Draft

SMART CITY PROPOSAL

Ludhiana

FOR THE SMART CITY CHALLENGE
Citizen Poll Ludhiana
Citizen Engagement

Focus Groups

Ward-to-ward surveys

Reach Out Campaigns

The Smart City team actively ran awareness campaigns and collected feedback from focus groups, popular schools and colleges, commercial areas, public spaces with the local citizens of Ludhiana.

Online-
facebook.com, myGov.in portal and dedicated website on smartcityludhiana

Phone-
whatsapp and SMS
85% of respondents think **air in Ludhiana is severely polluted**

59% of respondents said **PHC/CHC doesn’t have adequate facilities** to meet their medical needs

68% of respondents reported that there are **no adequate parking facilities** when they go for shopping

Only 35% of respondents get **online service delivery** from all departments

76% of the respondents **don’t feel safe during night**

89% of the respondents feel that **public transportation needs to be improved**

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**4,050 RESPONSES** on MyGov

**2,206 VISIONS**

**1,844 VOTES**

**99,687 SURVEY RESPONDENTS**

The following summarizes feedback from citizen engagement process – hard copy survey forms + www.Mygov.in + www.smartcityludhiana.in
Top Priorities for citizens of Ludhiana

Environment Control is Priority 1 for 33.79%

1. 24 x 7 Power supply
2. Adequate & quality Water supply
3. Business Friendly Environment
4. Citizen participation in Governance and promoting e-governance
5. Dedicated Bicycle tracks in the city
6. Education
7. Environment control – pollution (air / sound / water)
8. Healthcare
9. Industrial area- waste disposal
10. Non-Conventional sources of energy
11. Others (please specify)
12. Parks and Recreation
13. Pollution free Buddha Nala
14. Public Safety and Security on streets
15. Public Transportation
16. Sewage & Drainage
17. Solid Waste Management
18. Traffic Management & Parking
19. Wi-Fi and Internet Connectivity

Number of survey respondents = 99,687

Solid Waste Management, Adequate & Quality power supply and 24x7 Power Supply are the top three items in priority 2 list of the citizens

Traffic Management & Parking also appear in top 5 of Priority 2 list
SWOT

STRENGTHS

Physical and Socio-Economic Features:

- Heart of Punjab, biggest trade business hub of Punjab- **Biggest Cycle manufacturing & parts in India and 2nd largest in the world**
- Connectivity –railways/road- Amritsar-Kolkata(NH-1) and Chandigarh-Ferozepur (NH -95) pass through the city
- Agricultural university and engineering education; health care education including nursing, paramedical
- Manufacturing hub (Agriculture equipment, hosiery, cycle-N, hand pump-N, I, machine tool-N etc.)
- 2001 census - total literacy rate of Local Planning Area is 78%
- 63% of the total population - non-workers. Major center for tertiary activities, approx. 84% of the total workers

Infrastructure:

- NMT constituting almost 46.5% of total trips (31.5 % Walk and 15% Cycle trips)
- Total 6,10,000 Cycles in the city
- Surplus Power - 24X7 power supply, 100% metering, establishing GIS base coordinated maps, Power losses < 6%, designated theft control system
- Power system is implementing SCADA being handled by PSPCL
- 87% coverage for water supply, with availability of Surface Water. Total 240355 no. of water connections with 10 hour of water supply daily.
- 61 nos. of new reservoirs built for improving water supply and their capacity (i.e. improvement in water storage (MLD)
- 85% area have sewage connections
- Few existing ICT initiatives like Mobile apps, public grievance system, CRAMET for parking
- 18,7528 traffic challans have been issued till sept 2015 for over speeding, red light jumping, and drunken driving

WEAKNESSES

Physical and Socio-Economic Features:

- Densely populated, unplanned with mushrooming of slums due to migrant population- inhuman living conditions for migrants
- Lack of air connectivity
- Encroachment of public property 25% of population living in slums

Infrastructure:

