



Urban Mobility in Kathmandu

Status and Trends



Photo courtesy: Prashanta Kharel

INTRODUCTION

Nepal is one of the fastest urbanizing countries in Asia with more than 5% average growth rate (World Bank, 2012), and Kathmandu Valley (KV) is perhaps one of the fastest urbanizing cities. With increasing economic growth and rapid urbanization, the city has seen unprecedented growth in motorization. Increasing traffic congestion, road accidents, fossil fuel dependency,

air pollution and carbon emissions have led to significant economic, environmental and health cost.

Transport is vital for functioning of the city. Policy makers and urban transport planners often use conventional approach of “Predict and Provide” in addressing urban transport problems where future growth of vehicular traffic are ‘predicted’ and more road infrastructures are ‘provided’ to meet the future growth (Fig 1.). Experiences from the cities around the world show that this approach has already proven unsuccessful. UNHabitat (2013) says the greatest challenge to urban mobility comes from the fixation with building or expanding transport infrastructure, over increasingly long distances, rather than ensuring people greater access to destinations and facilities that satisfy their needs. The report suggests that urban planners and decision-makers must realize the human right of people to equitable access and make the fulfilment of that right the focus of their efforts to improve urban mobility.

There is therefore a need for a paradigm shift from a vehicle centric to a people centric transportation system that improves the environment, economy and the quality of life as whole.

“Mobility is not just about developing transport infrastructure and services; it is about overcoming the social, economic, political and physical barriers to movement, such as class, gender relations, poverty, physical disabilities and affordability”

*Dr. Joan Clos,
Executive Director,
UN-Habitat*

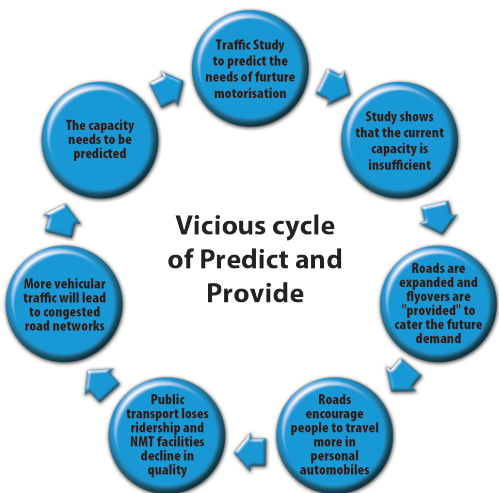
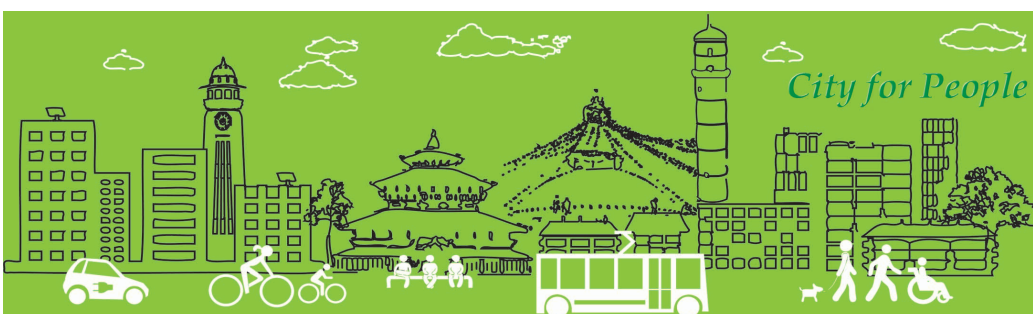


Figure 1: Conventional Approach- Vicious cycle of Predict and Provide (Source: GIZ-SUTP)





Traffic congestion is everyday ordeal in Kathmandu Valley

Photo courtesy : Kishan Thapa

“Kathmandu is growing fast. In the absence of any coordinated plan for its development, the city is sprawling in a haphazard way creating problems in transportation, water supply, drainage and so forth.”

