

# Strategy and Action Plan for Electrification of Public Transport and Intermediate Public Transport in Ahmedabad and Mahesana

## Session 1: Ahmedabad

Making public transport more inclusive –  
Ahmedabad bus electrification strategy

Shalini Sinha, Smruti Jukur, Pratul Ahuja

# Project Context

- 1 Slow uptake of electric vehicles in India - electric mobility transition mostly as standalone projects adding only few electric vehicles to existing fleet
- 2 Absence of a strategic plan for accelerating electric vehicle adoption at a local level
- 3 Lack of awareness in the cities on climate change mitigation and also limited capacities to assess requirement and approach for electrification of vehicles
- 4 Challenges pertaining to procurement, financial barriers, technological barriers and infrastructure augmentation affects decision making

Translation of policies to local level plans -  
sustained efforts which accelerate transition to electric mobility

# Context of Ahmedabad

Population 7 million  
(est. 2021)

Share of public  
transport declining  
in the city

City procuring  
electric buses (200  
operational buses)



## An inclusive and integrated approach

Review of international  
experience of  
electrification strategy for  
E-buses

Review of EV Ecosystem  
for Public Transport at  
national, state and local  
level

Existing e-bus operations  
analysis

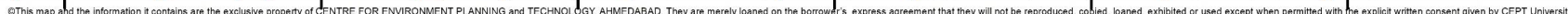
Base situation assessment  
for Service levels and  
Users' perception for  
existing AMTS and BRTS

E-bus users and non-  
users' perception analysis

Stakeholder engagement  
for e-bus transition

Gap-identification in  
existing bus and e-bus  
operations ty& EV  
ecosystem maturi

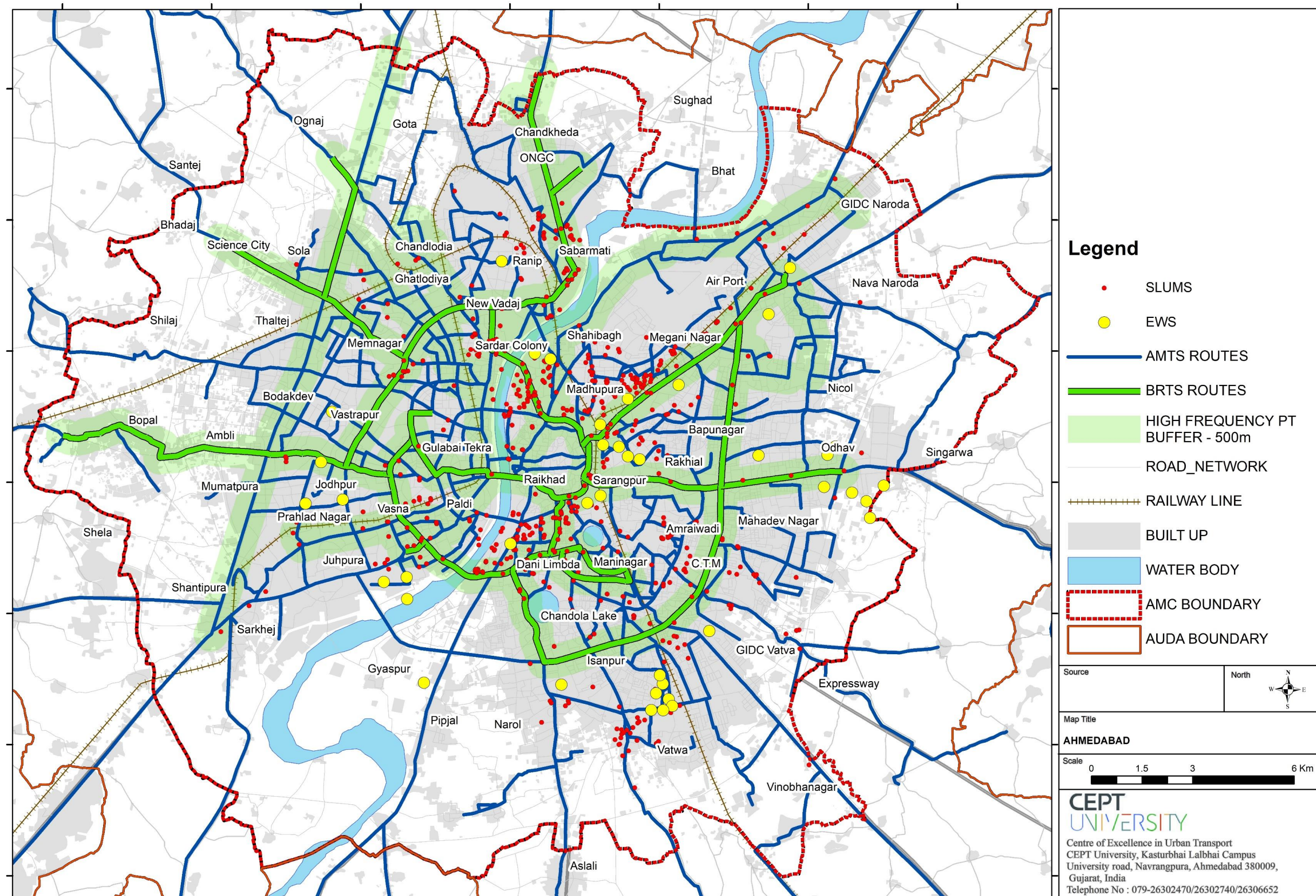




- Source: AMTS / AJL Data, 2020



# Public Transport Coverage



**96%** developed area coverage

**93%** population coverage

**53%** population coverage by  
high frequency routes (headway < 10 min)

**50%** EWS housing locations and  
**75%** Slum locations are served by  
high frequency services

## Uncovered Areas

- **Areas adjoining SP ring road**
- **Eastern City** – Vatva, Mahadevnagar, Rakhial, Amraiwadi, Mangal Nagar, Naroda
- **Western City** – Vastrapur, Juhapura, Thaltej, Shilaj, Ognaj



