

Capacity building
initiatives for
sustainable urban
transportation
environmental ...



The terms of reference of this sub group of Working Group on Urban Transport of National Transport Development Policy Committee (NTDPC) are postulated as given below.™ Institutional Capacity requirements such as UMTA; UT Institutions; COEs, etc™ Need for Database Development and institutional setup to realise™ Education and Training requirements for skill development of personsinvolved in planning, implementation and monitoring of UT facilities™ Identification of Research needs in UT and to identify required mechanism topursue™ Identification of Best Practices in UT and their disseminationCapacity building initiatives to be taken up by covering above terms of reference are discussed in subsequent articles.

1. 0 INTRODUCTION

The most important issue is lack of skills in cities to develop its urban transport along a sustainable path. There is an urgent need for capacity building. The UN DevelopmentProgramme (UNDP)hasdefined " capacity" as" theabilityof individuals, institutions and societies to perform functions, solve problems, and set and achieve objectives in a sustainable manner." The terms " capacity building" or " capacity development" describe the task of establishing human and institutional capacity. UNDPdefined'capacity building'asthecreationofanenablingenvironment with appropriate policy and legal frameworks, institutional development, including community participation, human resources development and strengtheningof managerial systems, adding that, UNDP recognizes that capacity building is along-term, continuing process, in which all stakeholders participate (ministries, local authorities, non-governmentalorganizationsandusergroups, professional associations, academics and others). Capacity Building is much

more than training and includes the following:™ Human resource development: the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively.™ Organizational development: the elaboration of management structures, processes and procedures, not only within organizations but also the management of relationships between the different organizations and sectors (public, private and community).™ Institutional and legal framework development: making legal and regulatory changes to enable organizations, institutions and agencies at all levels and in all sectors to enhance their capacities (citation: Urban Capacity Building Network). For organizations, capacity building may relate to almost any aspect of its work: improved governance, leadership, mission and strategy, administration (including human resources, financial management, and legal matters), program development and implementation, fundraising and income generation, diversity, partnerships and collaboration, evaluation, advocacy and policy change, marketing, positioning, planning, etc. For individuals, capacity building may relate to leadership development, advocacy skills, training/speaking abilities, technical skills, organizing skills, and other areas of personal and professional development (Evaluation of Capacity Building: Lessons from the Field by Deborah Linnell, published by the Alliance for Nonprofit Management). USA with 300 million population, has approximately 70, 000 urban or transport planners. In case of China, with 1. 3 billion population, it has approximately 24, 000. Whereas, India with 1. 2 billion population, has much less urban or transport planners. The responsibility for the planning and implementation of urban transport systems rests with the State governments and the municipal bodies.

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However, since the problems associated with urban transport are of relatively recent origin in India, having surfaced only from the early 1990s, the ability to fully understand and deal with these problems is yet to fully mature. This calls for concerted efforts at strengthening capabilities at the State and city level to address these issues and undertake the task of developing sustainable urban transport systems (NUTP, 2006). Scientific assessment of institutional and technical capabilities on transport planning and traffic management of cities of different sizes needs to be carried out. Capacity building will have to be addressed at two levels – institutional and individual. The objectives of any such capacity building mechanism w. r. t. urban transport are™ To develop legal, regulatory and institutional frameworks for the most effective management of urban transport systems™ To set up / strengthen institutions that are appropriately equipped to support /undertake urban transport planning / research™ To develop a manpower base for effective and sustainable urban transport planning™ To create a system for continuous learning and updating of knowledge and information

