

No. K-14011/51/2019/UT-IV
Government of India
Ministry of Housing and Urban Affairs
(Urban Transport-IV Desk)

Nirman Bhawan, New Delhi-110 011.
Dated 26th October, 2021.

Office Memorandum

Sub: Urban Transport Planning & Capacity Building Scheme

Ministry of Housing and Urban Affairs has been providing Grants to States/UTs/Cities through "Urban Transport Planning & Capacity Building Scheme" for undertaking traffic and transportation studies in the area of Urban Transport in the following manner:

- a. 80% of the cost as Central Financial Assistance (CFA) for preparation of Comprehensive Mobility Plan (CMPs)/ Comprehensive Traffic and Transportation Plans.
- b. 50% of the cost as Central Financial Assistance (CFA) for undertaking Techno-feasibility studies/Detailed Project Reports (DPRs) for individual urban transport projects, Metro/MRTS projects etc.
- c. 100% Financial Assistance to Academic Institutions, Research Organizations, Registered Societies etc. for undertaking research proposal/projects in Urban Transport.

2. The objective of the scheme is to provide guiding documents to the Administrators/ Decision Makers/ Urban Transport Planners at the initial stage of planning and thereby promoting safe, affordable, quick, comfortable, reliable and sustainable transport resulting into meaningful projects. Keeping in view of this, the Scheme has been extended up to 31st March 2023. A copy of the revised guidelines of Urban Transport Planning Scheme is enclosed for ready reference.

3. Hence, the State/UT/ULB authorities are requested to direct the concerned to avail the Central Financial Assistance for taking up various Urban Transport studies/Techno-Feasibility studies/surveys /awareness campaigns and research proposals/pilot projects etc. at the earliest.

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4. All premier Academic Institutions, Technical Educational Institutions, Research Organizations and Registered societies like IITs and NITs etc. are also requested to send their research proposals/projects in field of Urban Transport for availing Central Financial Assistance as per guidelines of the scheme.



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- Encl: 1. Scheme Guidelines
2. Standard ToR for preparation of DPR for Metro Rail
3. Standard ToR for Preparation of CMP

To

1. Principal Secretaries (Urban Development / Transport) of all States/UTs
2. The Directors of all IITs and NITs.
3. All the Premier Academic Institutions, Technical Educational Institutions, Research organizations and Registered Societies. (through Ministry website)

Revised Guidelines for providing Central Financial assistance under "Urban Transport Planning & Capacity Building Scheme" of Ministry of Housing & Urban Affairs

1. Introduction

1.1 Realizing the rapidly growing problems of Urban Transport, Government of India has approved the National Urban Transport Policy (NUTP) in April, 2006. The Policy seeks to provide safe, affordable, quick, comfortable, reliable and sustainable access for the growing number of city residents to jobs, education, recreation and such other needs within our cities with focus on moving people and not vehicles. This can be achieved by incorporating Urban Transportation as an important parameter at the urban planning stage, rather than the consequential requirement as is the case today.

1.2 This will require taking up of comprehensive traffic and transportation studies, preparation of complete mobility plans, integration of land use and transport planning in all the cities so that travel distances are minimized and access to livelihood, education, and other social needs, especially for the marginal segments of the urban population is improved. These studies should then lead to preparation of Detailed Project Reports after comprehensive and thorough evaluation of all alternative technologies. Unless and until proper emphasis is laid on incorporating urban transportation as an important parameter at the level of planning stage, it might lead to chaotic conditions in the city in view of the present trend for increased use of personal vehicles and rapid urbanization. With rising concern of global warming, it shall be essential to focus on Clean Development Mechanism (CDM) and avail of carbon credits wherever possible. Certain pilot studies in some cities may also be required to be taken up by Government of India as envisaged in NUTP, 2006.

1.3 No Urban Transport Policy can succeed without fullest cooperation from all the citizens. NUTP, therefore, envisages launching of awareness campaign to educate people of ill effects of growing transport problems in urban areas especially on their health and wellbeing. These campaigns would seek their support for initiatives like greater use of public transport

and non-motorized vehicles, the proper maintenance of their vehicles, safer driving practices, etc. Such campaigns would also encourage individuals, families and communities to adopt "Green Travel Habits" that would make travel less polluting and damaging. As outlined in the National Urban Policy-2006, the Central Government would not only take up major awareness campaign in this regard but also seek the support of the State Governments in its implementation. As such, this activity will also be undertaken through this scheme.

2. Objectives

The objectives of the schemes are:

Promotion of :

- Comprehensive Traffic and Transportation Studies;
- Integrated land use and transport planning in all the cities;
- Public transportation, Non-Motorized Transport and inter modal integration;
- Intelligent transport systems, Traffic Information Centers etc.; and
- Research in urban transport.

(Research in urban transport shall be defined by the Guidelines under 'Urban Transport Planning Scheme' for Research and Advisory Proposals)

Preparation of:

- Complete mobility plan; and
- Detailed Project Reports etc.
- Launching awareness campaign in line with National Urban Transport Policy, 2006;
- Clean Development Mechanism (CDM) measures; and
- Pilot studies in some cities by Government of India as envisaged in NUTP, 2006.

3. Duration of the Scheme

The scheme is extended till March, 2023 and will be reviewed before the end of year 2022-23 for further extension if required.

4. Coverage

The scheme is meant for all the cities in India and as such it is not location specific.

5. Admissible Components

The components for assistance under the scheme will include all kinds of Traffic and transportation studies, Detailed Project Reports (DPRs), studies & DPRs for application of Intelligent transport systems and setting up of Traffic Information Centers, research in urban transport, CDM studies/measures, Parking management etc., taking up pilot studies by Govt of India in some cities and launching awareness campaign in line with NUTP, 2006 etc.

i. The list of studies eligible under the scheme are stated below:

i. Transport Planning

- Comprehensive Mobility Plan
- Comprehensive Traffic & Transportation Studies (CTTS)
- Integrated Mobility Plan
- Regional Transport Plan
- Accessibility Planning and Area Improvement Plans
- Transport Demand Management Plan
- Traffic Improvement and Management Plan
- Transit Oriented Development
- Freight Management Plan
- First & Last Mile connectivity

ii. Public Transport Planning: Road Based – Bus and IPT

- BRTS Project
- Trolley Bus
- City Bus System
- PT Infrastructure like Bus Stations, Terminals, Transit Centers, Depot,
- Workshops, Control Centers
- IPT Planning
- Ancillary Infrastructure like Stops, Shelters and Parking

iii. Rail Based

- Metro Rail
- Light Rail

- Mono Rail
- Sub Urban Rail
- Metrolite
- MetroNeo

iv. Non-Conventional Public Transport

- Ropeway
- Metro Cables
- Lifts
- Any other innovative solution

v. Transport Infrastructure

- Network Improvement and Expansion
- Grade Separators such as Flyovers, Railway over Bridge, Underpass and Road under Bridges
- Junction Improvement
- Street Furniture and Beautification
- Parking Management
- Multi modal Integration Station

vi. Non-Motorized Transport

- NMT Improvement Plan
- Cycle Track Network
- Public Bicycle Sharing (PBS)
- Footpath
- Pedestrian Crossing Facilities like Foot over Bridge and Subways
- Walkability Analysis

vii. Intelligent Transport System

- ITS Master Plan
- ITS in Public Transport
- BRTS Project
- City Bus System
- PT Infrastructure like Bus Stations, Terminals, Transit Centers, Depot, Workshops, Control Centers
- Feeder Service
- IPT Infrastructure for like Stops, Shelters and Parking
- ITS for Traffic Management
- ITS for Parking Management
- ITS for Freight Management
- ITS for multimodal integration

viii. Urban Freight

- Freight Management Plan
- Freight Terminals/Consolidation Centers

ix. Policies & Reforms

- Parking Policies
- Frame work of Value Capturing Finance Tools
- TOD Policy
- UMTA act and Implementation Plan
- UTF Fund

The earlier Scheme shall be discontinued once the new scheme comes into effect. The ongoing studies would be *covered* under the new scheme.

6. Inadmissible Components

Any component which is beyond the scope of the National Urban Transport Policy, 2006 shall be inadmissible under this scheme.

7. Financing Pattern

7.1 This scheme is proposed to be taken up on 80:20 principle for the initiatives taken up by State Governments/UTs/ULBs. While Central Government will provide 80% of the cost as grant for all kinds of traffic and transportation studies, CDI studies/measures, studies for application of Intelligent Transport Systems (ITS), setting up of Traffic Information Centers, inter modal integration, parking complexes etc, and launching awareness campaign in line with NUTP, 2006 etc., remaining 20% of the cost shall be borne by the State Governments/ UTs/ Urban Local Bodies.