# Travel preferences & PT perception surveys

## Low income communities including women

- Focus Group Discussions across 12 low-income settlements in the city

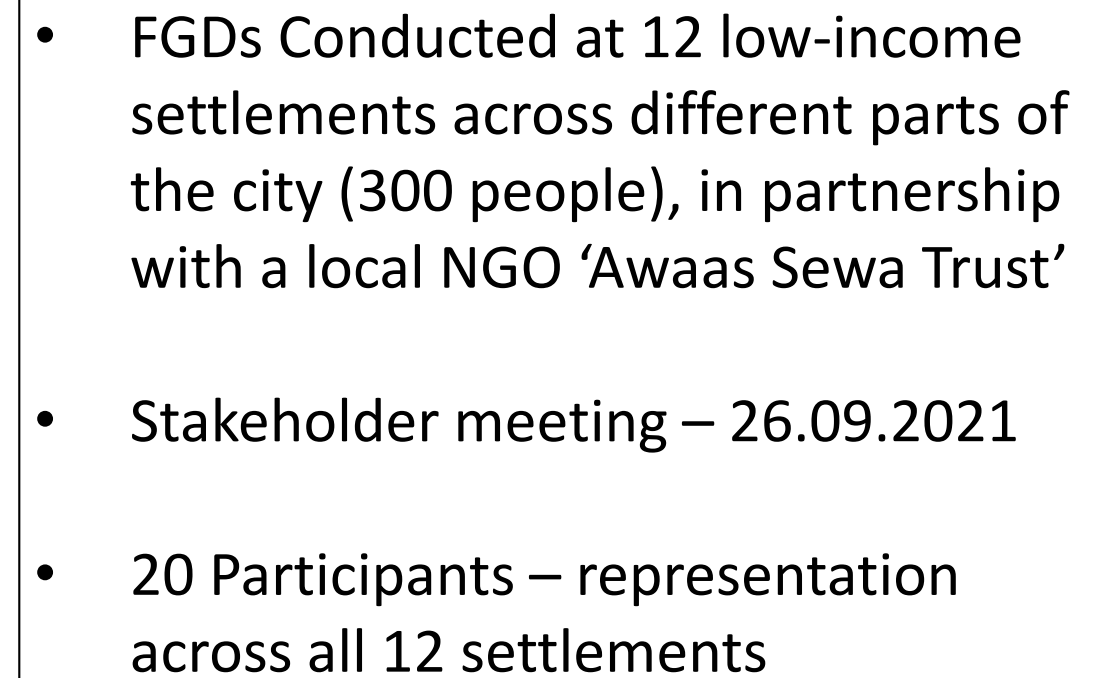
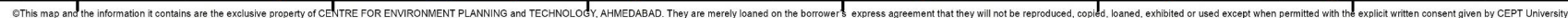
## Existing e-bus users

