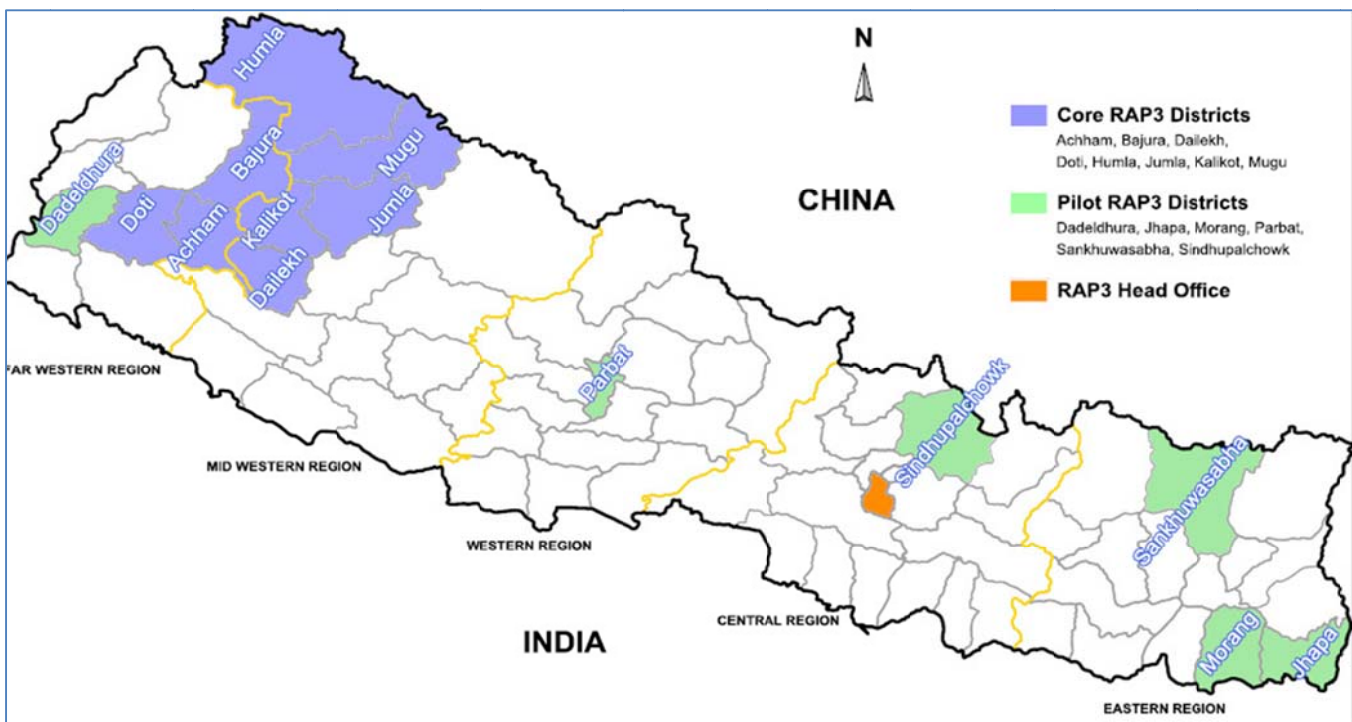


Briefing Note 028 – Municipal Transport Master Plans

1. INTRODUCTION

The creation of new municipalities in the country has given rise to a perceived need to develop Municipal Transport Master Plans (MTMPs) that are coordinated with the District Transport Master Plans (DTMPs). Full land use master plans are not required but an add on section to the DTMP to be applied specifically to the DRCN lying within the new municipality boundaries might fulfil the need as perceived by MOFALD and DOLIDAR. What is required is a short technical paper setting out the background to the designation of new municipalities, the objectives of formulating MTMPs, and their scope, including and analysis of priorities based on the DTMP results. This could be tied in with the note prepared by Kamal Banskota. (See below)



The following was prepared by Kamal and gives some useful background but needs recasting

Tentative Thoughts on Developing Guidelines for Urban Transport Master Plan

The **purpose** of this document is to initiate a process of developing a Guideline for the development of Transport Master Plan in urban areas of Nepal. As such this document serves as a basis to draw ideas and discussions.

