques to control and calm traffic, and ease of access to key locations—that either facilitate or impede riding. Furthermore, crime rates, traffic patterns, and driving behavior of the designated spaces that could affect cycling safety have also been studied. Strategies have also been studied to integrate all communal stakeholders within the process. Lastly, policy implications provide data on how funding from the government helps in the cause via infrastructural upkeep etc.

The gathered and filtered data will be examined to find recurring issues, and highlight areas where study is still lacking. In order to create a more bicycle-friendly Walled City of Lahore, the analysis will concentrate on finding successful case studies and best practices from other cities that have implemented similar initiatives, identifying potential challenges unique to the Walled City of Lahore, and suggesting strategies for overcoming obstacles and taking advantage of opportunities. The research will provide a solid foundation to devise a comprehensive plan to turn Lahore's Walled City into a bicycle-friendly zone by conducting an extensive literature review and data analysis.

### 3.2. Site Assessment:

Before starting it is crucial that a detailed site study of the Walled City be carried out to understand



Figure 1 Walled City plan with Traffic Stress

the current scenario of the area. In order to carry out this evaluation, it will be necessary to visit the Walled City. It will be important to note the current infrastructure scenario for bicyclists, the state of the roads, traffic patterns, public areas, and their accessibility.

While on site issues and challenges faced by bikers and vehicular users at large are observed. These challenges include the lack of biking infrastructure, which forces cyclists to share the road with motorized traffic, the impact of commercialization, which increases traffic and decreases the amount of open space for cycling, and narrow streets that restrict the amount of space available for safe cycling. The site evaluation attempts to give a clear picture on the current situation of Lahore's Walled City so a plan to resolve the issues and capitalize on the opportunities the space provides can be formulated.

### 3.3. Data Collection & Interview Process:

The designated area of study will have data extracted from it that will be cross checked and quantified and allow an in-depth analysis on bicycle infrastructures, safety precautions, communal stakeholder involvement and policies that would make the concept viable. All key features that would help in enhancing the cause will be observed on site and through various data collection methods will be quantified. A few would be the lighting, signage and methods of traffic control in the area. The data collected will give a detailed picture of the bicycle infrastructure as it is today and the overall context of the region by methodically recording various elements. One crucial method for data collection would be conducting interviews and filling up questionnaires and survey forms. But keeping in mind the mentality of the general populace of the walled city a better alternative would be to have semi structured or impromptu interviews that provide the peoples perspective according to the need of the situation. These interviews will be with significant stakeholders like residents, shopkeepers, bicycle users at the current scene, pedestrian commuters, and government officials in charge. This will allow

for people to give their opinion and correlate it with their experience, it will help signify the importance of bicycle usage within the region or the need for changes accordingly.

### **3.4. Stakeholder Identification:**

It is essential to identify important stakeholders in bicycle promotion as part of the research. The first step is to acknowledge the importance of the community as a major stakeholder that will be required to realize the main objective bicycle friendly region. Moreover, the local government that overlooks the regions policies is also important to have active policies and infrastructure that promote bicycles. It is also important to take into account the urban planners that have designed the plan for the city as a whole for the next five decades and see if policies can be included that materialize the notion of sustainability through the usage of bicycles and therein provide decent infrastructure to the area. Another stake holder and probably the most important one would be the bicycle users in the current scenario as it will provide great insight to see what challenges they face and through what means can they be resolved. By interacting with these stakeholders, the research hopes to obtain a diverse variety of perspectives and insights that are crucial for recognizing the challenges and opportunities associated with developing a bicycle-friendly environment in Lahore's Walled City.

### **3.5. Survey and Data Analysis:**

A survey will be carried out as part of the research technique to gauge public opinions, and riding habits in the current setting. Information gathered will be on riding patterns, safety, and the usability of the current infrastructure as well as the involvement of the local community. This will be carried out through impromptu interviews that answers the prerequisites set in the survey and questionnaire. Moreover, demographic data, cycling frequency, bicycle traffic on specific routes will all be taken into consideration as a plethora of surveys will be carried out that will allow data collection that can then be analyzed and quantified.

