

# CAPACITY ASSESSMENT AND ENHANCEMENT FOR SAFE STREET DESIGN AND ENABLING NMT INFRASTRUCTURE

**VOLUME 5: LESSONS AND EXPERIENCES FROM 3 INDIAN CITIES IN NMT  
PLANNING, IMPLEMENTATION AND INSTITUTIONAL MANAGEMENT**

Chennai, Tamil Nadu | Pune, Maharashtra | Bengaluru, Karnataka

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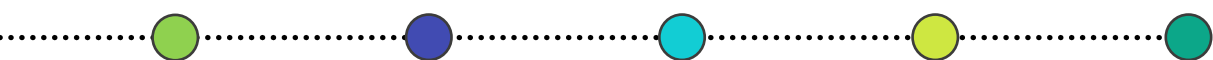
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# Contents

<b><i>1. Introduction</i></b>	5
• Purpose of this document	6
• Framework for this study	8
• Limitations of this study	9
<b><i>2. Following the NMT trail</i></b>	11
• Chennai, Tamil Nadu	12
• Pune, Maharashtra	16
• Bengaluru, Karnataka	20
• How do these cities fare against the framework for this study?	24
<b><i>3. Learnings and recommendations</i></b>	39
<b><i>References</i></b>	47

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## *Introduction*

Purpose of this document

Framework for this study

Limitations of this study



# *Purpose of this document*

Since 2015, Coimbatore City Municipal Corporation (CCMC) and Coimbatore Smart City Limited (CSCL) have been working on several projects focused on the improvement of non-motorised transport (NMT) infrastructure for the residents of Coimbatore. These include a 22 km long eco-mobility corridor connecting eight lakes, implementing model road projects, improving pedestrian facilities on seven roads, implementing tactical urbanism measures on Big Bazaar Road, and preparing a strategic city-wide NMT network plan.

As one of the three partner cities of the SMART-SUT Project, GIZ has been supporting CCMC to integrate the various NMT interventions for a holistic impact. As part of this vision, it was felt that there is a need to undertake an institutional capacity assessment to ascertain the capabilities of CCMC personnel to conceptualize and deliver more such projects/ initiatives. The assessment would then be followed up with a capacity enhancement plan tailored to their specific needs.

*“Capacity is the ability of people, organisations and societies as a whole to manage their affairs successfully and to continuously adapt in response to changing conditions. This involves identifying development constraints, designing solutions and successfully implementing these.” (GIZ Orientierungsrahmen).*

This capacity assessment and enhancement plan is envisioned to span across 3 stages -

## **1. DIAGNOSIS**

Review of the existing institutional and staffing capacity of CCMC to understand capacity and gaps (if any) on all aspects of non-motorized transport  
Documenting current processes related to NMT and road design including the process/ co-ordination between CCMC and other agencies with regard to design and implementation of projects

## **2. FORMULATING RECOMMENDATIONS**

Deriving recommendations to address gaps and capacity enhancement that are immediately implementable, midterm and long term  
Creating a plan for capacity building to fill skill gaps of staff (if any) which will include design of capacity building exercises

## **3. IMPLEMENTING RECOMMENDATIONS**

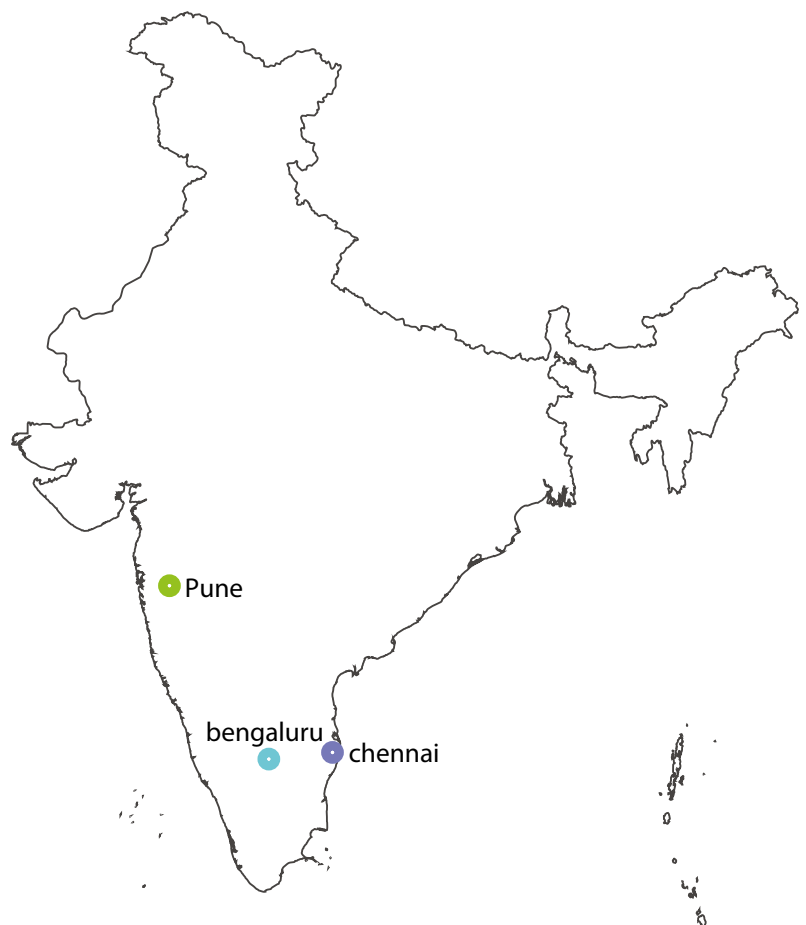
Scheduling and deployment of capacity building exercises in tandem with the project phases

One aspect of the 'Diagnosis' stage that feeds into the 'Formulating recommendations' stage of the work plan is to undertake secondary research to understand the efforts of other Indian cities that have made noteworthy strides in the planning and execution of non-motorized transport projects/ initiatives.

Learning from cities that are of a similar scale and governance structure will help Coimbatore take similar strides but for this knowledge transfer to occur in a productive manner, a systematic study of the city's efforts is needed. The key takeaways for Coimbatore will therefore be answers to several key questions including but not limited to-