7.2 However, in case of Detailed Project Report (DPR) preparation for MRTS projects etc., which includes DPR for rail based projects such as Metro Projects, Mono Rail, LRT, Tramrail projects, Metrolite, MetroNeo etc. the grant will be limited to only 50% of the total cost. The cost of preparation of Feasibility Studies/ DPRs for low cost projects such as BRTS project, City Bus Services, IPT system, NMT, Public Bike Sharing Scheme, ITS and Metro Cables and Ropeway projects shall be eligible up to 80% grant under the scheme.

7.2.1. Towards the cost of pilot studies in certain cities taken up by Government of India, complete cost shall be borne by Government of India as envisaged in the NUTP 2006.

7.3 The central financial assistance shall be provided subject to the following guidelines being followed:

7.3.1 Where the standard Terms of Reference (TOR) of engagement of Consultants for undertaking such studies/DPRs etc. have been provided by the Ministry, there will not be any need to get it approved from Ministry separately before appointment of consultant. But in the case of a new study where standard TOR is not available, the same will have to be approved by this Ministry, prior to appointment of consultant. The State Government/UT/ULB/any other State Government agency may also select a suitable consultant based on their own transparent and fair procurement process.

7.3.2 The State Government /UT /ULB/any other State Government agency may set up a Monitoring cum Appraisal Committee. This Committee should comprise of members from the concerned departments at the State level, district level and the local level for faster and effective decision-making. The Committee can have representatives from Independent Transport Specialist / State level Agency / Engineering College / Centres of Excellence for technical guidance on the subject. The Committee would meet periodically as per the requirements of the project. The Committee shall send detailed minutes of meetings to Ministry after each meeting. These minutes shall clearly outline the deliverables, time frame and current status of the study.

7.3.3 The State Government /UT /ULB/any other state government agency would submit the Report to Ministry only after approval of the Report from the Competent Authority.

7.3.4 The scheme, with the given objective and size of allocation, will not cover funding of creation of transport related physical infrastructure facilities or for funding comprehensive consultancy services for construction/ setting up of such facilities.

7.3.5 The Comprehensive Mobility Plan prepared under the scheme should be notified under relevant State Town and Country Planning Act as part of Master Plan for the respective local planning area.

7.3.6 The interim and draft final reports shall be shared with Ministry of Housing & Urban Affairs, Government of India for review/comments, if any. The view of this Ministry, if any, will be taken into account in the final report of the consultant.

7.3.7. The final installment of the payment from this Ministry would be released only on receipt of the three numbers of soft/hard copies of the final report.

7.3.8 The consultant must assign the copy right to the State Government/ULB and to the Ministry of Housing & Urban Affairs, Government of India and there would be no objection from him for this report to be put in the public domain.

7.3.9 The primary survey data and transport model developed along with the soft copy need to be submitted to MoHUA. The final reports should be displayed on MoHUA's website and the website of the respective State Government/UT/ULB/any other State Government Agency.

8. So far, under the aegis of the Scheme many Research studies/Documents Urban Transport have been prepared over the years. To facilitate preservation and reference, copies of available documents (soft/hard copies) may be shared with IUT and they may be asked to keep in accessible to the stakeholder/user institutions in the States/ULBs.

9. Release of Central Assistance

The scheme will be implemented by Ministry of Housing & Urban Affairs, Urban Transport Division which is the nodal Ministry for Urban Transport in the country. The Central Financial Assistance (CFA) shall be released in following in three installments:-

- | | | |
|--------------------------------|---|-------------|
| a) Mobilization advance | - | 10% of CFA |
| b) Interim Report/Draft Report | - | 45 % of CFA |
| c) Approval of Final report | - | 45% of CFA |

The release of second and third installments shall be done only after the utilization certificates (UC) are furnished for earlier installment.

However, the funding pattern may be modified as per the tasks given in respect of CMPs/DPRs or as per agreements made by the States/UTs/ULBs in consultation with IFD, MoHUA

10. Appraisal Agency

The State Government may appoint a suitable appraisal agency at the State level such as TCPO, CEPT, IIT Delhi, IIT Madras, IUT etc. for reviewing the reports submitted by the consultant. After Appraisal of the report by the appraisal agency, the State Government may submit the Report to MoHUA for release of the payments.

11. Outcomes of the Scheme

On completion of the Scheme period, it is expected that States/ ULBs/ Parastatals will achieve the following outcomes:

- Improved mobility within the city;
- Reduced travel time;
- Reduced air pollution specially in reducing the emission of Green House Gases (GHGs) through Clean Development Mechanism;
- Improved capacity for Urban Transport Planning;
- Better Public transport and Non-Motorized Transport (NMT) planning;
- Development of comprehensive and integrated Urban Transport plans;
- Application of intelligent transport systems;
- Comprehensive analysis of all alternative technologies for MassTransit Systems;
- Increased public awareness about the various initiatives taken by the Government for implementation of NUTP, 2006;
- Improvement of the social image of pedestrianization, NMT and public transport.
- Land use and transport integration;
- Delivery of studies/reports which can be translated into meaningful project proposals;
- Integration of National Urban Transport Policy, 2006 from the initial stage of planning; and
- Availing of carbon credit for Urban Transport Projects.

1 2. Miscellaneous

(a) The Ministry of Housing & Urban Affairs, Government of India will administer this Scheme. A review will be done once a year to review the outcome of the studies undertaken under this scheme in which TCPO, Economic Adviser, NITI Aayog, and Finance Ministry as well as concerned State Governments may also be invited.

(b) Ministry of Housing & Urban Affairs in consultation with Ministry of Finance and NITI Aayog may effect changes in the scheme guidelines, other than those affecting the financing pattern as the scheme progress, if such changes are considered necessary.

Scheme for Capacity Building in Urban Transport

1.0 Introduction

1.1 Like in other developing countries, cities in India have also witnessed a rapid growth in the number of personal motor vehicles leading to severe congestion and air pollution in the cities. So far, attempts to mitigate these problems have largely been in the form of increased supply of transportation services, whether they be in the form of Metro Rail systems, expanded bus services, road widening, construction of flyovers or similar other initiatives.

1.2 Such measures have only a limited impact and cannot serve the purpose of improving mobility in urban areas on a sustainable basis. Improving overall mobility requires several other measures to be undertaken in a coordinated manner, such as improved integration of land use and transport planning, integration of public transport systems, demand restraint measures, etc. Unfortunately, the capability for undertaking such a coordinated approach to improving mobility and a complete understanding of such issues is lacking at the State Government or city level. It is in this context that this scheme for capacity building in urban transport was formulated for implementation during the 11th Plan period and continued in 12th Plan period also and now extended till year March 2020.

2.0 Components of the capacity building

This scheme for capacity building has the following components:

2.1 Training

- i. Identification and strengthening of regional centers for imparting training in urban transport;
- ii. Development of training curriculum and other training materials; and
- iii. Conduct of training programs.

2.2 Education

- i. Development of curriculum and faculty development of Institutes conducting post graduate and doctoral level educational programs in urban transport planning.

2.3 Conferences and Journals

- i. Annual Conference on urban transport is to be continued;
- ii. Nomination of Indian professionals to Conferences abroad;
- iii. Professional journal on urban transport; and
- iv. Subscription to International journals on Urban Transport.

2.4 Institutional Development

- i. Development of legal and administrative frameworks;
- ii. Development of manuals, codes and standards;
- iii. Development of a national database;
- iv. Development and strengthening of Institute of Urban Transport (India), a national level institute for coordinating research and dissemination of new information including infrastructure development.
- v. Promotion of national level consultancy organizations to provide a pool of professional manpower to assist State/city Governments;
- vi. Setting up of institutions for the Research and Design; and safety certification of externally guided rail based transit systems and other new systems that may be developed for urban transport; and
- vii. Setting up of Unified Metropolitan Transport Authority (UMTA), and Urban Transport Cell in various mission cities.

3.0 Training

3.1 The focus of this component will be to develop awareness, skills and a deeper understanding of the requisite issues for urban transport planning amongst those already employed in the State/city and engaged in the area of urban transport planning.

3.2 Regional training centers would be identified through a process of inviting Expressions of Interests from all Training Institutions in the country. Out of the applications received, around three to four centers would be strengthened as regional centers for training, on the following basis:

- (a) Geographical spread;
- (b) Capability of the existing faculty and quality of the existing infrastructure; and
- (c) Potential for tying up with professional and academic institutions nearby;

Once the institutions are identified, a plan for strengthening each of them would be developed and these training centers would be strengthened in accordance with such a plan.