- On-board e-buses

## Other mode users (Autorickshaws, private vehicles)

- Major destination nodes / parking locations

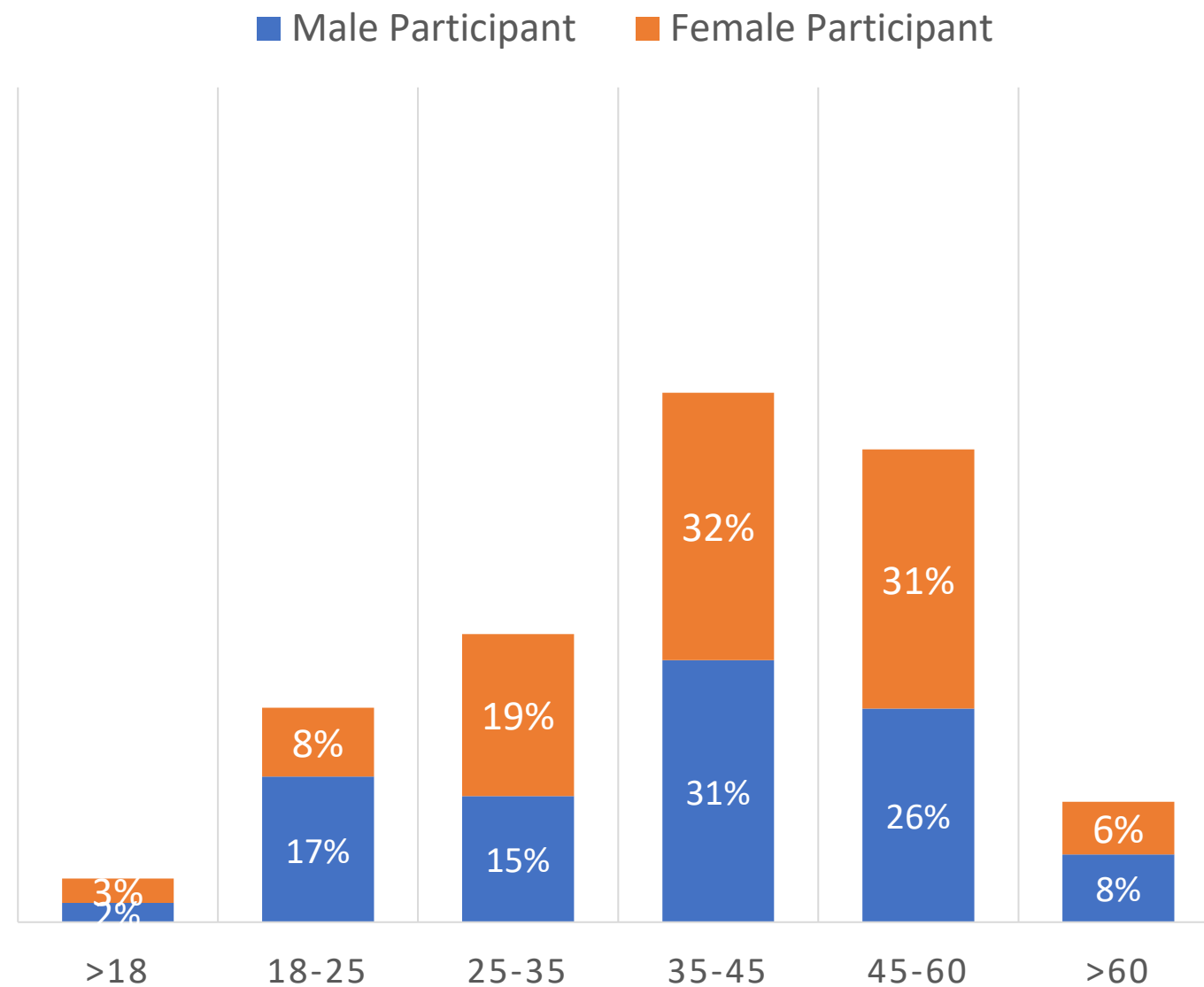




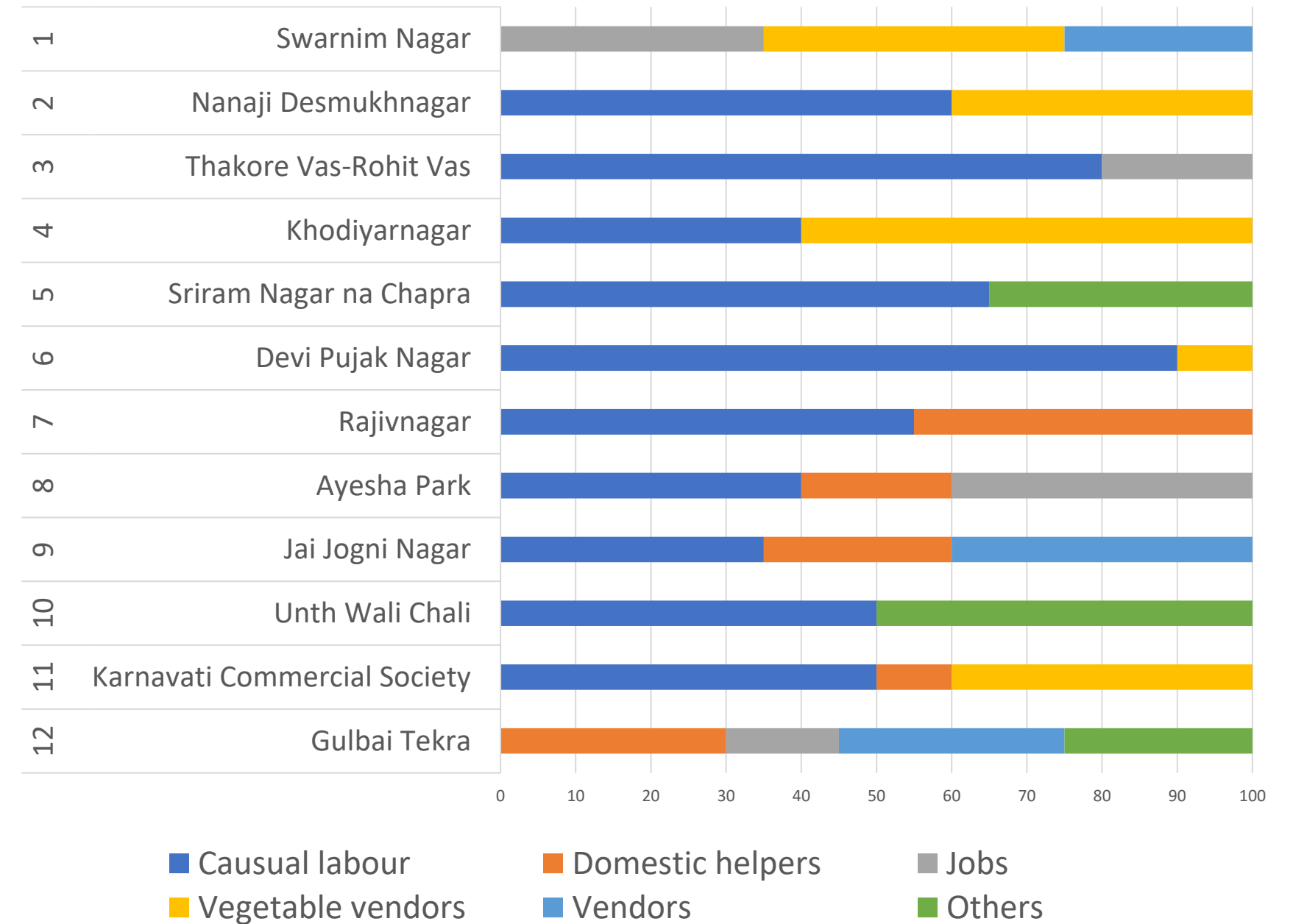


# Profile of the respondents

## PROPORTION OF PARTICIPANTS BY AGE AND GENDER



## Major occupations by location



Respondents predominantly involved in the informal sector;  
Household income levels upto INR 15000 per month



# Users' Perception



## AMTS Buses

- .Very affordable mode; service quality deterioration over the last decade



## BRTS Buses

- Faster, comfortable (AC) and reliable services; concerns of safety, last mile connectivity and lack of comfort with smart cards

### ACTION AREAS



#### SAFETY

- Seat reservations for women passengers.
- Driver training
- Easy bus access facilities for specially abled

- Driver training on:
  - Docking buses at stations
  - closure of bus doors once all passengers board the bus
  - Smooth and safe driving
- Availability of seats to passengers