*B.B. Pradhan,
Secretary, Ministry
of Public Works,
Transportation &
Communications,
Physical Development
Plan for Kathmandu
Valley, 1969*

URBANIZATION AND MOTORIZATION TRENDS

The towns of Kathmandu Valley have traditionally been built as compact settlements that encouraged walking and the use of public open spaces. In recent years, however, rapid and unplanned growth has led to urban sprawl with limited public space, deteriorating environment and chaotic traffic. The Valley with a population of about 2.7 million that is growing at 4.32 % per annum is one of the fastest urbanizing cities in Asia. The percentage of urban/built-up area had

a noticeable increase, from 3% (2,010 ha) of the total land in 1967 to 25% (16,216 ha) in 2011 (Figure 2). During these two decades, population growth in the northern and southern areas outside of the Ring Road showed high growth rate of over 8% per annum. In 2022, population in KV is assumed to be 3.8 million, with an annual growth rate of 4.18%, which means a population increase of 57% since 2011 (MoPIT/JICA, 2012).

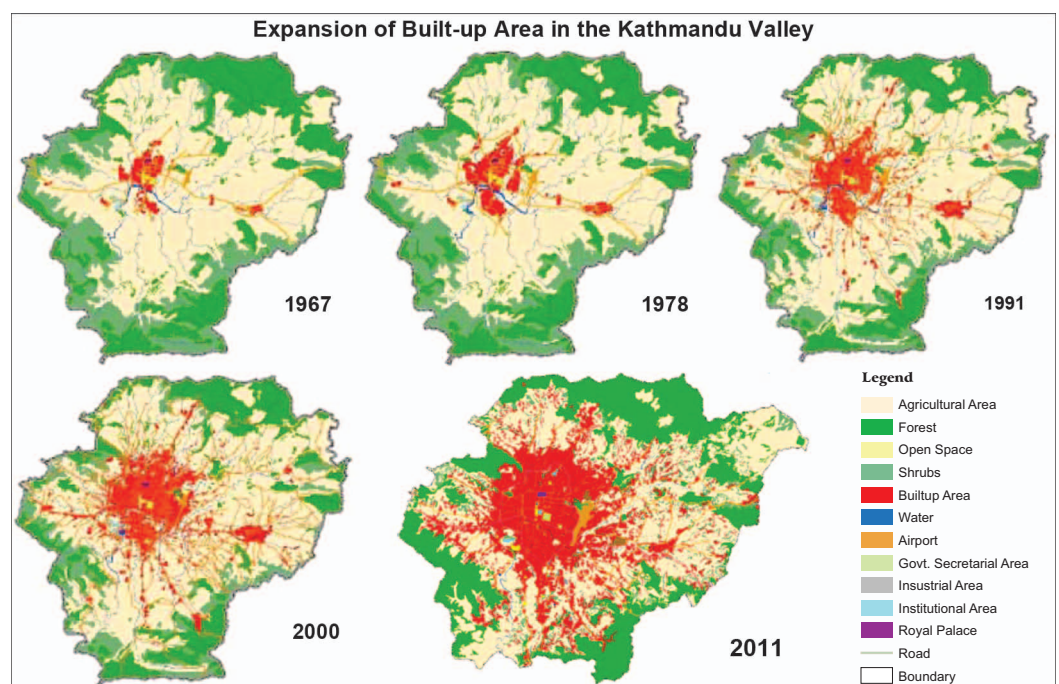


Figure 2: Land Use Change in Kathmandu Valley (Source: MoPIT/JICA, 2012)



According to the Department of Transport Management, 688,028 vehicles have been registered in Bagmati zone till fiscal year 2012/13 and most of them ply on the streets of KV. Out of total registered vehicles in Bagmati, 92% were private vehicles – mainly motorbikes (80%) (Figure 3). The annual average growth rate of the total registered vehicles in Bagmati zone for last 10 years is 12%, and for motorbike only the growth rate is nearly 14% (Figure 4). In past 10 years, the number of registered vehicles has increased by nearly 3 times, causing massive congestion on the streets of Kathmandu.

The total trips in the KV were 3.5 million per day in 2011, and forecasted to increase by nearly 1.6 times by 2022. Based on the recent trend, motorcycle and car ownership will increase continuously in the long run. In do-nothing scenario until 2020, 80% of roads inside Ring Road will be terribly congested restricting every activities, particularly in central area (MoPIT/JICA, 2012).