4.0 Education

4.1 The focus of the education component is to create a pool of skilled manpower to be available in the country for recruitment by various organizations engaged in urban transport. Alumni from such programs would be potential recruits for State Transport Corporations, State Transport Departments, Municipal bodies, consultancy organizations, research and academic institutions, etc. accordingly it will focus on development of curriculum and faculty development of Institutes conducting post graduate and doctoral level educational programs in urban transport planning.

5.0 Conferences and Journals

5.1 This sub component recognizes that the latest in any field is first made known through professional Conferences and journals. There is a significant time lag between the latest in any field and its incorporation into training programs.

5.2 It is in view of the same this component on Conferences and Journals has been conceptualized. An Annual Conference on the broad theme of urban transport with at least 3 or 4 sub themes, depending on areas of current importance, would be held every year, preferably in Delhi. Awards shall be given in various areas for excellence in Urban Transport during the Conference. This would be overseen and guided by a Steering Committee headed by the Secretary, Ministry of Housing and Urban Affairs and drawing representatives from amongst other professionals in the field, State Governments, Planning Commission, Ministry of Road Transport & Highways etc.

5.3 Proceedings and papers presented at this conference would be disseminated widely through a quarterly journal in which a section of the papers presented would be included. The journal would have an Editorial Board, composed of people nominated by the Ministry of Housing & Urban Affairs. The Editorial Board would make a selection of the most useful papers for inclusion in the journal. The journal could also include papers from outside those presented during the Conference.

5.4 In order to keep abreast with the latest developments in the field of urban transport globally, international journals subscription shall be taken and a database shall be created in Institute of Urban Transport (India).

5.5 The Institute of Urban Transport (India) would be responsible for the overall management of the conferences and publication of the quarterly journal.

5.6 Nominations for these conferences would be made by the Ministry of Housing & Urban Affairs, Govt. of India using the following criteria:

- The nominee should have written a paper to be presented at the conference which should have been accepted by the Conference Organizer, and the quality of the paper should be found to be of the high order by the Ministry of Housing & Urban Affairs.
- Alternatively, the nominee should be a key decision maker in the ULB, State or Central Govt.
- The International Conference should be a well-known and professionally recognized Conference i.e. held at regular intervals of not less than once in 2 years.

5.7 The costs to be provided would cover the travel cost by Economy Class (regardless of the level of the nominee), Daily Allowance, boarding and lodging etc. as admissible to the officers of Government of India traveling abroad. Registration fee, if any sought by the Conference organizer, will have to be paid by the organization to which the nominee belongs or by the nominee himself. This is being insisted upon to ensure that there is a sense of ownership in such nominations by the organization to which the nominee belongs or the nominee himself.

6.0 Institutional Development

6.1 It is well recognized that a number of other supporting activities need to be implemented in order to develop overall capacity for urban transport in the country. This includes the development of legal and administrative frameworks, a number of manuals and codes, a national database, a mechanism to coordinate research sponsorship and dissemination of research results, mechanisms to

provide technical support to the State/City Governments, as well as an institutional mechanism for Research and Development and to certify the safety of rail based and other externally guided transit systems.

6.2 Institutional capacity would primarily involve creating a pool of knowledge and a knowledge management center that would sustain and enhance expertise as well as facilitate more informed planning as well as formulation of right mitigation strategies. The Institute of Urban Transport (India), an existing institute under the purview of the Ministry of Housing & Urban Affairs would be suitably strengthened under this scheme to discharge this responsibility. It would be built up to serve as a National level facility to provide continuous advice and guidance on the principles of good urban transport planning as emerges from its research. Advice on new technologies would also be regularly available to implementing agencies from this institute. For this purpose, the institute would become a store house of information on the various public transport technologies being used in different parts of the world and would maintain the latest information and literature on the experience with such technologies. It would, in fact be a comprehensive repository of the best practices in the field. However, besides above the Ministry of Housing & Urban Affairs would also support the individual projects under the scheme which would assist in better implementation. Such cases would be governed by separate guidelines.

6.3 The virtual lack of a database on urban transport statistics has severely constrained the ability to formulate sound urban transport plans and reliably assess the impact of the different initiatives that have been taken. The IUT (India) would build up a database for use in planning, research, training etc. in the field of urban transport.

6.4 The need for strengthening of safety certification agency is being felt for metro rail systems in view of various metro rail projects coming up in the country. Hence, the office of the Chief Commissioner of Railway Safety, which functions under the Ministry of Civil Aviation is proposed to be strengthened for undertaking such safety certification. A separate Cell for Research & Development for metro rail projects would also be set up in Research, Design and Standardization Organization under Ministry of Railways.

6.5 Unified Metropolitan Transport Authority (UMTA) and Urban Transport Cell in various cities are a must to carry forward the Urban transport agenda as envisaged in the National Urban Transport Policy-2006. As such, the Scheme would support setting up of these institutions in AMRUT/ SMART/ HRIDAY Mission cities to provide technical support to the State/City Governments subject to the Urban Local Bodies (ULBs) having a clear and definite financial stake in establishing these bodies.

6.6 All these activities would be supported through suitable consultancy arrangements, where required, and the consultants would be selected through an open and transparent process.

7.0 Management Arrangements and monitoring

7.1 The implementation of this scheme for capacity building in urban transport would be directed and overseen by the Ministry of Housing & Urban Affairs and would be guided by a Steering Committee headed by Secretary (HUA)). It would include representatives from the NITI Aayog, DOPT, some professionals in the field besides Director (NIUA), JS & FA (MOUD), OSD (UT)&EOJS, TCPO and Director (UT) will be the Member Convener. The Steering Committee would approve a set of guidelines to support individual projects under the scheme and would have overall responsibility besides guiding the overall implementation of the scheme.

7.2 Modifications to the Scheme guidelines may be approved by the Steering Committee, where representative of Ministry of Finance shall also be invited.

7.3 The Institute of Urban Transport (India) shall be the project implementation unit (PIU) and the lead institution for implementation of the entire Programme in a coordinated manner so that different components of capacity building Programme could be effectively synergized. For this purpose, the Institute will enter into a MOU with the Ministry of Housing & Urban Affairs. Different components may be out-sourced by the IUT to separate institutions, but the lead institution would take responsibility for proper coordination and will report progress from time to time to the MoHUA. The PIU will also service the Steering Committee.

7.4 A review may be done once a year by the Steering Committee to review the outcome of the Scheme in which Economic Advisor and representative of Finance Ministry will also be invited.

Guidelines under

'Urban Transport Planning Scheme' for

Research and Advisory Proposals

MINISTRY OF HOUSING & URBAN AFFAIRS

Guidelines for taking Research project under Urban Transport Planning Scheme

1 Introduction

Realizing the rapidly growing problems of Urban Transport, Government of India has approved the National Urban Transport Policy (NUTP) in April, 2006. The Policy seeks to provide safe, affordable, quick, comfortable, reliable and sustainable access for the growing number of city residents to jobs, education, recreation and such other needs within our cities with focus on moving people and not vehicles. This can be achieved by incorporating Urban Transportation as an important parameter at the urban planning stage, rather than the consequential requirement as is the case today. Keeping in view these facts a new scheme for urban transport planning to provide central assistance for comprehensive traffic & transport planning, mobility plans, preparation of DPRs in line with NUTP have been launched in August, 2008. The Scheme provides Central Financial Assistance for taking up various Urban Transport studies/surveys, awareness campaign and research projects etc. In case of studies by State Govt./ ULB the Central Financial Assistance is up to 80%. In case of DPR for pilot projects, it is up to 50%. The guidelines for the scheme also provide for promotion on research on urban transport and Pilot study in some cities by Government of India as envisaged in NUTP, 2006. Towards the cost of pilot study & Research Work, the complete cost is to be borne by the Government of India.

2. Receipt & Appraisal of Proposals

Urban Transport Wing of Ministry of Housing & Urban Affairs will receive the proposals and screen the same. After the screening, the proposals would be appraised by the UT Wing and discussed in the Pre-Research Advisory Committee chaired by AS (D&UT) comprising of OSD (UT) & E.O. J.S., EA, TCPO, CPWD, Dir(Finance), Dir (UT), Dir (NIUA), Dir (NITI Aayog) for seeking views of all members for refining the proposal before placing before the Research Advisory Committee (RAC).