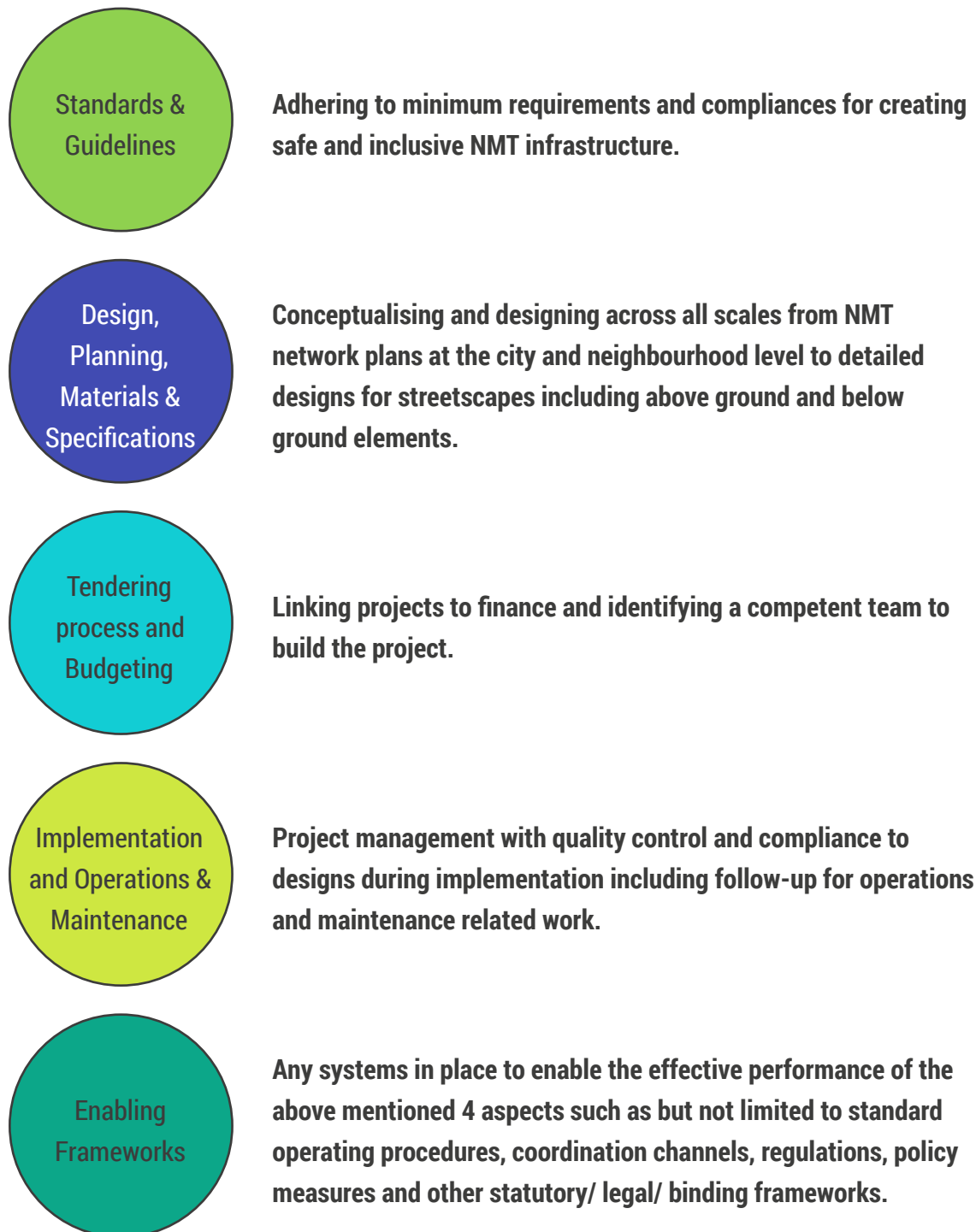
- How did other cities approach the improvement of NMT infrastructure?
- What policy measures did they take?
- How did they approach the design of NMT infrastructure?
- What changes did they make to institutional frameworks to enable NMT prioritization including organizational level changes?
- What is the key driving force for their NMT initiatives?
- How did they finance such initiatives?
- What kind of capacity enhancements were deployed to facilitate the improvement of NMT infrastructure?

This document therefore presents learnings from three Indian cities - ***CHENNAI, PUNE AND BENGALURU*** - owing to several NMT projects being implemented in these cities over the past decade.



# *Framework for this study*

For the purpose of this capacity assessment and enhancement plan, five critical aspects of realizing NMT infrastructure have been identified and the entire exercise i.e. Diagnosis, Formulating recommendations and Implementing recommendations, is framed around these five aspects. The research on the three cities presented in this document are also collated and presented under these 5 aspects listed here -





Additionally, the inferences from the 3 cities are presented in the form of learnings and recommendations at three levels:

*INDIVIDUAL-LEVEL* – Initiatives that target individual capacity enhancement of CCMC staff at various levels on expertise like planning, design, budgeting and implementation of NMT projects.

*ORGANIZATION-LEVEL* – Initiatives that target capacity enhancement at the organization level such as changes to organizational structure and defining clear roles & mandates and improvements to relevant processes such as design capabilities, project management, inter-organisational coordination and decision-making mechanisms.

*INSTITUTIONAL MECHANISMS* – Legal/ statutory frameworks and initiatives that enable individuals and organizations to effect changes to existing systems and undertake measures towards NMT prioritization.

## *Limitations of this study*

This study is limited by the availability and quality of secondary data sources for each city. With regard to some initiatives, the information trail was incomplete; websites and news articles did not present a full picture of the initiative from start to finish. Wherever possible, the dots were connected either through a logical conclusion or by seeking out individuals who were accessible via phone for answers. In some cases, the information was ambiguous and/ or had inconsistent reportage across different news articles.

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## *Following the NMT trail*

Chennai, Tamil Nadu

Pune, Maharashtra

Bengaluru, Karnataka

How do these cities fare against the framework for this study?

# Chennai

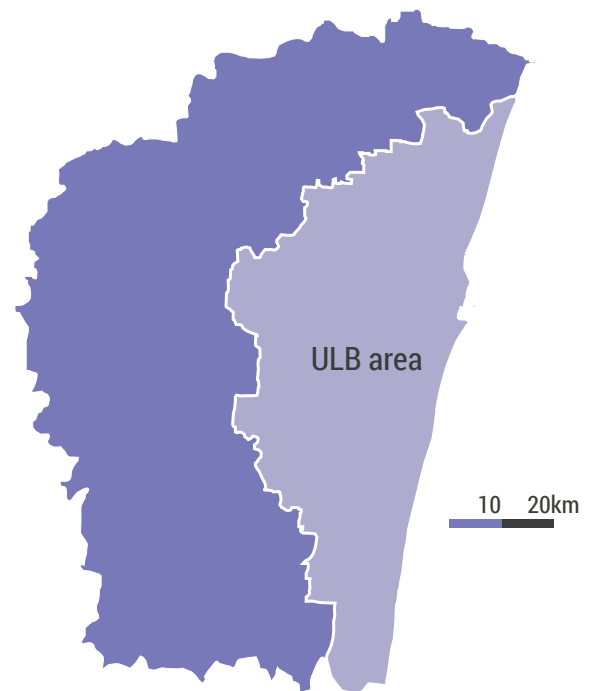
*Metropolitan Area:* 1189 Sq.km

*City Area/ Area Under ULB:* 426 Sq.km

*Population:* ~86 Lakhs

*ULB:* Greater Chennai Corporation (Gcc)

*Budget Allocation For NMT Infrastructure:* Not Available



Since 2008 onwards, there have been consistent efforts from various non-governmental agencies to raise awareness on the state on pedestrian infrastructure particularly with a focus on road safety. The need for improved infrastructure for non-motorized transport has also been consistently corroborated by findings of city-wide traffic and transportation studies that walking, cycling and public transport are the preferred mode of travel by over 60% of the population. Over the past decade, several initiatives have been launched with technical assistance from several non-governmental agencies and this has resulted in a gradual increase in the supply of better NMT infrastructure for Chennai. Chennai is also the first city in the country to have adopted a Non-motorized Transport policy in 2014 as per Council resolution. Following this, in 2020, the ULB has also adopted a Complete Streets Framework for all street design work across the city.

**Chennai is a prime example to show how NMT infrastructure can be realized by forging partnerships between ULBs and non-governmental agencies providing relevant technical assistance. While the city's approach may be project-based rather than through systemic change, sensitisation of bureaucrats and GCC engineers has enabled them to procure funding as well as manage and monitor such projects.**