Looking Back

The decades of 70's and 80's witnessed emphasis on regional planning and market centers/towns in urbanization and planning literature, where the construction of physical infrastructure received central attention. Lately there has been a paradigm shift: new urban transport master plans emphasize roads and infrastructures as a "means" to promote "social and individual welfare" (livelihoods, accessibility, mobility etc.). Population growth, growing urbanization, space limitations, environment and climate concerns are forcing new ways to design urban infrastructures with greater focus on group access and mobility rather than individual mobility and accessibility and efficient use of spaces.

About 50% of the population in Nepal live in mountain areas with the remaining 50% living in the narrow southern plains of the Terai. Although there is more land in the mountains, the rugged terrain and numerous river valleys, make infrastructural development along steep slopes extremely expensive and challenging. The annual monsoon rains cause havoc, washing away sections of the roads or blocking vehicular movements sometimes for days due to landslides. Such episodes are recurrent and reflect a huge economic cost to the nation. Road construction and maintenance in the mountain areas are exorbitant. Settlements are extremely scattered in the mountain region. Whenever a road is constructed new settlements along roadside emerge and gradually expand into small towns, in

both the mountains and Terai. Such settlement eventually grow/have grown, often in unplanned and haphazard way, into townships as traffic along the road increases and hinterland areas, which are primarily agricultural in nature diversify their production activities from low income crops to high value crops such as vegetables, which have higher market demand. People gradually migrate to these areas where daily life is relatively more easy and the settlements expand alongside the roads. The same phenomenon is more or less true in the Terai as well. Settlements are denser in the Terai relative to the mountains. Many settlements, old and new, both in the mountains and Terai are expanding in unplanned ways and are gradually being unable to provide adequate water, electricity, sewage, garbage etc. facilitates. A prime reasons for this is the lack of proper land use plan, based on long term of vision of how an area should grow, and regulatory policies and their effective implementation.

Expansion of these settlements into towns and cities are inevitable over time. There are important reasons to plan and guide the future development of such growing settlements:

1. Market towns/settlements can serve as economic link between large urban areas and rural hinterland in terms of product and factor markets
2. Desirable locations for the concentration and provision of public services which are expensive to provide in scattered settlements
3. Instrumental for rationalizing the distribution of population through settlements agglomeration which can ease the pressure on the provision of services and infrastructures unlike in bigger towns where the ever growing population is putting enormous pressure on the provisioning of basic services (drinking water, garbage, electricity, transit, etc)
4. Market and small towns facilitate channels of trade and economic interactions by providing the marketing link between larger urban centers and dispersed isolated markets as well as help promote a dispersed pattern of industrial locations
5. Function as a source for diversification of rural economies and can be an effective means to decentralize the development process
6. Play an important role in the diffusion of ideas and technologies to capture the economies of scale, utilize and promote comparative and competitive advantages
7. Provide potential locations for generating off-farm and non-farm employment
8. Provide alternative destinations for migrants who may otherwise be destined for larger urban areas further away from their homes
9. Small towns discourage crowding, congestion, environmental diseconomies of large cities and help minimize loss of lives and property due to natural calamities
10. Articulators of the productive potential of the rural hinterland necessary for mobilizing rural resources for regional development

Develop Vision and Land Use Plan

There are many competing uses of land and often of conflicting nature. Land use planning seeks to regulate land use in an efficient and ethical way to prevent land use conflicts among different uses and stakeholders. Its purpose is to select and put into practice those land uses that will best meet the needs of the people while safeguarding resources for the future and providing a basis for future growth and development. Hence there is a need to **develop a vision** of how the city/town/settlement (Urban Development Plan -UDP) will grow over a time horizon such as 25-30-50 years. All plans that will be developed will then aim to materialize the vision in the UDP. After developing the UDP, the next step is to develop a Land Use Plan.