Transport system is increasingly reliant on imported petroleum products. KV alone consumed Rs.14.4 billion worth of petrol and diesel in fiscal year 2010/2011. The valley consumed 45.5% of total petrol and 15.5% of total diesel sales in Nepal (NRB, 2012), which largely consumed in transport sector. The total petrol sales in Kathmandu Valley in FY 2012/13 were 90,003 KL and for diesel were 106,684 KL (Figure 5)

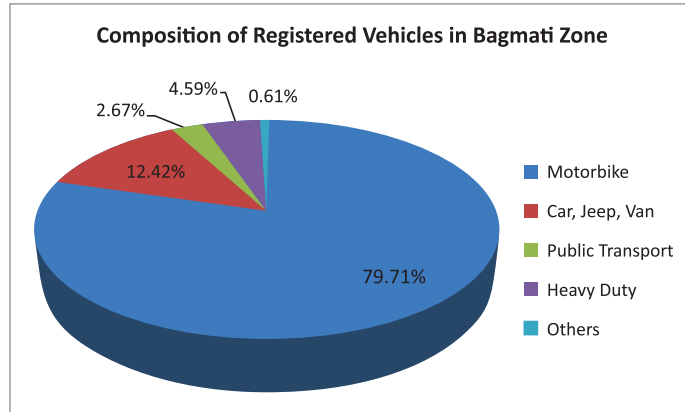


Figure 3: Composition of Registered Vehicle in Bagmati Zone

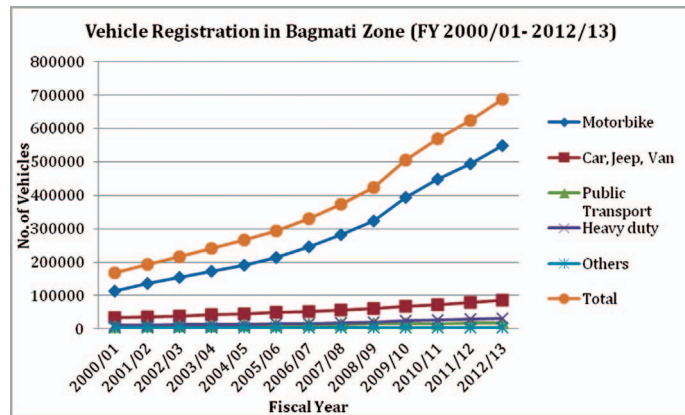


Figure 4: Vehicle Registration in Bagmati Zone (FY 2000/01-2012/13)

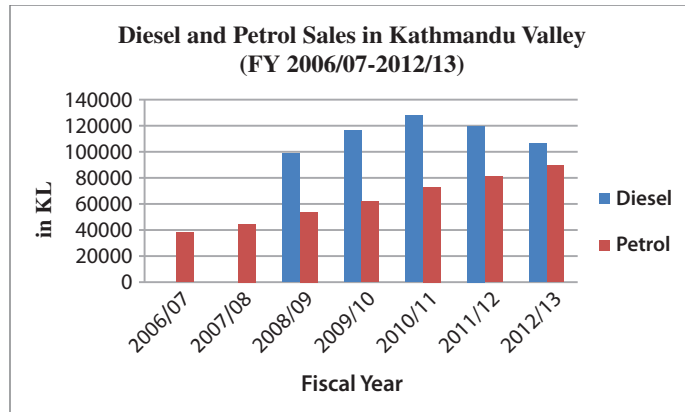


Figure 5: Diesel and Petrol Sales in Kathmandu Valley (FY 2006/07-2012/13)

"If the city decides to buy cars, buy cars and buy more cars... a day will come when nothing will move. Should planners allow that to happen?"