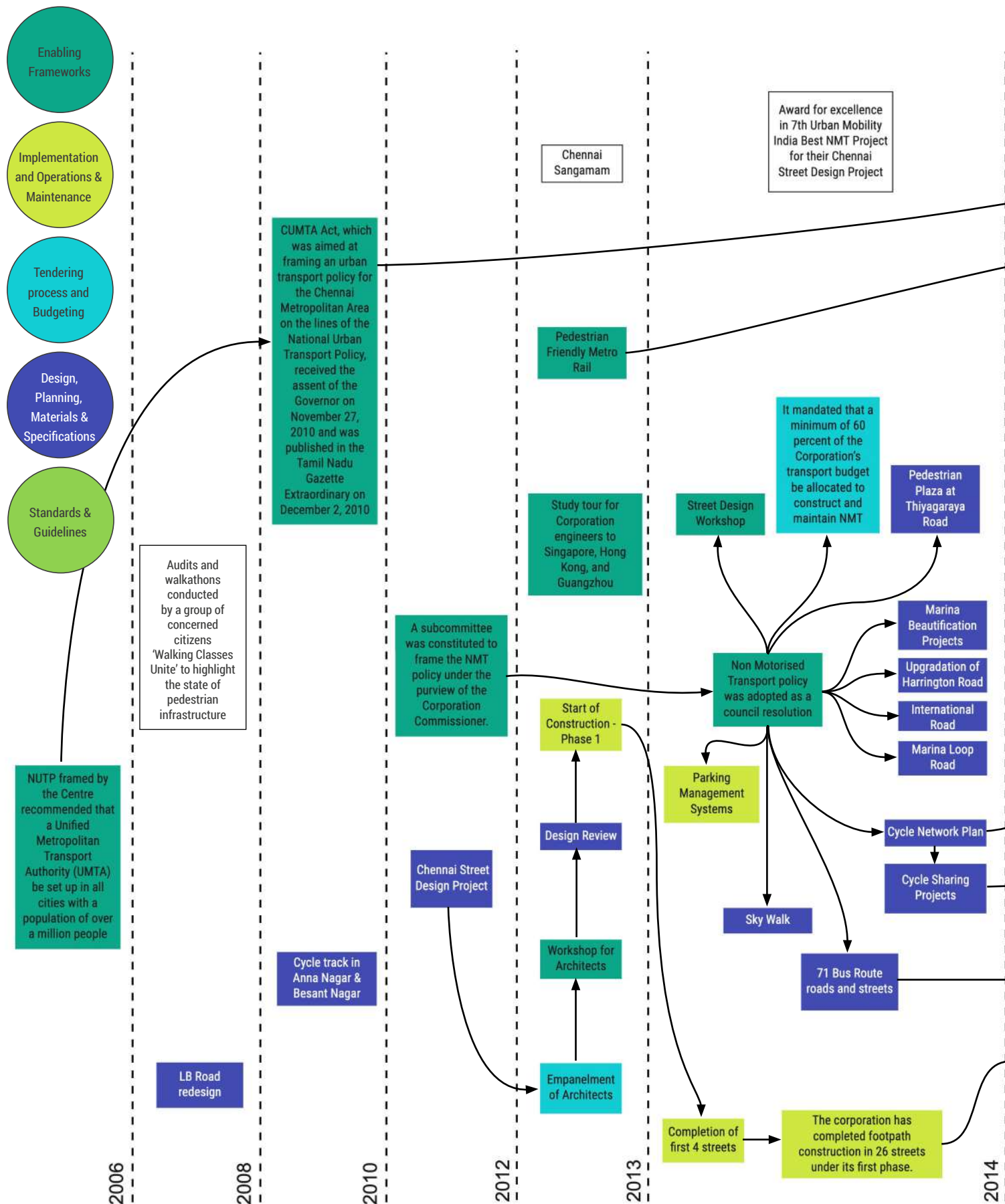


*Street transformations in Chennai*





## A Timeline of Chennai's NMT Related Initiatives







# Pune

*Metropolitan area:* 7256 sq.km

*City area/ Area under ULB:*

*Population:* ~72 lakhs

*ULB:* Pune Municipal Corporation (PMC)

*Budget allocation for NMT*

*infrastructure:* Approximately 600 crores (as of 2016)



Pune's NMT timeline starts in 2009 when, under the JNNURM Mission, it began creating a better network of roads with footpaths and cycle tracks. The Pune Municipal Corporation (PMC) also came up with a proposal for a pilot public bicycle scheme and has since steadfastly pushed on with its image as the bicycle capital. Following these efforts, since 2016 when Pune was selected under the Smart Cities Mission, it has further taken up non-motorized transport infrastructure projects and identified 100km of streets to be redesigned as complete streets with a budget overlay of 525 crores. Additionally, all along the years, the active role of civil society organizations dedicated to the causes of pedestrians and cyclists in the city has also ensured that the momentum is sustained from the government end through a constructive approach for feedback and improvement.

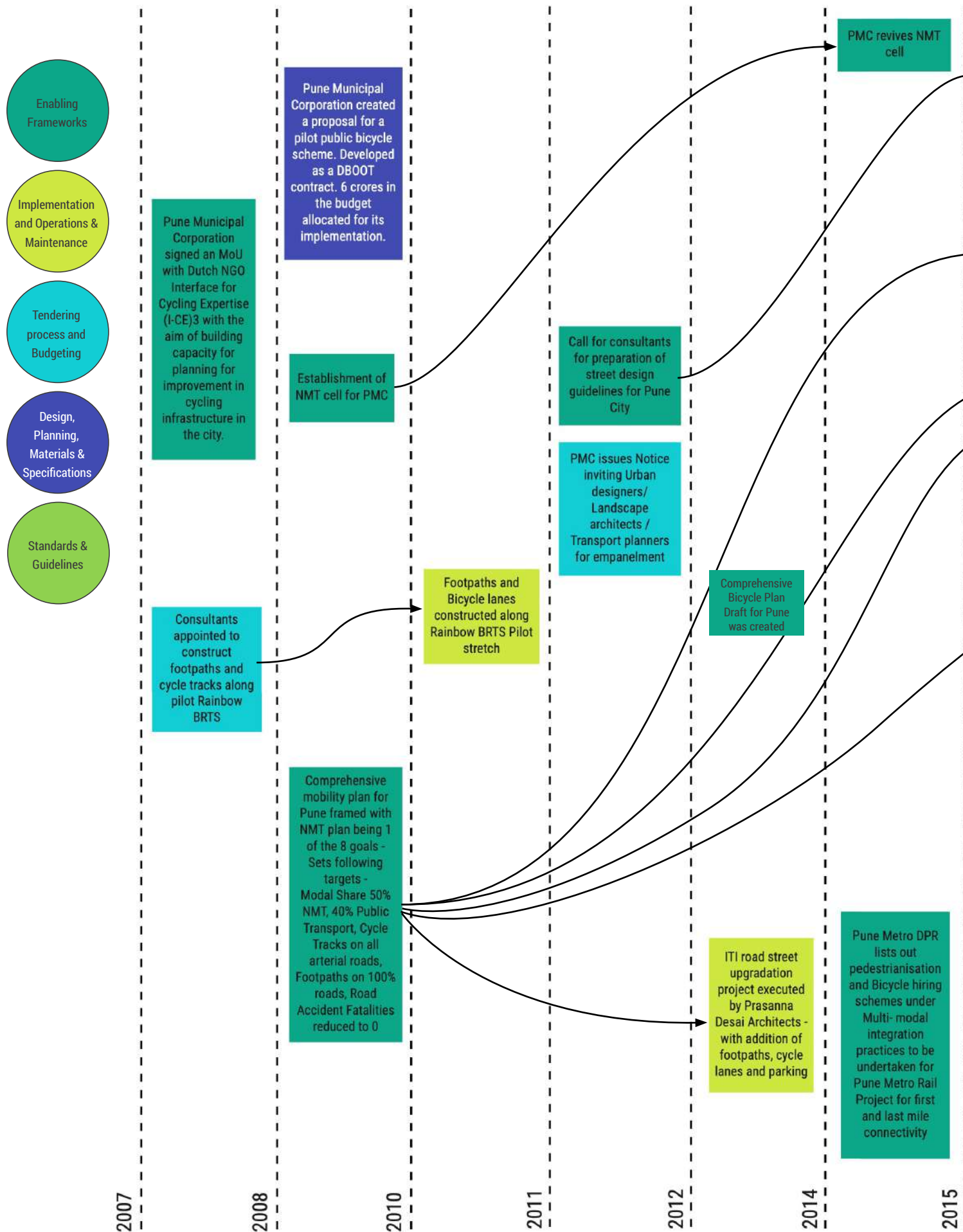
**Pune is a good example of a city that has capitalized on the central government funding schemes to deliver quality streetscapes for its citizens in a collaborative manner with civil society organizations. Pune has also been very systematic in the delivery of NMT infrastructure with significant efforts across all 5 aspects of NMT as outlined in this document.**