2.0 INSTITUTIONAL DEVELOPMENT (Institutional Capacity Building)

Following are major gaps in majority of MCs and UDAs.™ Lack of personnel with appropriate skill sets, background and aptitude™ Inadequate skill sets and requisite knowledge of personnel already deployed™ Lack of appropriate institutional framework to handle specific programsItems to be covered under institutional development are listed below.™ Development of legal and administrative frameworks™ Development of manuals, codes, standards and toolkits™ Development of national database™ Development and

strengthening of National Level Urban Transport Research Apex Institute to coordinate research and dissemination of knowledge and data™ Setting up of institutions for the Research and Design; safety certification of transit systems and other new systems that may be developed for UT™ Setting up of UMTA and Urban Transport Cell in various cities™ Promotion of National level consultancy organisations to provide a pool of professional manpower to assist state / city governments

2. 1 Development of Legal and Administrative Frameworks

2. 2 Development of Standards, Manuals / Toolkits and Codes

A series of standards, manuals and codes will have to be developed for making urban transport planning more professional. Standards would also help in enabling quality and safety certification as also in ensuring some degree of uniformity across the country.

2. 3 Urban Transport Database Management Centers

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. Creation of a centralized data base at major cities, State and Central level for use by all the interested agencies is necessary. These institutes would build up a database for use in planning, research, training, etc in the field of urban transport, and act as Knowledge Management Centers (KMCs). Regular update of the database and information will be one of the important tasks of the KMC. Regular collection of data and information to keep the data base and the library at the proposed Knowledge Management Center up-to- date

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should be institutionalized. Data from Masters and Ph. D thesis work at academic institutes should be channeled into the database. The data base consists of;™ Identification of available data base with different agencies and the missing areas of data base that requires frequently for planning and monitoring purpose for urban infrastructure including transport.™ A proper data collection system through primary surveys and periodical updation of the data for the missing data.™ Collation and management of all data base.™ Access to the data base to the stakeholders.™ Data base can include all study projects reports, raw data, models, software etc.™ Management of the database by a committee representing all stakeholders with adequate responsibility and budget provisions. The Institute of Urban Transport India, an existing institute under the purview of Ministry of Urban Development will act as Central Urban Transport Database Management center, so that it can serve as a national level facility to provide continuous advice and guidance on the principles of good urban transport planning.

2. 4 National Level UT Research Institute

It would serve as a national level facility to provide continuous advice and guidance on the principles of good urban transport planning. Advice on new technologies would also be regularly available to implementing agencies from this institute. 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. Its activities should include:™
Developing and managing a national data base containing a

comprehensiveset of data items required for urban transport planning™
 Acting as a clearing house of specialized information in respect of urban
 transport™ Coordinating research activities and other studies / surveys
 undertaken in the field of UT with a view to facilitate effective dissemination
 of the results ofsuch research / survey / study.™ Organizing a national
 conference on UT every year and such other periodic workshops / seminars
 as may be necessary™ Maintaining a database of specialized manpower in
 the field of UT available inthe country.™ Publishing a high quality journal on
 UT™ Publishing UT Research Report™ UT Research Digests – State of the art
 Research Documents on Various aspects of UTThe following Research areas
 are identified based on the current gaps in the literature. Suitable funding is
 to be allocated for carrying out systematic research study on all the following
 topics to establish indigenous procedures / techniques.™ Trip Generation
 Rates for Urban Areas™ Integration of Urban Land Use and Transportation
 Planning™ Integrated Corridor Management System™ Capacity Manual for
 Urban Roads™ Technologies for PT: BRT / Metro / MRTS / LRTS / Mono Rail™
 Alternative Fuels & Vehicle Technologies™ Environmental Impacts of UT™
 Road Safety / Road Safety Audits / Road Safety Investigations™ Traffic
 Simulation™ Urban Travel Demand Modelling – Mass Transit Patronage
 Estimation™ Urban Sprawl Mapping™ RS & GIS Applications in UT™ NMT™
 Traffic Management Strategies / TSM / TDM™ Intelligent Transportation
 SystemsoAdvanced Traffic Management Systems (Traffic Management
 Centres)oAdvanced Traveller Information SystemsoElectronic Toll Collection /
 Electronic Smart CardsoCooperative Intersection Collision Avoidance
 SystemsoEmergency Transportation OperationsoIntegrated Vehicle based
 Safety SystemsoVehicle Assisted and Automation Systems for Transit
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Operation™ Transit Oriented Development / Planning Established technical institutions as well as leading national and international professional agencies may also be involved in carrying out research activities. Some of the institutions and professional bodies, engaged in Urban Transport research, are™ Central Road Research Institute, New Delhi™ IITs / NITs / Universities / SPAs (CEPT), etc.™ NATPAC, Tiruvanthapuram™ Central Institute for Road Transport, Pune™ Highway Research Stations at Chennai, Gujarat, etc.™ TERI, New Delhi™ IUT, New Delhi™ IRC, New Delhi