- 16 lakh registered vehicles with 55,000 vehicles (80,000 PCUs) enter city every day
- Inner city area witness total traffic volume of 150,000 Vehicles (140,000 PCUs)
- High modal share of auto rickshaws (13% with walk trips and 25% without walk trips, 30,000 auto-rickshaws operate daily).
- Bus transport is negligible, (only 50 buses operating on 5 routes of 70 Km length of the total road length of 1376 Km.
- Dust generation in ports due to cargo handling near the Dry Port
- High emission levels due to Industries and petrol & diesel driven vehicles especially autos contributing about 70% of the city pollution, given by PPCB in a report submitted to high court
- Lack of footpaths and cycle tracks. Only 70 Km of walkways out 300.45 Km of road network.
- Exploitation of Ground Water with 100% dependency with Deep Bore wells 696 and Shallow Bore wells 299 accounting to 560 MLD
- High amounts of water wastage with no metering or recycling strategies in place
- NRW > 20% - The City has about 2.39 lakh authorised and about 1.3 lakh unauthorised connections.
- No effluent collection network in spite of the large industrial land use
- Poor solid waste management - only about 25% of the City areas are covered by door to door solid waste collection.
- Many industries have their developed DMP, but disaster management plans pan city are not integrated with city level DMP
### Physical and Socio-Economic Features:

<table>
<thead>
<tr>
<th>OPPORTUNITIES</th>
<th>THREATS</th>
</tr>
</thead>
<tbody>
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<td><strong>Investment Opportunity</strong></td>
<td><strong>Goods from China</strong></td>
</tr>
<tr>
<td>Ludhiana being the cycle manufacturing hub of India, <em>Cycle can be promoted as an alternative mode of transport</em></td>
<td><strong>Industrial Manufacturing Competition (Tirrupar, Tamil Nadu)</strong></td>
</tr>
<tr>
<td>Bicycle and Active Fashion Industry - Expansion in existing Industry</td>
<td><strong>Change in Tax regime</strong></td>
</tr>
<tr>
<td>Market of luxury goods</td>
<td><strong>Encroachments resulting into congestion in city</strong></td>
</tr>
<tr>
<td>Potential for skill development</td>
<td><strong>Personal choice for using Car and less inclination towards using public transport</strong></td>
</tr>
<tr>
<td>Trade with Neighboring Countries</td>
<td><strong>Infrastructure:</strong></td>
</tr>
<tr>
<td>Scope for expansion in the Housing for the weaker section</td>
<td><strong>Pollution-air, water- Impacts of health of citizens</strong></td>
</tr>
<tr>
<td>Large Employment potential-Skilled, semiskilled</td>
<td><strong>Highest Per Capita Vehicle in India</strong> with 21, 23,215 cars being handled daily on the roads with an alarming no. of vehicles regd. In calendar year 2014 = 1,40,000</td>
</tr>
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</table>

### Infrastructure:

- Waste to energy generation plant as proposed in existing DPR
- High Work Force Participation Ratio (38.6%) and Shorter trips lengths. (Average trip length of 3.7 Km) indicates the potential for compact and sustainable transport
- Potential for low capacity bus based public transport system
- Renewable energy generation
- Underground of power cables
- Rain water harvesting
- Promotion of CNG fueled transport
- **Promotion of NMT like e-rickshaws** and restriction of autos in city core
- Implementation of 117 MLD CETP (3 Units) by cutting off industrial effluent from domestic sewer network is in implementation stage, but waiting for funds

- Ludhiana part of top 15 most polluted cities in the world (WHO data, 2014)
- High accident rate on arterial roads act as deterrent in using NMT as mode of transport
- As per the Seismic Zoning, Ludhiana falls in Seismic Zone IV, a high damage risk zone
- **No storm water network for 90% of the city** causing over burden on sewage network and overflowing and contamination during rains
“Ludhiana, the clean and green bicycle capital of the country”
Ludhiana, Kanpur among world's top 10 cities with worst air pollution

Many of these cities are among the fastest-growing in the world. And in some, residents burn wood and coal for warmth, releasing additional emissions.
VISION to make
LUDHIANA
A Livable and Lovable City