Post collection, the survey data will be examined to find recurring themes, and issues among participants. The data will be subjected to multiple statistical analysis techniques to arrive at an amicable solution. The final result from the quantified data will offer useful information on how the local community views cycling in cities, and naturally provide suggestions for encouraging cycling and making the Walled City of Lahore a more bicycle-friendly place.

### **3.6. Review of Best Practices:**

Comparative case studies with Asian cities renowned for incorporating bicycle-friendly policies initiatives and infrastructure will be necessary to have a precedent. The cities shortlisted due to their efficient policies and initiatives are: Beijing, China; Taipei, Taiwan; Hoi An, Vietnam; Gagtok, India; Chiang Mai, Thailand. These cities have a cycling culture, due to which they have a detailed bike lane network and infrastructure. Moreover, they also have a steady upkeep of cycling specific amenities (Atif et al., 2019).

The evaluation will comprise of multiple factors, such as communal involvement, infrastructure design, integrated connection, safety and comfort, and effectiveness. The cycling infrastructure quality and the segregation from motor traffic is also to be accounted for. In order to assess connectivity, it will be imperative to look at how easy it is for cyclists to navigate, as well as how connected bicycle routes are to key locations such as offices, schools, and commercial districts. Moreover, multiple variables also need to be considered when determining the comfort and convenience of a city (Lam, 2023). The efficiency of cycling infrastructure in increasing bicycle utilization and decreasing motor traffic and therein influence on the sustainability, livability, and public health of the city. This in turn determines the effectiveness of the applied policies in the city.

Through the gathered data custom strategies will be devised to make the Walled City of Lahore a space that encourages cycling, in turn addressing both the built environment and the social and cultural factors.

### 3.7. Policy Recommendation & Development:

After thorough data has been collected and quantified practical policies need to be created that cater to all the issues whilst involving the communal stakeholders of the region. Through the cumulative data gathered through various modes the study offers an insight at how spaces can be transformed into bicycle friendly zones and in turn how the sustainability objective can be met.

### 4. Case Studies:

In order to study from precedents some cities which are known for their bicycle friendly initiatives and infrastructure have been identified and chosen as case studies. The selection has been done of cities within Asia, that have a successful reputation for innovative and effective cycling infrastructure, community engagement in endorsing cycling, and the execution of supportive policies, so as to have a parable comparison to study and learn from.

City	Country	Bicycle-Friendly Features
Gangtok	India	Dedicated bike lanes and pedestrian zones have proven beneficial in promoting cycling as a means of transportation in Gangtok, India. In order to improve bike parking facilities and increase accessibility and convenience for residents, the city has also implemented bike-sharing programs (Dr Sanjay Gupta, 2016).
Chiang Mai	Thailand	Chiang Mai, Thailand, has become famous for its many initiatives to promote bike riding which involves the proper infrastructures for cyclists such as purpose built bike lanes, bike stations and bike friendly junctions. Educational initiatives and community get-togethers have played a major role in increasing the public awareness regarding the benefits of the city becoming bike friendly. (Chiang Mai Bicycle, n.d.)
Hoi An	Vietnam	In order to make cycling more enjoyable and safer for the residents, Vietnam's Hoi An, has come up with a wide range of strategies that include methods to control traffic as well as the limit vehicular usage within the city center. They have transformed the infrastructure in a manner that encourages walking and biking making the city more sustainable. (Bowyer, 2018)
Beijing	China	A considerable investment has been made by China's Beijing city to make it more sustainable and bike friendly by modifying the city road network to include specific bike lanes. They have also come up with various biking initiatives such as bike sharing (Schreurs, 2015). Several laws have been employed that restrict