2. 4. 1 Conferences and Journals

It is necessary to document and publish Indian reasearch studies through a peer reviewed journals. Publication of Urban Transport journals may be entrusted to national level Urban Transport research institute. An annual urban transport conference would also be institutionalized, to bring together the urban transport professionals in the country to share their experiences. International experts would be invited to such a conference so that Indian professionals are able to exchange information and learn from developments and experiences abroad. This responsibility may also be entrusted to the above same institute.

Opportunities may be provided to Indian Professionalsto attend international conferences abroad.

2. 5 Clearing house for new technologies in urban transportation

The new technologies for better traffic management for urban areas, such as area traffic control, new types of license plates, smart card for registration and driving licenses, etc, should be tested and implemented in urban areas.

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A suitable permanent committee representing high level decision makers of different agencies involved in urban transport service, technical experts and representative of users can be used for this purpose. It is recognized that there are several proven technologies for public transport around the world that have yet to be adopted in India. In order to build up the necessary capacity to adopt such technologies within the country, the Central Government would facilitate joint ventures and collaboration agreements between such technology providers and suitable Indian companies. Necessary incentives would be provided to enable such technologies to get commercialized in India. This could be by way of financing customized prototypes, development of designs to suit Indian conditions, trial operations, training of the technical personnel, etc. The objective would be to ultimately build a level playing field for all proven technologies. Some of the new technologies, which need immediate attention, are™ Technologies for PT: BRT / Metro / MRTS / LRTS / Mono Rail™ Alternative Fuels & Vehicle Technologies™ Intelligent Transportation Systems™ Advanced Traffic Management Systems (Traffic Management Centres)™ Advanced Traveler Information Systems™ Electronic Toll Collection / Electronic Smart Cards™ Advanced Public Transportation Systems™ Emergency Transportation Operations™ Traffic Management Centres

2. 5. 1 Urban transport software library

This includes Development, commissioning, acquiring and maintaining various software packages in Transport planning, Traffic engineering, GIS packages, etc. It is necessary to carry out need assessment analysis to identify software requirements of Indian Urban Transport. Emphasis should

be given for development of indigenous software for our Urban Transport needs, so that India can have self sufficiency and independency.

2. 6 Setting up of UMTAs / Urban Transport Cells

NUTP recommends setting up of Unified Metropolitan Transport Authorities (UMTAs) in all million plus cities, to facilitate more co-ordinated planning and implementation of urban transport programs and projects and an integrated management of urban transport systems. But, a very few cities have established UMTAs or in the process of establishing. Efforts should be made to establish UMTAs in all other million plus cities. UMTA should be a statutory autonomous body with full technical and financial authority and responsibility for delivery and be accountable. UMTA to be effective should have the authority to allocate funds to various agencies in the city to undertake various UT related activities. UMTA manned by trained urban transport professionals should take care of integrated planning of urban transport and provision and coordination of services. UMTA should take care of the connectivity with the surrounding region as well. Urban Development Authorities (UDA) should initiate formation of UMTA and coordinate its functionality. There should be a Traffic and Transportation cell, manned by professionals, to support UMTA. There should be a dedicated Metropolitan Traffic Cell at Municipal Corporation to deal with regular traffic and transportation problems of city. These cells are responsible to carry out traffic management plans, junction designs, traffic signals design, TSM / TDM strategies, traffic impact studies, etc. Similarly, a dedicated Urban / City Traffic Cells need to be established in all other small and medium cities. The capacity building of technical experts in the high level and middle level in