To provide an enhanced quality of life to citizens of Ludhiana through social well-being, better health and a safe environment with reduced dependence on cars, reduced traffic congestion and better air quality, to strengthen Ludhiana as a business friendly International Manufacturing Hub with sustainable infrastructure that will facilitate job growth for all sections of society; where technology will assist citizens to make their desired choices for day-to-day activities; where citizens have a choice of multiple modes of mobility; where education, sanitation and public health facilities are easily accessible & available; where environment and depleting natural resources are preserved leading to a vibrant urban environment.
The Most Bike Friendly City in India
Healthy and Thriving
Safe and Walkable
Improved Air Quality
Reduced Traffic Congestion

Solution

Pollution

Convergence with
Make In India
Swatch Bharat Mission
Digital India
Amrut

Ludhiana 2025
STRATEGIC BLUEPRINT 2025

The Most Bike Friendly City
STRATEGIC BLUEPRINT 2025

Safe and Walkable
STRATEGIC BLUEPRINT 2025

Improved Air Quality
Reduced Traffic Congestion
STRATEGIC BLUEPRINT 2025

Technologically Innovative City
Economically Resilient City
Controlled Growth in the City
GOALS AND SUB GOALS

Re-discover the Bicycle capital of the world
- Bicycle manufacturing hub of the world - *Align with “Make in India”*
- Innovative and indigenous solutions like bamboo bicycles
- Participation by citizens in biking culture
- Healthier and more active lifestyle
- Improve health metrics

Enhance Health + Wellness of citizens
- Promote healthier mobility options – like Bicycles, e-rickshaws
- Reduce pollution and vehicular congestion
- Mitigate industrial pollution
- Provide better integrated healthcare facilities to citizens – inclusive care, smart hospitals

Reduce Traffic Congestion
- Integrated Traffic Management Systems (IMS)
- Make streets pedestrian and bike friendly
- Improve existing Public Transport
- Reduce dependence on privately owned vehicles
GOALS

Clean + Green the city
- Switch from diesel and petrol to electric and renewable sources
- Alternative sources of energy for public space lighting - 10% of the Smart City’s energy requirement should come from solar energy
- Integrated Solid Waste Management Strategy - Align with “Swachh Bharat Mission”
- Waste to energy

Ensure Public Safety
- Responding effectively to traffic patterns, disasters, security breeches
- Crime prevention and monitoring, and protecting citizens and public assets
- Street lighting to ensure walkable environment
- Emergency response
- Law enforcement for traffic rules, pedestrian rights and safeguarding right of way for bike riders

Enable E-Governance
- GIS based mapping
- Smart Metering
- Smart Monitoring
- App based and telephonic citizen grievance redressal system – plus into existing system available on MCL website - Single emergency help line
- 24x7 Information kiosks
1 or 2 PAN city initiatives that are ICT enabled and improve public service
GPS enabled ‘Smart’ E-Rickshaws to replace diesel autos running in the city. The initiative will reduce pollution, congestion, health and safety problem in the city and provide a better livelihood to drivers. Local manufacturing in Ludhiana will also contribute to the auto parts manufacturing industry.
Building upon ongoing project of GIS mapping of MCL properties to levy property tax, this initiative looks at expanding the initiative by linking it with NPR initiative, building a robust command center for future operations. These systems can also be used by police, fire departments, election department and in disaster management etc.
area based development

Smart City Proposal
Smart City Features Considered for Site Evaluation
Based on MoUD Criteria

- Robust IT Connectivity & Digitalization
- Innovative use of Parks & Open Spaces
- Intelligent Traffic Management + Smart Parking
- Walkability & Cycling
- Energy Efficient Street Lighting
- Smart Metering
- Solar Generated Electricity
- Pedestrian friendly pathways
- Non-Vehicle Streets/ Zones
- Assured Power Supply
- Storm Water Reuse + Rain water harvesting
- Waste Water Recycling
- Underground Electric Wiring
- Sanitation
- Solid Waste Management
- Safety & Security of Citizens (esp. women & children)
- Adequate Water Supply
The three shortlisted sites are based on citizen responses in surveys and focus group discussions.