- Delhi High Court on Bus Rapid Transit Case (2012)



Photo Courtesy: Kishor Das Shrestha



URBAN TRANSPORT AND ITS ENVIRONMENTAL AND HEALTH COST

The rapid growth of private motor vehicles and traffic congestion have huge environmental, economic and health cost. Kathmandu Valley suffers from very high levels of air pollution and the transport sector is the major source of air pollution in the Valley contributing to about 63% of PM10 (particulate matter less than 10 micron) emission. Ambient air quality monitoring data shows that the high traffic density areas, such as Putalisadak and Lagankhel are seriously polluted with PM10 levels exceeding WHO guidelines and Nepal's standards at all times (Figure 6). The highly polluted air of Kathmandu has serious implications on public health and the economy. Some of the findings from previous studies indicate that:

- Air pollution is responsible for 1600 premature death in KV (MoEST, 2005).
- Records from major hospitals in the KV show that Chronic Obstruction Pulmonary Disease (COPD) has been steadily increasing (CEN/

ENPHO, 2003).

- Nepal's annual health cost, attributed to urban air pollution is USD 21 million, equivalent to 0.29% of the GDP (World Bank, 2007).
- Reduction in PM10 levels in the KV to comply with international standard would reduce 1,35,475 cases of acute bronchitis in children, 0.5 million asthma attacks, 4,304 cases of chronic bronchitis and thousands of hospital admissions and emergency room visits (CEN/ENPHO, 2003).
- The annual welfare gain to an individual in the city from a reduction in air pollution from the current average level to a safe minimum level is NRS 266 per year (USD 3.70). Extrapolating to the total population of the two cities of Kathmandu and Lalitpur, it would result in monetary benefits of NRS 315 million (USD 4.37 million) per year (Adhikari, 2012).

"We have to start looking at other ways to move people. Traffic does hurt your economy,"

- Michael Bloomberg, Mayor of New York City

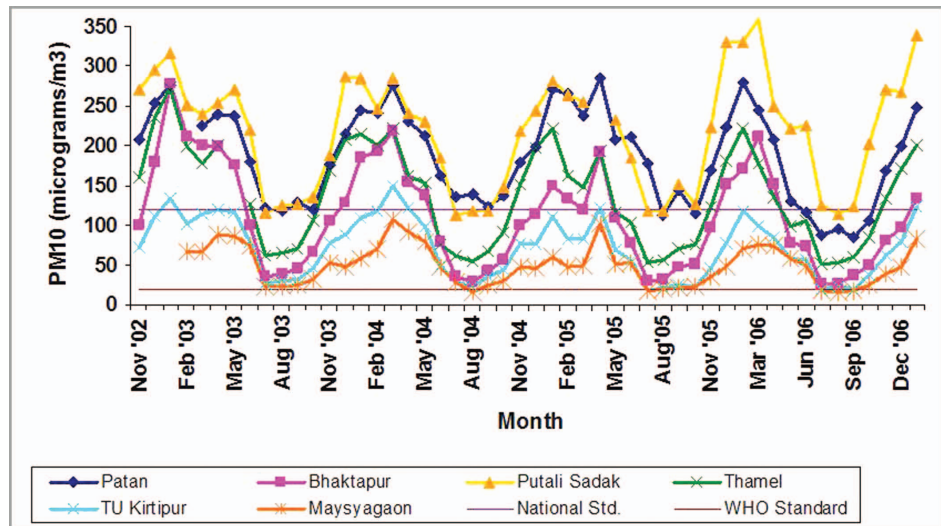


Figure 6: PM10 Levels of Six Monitoring Stations in Kathmandu Valley- 2002-2006 (Source: MoSTE)

TRAVEL MODE SHARE

Although there has been a rapid increase in motorization, studies show that walking is still the major mode of travel in KV. While the share of non-motorized transport (walking and cycling) is still high compared to other travel modes, it has declined significantly in last 20 years (Figure 7). The mode share of walking in 2011 declined to 40.7% from 53.1% in 1991, and cycling from

6.6% to 1.5%, while the share of motorbike has increased almost 3 times, from 9.3% to 26%. Large part of walking and cycling has been replaced by motorbikes (MoPIT/JICA, 2012).

The average trip-distance for all travel modes and trip purposes is 5 km. Interestingly, nearly 28% of travel is done on foot or bicycle by the people who owns private motorized vehicle.