transport planning, engineering, management and maintenance will improve the efficiency of urban transport infrastructures, rather than current situation of managing the traffic by traffic police. The recognition of specialized nature of transport functions and assigning such personnel for minimum 2-3 years, clear cut positions and authority for different ranks, provision for external/lateral entry for limited durations, capacity building through compulsory training in traffic & transport to senior and middle level officials. Based on the functional requirements of urban transport infrastructure, additional transport planning experts should be added to the agencies responsible for planning. Suitable trainings should be made to the agencies responsible for implanting, maintaining and regulating the urban transport services.

2. 7 Centres of Excellence (COEs) in Urban transport

The Ministry of Urban Development, GOI established four COEs in Urban Transport in 11th Five Year Plan period. Some more COEs may be further established in subsequent plan periods. These COEs should™ Offer PG Programs™ Carryout Research, Development and Demonstration™ Act as Regional Training Centers (UT Technology Transfer Centers) to train working professionals™ Identify Best Practices in UT™ Assist MoUD on various aspects of UT

3. 0 INDIVIDUAL DEVELOPMENT

Individual capacity building should be for existing city officials and also for turning out professionals from Universities. The focus of training city officials will be to develop awareness, skills and a deeper understanding of the

requisite issues for urban transport planning amongst those already
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employed in the State/city and engaged in the area of urban transport planning. The focus of the education component will be to create a pool of skilled manpower to be available in the country for recruitment by various organizations engaged in urban transport. Simultaneously State Governments should be encouraged to create jobs for such professionals.

3. 1 Training

At the individual level, a major exercise of training and skill development of the public officials and other public functionaries would be taken up to make such officials aware of the nuances of urban transport planning and the specific issues involved in managing city transport. This would be targeted at personnel belonging to the State transport departments, municipal corporations, metropolitan development authorities, traffic police, environmental authorities, State Transport Corporations, Public Works Departments, etc. Training activities, normally, consists of™

Identification and strengthening of Central and regional Training centres for training in Urban Transport planning™ Development of training curriculum and other training materials™ Conduct of training programs

The Institute of Urban Transport India will act as central capacity building coordinating agency. It should encourage other partners, possibly educational or research institutions and international agencies to introduce specialised courses that will be conducted by experts with practical exposure. The existing Centres of Excellence in Urban Transport can be used for scientific inputs and also to conduct courses. Private sector, also, should be encouraged to participate in capacity building activity. Services of the following institutions, which have been offering training on different aspects of Transportation, can be used for

this endeavor.™ IITs, NITs, Universities & SPAs including CEPT™ Central Road Research Institute, New Delhi™ NATPAC, Tiruvanthapuram™ CIRT, Pune™ ESCI, Hyderabad™ ASCI, Hyderabad™ GIZ, Germany™ EMBARQ – CTS India™ ITDP, USABottoms-up approach may be adopted in assessing Training and Capacity Building Needs at the State and City levels for formulating Capacity Building Programmes and activities. Hands-on learning and exposure visits shall be integrated into programmes and activities. Initially, focus shall be on consolidating information on training materials already available, identifying individual trainers and institutions. Some of the training modules developed by different agencies are presented in Appendix A. All programmes shall be continually evaluated against verifiable and measurable indicators for effectiveness and outcomes. Midcourse corrections shall be undertaken wherever necessary.