#### SERVICE QUALITY

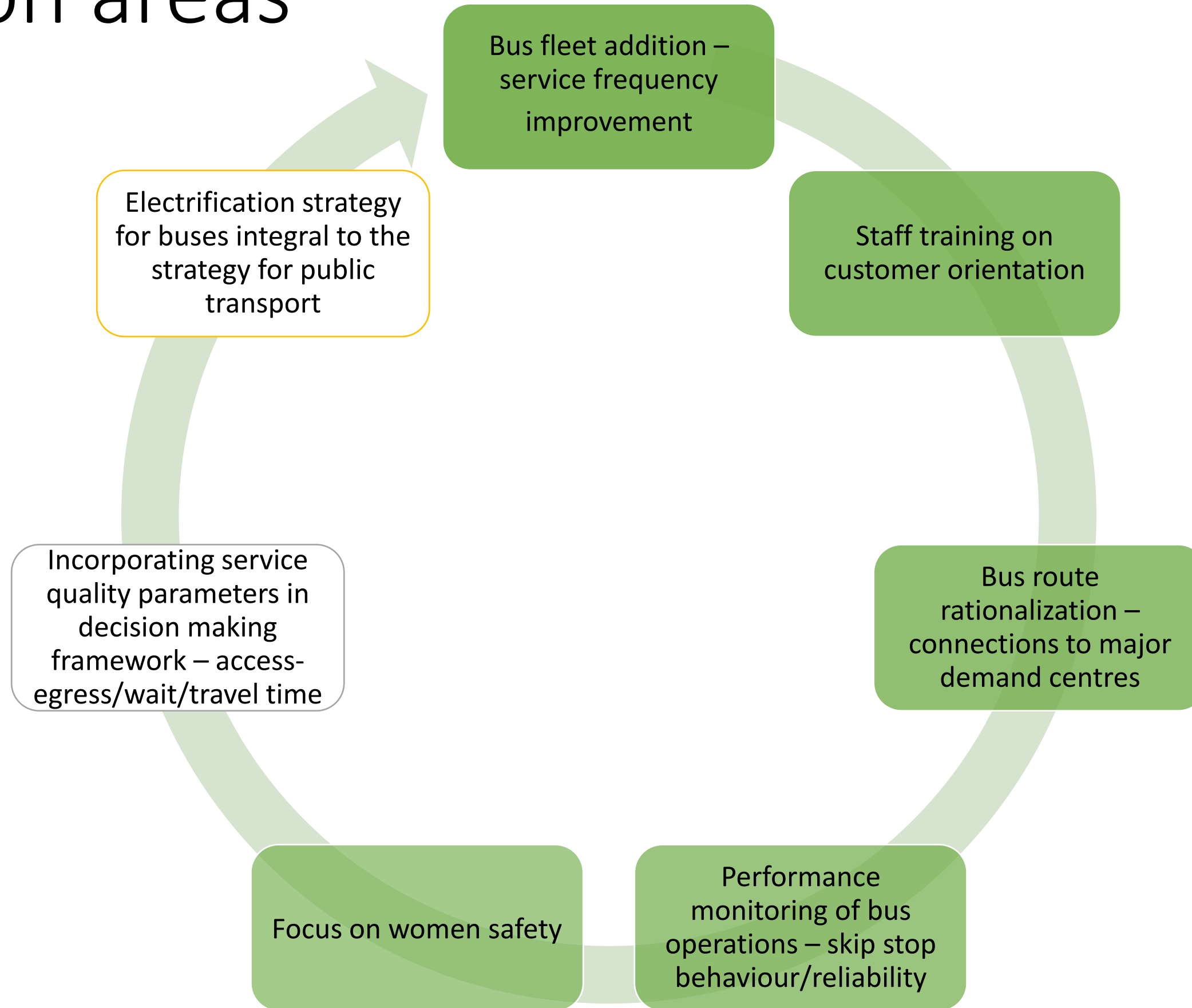
- Improve in service quality in terms
- Bus schedule information at bus stops
- No seating facility and information at bus stop
- Bus stopping at stops as per stop sequence
- Staff cooperation

- Awareness on Smart ticketing
- Strengthening last mile connectivity needs

# Commuter perceptions of electric buses

- ❑ High level of satisfaction with e-buses (Average score 4.85 out of 5)
- ❑ All the respondents find e-buses more comfortable than the conventional fuel buses.
- ❑ 96% of the respondents find noise levels to be lower in e-buses than the conventional fuel buses.
- ❑ 93% of the respondents are aware that the e-buses are environmentally friendly
- ❑ 75% of the respondents suggest transitioning the entire fleet to electric

# Action areas



# Scenario Impact Assessment Framework

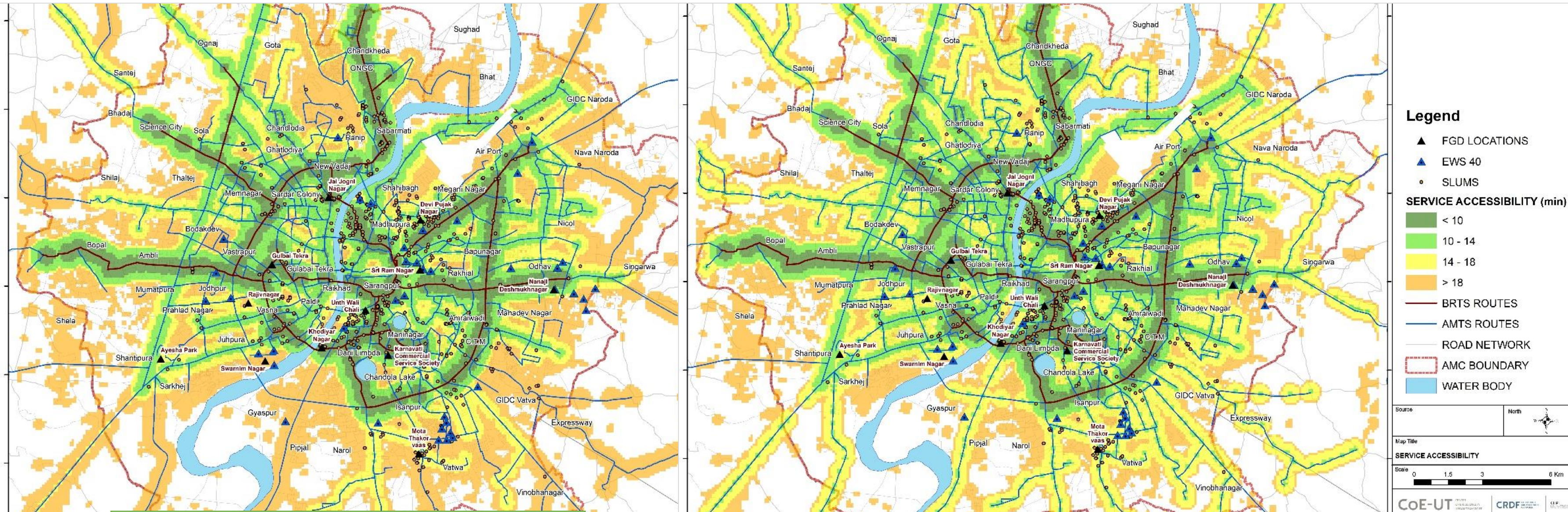
		For Users	For Society	For Operators
Output Indicators		Accessibility Improvements	GHG Emission Impacts	Financial Performance
		<ul style="list-style-type: none"> <li>• % increase in service accessibility for lower income group settlements</li> <li>• % improvement in destination accessibility</li> </ul>	<ul style="list-style-type: none"> <li>• % GHG emission reduction</li> <li>• Per capita emission reduction</li> </ul>	<ul style="list-style-type: none"> <li>• EPKM/CPKM</li> <li>• Cost/ Pass.km at 100% LF</li> </ul>
Inputs/ Assessment		<ul style="list-style-type: none"> <li>○ Wait time and accessibility time estimates at Grid level</li> <li>○ Total travel time assessment for destination accessibility</li> </ul>	<ul style="list-style-type: none"> <li>○ Mode share, fleet details, % electric fleet, emission factors, trip details</li> <li>○ GHG Emission calculation</li> </ul>	<ul style="list-style-type: none"> <li>○ Total Cost of Ownership for each scenario (mix of fleet)</li> <li>○ Revenue details</li> </ul>