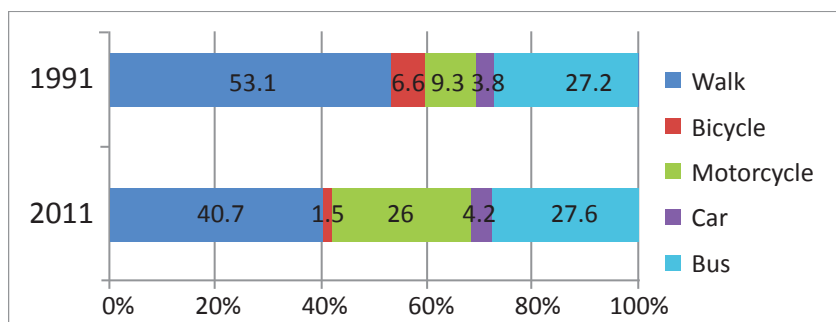


Figure 7: Travel Mode Share in 1991 and 2010

Source: MoPIT/JICA, 2012



PUBLIC TRANSPORT

Although the public transport constitute only 2.5% of total vehicle fleet, it has 27.6% of travel mode share. The public transport service in KV is provided by several thousands of individual operators in over 100 routes. It largely comprises of lower occupancy vehicles such as microbus and minibuses, which are often poorly assigned to routes.

Although public transport system is self-sustained (without government subsidy), it is inefficient, unsafe, unreliable and highly polluting. A survey conducted by CEN/CANN showed that 69.1% of surveyed passengers perceive that the public transport drivers practice reckless driving making

introduction of standard urban buses in primary routes and improvement in frequency, reliability, safety, GPS based bus operation system, real time passenger information system, electronic ticketing system, among others. The government should promote efficient and low cost mass transit systems like Bus Rapid Transit, which 10 to 100 times less than the metro system while providing comparable services and efficiency.

There are some initiatives on improving public transport system in KV. The private sector operates over 600 electric three wheelers – Safa tempo – along fixed routes in the Valley, and recently, Sajha Yatayat has resumed its operation



Photo courtesy: Pashantara Kharwal

Sajha Yatayat has recently resume its service with 16 standard buses

travel uncomfortable. More and more people are shifting from riding public transport to cars and motorbikes.

Public transport infrastructures and services desperately need improvement to make them affordable and accessible for all, including lower-income people, differently-abled and elderly citizens. The public transport system in KV needs a comprehensive reform and restructuring. with

with 16 large Euro 3 buses in two major routes. Under Kathmandu Sustainable Urban Transport Project (KSUTP) funded by ADB, the government is planning to restructure the operation and management of public transport system, and develop pilot routes to demonstrate the ability of contracting mechanism to allow transport entrepreneurs to operate profitably with improved level of services, and reduce emissions.

“An advanced city is not a place where the poor move about in cars, rather it’s where even the rich use public transportation”