3. 1. 1 Sustainable Urban Transport Project (SUTP) Capacity Building Initiatives

The Sustainable Urban Transport Project (SUTP) is the outcome of NUTP and is supported by GEF, World Bank (WB) and UNDP. It is intended mainly to help in ‘capacity building’ of institutions and individuals dealing with urban transportation. It is also intended to help in developing ‘demonstration projects’ in the field of sustainable transportation in some of the selected cities, with a view to replicate them later in others. As a part of SUTP, a workshop was organized at Goa on 29th - 31st August 2010 to discuss elaborately about capacity building needs in Urban Transport. The outcome of this workshop is summarized below.™ Stake holders of Urban

TransportoStrategicfLevel 1: Ministers, Principal Secretary, SecretaryfLevel 2:

Municipal Commissioners, District Collectors, Development Authority heads
 Operational Level 1: Technocrats (Public & Private): engineers, town planners, urban planners, etc and enforcement agencies
 Level 2: Operators and operating staff
 Civil Society: NGOs, Media and Users™

Topics Identified for Training of various Stake Holders

Strategic

- Sensitization about NUTP Concepts and Urban Transport
- Institutional Development
- Financing, Best Practices, cost-benefits
- Good practices world over
- Civic Society
- Sensitization about NUTP Concepts and Urban Transport
- Policies, project concept, benefits, health safety
- Good Practices world over
- Social & Environmental Impact Assessments
- Operational
- Sensitization about NUTP Concepts and Urban Transport
- Good Practices world over
- Policies, bylaws, rules and regulations
- Project structuring
- Detailed engineering aspects
- Land use-transport integration
- Financing
- Bus operations
- ITS
- Social and Environmental issues
- Safety and security
- Branding and public outreach

MOUD called for services of a consultant to develop manuals and toolkits in 11 subject areas associated with sustainable urban transport. The manuals/toolkits are to be developed to provide urban transport professionals suitable high quality reference/guidance documents in the listed subject areas. In addition, the consultant will be required to develop training material from the prepared manuals and toolkits. The 11 subjects identified are:

- a) Land use transport integration and density of urban growth
- b) ITS and Traffic management
- c) Public transport and pedestrian accessibility
- d) Urban travel demand modeling
- e) Financing and financial analysis
- f) Traffic analysis and Performance measurement
- g) Environmental analysis and Strategic environment assessment
- h) Transport demand management and Transport Supply Management
- i) Road Safety and Safety Audits
- j) Urban Road Capacity &

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LOS Analysis and Traffic System Design (Roadway design, Intersection designs, Interchange designs, parking facility designs, terminal designs)k)
Driving code

3. 2 Education

As part of the exercise of skill development, academic programs in urban transport, especially at the post-graduate level (24 months duration), would be strengthened so that a nucleus of qualified urban transport professionals becomes available in the country. The list of institutions in India offering M. Tech program in Transportation Engineering are given in Annexure B. Very few are offering degree program in Urban Transport. Typical program names are given below.™ Transportation Engineering™ Transportation Systems Engineering™ Traffic & Transportation Planning™ Transportation Engineering and Management™ Urban Planning / Transportation Planning™ Urban & Regional Planning™ UT Planning & Management™ Highways & Transportation Engineering™ Highway EngineeringHowever, many of these institutions have included following courses related toUrban Transport in their curriculum.™ Urban Transportation Planning™ Landuse and Transportation Planning™ City Planning™ Traffic Engineering and Design / Traffic Flow Theory™ Transportation System Management / Transport Demand Management™ GIS applications in Transportation™ Intelligent Transport SystemsPG Diploma programs (12 month duration) in UT may be designed to suit the requirements of working professionals in UDAs and MCs. Short term courses in Urban Transport on need based specific topics may also be designed. Suitablecollaborations, with leading institutes abroad, would be established to offer expertise to such programs in the initial years.

Emphasis should be placed on development of curriculum and faculty development of institutes conducting post graduate and doctoral level educational programs in urban transportation planning. The existing PG programs should be suitably strengthened with liberal financial aid. Some of the institutions may be encouraged to start PG program in Urban Transport.

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