3. Thrust Areas:

The Ministry of Housing & Urban Affairs provide financial assistance for research proposal related to urban transport submitted by Academic Institutions, Research organization, Registered Societies etc. Ministry may provide 100% financial assistance for such Research proposals/ projects. Indicative thrust areas and research in urban transport are as follows:

- (i) Service Label Bench Mark in urban Transport
- (ii) Traffic management/congestion management measures
- (iii) Preparation of Model Policy for parking, advertisement etc.

(iv) Building data base at city/State level for various parameter of urban transport.

(v) Intelligent Transport System.

4. Sanction of proposals/Research Advisory Committee

4.1 The proposals as per recommendation of Pre-RAC would be put up to the Research Advisory Committee (RAC) under the chairmanship of Secretary (HUA) which is the Apex body for deliberation and sanction of the research proposals. The composition of RAC would be as under:

Chairman

1. Secretary (HUA) Ministry of Housing & Urban Affairs, New Delhi.

Members

2. Addl. Secretary (D&UT), Ministry of Housing & Urban Affairs;
3. OSD (UT) & E.o. Joint Secretary, Ministry of Housing & Urban Affairs
4. Joint Secretary (SC), Ministry of Housing & Urban Affairs,
5. JS&FA, Ministry of Housing & Urban Affairs,
6. Economic Adviser, Housing & Urban Affairs,
7. Adviser (Transport), NITI Aayog
8. Chief Planner, Town and Country Planning Organization New Delhi
9. Director, National Institute of Urban Affairs.
10. Chief Engineer, CSQ, CPWD, New Delhi.
11. Director (UT), Member-Secretary, Housing & Urban Affairs,

Terms of Reference:

1. The Committee will meet as when required to decide the priority areas of research in the field of Urban Transport.
2. The committee may lay down principles to be kept in view by UT wing while screening research proposals.
3. The committee will consider proposals short-listed after screening by UT wing and recommended by pre RAC for the sanction.
4. The committee may attach conditions to the sanction as deemed fit in the opinion of the committee.
5. The committee may review progress of research projects already sanctioned.
6. For any meeting (or part of the meeting), Chairman, RAC may invite any other persons who in the opinion of Chairman would be making useful contribution in the meeting (or part of the meeting).

April 2018

Term of Reference for Preparation of Comprehensive Mobility Plan (CMP)



**Ministry of Housing & Urban Affairs
Government of India**

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1. TERM OF REFERENCE

1.1. COMPREHENSIVE MOBILITY PLAN

A Comprehensive Mobility Plan (CMP) is a long-term vision for movement of people and goods for a city and provides a strategy and investment program to meet the vision. The methodology for the preparation of a CMP is given below:

1.2. METHODOLOGY FOR PREPARATION OF CMP

1.2.1. Stage I: Define objectives of Mobility Plan and delineate Planning Area and Horizon of Mobility Plan

Task 1: Define Objectives and Vision of the Mobility Plan

- Define Objectives and Vision of the Mobility Plan. These objectives would aim at addressing the following aspects:
 - Develop a long-term strategy for the desirable city mobility pattern that recognizes all modes of transport and avoids a piecemeal and reactive approach to existing problems and those expected to arise in future.
 - Improve and promote public transport, non-motorized vehicles (NMVs) and facilities for pedestrians as important transportation modes.
 - Promote integrated land use and transport planning.
 - Develop an urban transport strategy that is in line with the current National Urban Transport Policy (NUTP).
 - Ensure that the most appropriate, sustainable and cost-effective investments are made in the transport sector.

Task 2: Delineation of the Planning area and planning horizon

- Delineation of planning boundary for Mobility Plan based on existing Planning and Municipal area boundary and in discussions with relevant agencies. The CMP should be made for a horizon period of 30 years and should to be reviewed after every 5 years and revised, if required.

1.2.2. Stage II: Data Collection and Analysis of the existing Urban Transport Environment

Task 3: Review of City profile, delineation of Traffic Analysis Zones and review of Land Use pattern and Population density

- Data on existing land use and land use plans should be collected and presented after a detailed review of existing development plans, including the Master Plan and/or the City Development Plan (CDP). In particular, new development areas that will affect transport demand in the planning area should be highlighted.
- The secondary data collected should be utilized in studying the past and existing growth pattern, land use plan of the city and its suburbs. The data to be used in projecting future growth patterns, land use patterns and possible growth directions.
- In case, there are data gaps or the survey data is more than 2 years old, fresh primary surveys to be conducted, if considered necessary.

Task 4: Review of the Existing Transport Systems

A review of existing transport infrastructure and facilities should be done for each transport mode, including walking, bicycle, cycle rickshaw, shared auto-rickshaw, public transport and any other prevailing modes. The review will include all types of facilities and amenities including pavement description, intersection treatments, lighting, parking space, parking cost and operation-related parameters.

Task 5: Data Collection Approach - Methodology and Sources

- Relevant data should be collected from secondary sources like published reports (CDP, CMP or CTTS), city authorities or primary surveys.
- The primary surveys to be carried out for the analysis of the existing urban transport systems are as follows:
 - Road Network Inventory Surveys (within city limits- All major arterials and important sub-arterials and local streets)
 - Classified Traffic Volume Count Surveys - 16 hours (Outer and Inner Cordon)
 - Speed and Delay Surveys – Peak hour and off peak hour
 - Pedestrian Count Surveys - 8 hours (peak hours)
 - Parking Surveys - 12 hours (peak hours)
 - Public Transport - Boarding and Alighting Survey (based on city travel characteristics)
 - NMT Opinion Surveys
 - Junction Turning Volume Counts - 12 hours

Task 6: Study of Existing Travel Behavior

Two important considerations that should be taken into account while collecting data on travel patterns are; the collected data should be representative and cover the travel behavior of all individuals within a household; and the data to be segregated by social group and trip purpose. The household surveys should be designed to assess different social groups effectively and to represent people's perceptions towards different modes of transport in terms of time, cost, comfort, safety and security. For understanding and analyzing the existing travel behavior and characteristics, the following additional primary surveys need to be conducted:

- Screen Line Classified Volume Count Surveys - 16 hours
- Household Interview Surveys (sample size should be between 1-2% depending on the size of the city)
- Road Side Interview Surveys - 8 hours (peak hours)

Task 7: Review of Energy and Environment

Quantifying energy consumption for transport is important for estimating the CO₂ and local air pollution emissions from transport-related activities. In order to create a complete picture, both top down and bottom-up approaches for estimating energy consumptions will be adopted.

Task 8: Analysis and Indicators

The impact of the projects in terms of service level benchmarks should be evaluated. Service level performance benchmarks identified as per the Ministry of Housing and Urban Affairs (MoHUA) guidelines are for the following areas of intervention:

- Public transport facilities
- Pedestrian infrastructure facilities

- Non-Motorized Transport (NMT) facilities
- Level of usage of Intelligent Transport System (ITS) facilities
- Travel speed (Motorized and Mass Transit) along major corridors
- Availability of parking spaces
- Road safety
- Pollution levels
- Integrated land use transport system
- Financial sustainability of public transport

As part of the study, the impact of the projects proposed should be evaluated in terms of improvement in the Service Level Benchmark (SLB) of each indicator and overall improvement in SLB.

1.2.3. Stage III: Development of Business as Usual (BAU) Scenario

Task 9: Framework for Scenarios

BAU Scenario represents the future based on the continuation of past trends, and is used as a counterfactual reference or benchmark for assessing policy interventions. In terms of passenger transport, the BAU scenario predicts the increased car ownership and a higher demand for motorization. In terms of technologies, the scenario foresees continued reliance on fossil fuel cars, with improved efficiency and a greater share of electric and hybrid cars.

Task 10: Socio-economic Projections

City's future economic transitions depends on the current economic transitions taking place across the country. Demographic projections, Employment projections and Industrial growth projections will be done using the model and other parameters.

Task 11: Land Use Transitions

The land use type should be disaggregated into residential, commercial, retail, recreational, industrial, educational, religious, and other categories. Land use projections and allocations for the horizon years should be done in three steps. The first step includes the projection of socio demographics and the per capita space requirements for each activity in the city. The second step involves the allotment of activities based on connectivity and distances, as well as the availability of space. The third step includes the scope of the land use transition.

Task 12: Transport Demand Analysis

Demand for passenger transport should be estimated using a four-step model. The four-step model is based on an understanding of existing travel behavior obtained from the household survey, and provisioning existing transport infrastructure and service quality. The transport model to be developed must be a peak-hour model and not a daily model. After set up for the base year, the transport traffic flows on different road links should be compared with the actual traffic volume counts observed at various locations observed across the city.