City	Country	Bicycle-Friendly Features
		vehicular traffic in many areas and encourage biking as a way to control traffic congestions and reduce the air pollution. Their modification of the infrastructure has given bikers their own separate lane which makes it safe from other vehicular traffic. Beijing is also invested in making a raised up dedicated bike path which will be 9-kilometer long (Hou, 2021).
Taipei	Taiwan	Taiwan's Taipei has made the city more bicycle friendly by incorporating complex policies that embed biking into the city's infrastructure and make is a more user friendly mode of transport. They have achieved this by making elaborate systems within the road network to encourage and promote biking as well as supporting bike sharing and parking ventures that help the bike users in their daily commute. Taipei also has dedicated bike lanes. One of their famous bike sharing ventures in 'You Bike' that is a public venture that is a joint collaboration of Taipei City Department of Transportation with the local manufacturer Giant Bicycle (Kembel, 2023).

## 5. Legal Considerations and Legislations:

The Walled City of Lahore (WCL) Act declares the region as a whole to be of cultural significance, and laws are expressly designed to preserve and safeguard it. According to this Act, the premise of Walled City which is in essence the area within the twelve gates of Lahore and heart of the city, has to be conserved as a whole and its position as a high-value cultural zone needs to be restored by preserving and improving the heritage sites and the urban fabric of the area. Making sure new construction blends in with historic and cultural values is part of this. The Act also requires the preservation of buildings owned by the government, the control of the urban environment, the development of improved infrastructure, and the creation of certain regulatory frameworks for construction and land use (Punjab et al., 2021).



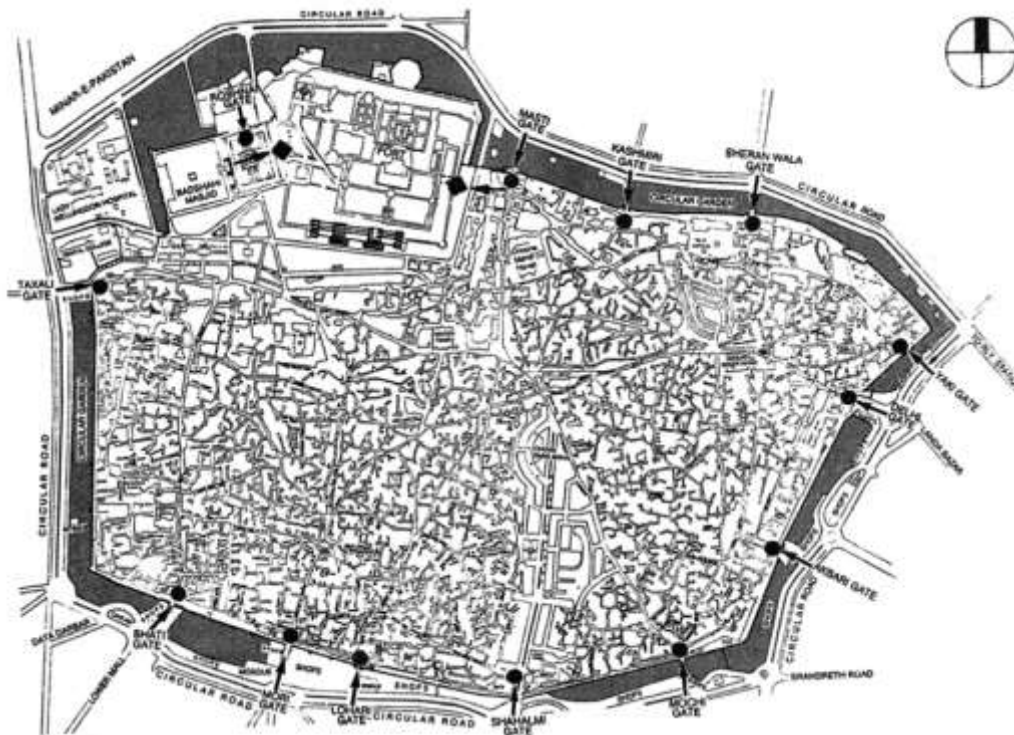


Figure 2 Walled City premise

The plan places a strong emphasis on improving WCLA's human resources, developing technical capabilities in the public and commercial sectors, and protecting heritage features in defined zones. In addition, the plan calls for proactive community involvement, giving local communities the freedom to direct their own development with WCLA's technical assistance (Punjab et al., 2021).