Land use is a branch of public policy. Land use policy must be able to guide investors/developers on which types of land are most suitable for different uses and why. Land use in the context of urban development generally includes:

- settlement/residential
- economic development and commercial
- transport (right of way)
- religious, historical and cultural sites
- recreational
- forest, biodiversity (flora and fauna, wildlife), national parks
- water bodies
- vulnerable areas

The land use plan must be able to provide a vision for the future land use such that it (town/settlement) becomes a center of planned communities that attracts investments and jobs, facilitates the mobility of people, and goods and services. The plan must provision for an efficient mobility of people, goods and services from the hinterland areas as well for strengthening economic linkages (forward and backward) to promote sustainable development.

Land zoning is an important part of land use plan. Zoning is used to permit some types of construction and prohibit others. In some areas, residential construction may be limited to a specific type of structure. Downtown areas may be a mixed-use of residential and commercial activity. There can be ordinance on

open space in urban center and residential areas. Manufacturing centers can be zoned for construction close to major road network. Some areas may be prohibited for development as a means of conserving green space or access to water. There may also be areas where only the historical aesthetic, parks, etc are allowed.

Challenges are faced in the zoning process, as cities desire to eliminate blighted areas of zero growth while maintaining a diversity of interests in a geographic area. The importance of mixed-use zoning is becoming increasingly apparent in major urban areas. Space is also being utilized more effectively, e.g., by building residential units above businesses and land use is maximized by creating a round-the-clock hub of activity.

In conclusion, with the growing number of settlements that are being converted to urbanization, the importance of a comprehensive land use plan is becoming ever more important for small as large settlement alike. Climate change, environmental, aesthetics, landscape, health and other social, economic and cultural issues are growing and proper land use planning can help to address these multiple issues. The land use plan has to synchronize with the Vision of Urban Development. A Transport Master Plan has to be an integral part of this document. The transport plan has to be developed in reference to the Vision.

Transport Master Plan (TMP)- Broad Guidelines

A transport master plan is a long term strategy to guide planning, development, renewal, expansion and maintenance of a multi-transportation system that is consistent with the land use plan and overall sustainable economic growth of the town/settlement (VISION). The focus of TMP has to be on integrated land use that emphasizes public transit use, cycling and walking as opposed to private vehicle use. TMP does not address specific sites.

Transport planning in small towns and growing settlements remains a neglected issue in the context of Nepal and as yet there is no conceptual, strategic, policy and operational issues to guide and promote the development of transport in such areas which is pre-requisite of overall development. Transport development is simply not planning roads and bridges only, but has to have a vision of how transportation system will benefit the residents in terms of improved access. Urban transport has to be visualized in such a development context. Such towns and settlements can play a significant role in the development of the nation, with each settlement having features of urban centers but at the same time also connecting well with the hinterland areas. Such planning can help avoid the problems of city like Kathmandu that has grown haphazardly and still there are no signs of the end to this grow.

Develop Vision: each town/settlement is expected to grow. It has its unique geography and landscape and other features (e.g., cultural, religious and recreational sites which will require special attention), all of which need to be featured in the planning process. The vision has to guide development towards a end along a desired path over the next 25-30 years. Development is meant to be sustainable, inclusive and growth oriented. Area delineation has to be clear and well defined.

In the context of Nepal, there are probably no towns and cities that are being developed under some comprehensive urban plan. But urbanization is inevitable and hence more and more land will be used for urban development. Besides some older cities such KTM, Biratnagr, Janakpur, Nepalgunj etc, other settlements that are emerging as urban centers are likely to expand over time and this growth can be guided in a planned way.

Any Transportation Master Plan has to be guided by the Vision of City and at the same time has to help achieve vision. TMP is a framework for how the City will address its future transportation needs and accordingly has to be aligned with the Urban/Municipal Development Plan. As such land use and transportation are inextricably linked. People living in these areas are expected grow over time and thus compact communities and mixed land uses become essential such that trip origins and destinations are brought closer together and trip lengths are minimized. This way walking and cycling become possible, transport system is least GHG emitting and the benefits associated with higher densities enables economies scale in transport system.