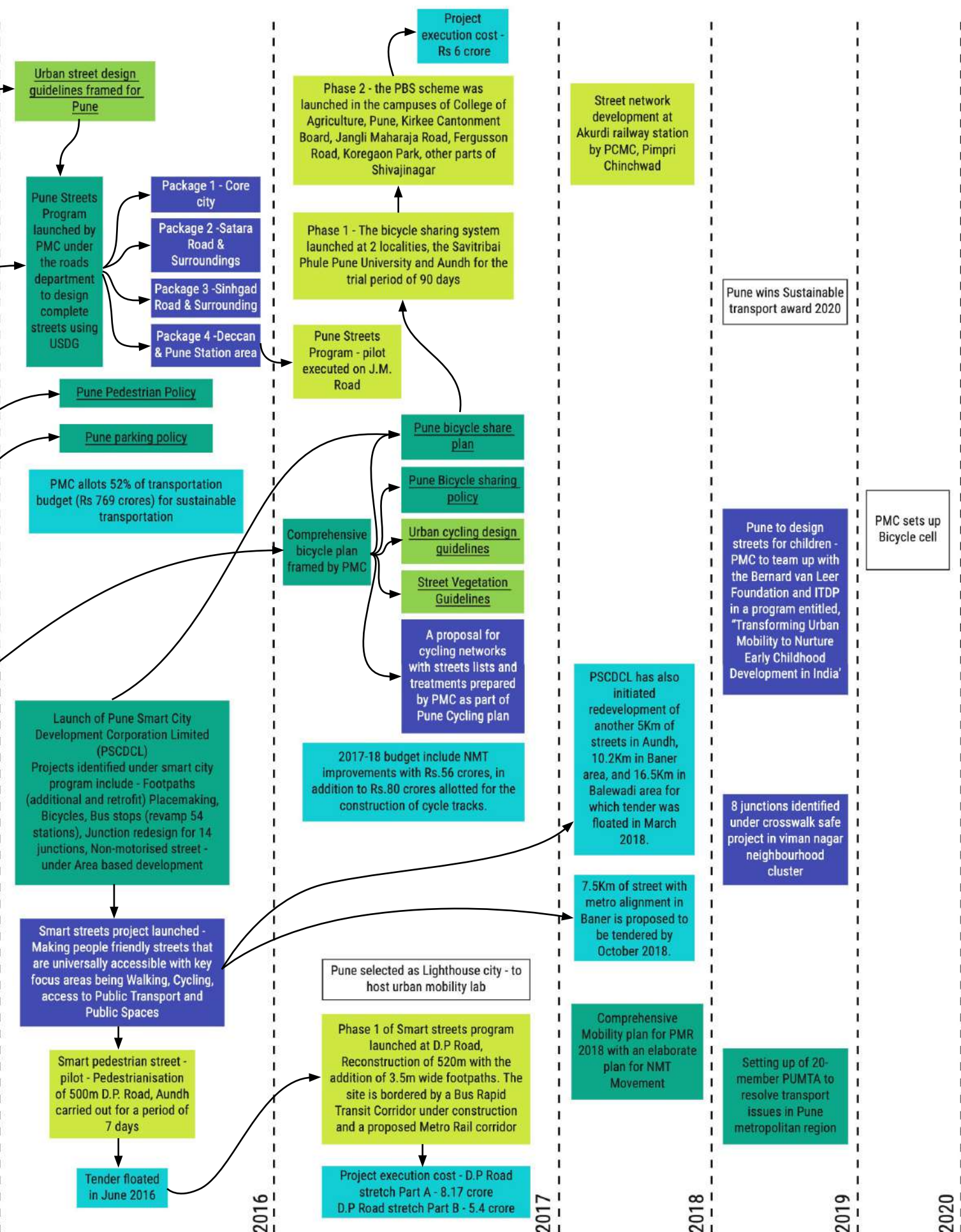
*Street  
transformations  
in Pune*



## A timeline of Pune's NMT related initiatives







# Bengaluru

*Metropolitan area:* 8005 sq.km

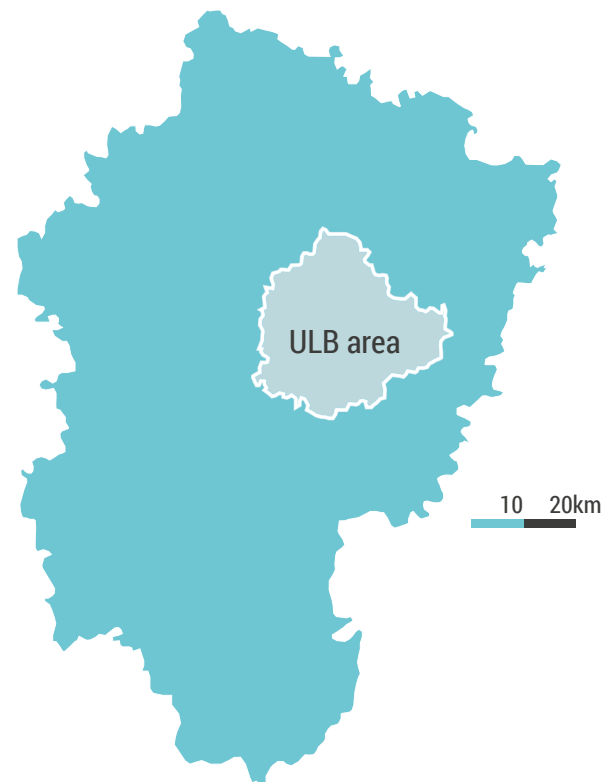
*City area/ Area under ULB:* 331.26 sq.km

*Population:* ~10 lakhs

*ULB:* Bruhat Bengaluru Mahanagara Palike (BBMP)

*Budget allocation for NMT*

*infrastructure:* Approximately 200 crores (as of 2015)