Task 13: Technology Transitions

An understanding of vehicles, fuels and CO₂ emissions from electricity use in transportation system is essential to understanding the implications of travel demand on CO₂ emissions and air quality.

Task 14: Model Framework

The framework for sustainable urban mobility should utilize the four strategic levers: Urban form, Non-Motorized Transport (NMT), Public Transport and Technology. The framework should study the impacts of alternative strategies using key indicators for mobility, safety, and local environment, as well as more aggregate indicators like CO₂ and energy use.

1.2.4. Stage IV: Development of Sustainable Urban Transport Scenarios

Task 15: Framework for Scenarios

Review of Green House Gas Emission indicators for the BAU scenario as well as sustainable scenarios should be done, however, technological transitions for various scenarios should also be discussed in detail.

Task 16: Strategies for Sustainable Urban Transport Scenario

Various scenarios should be developed describing the plans and policies aimed at limiting private vehicle ownership and use. The scenarios also assume an increase in motorized transport to some extent, which is inevitable given the low level of vehicle use on a per capita basis. Therefore, emphasis should be placed on improving technology in terms of efficiency and emissions.

Task 17: Transport Demand Analysis of Alternative Strategies for Sustainable Urban Transport

Strategies on Urban Structure, Non-Motorized Transport infrastructure, Public Transport, Improving Public Transport, NMT and Urban structure, Technology options, Regulatory and financial measures should aim to improve transport infrastructure and increase the cost of using personal motorized vehicles. The transport model to be developed must be a peak-hour model and not a daily model.

Task 18: Technology Transitions under a Low Carbon Scenario

In the low carbon scenario, the fuel mix is expected to diversify further from BAU scenario towards bio-fuels, electricity and natural gas. With advanced technologies, vehicle efficiency will also improve, and thus the overall demand for fuels will be lower in the low carbon scenario.

Task 19: CO₂ Emissions and Air Quality

The model framework is same as the BAU scenario for estimating CO₂ Emissions and Air Quality. The indicators for the sustainable urban transport scenario are similar to those estimated for the base year.

1.2.5. Stage V: Development of Urban Mobility Plan

Task 20: Integrated Land Use and Urban Mobility Plan

Integrating land use with the urban mobility plan would entail a two-way interaction between the two plans. High density residential areas intertwined with high-density employment areas, along with increased travel costs and an efficient public transport system would encourage

people to use NMT for shorter trips and public transport for longer ones, thus encouraging low-carbon mobility. To summarize, the land use plan should locate activities in a manner that encourages low-carbon mobility and the urban mobility plan, in turn, should facilitate access to activities.

Task 21: Formulation of Public Transport Improvement Plan

CMP details the Public Transport Improvement Plans into a number of sections, including service improvements for buses, trams and para-transit, appropriate MRT options and development plans, trunk and feeder network systems and intermodal facility plans. Formulating a public transport improvement plan in small sized Indian city can involve several challenges. These range from assessing transport demand to service provision and its alignment with land use.

Task 22: Preparation of Road Network Development Plan and NMT Facility Improvement Plan

A set of specific projects and policy measures would need be identified that the city authorities need to implement as part of the Mobility Plan. These projects and policy measures could be categorized as follows:

- Road network development Plan
- NMT facilities

Task 23: Preparation of Mobility Management Measures

In CMP, traffic management plans cover parking plans, traffic control measures, intermodal facilities, demand management measures, traffic safety plan and ITS. Mobility management measures suggested in the CMP should enable use of public transit and NMT modes. Additional measures should be added to increase the cost and discourage the use of motorized travel, including the taxation of cars and fuel, land use planning that encourages shorter travel distances and traffic management by reallocating space on the roads.

Task 24: Preparation of Regulatory and Institutional Measures

Effective development of urban land use and transport systems often requires regulatory and institutional changes. Such requirements should be worked out in detail and documented in the CMP. These measures can be developed region-wide/ city wide or be project specific. The regulatory and institutional plan should include the following:

Regulatory measures in relation to:

- Bus service improvement (concession, privatization, and lease contract);
- Traffic safety improvement (traffic regulation, mandatory road user education, enforcement systems);
- Introduction of Transport Demand Management (TDM) measures;
- Vehicle emissions (focus on non-fuel based vehicles and compressed natural gas/CNG vehicles);
- Public-Private Partnerships (PPPs).

Institutional measures in relation to:

- Coordination mechanism to integrate public transport operation and to integrate fares;

- Establishment of Unified Metropolitan Transport Authorities (UMTA); if not in place earlier
- Establishment of SPVs for the implementation of proposed projects; and other changes necessary to promote PPPs.

Task 25: Development of Fiscal Measures

Fiscal measures should be considered to achieve a balanced modal split, and to secure the budget necessary to implement urban transport projects. As fiscal measures usually correspond to institutional and regulatory measures, the following aspects may have to be examined in the CMP document:

- Fare policy for public transportation, and parking;
- Subsidy policy for public transport operators;
- Taxation on private vehicles and public transport vehicles; and
- Potential for road congestion charging.

Task 26: Mobility Improvement Measures and NUTP Objectives

The land use and transport measures proposed in the CMP should improve mobility in the metropolitan area and cover the critical issues addressed in the NUTP. A table can be prepared summarizing the relationship between the NUTP objectives and the measures proposed in the CMP, together with a classification of the measures according to their implementation time frame (short, medium and long term).

1.2.6. Stage VI : Implementation Plan

Task 27: Preparation of Implementation Programs

The necessary interventions for public transport improvement plans, road development plans, NMT facility improvement plans and mobility management measures are listed next into a set of actionable projects to be implemented in the city and prioritized into the following categories

- Short term (next 2-5 years)
- Medium term (5-10 years)
- Long term (more than 10 years)

All the projects should be presented to the city stakeholders and the suggested implementing agencies identified for each project.

Task 28: Identification and Prioritization of Projects

- Short-term measures are aimed at improving the safety and accessibility of pedestrians, cyclists and public transport users through area level traffic circulation plans and measures like implementing traffic signals.
- Medium-term measures typically involve corridor-level projects like implementing cycle tracks and mass-transit corridors, city level initiatives like public transport fleet improvement and efficient scheduling, developing area level cycle networks and Public Bicycle Sharing (PBS) schemes, parking policy development and implementation in the city. They are primarily aimed at restricting the decrease in the city's public transport and non-motorized transport mode shares.

- Long-term measures include implementing the overall vision of the CMP. These project ideas are presented to the stakeholders in order to get their feedback on both the projects and their prioritization. The final list of identified projects should include the implementation framework, cost estimates and the likely funding options.

Task 29: Funding of Projects

The various project-funding options would be assessed, identifying the projects amenable to PPP and those that can be implemented based on the government sources of funding from the city, State Government and Central Government schemes. Alternative and innovative sources of funding should be identified to reduce the investment by various Government agencies.