# Accessibility Indicators





# Service Accessibility



**Existing Scenario**

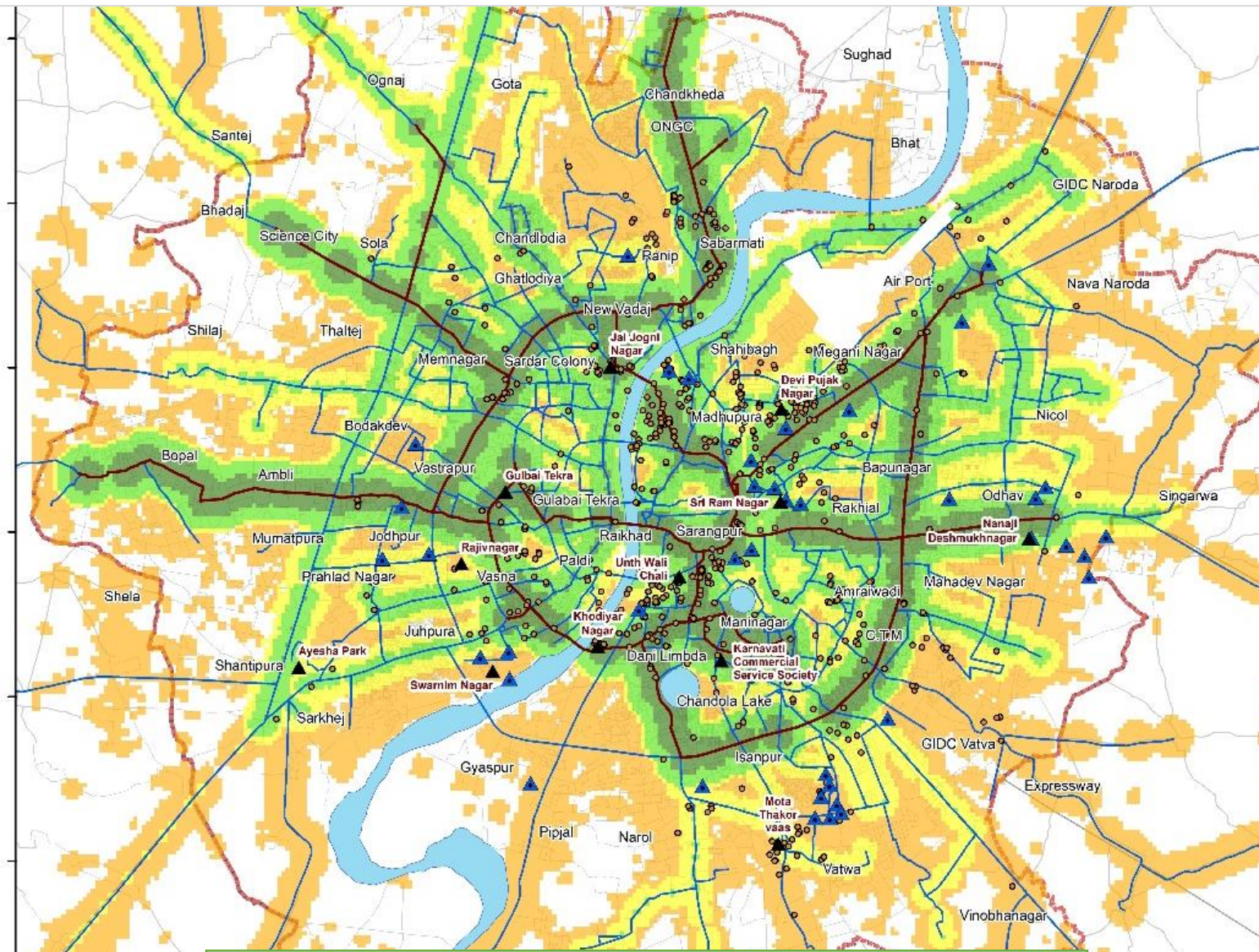
**Bus frequencies increase by 100%**

Service Accessibility Time (mins)	Overall Population	Developed Area	Low-income settlements
< 10	25%	19%	33%
10 to 14	34%	28%	40%
14 to 18	22%	21%	16%
> 18	19%	33%	11%

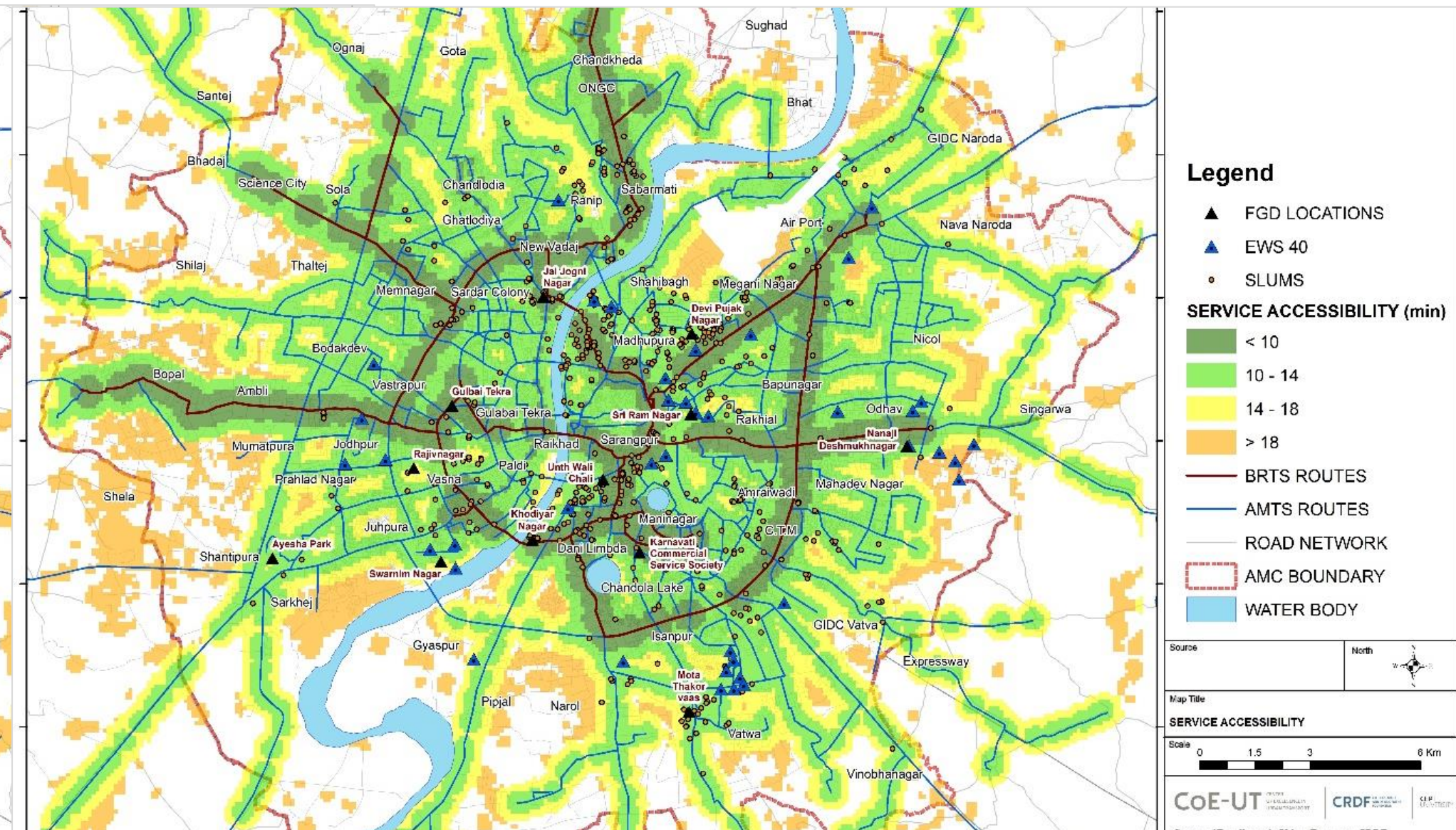
Service Accessibility Time (mins)	Overall Population	Developed Area	Low-income settlements
< 10	26%	20%	33%
10 to 14	39%	33%	44%
14 to 18	28%	30%	20%
> 18	7%	18%	7%