The Walled City of Lahore is becoming a more bicycle-friendly place thanks in large part to legal considerations and laws but it still has a long way to go. Safe passing regulations, which mandate that vehicles provide bicycles a safe space (often three feet) to pass, can improve safety and promote cycling (BikeLeague, 2014). It's crucial to remember, though, that some contend these laws may perpetuate the myth that cyclists should always ride far to the right, even though that's not necessarily the best or most sensible course of action. A precinct that is more bicycle-friendly can also benefit from vulnerable road user (VRU) regulations, which impose harsher penalties on motorists who kill or seriously hurt pedestrians and bicycles (Haydn, 2023). These regulations make it clear that vulnerable road users' safety is a top priority.

Allowing bicycles to interpret stop signals as yield signs—also referred to as the "Delaware yield" or "Idaho stop"—is another legal factor to take into account (Pedestrian and Bicycle Friendly Policies, Practices, and Ordinances, 2011). By reducing the need for cyclists to stop at every junction, this technique enhances traffic flow and increases the efficiency of cycling. The second state in the union to authorize this practice was Delaware in 2017 (Pedestrian and Bicycle Friendly Policies, Practices, and Ordinances, 2011). Policymakers and advocates can foster a more encouraging and conducive environment for cycling by putting these legal provisions into effect and taking into account the special opportunities and challenges presented by Lahore's Walled City. Consequently, a more sustainable and livable urban area may result, as well as a rise in the adoption of bicycles and an improvement in safety (Atif et al., 2019).

The Heritage Conservation Board is tasked with a strong, professional role as per the Act. Social mobilization should involve community participation in development projects, fostering a collaborative approach to conservation and urban improvement. This holistic strategy aims to protect the heritage and enhance the livability and cultural significance of the Walled City of Lahore.

By implementing these communities centered, legal and infrastructure based policies, the Walled City of Lahore can be made more bicycle friendly, thus making it a more sustainable part of the urban fabric (Atif et al., 2019). This holistic approach has the potential to make this congested and heritage rich part of Lahore area an example of sustainable urban development which will be in line with the WCL Act's goals of protecting the cultural heritage and improving the urban living.

## 6. Conclusion For Bicycle-Friendly Walled City of Lahore, Based on Legal Framework:

The walled city of Lahore encompasses centuries of architectural variation and demonstrates Pakistan's rich historic and cultural heritage. One of the most important aspects to consider is the legislative framework that would help in the conservation as well as the urban development of the region. It is there to ensure historic sites are preserved and environmentally friendly urban development is encouraged within the area. The WCLA the regulatory body of the Walled City of Lahore places great emphasis in protecting the heritage and culture present within the confines of the 12 gates of the walled city hence alterations are either not allowed at all or kept to a minimum. This plays a major role in preserving the historic significance and cultural relevance of the area. Moreover, strict building standards are also implemented that focus on adaptive reuse rather than damage or demolish historic buildings. (Raza et al.,2020).

In essence the Walled City of Lahore's conservation and growth is directly dependent on the legislative framework that is set into motion to cater to the issues that include the building codes, urban planning laws, heritage preservation laws and programs for communal participation. To further ensure the cause the idea of eminent domain can be utilized as well which allows the government to use private property whilst paying the owner the price for the property. It can be utilized to support comprehensive urban designs such as bike lanes, walkways and public areas. This in turn improves the overall livability of the region. Keeping in mind all the considerations it is possible that the walled city can become a starting point for a bicycle-friendly neighborhood that integrates both cultural and historic significance and encourages sustainable urban development.

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