Task 30: Monitoring of CMP Implementation

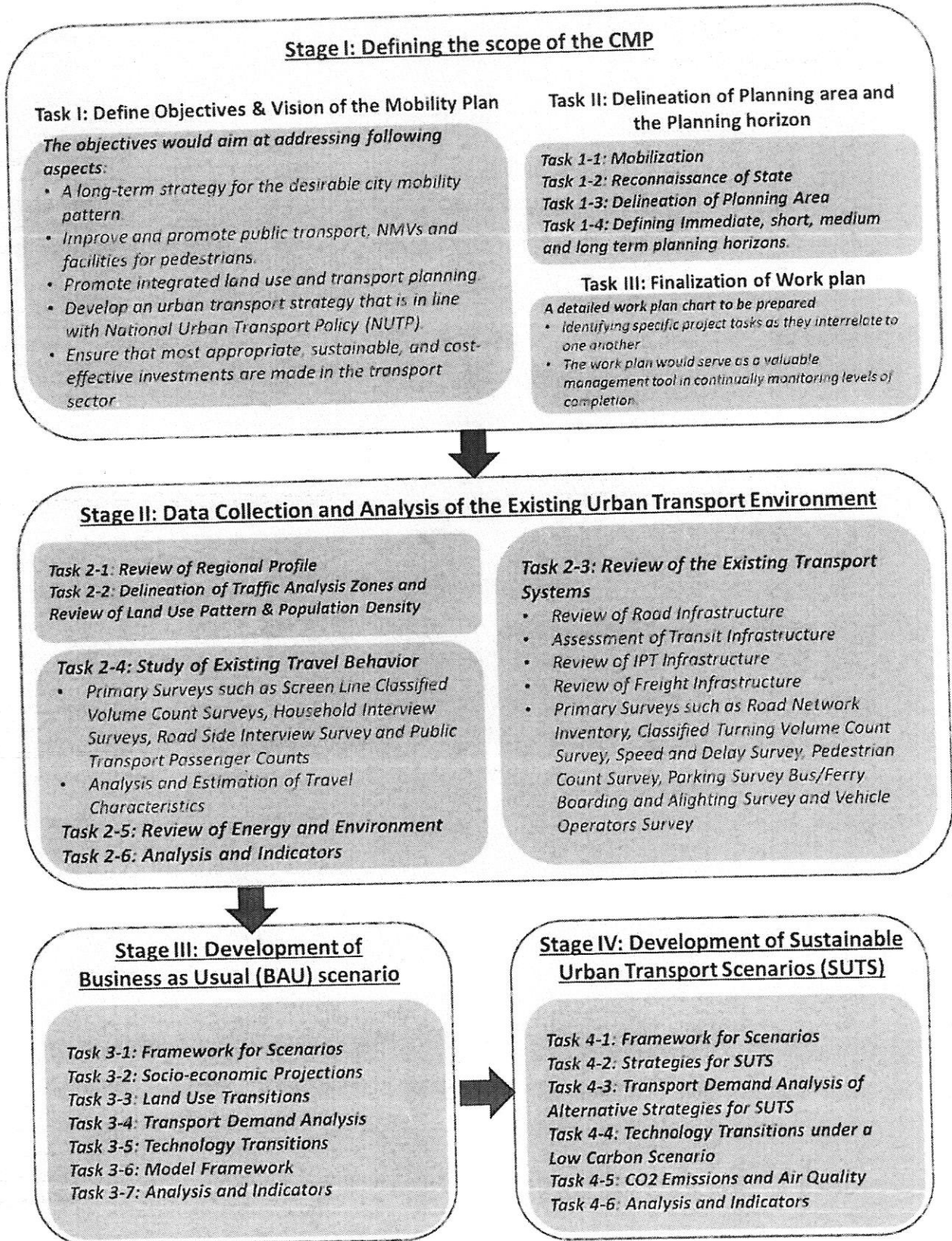
CMP is the basis for approving projects, plans and various regulatory measures within the city related to transport and it is therefore important to monitor and measure the impact of interventions. Agencies responsible for implementation of the projects and monitoring the progress of implementation of urban transport projects should be identified.

Task 31: Stakeholders Consultation

Stakeholders' consultation should be done after each major stage of the CMP such as the draft stage to ascertain their feedback and comments on the proposals and projects for improving urban transport.

The methodology flow chart for preparation of CMP is given in 1:

Figure 1: Methodology flow chart for preparation of CMP



Stage V: Development of Urban Mobility Plan

Task 5-1: Integrated Land Use and Urban Mobility Plan

Task 5-2: Formulation of the Public Transport Improvement Plan

Task 5-3: Preparation of Road Network Development Plan & NMT Facility Improvement Plan

- Road Network Development Plan
- NMT Facilities

Task 5-4: Preparation of Mobility Management Measures

Task 5-5: Preparation of Regulatory and Institutional Measures
Regulatory measures in relation to:

- Bus service improvement (concession, privatization, and lease contract)
- Traffic safety improvement (traffic regulation, mandatory road user education, enforcement systems)
- Introduction of Transport Demand Management (TDM) measures;
- Vehicle emissions (focus on non-fuel based vehicles and compressed natural gas/CNG vehicles);
- And Public-Private Partnerships (PPPs)

Institutional measures in relation to:

- Coordination mechanism to integrate public transport operation and to integrate fares;
- Establishment of Unified Metropolitan Transport Authorities (UMTA);
- Establishment of SPVs for the implementation of proposed projects; and
- Other changes necessary to promote PPPs

Task 5-6: Development of Fiscal Measures

- Fare policy for public transportation, and parking;
- Subsidy policy for public transport operators;
- Taxation on private vehicles and public transport vehicles; and
- Potential for road congestion charging.

Task 5-7: Mobility Improvement Measures and NUTP Objectives

Stage VI: Implementation Plan

Task 6-1: Preparation of Implementation Programs

- Short term (next 2-5 years)
- Medium term (5-10 years)
- Long term (more than 10 years)

Task 6-2: Identification and Prioritization of Projects

- Short-term measures
- Medium-term measures
- Long-term measures

Task 6-3: Funding of Projects

Task 6-4: Monitoring of CMP Implementation and Stakeholders Consultation

The Table of Contents for preparation of CMP is given in the **Annexure I**.

2. ANNEXURES

2.1. ANNEXURE I: TABLE OF CONTENTS FOR COMPREHENSIVE MOBILITY PLANS

The following are the Table of Contents for Comprehensive Mobility Plan:

S.No Chapters

Executive Summary

1. Introduction

- 1.1. Define sustainable mobility principles
- 1.2. Impact of regional/national framework
- 1.3. National Urban Transport Policy
- 1.4. Delineation of Planning Area
- 1.5. Define objectives and vision of Mobility Plan
- 1.6. Review availability of resources
- 1.7. Stakeholder's identification
- 1.8. Approach and Methodology

2. Review of City Profile

- 2.1. Review of existing Transport system
- 2.2. Transport demand surveys
- 2.3. Review of existing land use pattern
- 2.4. Analysis of existing Traffic/Transport conditions
- 2.5. Traffic volume count
- 2.6. Road network Inventory
- 2.7. Modal share
- 2.8. Speed and delays surveys
- 2.9. Parking surveys
- 2.10. Non-motorized transport surveys
- 2.11. Future land use developments plan
- 2.12. Review of Energy and Environment
- 2.13. Analysis and Indicators

3. Transport Demand Assessment

- 3.1. Development of Business as Usual (BAU) scenario
- 3.2. Development of Sustainable Urban Transport Scenario
 - Framework for scenarios
 - Strategies and plans for Sustainable Urban Transport
 - Transport Demand analysis of Alternative strategies for Sustainable Urban Transport
 - Technology transitions under a Low carbon scenario
 - CO₂ emissions and Air quality
 - Analysis and Indicators (Comparison with benchmarks)
- 3.3. Conclusions

4. Development of Comprehensive Mobility Plan

- 4.1. Integrated land use and Urban mobility plan
- 4.2. Formulation of Public Transport Improvement plan
- 4.3. Preparation of Road Network Development Plan
- 4.4. Preparation of NMT (Non-Motorised Transport) Facility Improvement Plan
- 4.5. "Inter-modality" -Integrated development of all modes including non-motorised transport
- 4.6. Freight Movement Plan
- 4.7. Plans for Intelligent Transport System
- 4.8. Traffic management measures
- 4.9. Action plan and budget plan
- 4.10. Monitoring and evaluation plan
- 4.11. Inform and engage stakeholders including citizens
- 4.12. Development of Fiscal measures
- 4.13. Mobility improvement measures and NUTP Objectives
- 4.14. Impact of the proposed measures on Service Level Benchmark

5. Implementation Plan

- 5.1 Preparation of implementation programs
- 5.2 Prioritization of sub-projects
- 5.3 Funding of projects
- 5.4 Monitoring of CMP
- 5.5 Stakeholders Consultation

April 2018

Term of Reference for Preparation of Metro Rail Detailed Project Report (DPR)



सत्यमेव जयते

**Ministry of Housing & Urban Affairs
Government of India**

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1. TERM OF REFERENCE

1.1. DETAILED PROJECT REPORT

The DPR along with the checklist for compliance with Metro Rail Policy 2017, as given in **Annexure V** needs to be submitted to the Central Government for approval. The DPR should be prepared in conformity to the Standards and Specifications for Metro Rail projects that have been issued/ being issued by MoHUA from time to time.

1.2. METHODOLOGY FOR PREPARATION OF DETAILED PROJECT REPORT

The Methodology for preparation of DPR is given below:

1.2.1. Assessment of existing city profile with existing transport characteristics

Task 1: A brief overview of the city in terms of its growth, economy, spatial structure and trends, perspectives on the future growth. Overview of study areas and existing plans with land use distribution, review of zoning Regulations, employment distribution by Traffic Zones, land use plan proposals should be done.

Task 2: Brief review of previous transport studies like City Master Plan, Comprehensive Mobility Plan and proposed Metro Rail plan and other urban transport proposals. A brief showing interconnection among City Master Plan, Comprehensive Mobility Plan and proposed Metro Rail plan should be given.

1.2.2. Travel characteristics and demand estimates

Task 3: Describes the components of urban transport system in terms of status, trends and gaps based on primary survey data, present travel patterns and forecast for the future travel demand.