# Service Accessibility



**Existing Scenario**



**Bus frequencies increase by 200%**

## Legend

- ▲ FGD LOCATIONS
- ▲ EWS 40
- SLUMS

## SERVICE ACCESSIBILITY (min)

- < 10
- 10 - 14
- 14 - 18
- > 18

- BRTS ROUTES
- AMTS ROUTES
- ROAD NETWORK
- AMC BOUNDARY
- WATER BODY

Source: North

Map Title

SERVICE ACCESSIBILITY

Scale 0 1.5 3 6 Km

CoE-UT CRDF

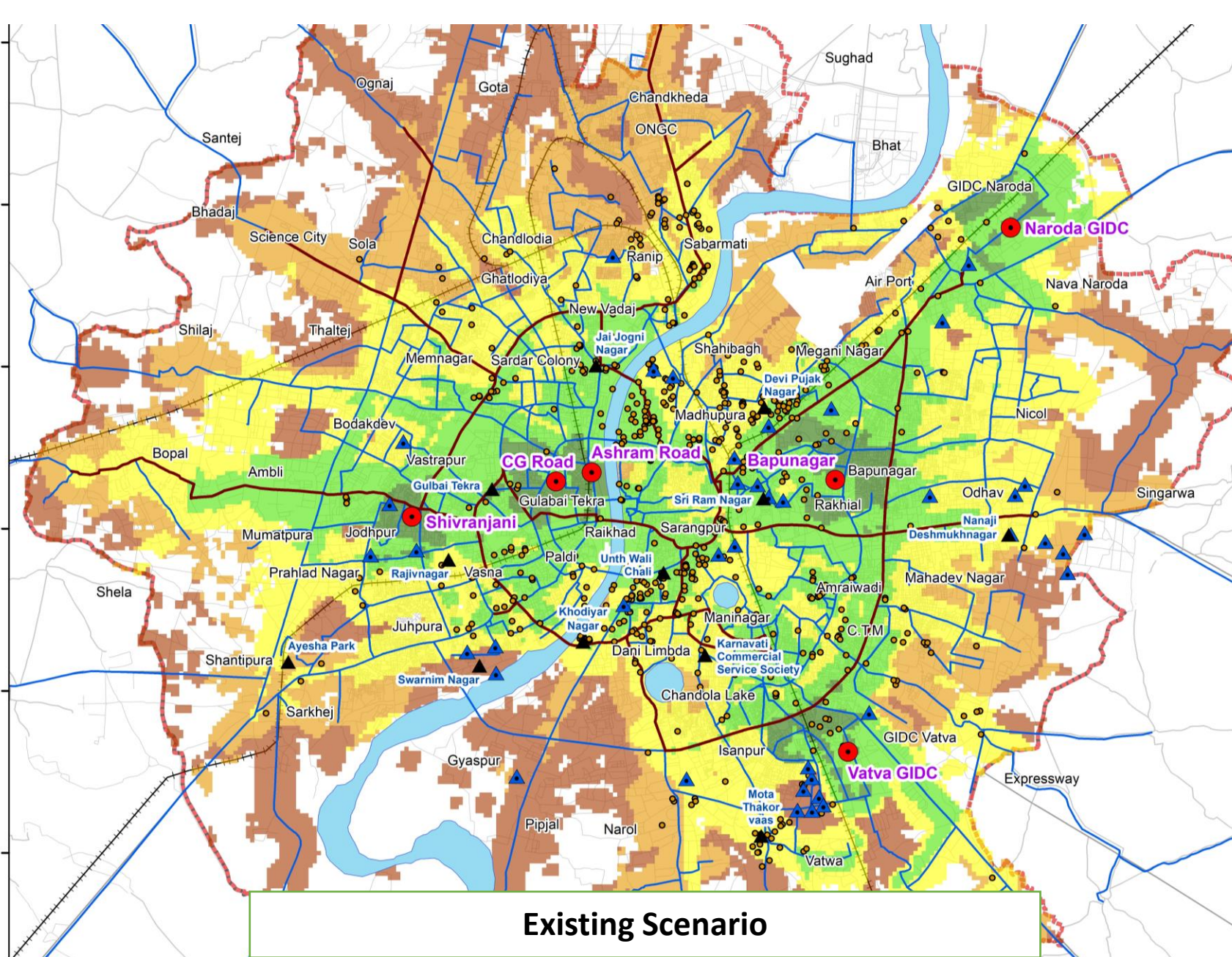
Source: CoE-UT, CRDF, and other sources

Service Accessibility Time (mins)	Overall Population	Developed Area	Low-income settlements
< 10	25%	19%	33%
10 to 14	34%	28%	40%
14 to 18	22%	21%	16%
> 18	19%	33%	11%