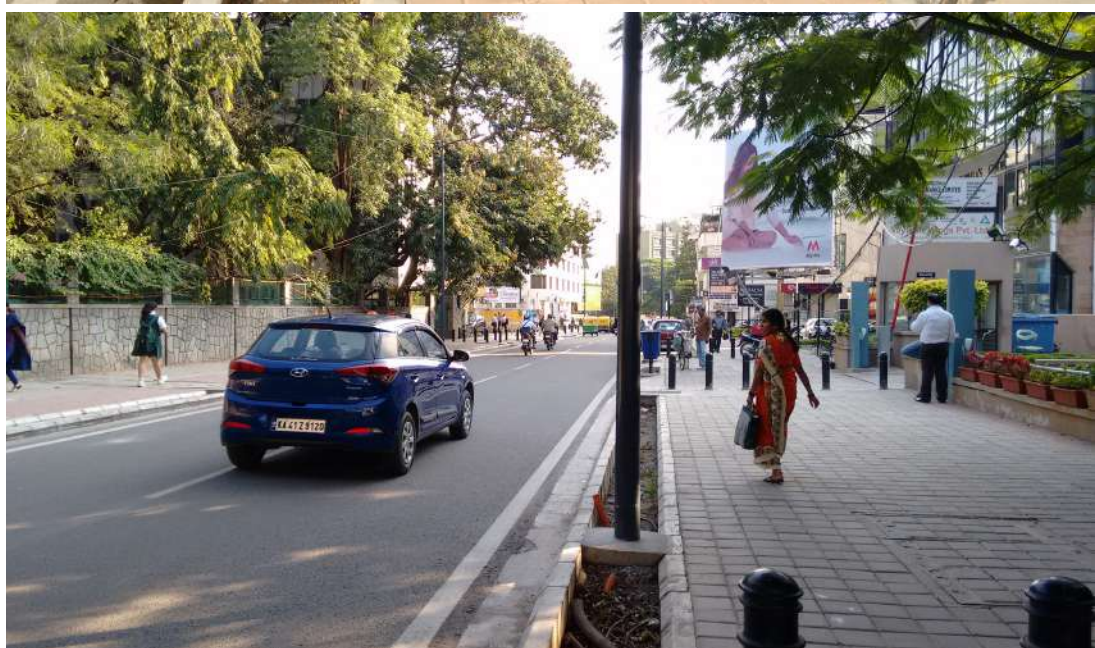


Bengaluru's NMT timeline starts in 2009 when the Bangalore CityConnect Foundation (BCCF) assisted the redesign of the Vittal Mallya Road. Following this demonstration project, the BCCF approached the state government with an offer to create a procedural manual for designing, tendering and construction of urban roads. With endorsement from the Government of Karnataka to adopt this manual across the state and a sanctioning of funds to implement 7 pilot stretches in Bengaluru that could demonstrate the full potential of such a manual/ procedural change, the city's NMT infrastructure received an unprecedented boost. It is also interesting to note that the funding for the pilot stretches came in equal share from the state government and the ULB. Subsequent to the pilot stretches being realized, ULBs across the state have realized many more kilometres of complete streets. The USP of Bengaluru's efforts is that the street redesigns are not restricted to creating a streetscape experience but is a complete overhaul of the street section to accommodate all users as well as below ground utilities.

**Bengaluru is a unique example to show how a combination of political will and competent civil society organizations can disrupt the status quo with regard to how infrastructure is planned and implemented at an institutional framework level.**