Task 4: Based on primary survey data and various traffic and transportation studies undertaken for the city, the present travel patterns and forecast for future travel demand should be done.

Task 5: Travel demand analysis, model framework, model calibration, summary of travel demand patterns and ridership assessment for horizon year.

1.2.3. System and Technology Selection

Task 6: Identification of suitable transit technology and the system specification to be adopted for the corridor including the rationale for choosing a particular technology as per the prescribed specification as issued by MoHUA from time to time. The technology chosen should not be a proprietary technology of any vendor.

1.2.4. Corridor alignment description

Task 7: Alignment description of approved alignment, with detail about site conditions specifying road geometrics, utilities available along the corridor

Task 8: Detailed analysis of corridor options with grade selection for construction. Design norms for track geometry, fixed structure clearance, geotechnical details with new

innovative techniques to be used for implementation in civil works, track system etc.

Task 9: Identification of existing services/utilities, if any

Task 10: Detailed estimation regarding land requirement for the corridor, depots, stations, parking, multi modal stations etc. with land ownership

1.2.5. Station Planning

Task 11: Station planning with preparation of general layouts based on type of station and site specific conditions focusing on:

- Station Area planning for non-motorized vehicles and pedestrians' facilities, multi modal integration with existing modes, feeder service planning.
- Accessibility for differently abled persons including specifying parking at stations for private and para transit facilities.
- Platform widths based on Station loadings and the minimum width to be provided.

1.2.6. Intermodal Integration

Task 12: Prepare an Intermodal Integration Plan focusing on how the Metro Rail will integrate with the existing transportation systems/proposed transit system and introduction of a feeder system, integrated with the proposed Metro Rail project for improving last mile connectivity. This will include not only preparation of an operational plan for feeder system but also infrastructure that need to be upgraded/ improved or introduced for improving the intermodal integration with other modes of public transport to improve the viability of the project. Recommendations for institutional integration, physical integration, fare integration, operational integration and technology integration would also need to be elaborated in the report.

1.2.7. Train Operation Plan

Task 13: System operation approach, station yard planning, trains operation plan including system frequency, timetabling, rolling stock requirement, stabling details.

1.2.8. Signaling and Telecommunication

Task 14: Identification of Signaling and System control, Operation Control Centre (OCC), maintenance requirement, technology selection and choice of automation

Task 15: Identification of Telecommunication System, System Traffic Control, maintenance and emergency communication, Passenger Information System (PIS)

1.2.9. Fare Collection System

Task 16: Detailing the specifications for Automatic fare collection system, Ticketing and pass system, Fare System integrated with other transport Systems including integration of fares of all available modes with the Metro system planned as per the guidelines issued by MoHUA (such as National Common Mobility Card).

1.2.10. Rolling Stock

Task 17: Technology selection, identification of rolling stock adopted as per Guidelines laid by MoHUA. Rationale for deviations, if any in choice of rolling stock parameters from the prescribed specifications and standards prevailing and Rolling stock requirement for various horizon years should be specified.

1.2.11. Power Supply and Traction System

Task 18: Choice of electric traction system. Projected power demand, Source of power supply, Traction and Auxiliary Supply and supervisory control and data acquisition system. No. of tractions and their locations.

1.2.12. Ventilation and Air Conditioning System

Task 19: Need for Ventilation and Air Conditioning, design parameters and design concepts for VAC System with details on tunnel ventilation, station ventilation and air conditioning of ancillary spaces including specifications for control and monitoring facilities.

1.2.13. Depots

Task 20: Identification of Depot locations. Approach to maintenance of depot facilities and workshop along with detailed designs and layout plans.

1.2.14. Environment and Social Impact Assessment

Task 21: Existing scenario, with analysis on water quality, noise level, land environment, biological environment etc.

Task 22: Environmental norms and Regulations, Detailed Environment Impact Assessment (EIA), Environment Management Plan (EMP), formation of an Environmental Management System (EMS) and costs estimates for Environment Impact mitigation measures.

Task 23: Detailed Social Impact Assessment (SIA) including R&R assessment, Resettlement Impacts, Resettlement Assistance Plan (RAP) and Monitoring and Evaluation Framework.

1.2.15. Disaster Management and Security Measures

Task 24: Disaster Management, Disaster Management imperatives, Objectives of Disaster Management Plan, Systems to cater for disasters and Security Systems recommended for MRTS and Safety and Security Measures.

1.2.16. Cost Estimation

Task 25: Detailed project cost estimates

- Capital cost estimates including taxes and duties
- Innovations proposed to reduce the cost of system
- Estimation of Operations and Maintenance Cost and the assumptions made thereof

1.2.17. Transit Oriented Development Plan

Task 26: The potential for Transit Oriented Development along the metro corridors based on the guidelines issued by MoHUA to be developed including densification of corridor by increasing FSI and land value capture as per the guidelines issued by MoHUA. Guiding list of lands/areas amenable for change in near future e.g. vacant land, low rise development relocation etc., use type.

1.2.18. Financial Analysis and Non Fare Box Revenue Assessment

Task 27: Estimations and inputs for the corridor, estimation for O & M, overheads, phasing of construction and lease of Built up Area (BUA), Operational viability of the project

Task 28: Means of finance, revenue from different sources, fare box revenue, non-fare box revenue, like advertisement, taxes and property development etc, possible ways of funding the project using different approaches. Alternative means of funding the project using different approaches Like PPP, BOT, DBFOT, DFBOT, Developer Finance Model Etc. and need to identify the proposed funding /implementation model in line with the Metro Policy 2017.

Task 29: Financial Returns: FIRR with 30 year time horizon, Sensitivity analysis should be done based on scenario building with variation in ridership estimates scenarios, costs estimates and Time overrun. Alternative scenarios based on the different options for funding /implementation of the project should be evaluated. A project should be able to meet its financial requirement for cost recovery and under a set of plausible assumptions be able to self-finance its activities. The State Governments will have to ensure the financial sustainability of the project through financial assistance.

1.2.19. Economic Analysis

Task 30: The Economic analysis should include economic cost and benefit analysis of the project and estimation of the EIRR for a period of 30 years as per the methodology for economic cost and benefit analysis as given in **Annexure IV**.

1.2.20. Implementation Plan

Task 31: Project implementation structure, if proposed to be implemented under various alternatives such as public or PPP model, role, responsibility and involvement (including financial stake) of the city government along with other government agencies in metro rail project, needs to be elaborated in the report.

1.2.21. Institutional Arrangement and Stakeholders Consultation

Task 32: Legal and Institutional Framework for implementation of the project based on the identified implementation plan should be included in the report. Stakeholders' consultation should be held at each major stage of the project such as the Corridor Alignment Report and the Draft DPR stage.

The Table of Contents for preparation of DPR is given in **Annexure I**.

2. ANNEXURES

2.1. ANNEXURE I: TABLE OF CONTENTS FOR PREPARATION OF DETAILED PROJECT REPORT (DPR)

Chapter	Content
	Executive Summary
1.	A Profile of the City A brief overview of the city in terms of its growth, economy, spatial structure and trends are analysed and perspectives on the future growth are presented.
1.1.	General/historical background
1.2.	Location, climate, physical setting, regional linkages
1.3.	Demographic and socio economic profile: population growth, density, migration patterns, spatial patterns of growth, projections for next 20 years
1.4.	Urban Land Use Structure / Activity Distribution Planning study areas and existing plans, existing land use distribution, review of zoning regulations (zoning and FSI pattern and its appropriateness), employment distribution by Traffic Zones, activity locations (Business areas, University, Hospitals, Transport Terminals), land use plan proposals (Master Plan and CDP strategy), road network pattern (Add compliance checklist)
2.	Existing Transportation System in the City Describe the components of urban transport system in terms of status, trends and gaps.
2.1.	Introduction
2.2.	Vehicular growth and composition
2.3.	Road network characteristics, Network inventory including length, width, Bridges, RoBs, flyovers, network pattern, missing links etc.
2.4.	Major transport nodes e.g. Railway. Station, ISBT, Airport and Traffic handled
2.5.	Pedestrian and NMV facilities
2.6.	Traffic Management Including parking management
2.7.	Traffic Characteristics, Volume, traffic composition, speed and delays, pedestrian and NMV movement
2.8.	Traffic safety
2.9.	Intermediate Public Transit (IPT)System : Composition, status and role
2.10.	Public Transportation System Type, status and trends in terms size, service, routing, fare, patronage, financial performance, institutional framework, responsible agency and Act, constraints
2.11.	Past proposals from CMP/CTTS/Transport Master Plan Based on Transport Master Plan/CMP, it should focus on moving people and not vehicles. It should integrate land use with transport plan including mass transit systems connectivity to all new/ future satellite townships/emerging activity centres (SEZ's), main network and feeder network including pedestrian and NMVs, phasing of implementation
2.12.	A brief showing interconnections among city Master Plans/Development plans, Comprehensive Mobility Plan and proposed Metro Rail Plan
2.13.	Issues and Prospects