### Ferozepur Road Area: Retrofitting
- **Extent:** 790 Acres
- **Feature:**
  - North: Government College Road
  - East: Pakhwal Road
  - South: Sidhwan Canal
  - West: Punjab Agricultural University

### Slum Rehabilitation Jawahar Nagar: Redevelopment
- **Extent:** 120 Acres
- **Feature:**
  - North: Ferozepur Road
  - East: State highway 95
  - South: Railway line
  - West: National Highway

### City Core Revival: Retrofitting
- **Extent:** 500 Acres
- **Feature:**
  - North: Chowda Bazar Road
  - East: Suffian Bagh Road
  - West: Ludhiana Railway Station
### City Core Revival: Retrofitting

<table>
<thead>
<tr>
<th>Extent</th>
<th>500 Acres</th>
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</thead>
<tbody>
<tr>
<td>Wards Included</td>
<td>35, 36, 37, 52</td>
</tr>
</tbody>
</table>
| Area Character | - Character dominated by transport hubs – railway station bus stand  
- Busy and chaotic appearance  
- Encroachments along all major roads, esp. in commercial areas  
- Mix of small and medium Industrial area in very close proximity to Residential uses |
| Primary Land uses % | 65% Residential  
13-14% Industrial  
20% Mixed-use + Commercial+ Institutional |
| Open space % | 2-3% |
| Slums settlements | 1 |
| Projected Population 2017 | 1,22,185 |
| Health & Education | - Ramgaria Girls college  
- CMC ludhiana  
- Govt. senior secondary school  
- Vidya Mandir  
- Civil hospital, CMC ludhiana |
| Key Landmarks | - Chowda Bazar, old city  
- Railway Station |

### Ferozepur Road Area: Retrofitting

<table>
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<th>Extent</th>
<th>790 Acres</th>
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<tbody>
<tr>
<td>Wards Included</td>
<td>52, 53, 56</td>
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</tbody>
</table>
| Area Character | - Regional road Ferozepur passes through the area, with prominent junctions  
- Affluent residential neighbourhoods  
- Infrastructure in good condition  
- Large number of institutes provide good character to the place  
- Recreational spaces in good condition- both city wide parks and pocket parks |
| Primary Land uses % | 80% Residential  
10% Commercial |
| Open space % | 15% Commercial |
| Slums settlements | 1 |
| Projected Population 2017 | 38,000 |
| Health & Education | - Govt. college for Boys  
- Next to PAU  
- Khalsa College  
- Next to Swami Dayanand Medical College |
| Key Landmarks | - Rose Garden, Leisure Valley  
- Ghumar Mandi, Kipp’s Market  
- Bhaibala Chowk, Arti Chowk, Saraba Nagar main Market |

### Slum Rehabilitation Jawahar Nagar: Redevelopment

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<tr>
<td>Wards Included</td>
<td>50 (area 50 acres)</td>
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</tbody>
</table>
| Area Character | - Slum/ Camp Settlement  
- Poor Condition  
- Commercial Retail unauthorised developed along the fringe – mall road, bus stand  
- Encroachments along the ward boundary abutting mall road, station road |
| Primary Land uses % | 70% Residential approx. |
| Open space % | 3-4% approx. |
| Slums settlements | Camp Settlements primarily |
| Projected Population 2017 | 7328 (1600-1700 families) |
| Health & Education | - Jawahar Camp Boys School  
- Gurunanak Girls college |
| Key Landmarks | - Bus terminal adjacent to site  
- Lajpat Nagar market |
Citizen Engagement – Poll for site selection

- MyGov.in
- Smartcityludhiana.in
- Whattsapp
- Booths
Ferozepur Road Area - Selected area (retrofit)
Existing Conditions Analysis Plan