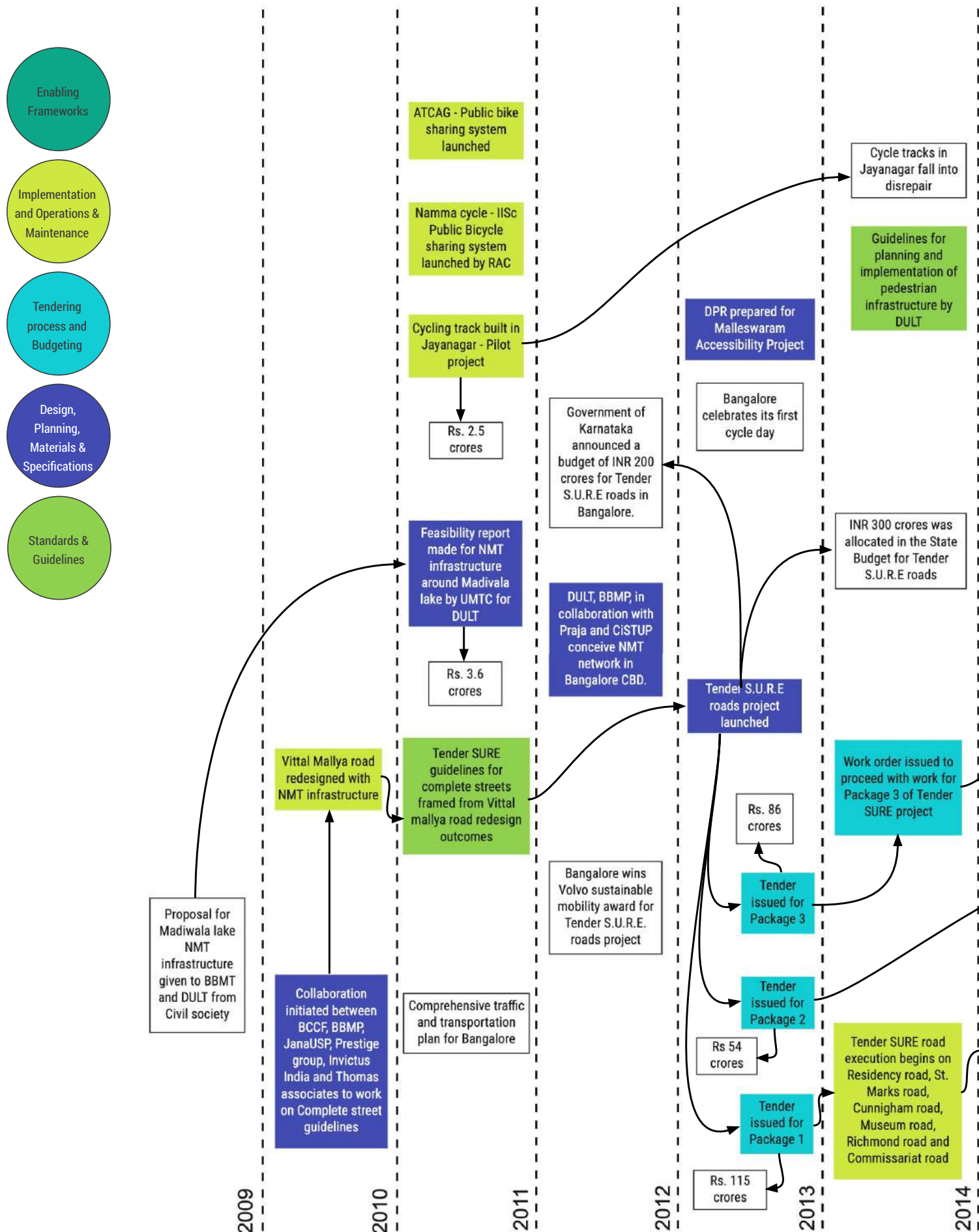


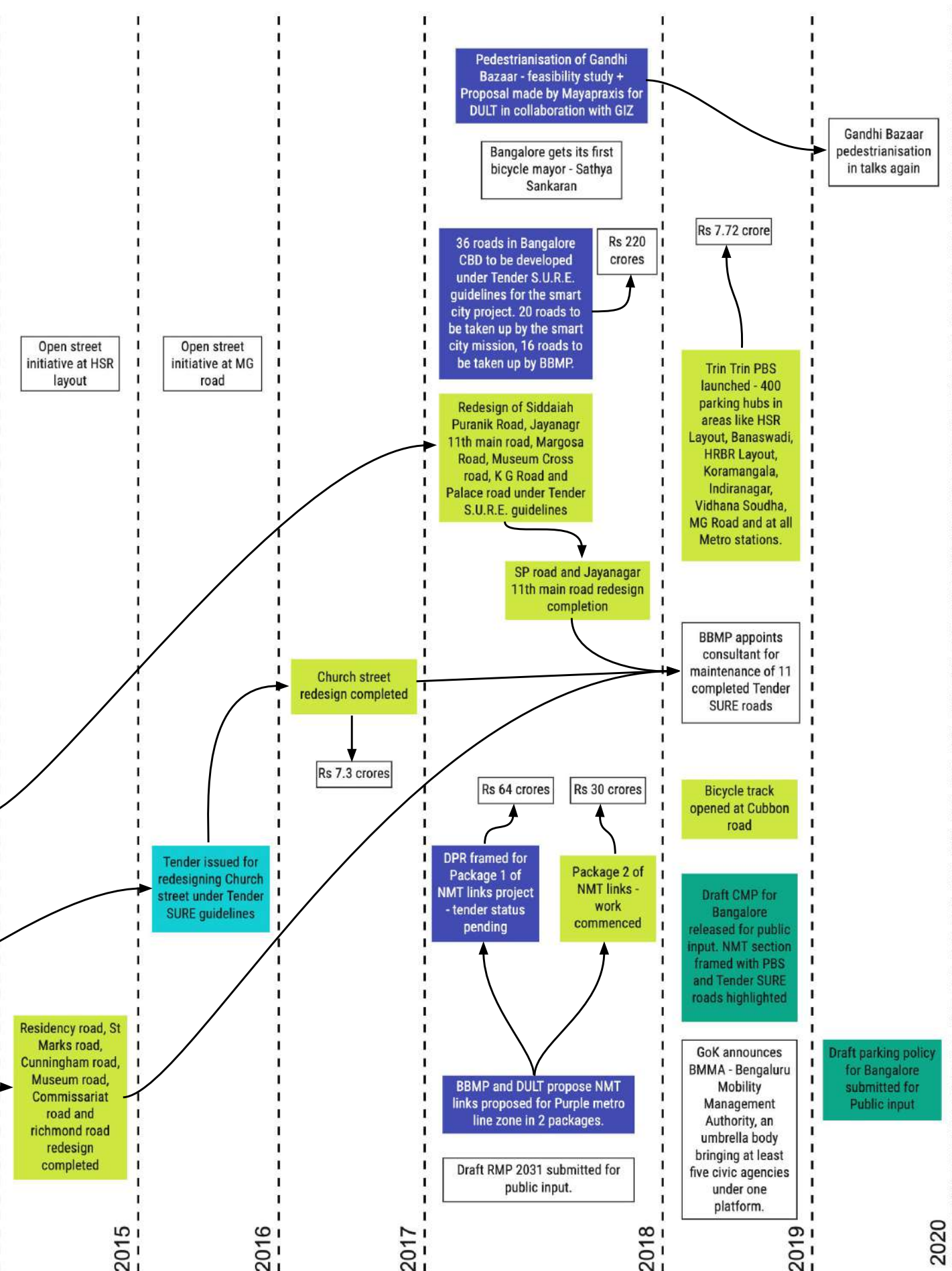
*Street transformations in  
Bengaluru*





## A timeline of Bengaluru's NMT related initiatives





*How do these cities fare against the framework for this study?*



**STANDARDS & GUIDELINES**

	CHENNAI	PUNE	BENGALURU
<i>Does the city have street design principles that integrate NMT?</i>			
<i>Do the street design guidelines have sections that provide standards/ metrics for the following-</i>			
<i>Walking</i>			
<i>Cycling</i>			
<i>Universal design</i>			
<i>Utilities - Above ground</i>			
<i>Utilities - Below ground</i>			
<i>Do the street design guidelines have sections that address the design and planning of -</i>			
<i>Pedestrian crossings and intersections</i>			
<i>Cycling infrastructure at intersections</i>			
<i>Universal design for intersection and crossing</i>			
<i>Street ROWs</i>			
<i>Types of Cycling infrastructure in relation with street typology</i>			
<i>Traffic calming</i>			
<i>Integration of Public transport with street ROW</i>			
<i>Integration of IPT with street ROW</i>			
<i>On-street parking</i>			
<i>Landscape</i>			
<i>Vending</i>			
<i>Street furniture and other amenities</i>			
<i>Signage and way finding</i>			
<i>Universal design for street furniture and Signage</i>			
<i>Materials for cycling infrastructure</i>			
<i>Materials for universal design infrastructure</i>			
<i>Utilities at intersections</i>			

*How do these cities fare against the framework for this study?*



**DESIGN, PLANNING, MATERIALS & SPECIFICATIONS**



	CHENNAI	PUNE	BENGALURU
<i>Is there a process outlined for the design process that is a default requirement for any street design project in the city?</i>			
<i>Is NMT an integral part of street design projects taken up by the city?</i>			
<i>Does the recommended design process include the following steps for site study and analysis?</i>			
<i>Topographic survey</i>			
<i>Pedestrian and activity survey</i>			
<i>Parking survey</i>			
<i>Traffic survey</i>			
<i>Bus route mapping</i>			
<i>Underground utility mapping</i>			
<i>Road safety audits</i>			
<i>Personal security audits</i>			
<i>Photo documentation</i>			
<i>Right-of-way overlay</i>			
<i>Does the recommended design process/ current practice for projects in the city include participatory planning?</i>			
<i>Channels for collaboration with government organisations</i>			
<i>Channels for collaboration with non-government organisations</i>			
<i>User-group mapping and needs assessment</i>			
<i>Review committee for designs that is comprised of a varied groups of stakeholders</i>			
<i>Does the city have a material palette for streets that addresses NMT needs?</i>			
<i>Does the city have a material palette for streets that addresses pedestrian infrastructure needs?</i>			
<i>Does the city have a material palette for streets that addresses cycle infrastructure needs?</i>			
<i>Does the city have a material palette for streets that addresses universal design needs?</i>			
<i>Does the city have a material palette for streets that addresses transit needs?</i>			
<i>Are there criteria for selection of materials for streets?</i>			







<i>Is there a planting list for city streets?</i>	
<i>Does the city have a process outlined for creating complete streets master plans?</i>	
<i>Is the recommended planning process based on gathering the following baseline data?</i>	
<i>Context map</i>	
<i>Right of way map</i>	
<i>Street typology</i>	
<i>Street hierarchy map</i>	
<i>Street ownership map</i>	
<i>Road safety map</i>	
<i>Public transport network map</i>	
<i>Landmark map</i>	
<i>Pedestrian and cycling infrastructure map</i>	
<i>Walkability analysis map</i>	
<i>Parking facilities map</i>	
<i>Information on transport projects</i>	








*How do these cities fare against the framework for this study?*



**TENDERING PROCESS AND BUDGETING**

*Note: Data unavailable for Pune.*

	CHENNAI	PUNE	BENGALURU
Does the city have a set format for an RFP for Design consultants for designing complete streets?			
If yes, does the RFP format cover the below mentioned criteria			
Qualification criteria based on relevant experience for technical assessment			
Evaluation of financial proposal			
Combined final evaluation with higher weightage distribution for technical assessment rather than financial evaluation; Quality Based Selection (QBS)			
Other standard procurement guidelines as per government regulations			
Indicators for measuring outcomes			
Does the city have a set format for hiring the contractor?			
If yes, does the RFP format cover the below mentioned criteria			
Qualification criteria based on relevant experience for technical assessment			
Evaluation of financial proposal			
Combined final evaluation with higher weightage distribution for technical assessment rather than financial evaluation; Quality Based Selection (QBS)			
Other standard procurement guidelines as per government regulations			
Quality control measures			
Special instructions for work execution			
Construction of sample stretch to demonstrate full range and suitability of material palette			
Disposal of demolition waste			
Contractor's facilities			
Does the scope of work for the contractor include planning and management of site for the following stages of implementation?			
Pre-construction phase			
Construction phase			
Post-construction phase - O & M			
Does the city actively seek funding for NMT projects from funding agencies?			

<i>Does the city budget for streets with emphasis on NMT in its municipal budget?</i>	
<i>While budgeting, does the city assess existing and proposed mobility projects holistically and realistically?</i>	
<i>Does the city prioritise/ phase projects while budgeting based on an assessment of the existing and proposed mobility projects in the city?</i>	
<i>Does the city involve stakeholders especially from civil society while budgeting?</i>	
<i>Does the city have a separate budgeting procedure or channel for operations &amp; maintenance activities?</i>	
<i>Does the city have a set format/ RFP for hiring an agency for O&amp;M once the construction contractors liability period has ended?</i>	
<i>Does the RFP cover the following aspects-</i>	
<i>Maintenance and monitoring</i>	
<i>Revenue generation towards maintenance and monitoring</i>	

*How do these cities fare against the framework for this study?*



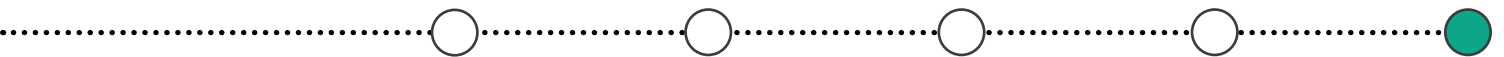
**IMPLEMENTATION AND OPERATIONS & MAINTENANCE**

*Note: Data unavailable for Pune.*




























	CHENNAI	PUNE	BENGALURU
Does the city have a set construction management plan?			
Does the plan cover the following?			
Pre-excavation management of site			
Tactical urbanism to test the design before it is made final for construction			
Traffic management plan for all stages of construction			
Construction of street edge and sidewalk			
Construction of sample stretch to demonstrate full range and suitability of material palette			
Construction of carriageway and medians			
Construction of traffic calming elements			
Managing utilities planning and installation including disconnection and reconnection schedules			
Installation of street fixtures			
Surface finish and Painting / road markings			
Communication plan for residents and establishments for all stages of construction			
Does a construction plan include estimated time lines for various stages in the construction process ?			
Has the construction management plan been fully operationalized and used for all projects?			
Does the city have established channels for coordination between various agencies?			
Has the city defined the roles and responsibilities of various agency involved for the following phases?			
Pre-construction			
During Construction			
Post- construction			
Does the city have a maintenance manual for streets?			
Does the city have a clear plan of action for involving other stakeholders in the operations and maintenance plans for streets in the post-implementation phase?			