3. **Travel Characteristics and Demand Estimates**

Based on primary survey data, present travel patterns and forecast the future travel demand

 - 3.1. Details of various traffic and transportation studies undertaken for the city
Study area, Zoning, Land use surveys, Transportation surveys: Classified volume counts, road side interviews, OD Surveys, willingness to pay/use Surveys, Traffic surveys, Speed-Delay surveys, Parking surveys
 - 3.2. Socio-Economic Characteristics
 - Age wise distribution of Population, Activity status (Work, Education), Income distribution, Vehicle ownership
 - Travel characteristics, trip rate, trip purpose, mode choice, trip length, monthly expenditure on travel, spatial pattern of passenger movement, mobility patterns and needs of women, old aged, physically challenged
 - 3.3. Travel demand analysis
model framework, model calibration, summary of travel demand patterns
 - 3.4. Future travel demand scenarios
 - 3.5. Ridership assessment for horizon year
4. **System and Technology Selection**
 - 4.1. Technology
 - 4.2. System specification to be adopted for the corridor
5. **Civil Engineering , Alignment details**
 - 5.1. Alignment description of approved alignment, availability of road space
 - 5.2. Analysis of corridor options to be Elevated, Underground or At Grade
 - 5.3. Design norms-Track geometry, Fixed structure clearance, Geo-technical details with new innovative techniques to be used for implementation in civil works, track system etc.
 - 5.4. Geometric design of Corridor including plan/profile.
 - 5.5. Identification of existing services/utilities, if any
 - 5.6. Land requirement for the corridor, depots, stations, parking ,multi modal stations etc.
 - 5.7. Ownership details of the land required for the corridor
6. **Station Planning**
 - 6.1. Station planning-elevated/underground based on site specific
 - 6.2. Station area planning for Non-Motorized Vehicle and pedestrians facilities
 - 6.3. Accessibility for differently-abled
 - 6.4. Parking on stations for public bike sharing, commensurate parking lots for cycles and personal vehicles, as well as adequate arrangement for receiving and dispatch of feeder buses at all metro stations and for IPT system
7. **Intermodal Integration**

- 7.1. Inter modal integration with existing modes
- 7.2. Feeder service planning from stations, fleet requirement, route planning,
- 7.3. Physical infrastructure requirement for integration with other modes
- 7.4. Recommendations for Institutional integration, Physical integration, Fare integration, Operational integration and Technology integration

8. Train Operations Plan

- 8.1. System operation approach, Station yard planning, Train operations plan
- 8.2. System frequency, Time-tabling
- 8.3. Rolling Stock requirement, stabling details

9. Signaling and Telecommunication

- 9.1. Signaling and System Control, Planning for Operation Control Centre(OCC) with System communication system, Electronic interlocking in stations and Depots , Maintenance requirement for maintaining and running an efficient system, Technology selection and choice of automation
- 9.2. Telecommunication, System shall cater to the needs of System traffic control, features to supplement signaling system, maintenance and emergency communication, passenger information system, etc.

10. Fare Collection System

- 10.1. Ticketing and access control
- 10.2. Automatic fare collection system options available, Ticketing and Pass System
- 10.3. Fare System integrated with other Transport System

11. Rolling Stock

- 11.1. Referring to system adopted ,type of rolling stock adopted as per guidelines issued by MoHUA from time to time
- 11.2. Rationale for deviation, if any in choice of rolling stock parameters from the prescribed specifications and standards prevailing
- 11.3. Rolling stock requirement for various horizon years for identified system

12. Power Supply and Traction

- 12.1. Choice of electric traction system
- 12.2. Power supply, total projected power demand
- 12.3. Source of power supply
- 12.4. Traction Power Supply and traction overhead equipment, if applicable
- 12.5. Auxiliary power supply network
- 12.6. Supervisory control and data acquisition system

13. Ventilation and Air Conditioning System for Rail based System

- 13.1. Alignment Analysis, need for Ventilation and Air Conditioning
- 13.2. Internal design conditions in Underground stations, if provided
- 13.3. Design parameters and design concepts for VAC System
- 13.4. Station ventilation and Air Conditioning of ancillary spaces
- 13.5. Tunnel ventilation system, in case the same is provided
- 13.6. Control and monitoring facilities
- 14. Depots**
 - 14.1. Depot location and number, approach to maintenance
 - 14.2. Design of depot facilities and workshop with layout plans
- 15. Environment and Social Impact Assessment**
 - 15.1. Existing scenario, water quality, noise level, land environment, biological environment, socio economic survey, archeological sites, if any
 - 15.2. Environmental norms and Regulations
 - 15.3. Detailed Environment Impact Assessment, discussing Impacts due to project location, project design, project construction, project operation, depot etc.
 - 15.4. Positive & Negative Environmental Impacts
 - 15.5. Environment Management Plans
 - 15.6. Environmental Monitoring Plan, discussing Pre-construction phase, Construction phase, Operations phase, Implementation of Environmental Management Plan, Formation of an Environmental Management System (EMS)
 - 15.7. Summary of Costs
 - 15.8. Social Impact Assessment (SIA), potential resettlement impacts, baseline socio economic study, eligibility and entitlements, institutional framework, public consultation, resettlement assistance plan and cost, monitoring and evaluation
- 16. Disaster Management & Security Measures**
 - 16.1. Disaster Management, Disaster Management imperatives
 - 16.2. Need for Disaster Management
 - 16.3. Type of Disasters in MRTS
 - 16.4. Objectives of Disaster Management Plan, Systems to cater for disasters
 - 16.5. Preparedness of staff for disasters, preparedness for Disaster Management, Authorities to be coordinated with in case of disaster, Command & Control at the National, State & District Level
 - 16.6. Security measures, essentials of security management, Security system design parameters, Door frame metal detectors, X-ray scanning etc.
 - 16.7. Security systems recommended for MRTS
- 17. Detailed Project Cost Estimates**

- 17.1. Capital cost estimate of complete system with details of civil engineering works , permanent way ,utility diversions, environmental protection, miscellaneous other works ,rehabilitation and resettlement ,traction and power supply ,signaling and telecommunication works, rolling stock ,general charges and contingencies
- 17.2. Innovations proposed to reduce the unit cost of Civil works, Track system, Rolling stock etc.
- 17.3. Costing of entire project and for each of the phases
- 17.4. Summary of Capital Cost
- 17.5. Estimations of Operations and Maintenance Cost
- 18. Transit Oriented Development Plan**
 - 18.1. Assessment of development Potential
List Land/Buildings amenable for change in near future e.g. vacant land, low rise development relocation etc., use type, densification of corridor by increasing FSI, land value capture as per the guidelines issued by MoHUA
- 19. Financial Analysis and Non Fare Box Revenue Assessment**
 - 19.1. Estimations and inputs for the corridor, phasing of construction and lease of BUA
 - 19.2. Estimations for operations and maintenance cost ,overheads, compare the proposed costs with existing domestic and international benchmarks (including manpower/km), and measures to be taken for improvement in operations and maintenance cost, Innovations to ensure profitability at O&M level
 - 19.3. Operational viability
 - 19.4. Means of finance
Revenue From Different Sources
 - Fare box revenue
 - Non fare box revenue, like advertisement, taxes and property development etc.
 - 19.5. Financial Returns , FIRR for 30 years time horizon
 - 19.6. Alternative sources for Means of Finance, exploring all possible ways of funding the project using different approaches Like PPP, BOT, DFBOT, DBFOT, Developer Finance Model Etc. and proposed funding model/implementation model.
 - 19.7. Sensitivity Analysis
 - i. Expected Ridership
 - ii. Costs
 - iii. Time overrun
- 20. Economic Analysis**
 - 20.1. Approach and Methodology for Economic Analysis
 - 20.2. Estimation of Economic Project cost of MRTS
 - 20.3. Economic Benefits of MRTS

- 20.4. EIRR for 30 Years
- 20.5. Outcome on Economic viability

21. Implementation Plan

- 21.1. Project Implementation Plan
- 21.2. Project implementation structure if implemented on PPP model
- 21.3. Legal and institutional Framework for implementing the project
- 21.4. Role, responsibility and involvement (including financial stake) the city government shall have in the Metro Rail project