<table>
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<tr>
<th>Sl. No</th>
<th>Feature</th>
<th>Detail</th>
</tr>
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<tr>
<td>1</td>
<td>North</td>
<td>Government College Road</td>
</tr>
<tr>
<td></td>
<td>East</td>
<td>Pokhwal Road</td>
</tr>
<tr>
<td></td>
<td>South</td>
<td>Sidhwan Canal</td>
</tr>
<tr>
<td></td>
<td>West</td>
<td>Punjab Agricultural University</td>
</tr>
<tr>
<td>2</td>
<td>Area</td>
<td>790 Acres</td>
</tr>
<tr>
<td>3</td>
<td>Wards Included</td>
<td>52, 53, 56</td>
</tr>
</tbody>
</table>
| 4      | Primary Land uses % | 80% Residential  
|        |                  | 10% Commercial                              |
| 5      | Open space %     | 15% approx.                                 |
| 6      | No. of slums settlements | 1     |
| 7      | Projected Population 2017 | 1,20,654                                   |
| 8      | Health Education | Next to Swami Dayanand Medical College       |
|        | A) Schools       | Govt. college for boys Next to PAU Khalsa College |
|        | B) Hospitals     | Rose Garden, Leisure Valley, Ghumar Mandi, Bhaibala Chowk, Arti Chowk, Sarabha Nagar main Market |

LEGEND
- CITY LEVEL LANDMARK
- AREA LEVEL LANDMARK
- URBAN NODES
- RESIDENTIAL
- COMMERCIAL
- OPEN SPACES
- ROADS
The residents of Ludhiana see the Area-Based Development proposal to be creating the **maximum impact** in the most geographically, economically and socially suitable area of the city. Reasons for selection of this area include:

- The area being a **high significance area locally and regionally** due to its location along the major Ferozepur road
- **Availability of relatively good condition Infrastructure** making it **easier to implement a 100% successful smart pilot project** with lesser capital and time investment yielding more results, visibility and in shorter time frame
- The area having an **optimum mix of uses and a diverse user base** making itself suitable for maximum citizen impact.
- The area can lend itself to **the best smart technology led solutions**
Ferozepur Road Area - Selected area (retrofit)

Key Interventions

Vehicle Free zones

Pedestrian and bike friendly streets

Bicycle highway along canal

Speed Limit cap of 25km/hr

Multi use Multi level car parking

Essential features as per MoUD requirement
AREA BASED DEVELOPMENT

Dedicated Cycle Tracks shared with Footpaths + Public Bike Sharing
AREA BASED DEVELOPMENT

Streetscape Improvements and Beautification
Including footpaths, landscape, signage and bioswale on Ferozepur road
AREA BASED DEVELOPMENT - OTHERS

Rooftop Solar Panels

Hoardings free city & Digital Hoardings

Public Toilets (10 nos.)
AREA BASED DEVELOPMENT

Elevated Bus rapid transit system with Smart Bus Stops

Network length: 98.76 kms.

Fleet requirement: 166 with 95% fleet utilization.

ridership for 2015-16: 43386 passengers/day

Cross section with 70m R.O.W

P.I.S at bus stop

Real time P.I.S in bus

DPR already prepared for BRTS along Ferozepur road. Integrating plan with other traffic management proposals.

Real time P.I.S at stations

P.I.S in mobile

Public Bike Sharing

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Public Bike Sharing
Area Based Development - Transportation

Rob at Pokhwal Road and FOB

MLCP at 3 locations

Smart on street parking - 300 bays

Area wide - E-rickshaws
Area Based Development - Transportation

Bus shelters

ATCS intersections
AREA BASED DEVELOPMENT - SOLID WASTE MANAGEMENT

Integrated Solid waste Management system
AREA BASED DEVELOPMENT - INFRASTRUCTURE PROJECTS

Undergrounding Power cables

Storm Water network

Street Lighting

Rain water harvesting
AREA BASED DEVELOPMENT - INFRASTRUCTURE PROJECTS

Water Supply System

- Water Storage facility
- Water distribution network
- Replacements of Valves
- SCADA System
- Smart Meters system

Waste Water System

Potable Water  Waste Water