Transportation is more than moving people, goods and services on existing roads and using different transport modes, but is an essential infrastructure that shapes the urban form, impacts economic well being

and is a primary determinant of our city's environmental, financial and social sustainability. Many issues need to be well planned such as:

- How easily people can move through the city, the distances that needs to be traveled, the transportation choices available, how efficiently one can move between different transportation modes profoundly affects citizen's relationship with the city, the environment and each other.
- Growing environmental and GHG concerns, acknowledgment of the ongoing investment needed to maintain transportation infrastructure and rapid growth in population warrant a shift in transportation priority setting - shift from single passenger vehicle use to more public transit; from building outward to a compact urban form, multi-modal transportation system where citizens can walk, bike, bus and train efficiently and conveniently to their desired location, where rich people also prefer to use the public transit.

The strategic vision of the city can be as follows:

- Preserve and sustain the environment (also address GHGs)
- Improve livability in the city
- Transform urban landscape/form (beautification, zoning)
- Develop/shift alternative transportation modes (priority to public transport, cycling, walking);
- Ensure financial sustainability;
- Develop and diversify economy, etc.

Transportation strategic goals

The strategic vision of the city provides the basis for developing the strategic goals for the transport master plan. As such the transport plan and the land use/urban plan complement and support each other so that the use of transit and transportation infrastructure is optimized and supports best practices for land use.

The strategic goals of a urban transport plan can be as follows:

- Access and Mobility: The transportation system is interconnected and integrated to allow people and goods to move efficiently throughout the city and to provide reasonable access with a variety of modes for people across demographic, geographic, socio-economic and mobility spectrums.
- Sustainability: Transportation decisions reflect an integrated approach to environmental, financial and social impacts thereby creating sustainable, livable communities that minimize the need for new infrastructure and increase quality of life.
- Health and Safety: The transportation system supports healthy, active lifestyles and addresses user safety and security including access for emergency response services, contributing to Edmonton's livability.
- Transportation Mode Shift: Public transportation and active transportation modes are the preferred choice for more people making it possible for the transportation system to move more people more efficiently in fewer vehicles.
- Well-Maintained Infrastructure: The transportation system is planned and developed so that the city is able to keep it in a good state of repair and future growth is accommodated in a fiscally responsible and sustainable manner.
- Economic Vitality: Efficient movement of goods, convenient mobility of the labour force and access to a vibrant city centre are features of the transportation system that enhances the economic vitality and competitive advantage of the city

Current and future conditions

- Current population and expected growth over the next 25-50 years. Land requirements and uses Transport needs/trips (car, walking, public transportation and bicycle)- maximize public, walking and bicycle
- Street requirement, road expansions, transit points, parking space
- Plan for fiscal and environmental sustainability

Transportation and land use integration

- Integrate land use planning and transportation decisions to create a compact and efficient urban form. Transportation provides access to land, thereby affecting its desirability and value, while the mix and intensity of land uses results in activities that generate demands on the transportation system

- Building communities around effective transit service will decrease need for other public infrastructure investment throughout the region, and provide viable alternative transportation modes that lower city's carbon and ecological footprint and lessen demand on energy and natural resources
- Focusing industrial developments in close proximity to goods and services movement corridors is efficient, adds to the economic vitality of the city and reduces goods and services movement traffic through residential areas

Public transportation

- Develop and expand existing public transportation system
- Capitalize new opportunities for public transportation with future regional and town growth in mind
- Design transit system to make it preferred choice of public transportation
- Design a comprehensive public transportation system made up of a variety of service strategies - premium transit, bus service and disabled transit service, etc

Active transportation

- Priority to active transportation (people use their own energy to power their motion such as biking or walking)
- Benefits of active modes of transportation - builds health and exercise into one's daily routine, helps to create a strong sense of community, and reduces the greenhouse gas emissions etc.
- Encourage more active transportation by creating more walkable environment, a cycle-friendly city and an integrated network of multi-use trail facilities
- Active transportation should be viewed as being year round and available for all citizens; therefore the city must have a robust maintenance policy for all seasons.