*How do these cities fare against the framework for this study?*



## ENABLING FRAMEWORKS

	CHENNAI	PUNE	BENGALURU
Is there an existing state transport policy?			
Is there an existing Low Carbon Policy?			
Is there an NMT policy that the city has adopted?			
Does the NMT policy specify clear outputs and outcomes to be achieved?			
Is there an existing Road Safety policy?			
Does the city have a parking management plan/ policy?			
Does the city have a CMP?			
Does the CMP have a dedicated section on NMT planning frameworks?			
Does the city have a CDP?			
Does the city have a master plan that is current?			
Does the city's master plan prioritize compact development and integration with mass transit?			
Does the city have current ongoing investments towards mass transit?			
Does the city have a framework covering the following aspects-			
Monitoring & Evaluation			
Scaling to the city level			
Does the city have indicators/benchmarks for the various outputs and outcomes related to NMT ?			
Is there a protocol for collection of NMT data on a regular basis?			
Does the city have an NMT Cell?			
Does the city have dedicated manpower working on NMT projects all year round i.e. identifying street networks and planning and designing complete streets?			
Are there any Separate/special funds from State for promoting institutes in transport engineering or development of guidelines?			
Does the city have regular training programs for its staff to keep them updated on design, planning and implementation of Complete streets?			
Has the city invested in the preparation of it's own street design guidelines?			
Has the city empanelled architects to carry out street design projects?			
Does the municipal budget have any separate budget heads for walking and cycling infrastructure?			

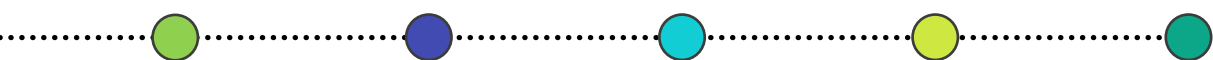
Does the municipal budget have any separate budget heads for cycle parking infrastructure?			
Does the municipal budget have any separate budget heads for public spaces/ vending/pedestrian zones?			
Does the municipal budget have any separate budget heads for awareness and outreach programs for NMT prioritization?			
Have there been any awareness programs conducted by State/City on importance of walking/cycling for health/saving carbon and emissions?			
Are these programs still ongoing?			
Are there any NGOs working on NMT prioritization in the city?			
Are there any public outreach partners/ media partners that the city works with for NMT prioritization?			
Have there been any events such as car free days, bicycle days etc. organized in the city?			
Are these programs still ongoing?			
Is priority to pedestrians and cyclists is a clear mandate of the traffic police?			
Are there any strict penalties framed for encroachment of sidewalks and cycle lanes by parked and moving motor vehicles?			
Does Traffic police plan awareness campaigns and drives to reduce deaths of pedestrians and cyclists as part of road safety campaign?			
Does Traffic police partner with citizen watchdog groups for road safety?			
Does Traffic police allocate part of their annual budget for pedestrian and cyclists' safety initiatives including planned drives, messages on billboards and in media and on-road drives?			
Is there provision for Traffic impact assessments (TIA) to ensure that mobility projects do not have negative impact on walking and cycling?			
Is there any provision for Social Impact Assessment (SIA) to ensure mobility needs of urban poor included?			
Is there any provision for Environment Impact Assessment (EIA) to ensure mobility projects do not lead to higher pollution and carbon?			
Does the city have evaluation committees with legislative backing to ensure results of evaluation of impacts are taken seriously?			





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## *Learnings & recommendations*

# *Key takeaways from Chennai, Pune and Bengaluru*

As mentioned in the earlier section on framework for this study, the key takeaways from the three cities are presented in the following spreads at three levels:

*Individual- level*

*Organization-level*

*Institutional mechanisms*

## *Individual level*

### *Chennai*

- Study tour for Corporation engineers to Singapore, Hong Kong and Guangzhou to sensitise them towards prioritising NMT in mobility projects
- Workshop on designing for NMT conducted for architects appointed to work on first set of street design projects in 2011-12
- Syllabus-based public space design workshop for municipal engineers to build capacity for street design projects with focus on NMT

### *Pune*

- Technical assistance provided to municipal engineers by external organizations like CSE, ITDP, Parisar and others for the preparation of street design guidelines and also for deployment of street design projects through design consultants

### *Bengaluru*

- Sensitisation of top-level stakeholders i.e. elected representatives and bureaucrats towards Tender SURE roads and thus making way for a funding-based enabling framework

## *Organization level*

### *Chennai*

- Launch of Mega Streets program in February 2020 with 110 kms of the city's arterial roads set to get a makeover
- Tactical urbanism is recommended to test the design before it is made final for construction as per Mega Streets framework
- Metro rail improves facilities for pedestrians outside all metro stations as per Metro Rail Policy 2017 under Ministry of Housing and Urban Affairs
- The city launched a proposal for commissioning NMT facilities including pedestrian streets, traffic-calming streets, multi-level car parking with ICT application and solar chargers for e-rickshaws under the Smart City Mission
- Chennai Street Design Project/ Bus Route Roads (BRR) project launched in 2011-12 to upgrade footpaths
- Empanelment of architects/ urban designers for BRR project
- Special projects division in ULB was assigned some of the BRR projects

### *Pune*

- Pune Streets Program launched by PMC under the roads department to design complete streets using USDG
- 2017-18 budget include NMT improvements with Rs.56 crores, in addition to Rs.80 crores allotted for the construction of cycle tracks
- PMC allots 52% of transportation budget (Rs 769 crores) for sustainable transportation
- Pune Municipal Corporation created a proposal for a pilot public bicycle scheme. Developed as a DBOOT contract. 6 crores in the budget allocated for its implementation.
- Empanelment of urban designers

### *Bengaluru*

- Tender S.U.R.E roads project launched - using Tender S.U.R.E guidelines

## *Institutional mechanisms*

### *Chennai*

- The Greater Chennai Corporation adopts the Complete Streets Framework in 2020
- CMP 2019 endorses several proposed NMT infrastructure projects
- Metro rail policy 2017 mandated by MoHUA which includes improving last mile connectivity and NMT infrastructure around stations
- Non Motorised Transport policy was adopted as a council resolution in 2014. It mandated that a minimum of 60 percent of the Corporation's transport budget be allocated to construct and maintain NMT
- CUMTA Act, which was aimed at framing an urban transport policy for the Chennai Metropolitan Area on the lines of the National Urban Transport Policy, received the assent of the Governor and was published in the Tamil Nadu Gazette Extraordinary