Enrique Penolosa,
Former Mayor of Bogota

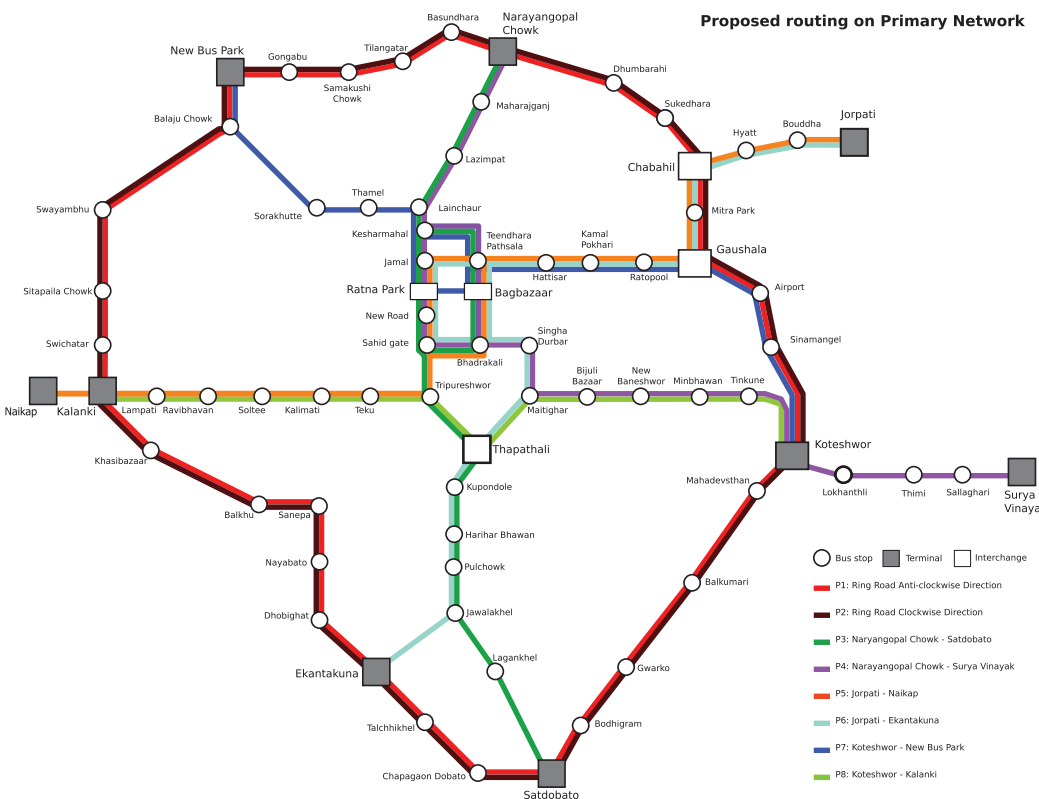


Figure 8: Restructuring of the public transport routes in Kathmandu Valley as proposed by KSUTP



“Ownership of cars in Beijing broke the 4 million mark in December. It took 31 months for the number to go from 3 million to 4 million. It took Tokyo 12 years to do so. ... [A strategy] may include emissions and environmental fees, securing a parking spot prior to obtaining a car plate, raising parking fees and levying a congestion charge, developing bicycle and pedestrian lanes, and encouraging people to walk or ride a bike when their commuting time is less than 30 minutes.”

- The Standing Committee of the Beijing Committee of the Chinese People's Political Consultative Conference, June 2010 (China Daily)

WALKING AND CYCLING

Though the share of NMT (walking and cycling) is significantly high compared to other travel modes, it has not been prioritized in urban transport planning. Pedestrians are forced to walk on narrow and poorly-maintained sidewalks, and cyclists pedal along with motor vehicles. For most low-income commuters, walking and cycling is the only affordable mode of transport, but poor infrastructures and services have impeded their mobility.

Pedestrians and cyclists are the most vulnerable amongst the road users. Although, Metropolitan Traffic Police Department (MTPD) claims that the number of road fatalities has gone down from 148 in FY 2011/12 to 128 in FY 2012/13, but pedestrians still represent 49% of all fatalities. This clearly shows that the roads are not pedestrian friendly and indicates inadequate planning for pedestrians.

A walkability study (assessment of pedestrian infrastructures and services) conducted by CEN/CANN in 2010 showed that 94% of surveyed road stretches in Kathmandu are not accessible to the differently-able people. Compared to other different cities of Asia, the study revealed that Kathmandu is one of the least walkable cities in Asia, categorized as 'Not Walkable'. No wonder, 78% of the respondents rated pedestrian facilities either bad or very bad. As Kathmandu is relatively a small city, most of its distance can be easily reached on foot or by bicycle. According to study by MoPIT/JICA, 90% of the trip by walking and cycling finishes within 30 minutes.

In order to make cycling more safe and convenient, there is a need of cycle lanes. In Kathmandu, there is only one cycle lane and that too is only 1.2 km long. Now, however, cycle tracks are being built along the Tinkune-Maitighar road stretch and in Ring Road (Kalanki-Koteswar). According to the government 18 km of cycle lanes are under construction. Although this is a good start there is a need for a complete network of cycle lanes through out the valley along with pro-bicycle policies to encourage more people to travel by bicycle.