Roads

- Roads are the foundation of transportation system
- Roads significantly affect the economic vitality and competitiveness as they facilitate movement of goods and services, emergency response services, and people using public transit, vehicles, taxis, bicycles and active modes
- As town grows a mid-size city to a large metropolitan area, congestion levels will increase, particularly during peak periods
- Physical, financial and community constraints in many areas make it unfeasible or even undesirable to build or expand roads to alleviate congestion.
- Emphasis on strategies to optimize use of existing road system- expansion of road not always feasible. These strategies include:
 - Land use development strategies
 - Promoting use of transit and active transportation modes
 - Managing existing roadways more efficiently
 - Transportation Demand Management (TDM)
 - Selectively adding more roadway capacity

Goods and services movement

- Plan transport system that enable free movement of goods and services
- Safe, efficient and effective movement of people, goods and services is essential to supporting and fostering the economic vitality and competitive advantage
- An efficient system is cost effective in terms of time, energy consumption and infrastructure needs

Regional interface

Relation with region and other centers in different areas such as:

- Region-wide system of inter-municipal transit
- Region-wide land use planning principles to support compact growth
- Inter-modal facilities and connections to support rail and air transportation (?)
- Roads of regional significance within the city as well as highway facilities with cooperation of the Province.
- Regional multi-use facilities and TDM initiatives

Asset management and maintenance

City-owned infrastructure, valued in the billions of dollars, include significant transportation assets that are in continuous need of maintenance, repair, rehabilitation or replacement. With limited budgets and increasing demands on the transportation network, the City is challenged to manage its assets in a way that minimizes total life-cycle costs yet sustains expected levels of service and safety. The City will use best asset management practices to preserve infrastructure and minimize total life cycle costs.

Operational maintenance of the transportation system such as cleaning and snow plowing are critical to maintaining system safety and accessibility, particularly for active modes. The City will have robust maintenance practices to facilitate year round transportation.

Implementation

The Transportation Master Plan and its policies are strategic in nature. An Implementation Plan that outlines plans, program and actions will be developed to bring the policies into reality. The implementation Plan, to be updated every three years, will outline the specific projects, programs and initiatives that will be carried out to achieve the Transportation Strategic Goals.

Progress measures will be developed and reported yearly to create an effective monitoring framework for the TMP that closely considers the Transportation Strategic Goals and Objectives. Emphasis will be placed on progress measures that track system-wide, long-term changes and that are easily understood by the public.

Moving Ahead

Transport Master Planning is a massive undertaking. There are some pre conditions to undertake such a exercise. In the first place, a proper site has to be selected. Through a stakeholder consultation there has to be clear agreement on land use plan and land use zoning and an assessment of th resources available and state of environment. Once the legal basis for such a land use plan and zoning is in place, an urban master plan can be formulated with team of experts.

Two distinct trends may be observed in the way settlements have expanded/emerged n Nepal in recent times. In older cities such as Kathmandu, Birgunj, Biratnagar etc, which have been inhabited from many centuries, urban settlements have expanded in an unplanned manner. After the transaction between the seller and buyer takes, construction of a house may start shortly, even in the absence of civic amenities and basic physical access. In many places construction continues to takes place and the available civic amenities and basic physical access have been over loaded.

The other case is strip settlements that have proliferated along most highways, where space is available across the country. Such settlement are taking place on both private and public lands. This is seen along the east west highway, along Kathmandu Pokhara road and other major roads highways. Such settlements are expanding in unplanned and haphazard ways and are often environmental disasters.

Issues:

So two major challenges arise namely to plan transport in older settlements with high population densities and in emerging settlements that are still low densities.

Only road plan

Need a clear scope