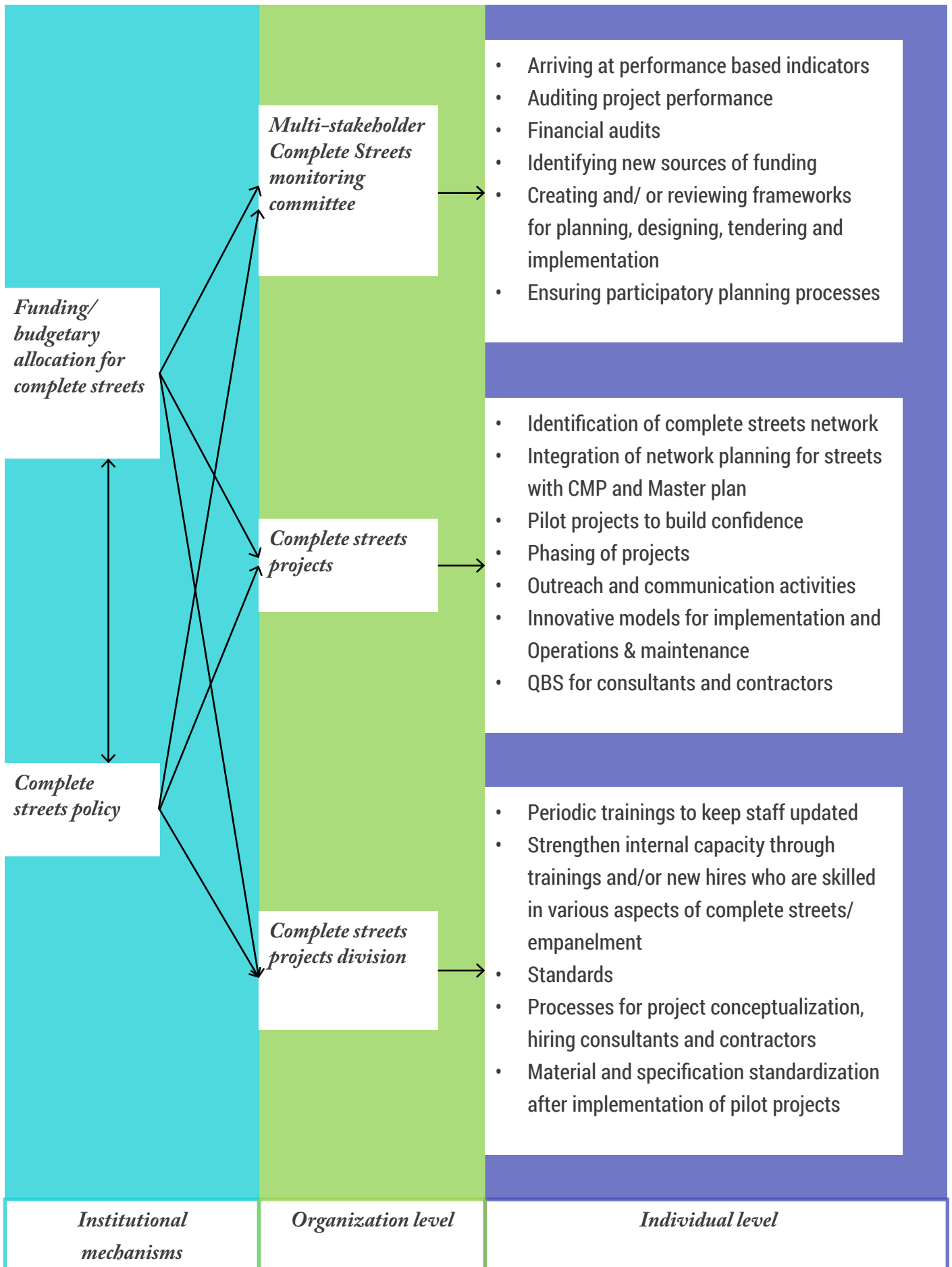
### *Pune*

- In 2020, PMC sets up Bicycle cell
- In 2019, a 20-member PUMTA is set up to resolve transport issues in Pune metropolitan region
- Comprehensive Mobility plan for PMR 2018 with an elaborate plan for NMT Movement
- Establishment of NMT cell within Pune Municipal Corporation in 2010 and reviving it in 2015
- Comprehensive mobility plan - 2010 - for Pune framed with NMT plan being 1 of the 8 goals and sets following targets - Modal Share 50% NMT, 40% Public Transport, Cycle Tracks on all arterial roads, Footpaths on 100% roads, Road Accident Fatalities reduced to zero

### *Bengaluru*


- In 2019, GoK announces BMMA - Bengaluru Mobility Management Authority, an umbrella body bringing at least five civic agencies under one platform.
- Draft CMP for Bengaluru released for public input in 2019. NMT section framed with Public Bike Sharing and Tender SURE roads highlighted
- INR 300 crores was allocated in the State Budget for Tender S.U.R.E roads in 2014
- In 2012, DULT, BBMP, in collaboration with Praja and CiSTUP conceive NMT network in Bengaluru CBD.

*Summary of recommendations based on the 3 cities' experience with Complete Streets*





# Key recommendations based on case studies



Listed here are some key recommendations towards the objective of creating cities for walking and cycling. This is by no means a comprehensive set of recommendations but those that have been gleaned from the journeys of the three case example cities studied in this report -

- ① *Role of leadership in governance*  
Strong leadership and vision towards sustainable transportation options, either at the state level or the ULB level, is essential for the realization of NMT infrastructure in our cities. This is particularly crucial from the point of view of prioritization and budget allocations for projects with NMT components.
- ② *Role of institutional frameworks*  
Institutional frameworks are vital enablers for creating cities for walking and cycling. These could take the form of policy measures that mandate creation of specific units to manage NMT projects and also allocate budgets for the same. The creation of NMT infrastructure or complete streets is not yet a standard line item in most municipal budgets. The budgetary norms are still directed towards repair and maintenance of street surfaces and utilities. In addition, institutional frameworks must also enable budgetary allocation for personnel required for planning, designing and supervising the execution of complete street designs.
- ③ *Role of organizational changes*  
The creation of nodal officer positions or NMT cells/ divisions within the ULB is pivotal to anchor the planning and execution of NMT infrastructure. Essentially, dedicated personnel who spend their full time on such efforts is a requirement. The role of these personnel could range from full-on planning, designing and executing projects to a managerial role in coordination with design consultants, contractors and other relevant government departments. In addition, procedural changes including coordination channels between agencies is also extremely important for the successful implementation of such projects without delays.

④ *Role of non-governmental agencies*

It is possible for NMT efforts to be spearheaded by non-governmental agencies in the form of technical assistance to realize projects. This could take various forms such as providing detailed designs for demonstration projects, assisting in the creation of manuals and guidebooks to shape and execute NMT projects, providing funding for technical expertise to be hired to design NMT infrastructure or providing for capacity enhancements of city officials who are involved in the design and construction of NMT infrastructure.

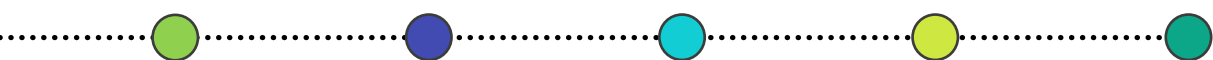
⑤ *Role of media*

The role of media too in highlighting the need for improvement of NMT infrastructure has been a contributing factor in each city's timeline of NMT efforts; more so in Chennai's case given the volume of news coverage that was accessed for this study as well. Additionally, it is known that in Chennai there have also been several radio shows that talk about urban issues including walkability and cycling in cities usually in the context of road safety. Likewise, there have been videos produced by civil society organizations in Pune and uploaded online for public viewing to highlight similar issues. This is a useful finding because it points to the need to tie the issue of poor NMT infrastructure to more tangible and perceivable risks such as deaths related to road safety in order to gain more traction.

⑥ *Role of citizen groups*

Citizen groups/ civil society organizations can also play an important role in the creation of NMT infrastructure by providing collated and constructive recommendations. Pedestrian environment audits, disability audits and campaigns to raise awareness on road safety, challenges faced by the elderly and persons with disabilities and other such pertinent issues can help steer municipal budget spending towards better streets for all.

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