Small stretches of historical areas in Kathmandu, Bhaktapur and Lalitpur have been pedestrianized, restricting the entry of vehicle. Kathmandu Metropolitan City is planning to pedestrianize

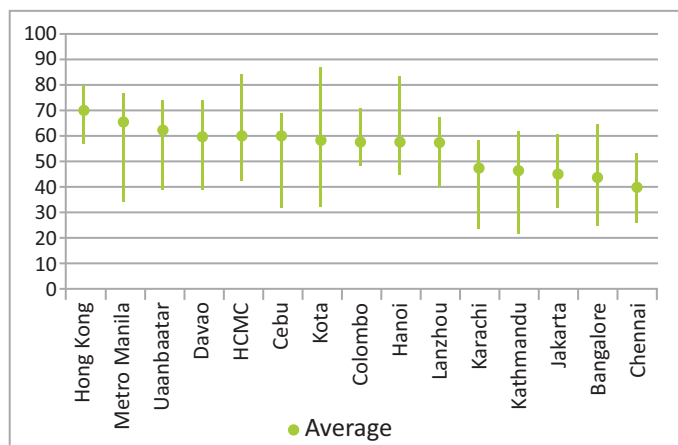


Figure 9: Walkability Ratings of Asian Cities (CAI Asia, 2010)

urban core areas under Kathmandu Sustainable Urban Transport Project. In fact, urban core areas were planned to make vehicle free since 1969, however, this has failed to materialize so far. The government is upgrading the existing sidewalks but clearly more needs to make the city pedestrian friendly.



Promoting cycling culture on the occasion of International Day of the Girl Child

Photo Courtesy: Amrit Joshi



INSTITUTIONAL FRAMEWORK FOR URBAN MOBILITY

The responsibility for urban mobility is spread over several agencies, but their roles are often unclear and lack of coordination is a serious concern. Department of Transport Management is responsible for managing public transport routes, but it does not have the expertise to do so. Private operators provide the public transport services, but they are regulated. Department of Roads as well as Kathmandu Valley Development Authority and the municipalities are involved in building and maintaining roads, while the Department of Urban Development and Building Construction is developing standards for urban roads. However, there is a need for an effective mechanism for coordination among these stakeholders. In this context, the need for a Kathmandu Valley Transport Authority has been raised by several studies but this is yet to be materialized.

CONCLUSION AND RECOMMENDATIONS

As Kathmandu Valley continues to urbanize rapidly, there is an urgent need to effectively plan and manage the transportation system and link it with urban planning. The Avoid-Shift-Improve approach (Figure 10) which uses three tools to reduce emission of pollutants and greenhouse gases, reduce energy consumption, improve efficiency and ultimately improve quality of life can be applied in Kathmandu. More specifically, the following measures can be adopted to promote sustainable urban mobility in Kathmandu.

Formulate and implement comprehensive urban transport policy and strategy- An inclusive urban transport policy should be devised putting mobility, accessibility and sustainability at the center. The policy should focus on moving people not vehicles. It should envision the future characteristics of mobility, ensure participatory approach in urban transport planning, and guide the development of comprehensive mobility plans.

Integrate transport planning with land-use

planning – Sustainable mobility entails closer connection between transport planning and land-use planning - that is the organization of urban space. The main objective should be to reduce the need for mobility by reducing the number of trips and length of distance travelled. Urban development in Kathmandu Valley needs to be planned so as to encourage compact settlements with mixed land use, that prioritize sustainable modes of mobility such as walking, cycling and public transport. Tools such as transit oriented development could also be used.

Finance Urban Transport - A sustainable and dedicated funding mechanism should be established mobilizing the national and local resources to ensure secure financing of urban transport development. The existing road, vehicle and pollution taxes could be mobilized to finance urban transport. Other innovative approaches such as congestion pricing could be introduced to discourage usage of private vehicles and simultaneously generate revenue.

Develop Urban Road Standard or Design Guidelines- There is a need for urban road standards and design guidelines to assist municipalities and road developers. The road design guidelines should incorporate complete street concept, more importantly prioritizing pedestrians, cyclists and public transport users in the design.

Promote Non-motorized Transport System – Although walking and cycling still dominate the travel mode share, it is declining rapidly. The government should encourage more people to walk and cycle by providing proper infrastructures and services and prioritizing non-motorized transport system in urban transport planning.