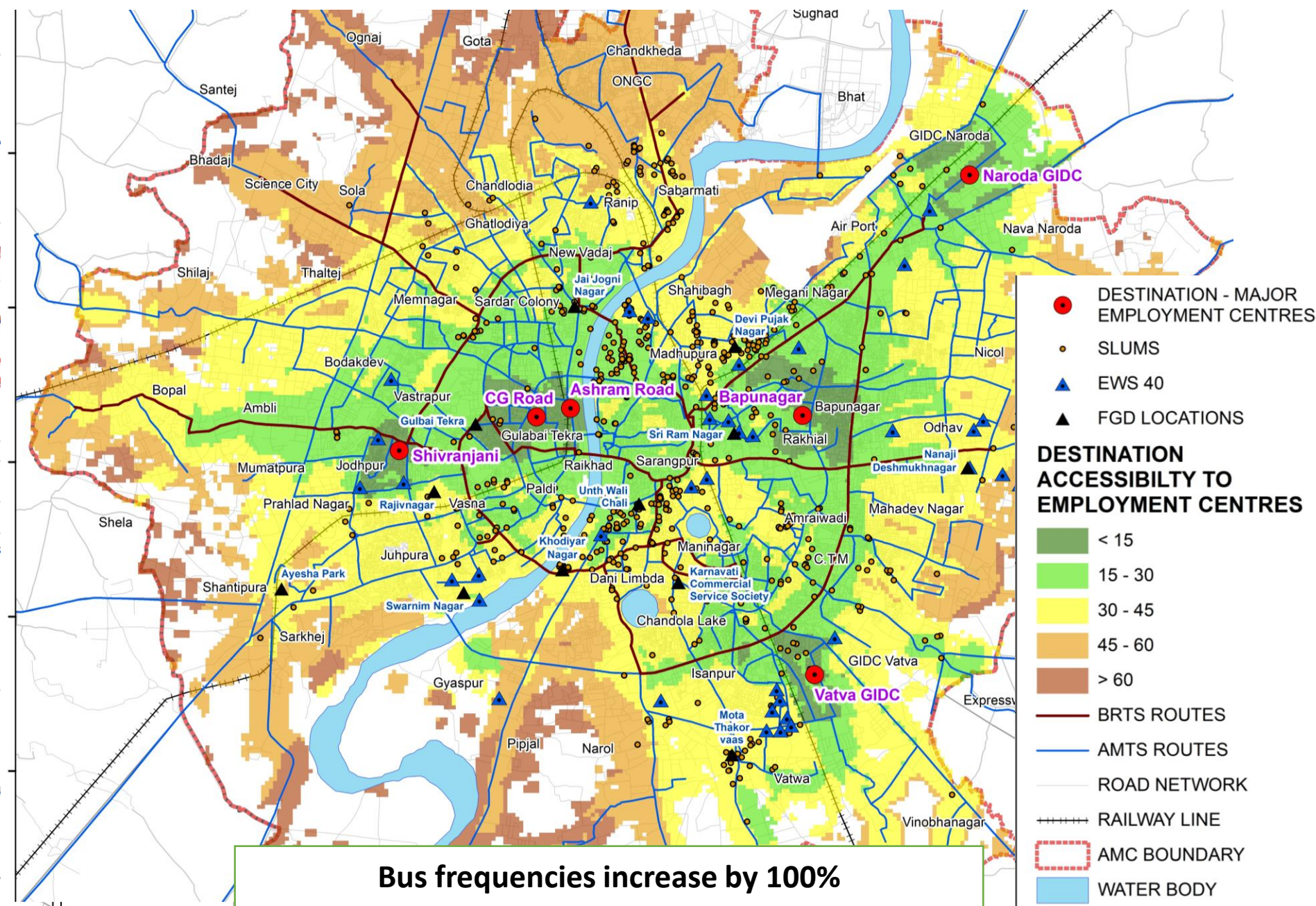
Service Accessibility Time (mins)	Overall Population	Developed Area	Low-income settlements
< 10	26%	22%	36%
10 to 14	57%	50%	56%
14 to 18	14%	16%	8%
> 18	3%	12%	0%



# Destination Accessibility – Work centres



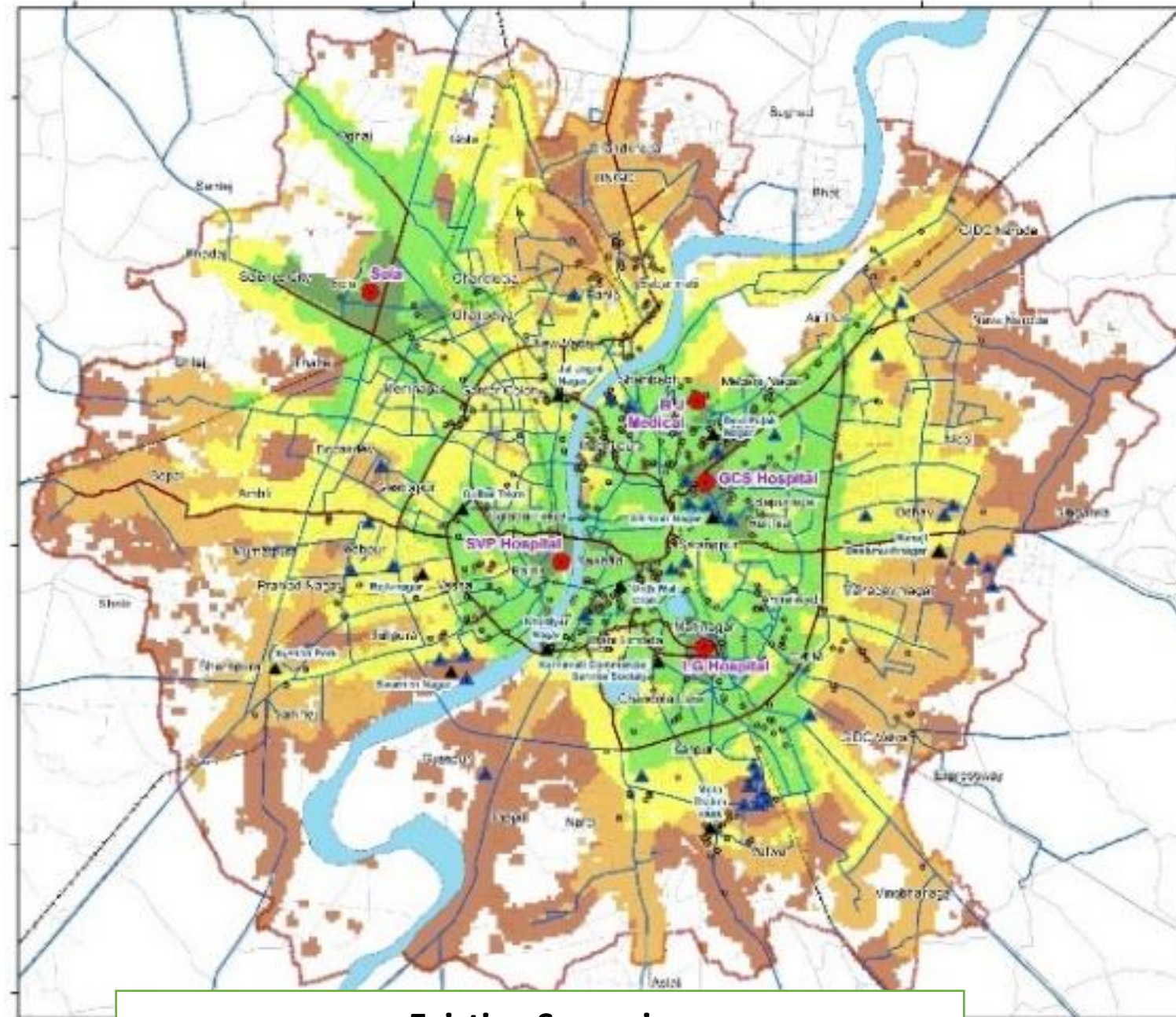
Travel time	Existing scenario
< 15	4%
15 to 30	28%
30 to 45	40%
45 to 60	18%
> 60	10%