Introduce Efficient and Affordable Public Transport System – The public transport system needs comprehensive reform to make it efficient, affordable, safer, comfortable and customer-friendly. Government should introduce efficient and affordable Bus Rapid Transit system in primary routes with trunk-feeder system.

“The principal objective of the National Transport Policy is to develop a reliable, cost effective, safe facility oriented and sustainable transport system that promotes and sustains the economic, social, cultural and tourism development of Nepal as a whole.”

National Transport Policy, 2058 (2001/02)

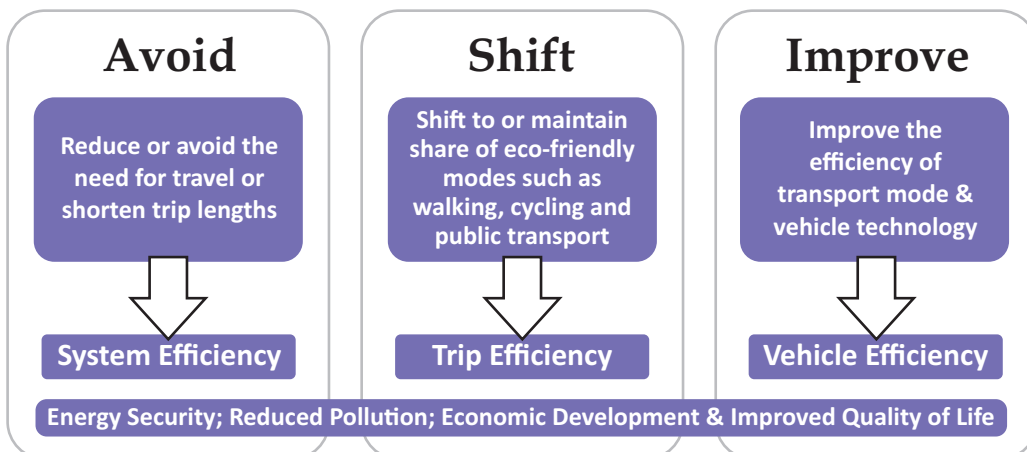


Figure 10: A-S-I Approach to Sustainable Urban Mobility



“A city is more civilized not when it has more highways but when a child on a tricycle is able to move about everywhere with ease and safety”—a city that is built for the people

*-Enrique Penalosa
Former Mayor of
Bogota*



Photo courtesy: Bhushan Tuladhar

REFERENCES

- Adhikari, N., 2012 : Working Paper, No 69–12 Measuring the Health Benefits from Reducing Air Pollution in Kathmandu Valley, SANDEE
- CBS, 2012 : National Population and Housing Census 2011 (National Report), Central Bureau of Statistics
- CEN/ENPHO, 2003 : Health Impacts of Kathmandu’s Air Pollution, Clean Energy Nepal
- MOEST, 2005 : Ambient Air Quality of Kathmandu Valley, Ministry of Environment, Science and Technology
- MoPIT/ADB, 2010 : Main Report: Kathmandu Sustainable Urban Transport Project
- MoPIT/JICA, 2012 : Final Report: Data Collection Survey on Traffic Improvement in Kathmandu Valley, Ministry of Physical Infrastructure and Transport
- NRB, 2012 : Survey Report: The Share of Kathmandu Valley in the National Economy, Nepal Rastra Bank
- UN-Habitat, 2013 : Global Report on Human Settlements 2013 – Planning and Design for Sustainable Urban Mobility
- World Bank, 2007 : Nepal Country Environmental Analysis Strengthening Institutions and Management Systems for Environmental Governance, Report No. 38984-NP
- World Bank, 2012 : Urban Growth and Spatial Transition: An Initial Assessment Nepal



This Factsheet was produced in October 2013 as part of MaYA (Manav-kendrit Yatayat Abhiyan) – A campaign for people-centric transportation systems being implemented by Clean Energy Nepal, with support from UN-Habitat. For more information on the campaign, please contact:

Clean Air Network Nepal/Clean Energy Nepal

104 BulbuleMarga, Thapagaon, Baneshwor • POB 24581, Kathmandu, Nepal
Tel: +977 01 4464981 • Email: info@cen.org.np • Web: www.cen.org.np