Travel time	Existing	Doubling of buses
< 15	4%	5%
15 to 30	28%	38%
30 to 45	40%	42%
45 to 60	18%	14%
> 60	10%	1%

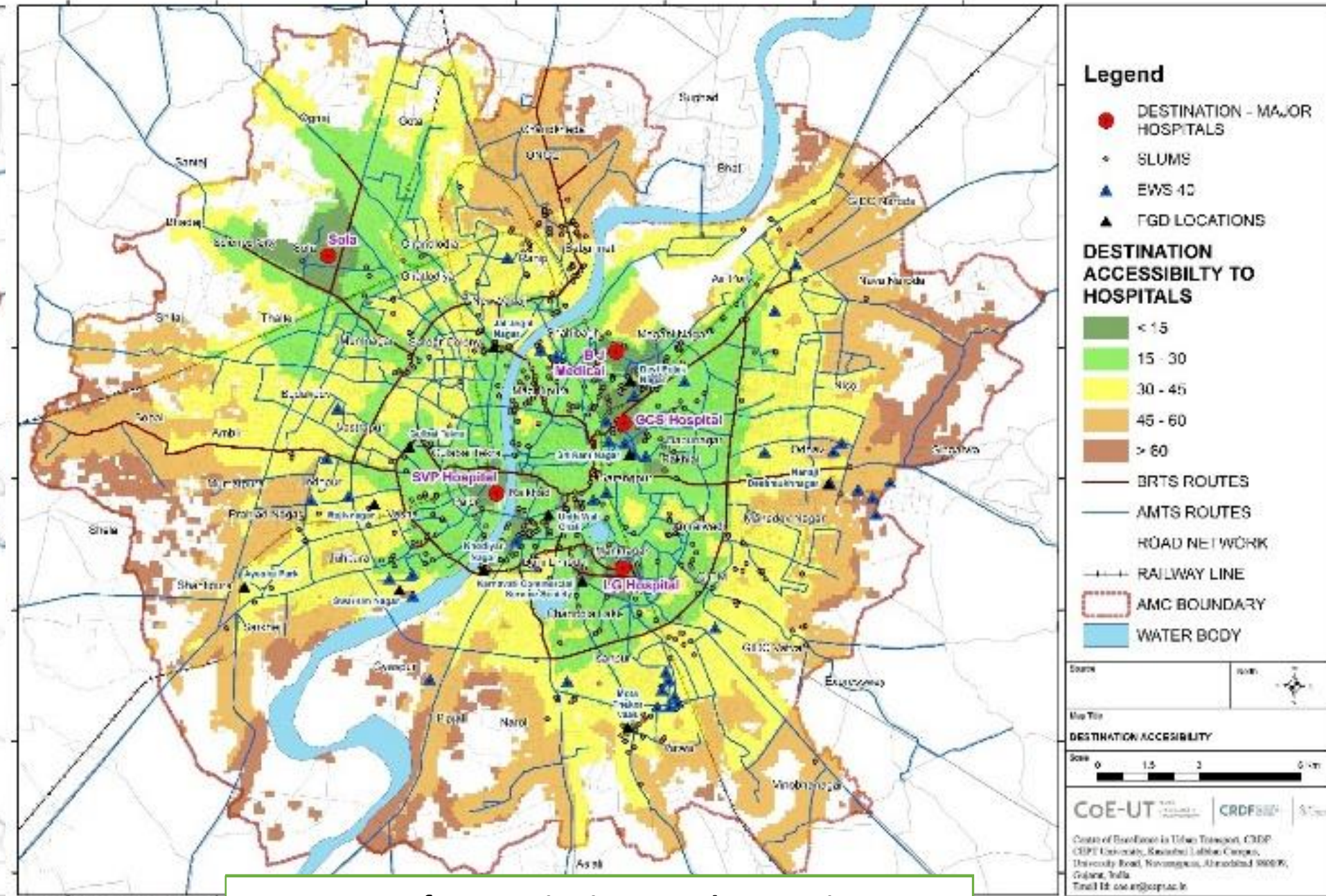


# Destination Accessibility – Health facilities



**Existing Scenario**

Travel time	Existing scenario
< 15	4%
15 to 30	39%
30 to 45	31%
45 to 60	19%
> 60	7%



**Bus frequencies increase by 200%**

Travel time	Doubling of buses	Tripling fleet size
< 15	6%	6%
15 to 30	39%	42%
30 to 45	35%	36%
45 to 60	18%	15%
> 60	2%	1%



Can help in analysing impact of PT interventions like:

Route changes  
Service frequencies  
Increased route coverage  
Ease of transferring  
Improved bus speeds



# Summary

- Electrification of buses as a means to improve public transport – an integral component of PT strategy 2031
- Accessibility indicators in Impact Assessment Framework
- User oriented key performance indicators
- Specific interventions towards customer orientation: staff training, information dissemination of new initiatives

# Thank you

