



Public Transportation in Kathmandu Valley

Restructuring and Reforming the System



Photo courtesy: Prabinata Khanal

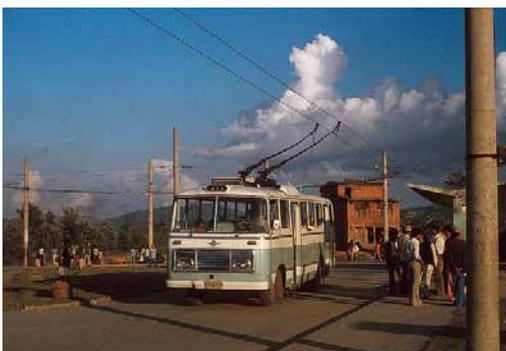
INTRODUCTION

Public transport is a shared passenger transport service, which is available for use by anyone who pays the set fares. It generally operates on fixed routes and may include modes such as three-wheelers, mini/micro buses, buses, trolleybuses, trams, trains and ferries. Besides reducing congestion and air pollution by providing transportation services to a large number of people, high capacity public transport systems may also influence the urban form and quality of life in cities. A good public transport system makes efficient use of urban space, provide efficient and affordable mobility, and access to work, school/colleges, social, recreation and economic activities. A standard bus occupies the same space that of two cars but carries almost forty times more passengers.

A major cause of concern in developing countries is that while urbanization continues to happen rapidly, the modal share of public transport is decreasing or remains stagnant. This is mainly because of lack of investment in the sector, weak regulations and poor quality of services. In the absence of a strong commitment by the government to provide an efficient formal public transport system, in many developing countries, private individuals or small companies provide informal public transportation services. These private operators are often driven by profits rather than public service. The situation is similar in Kathmandu, where over the past 10 years, population has increased by 4.32 % per year and motorization has increased by 12% per year (CBS 2011; DoTM, 2013) while the modal share of public transport has remained stagnant (MoPIT/JICA, 2012).

“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 Penalosa, former mayor of Bogota



(Source: www.flickr.com)

Trolleybus used to provide service in 13 km route from Suryabinayak to Tripureshwar



Photo courtesy: Pradip Kumar Thakur

First public transport service used to provide service from Patan to Kathmandu



HISTORY OF PUBLIC TRANSPORT SYSTEM

In September 1959, Nepal Transport Service started a local bus service between Kathmandu and Patan, marking the beginning of public transportation in Nepal. At its height, before being closed in 1966, it owned a fleet of 11 buses serving more than 10,000 passengers daily. Sajha Yatayat a cooperative started mass transport service in Nepal in 1961/62 providing services inside Kathmandu Valley as well as inter-district commuters. In 1975, electric trolley buses were introduced along the 13 km route from Tripureshwor to Suryabinayak. Although

both Sajha Yatayat and the Trolleybuses provided effective public transport services in Kathmandu for many years, they failed to retain their glory post 1990, when they suffered from poor management and political interference while the private sector started coming aggressively in transportation sector. The privatization of public transport brought more operators but services deteriorated with time as a result of syndicate system and lack of effective planning and regulation by the government.

TIMELINE: HISTORY OF PUBLIC TRANSPORTATION DEVELOPMENT IN KATHMANDU VALLEY



September 1959
Nepal Transport Service starts local bus service between Kathmandu and Patan, marking the beginning of public transportation in Nepal.



October 1961
Sajha Yatayat starts services



December 1975
Electric trolley buses introduced along the 13 km route from Tripureshwor to Suryabinayak



1993
Seven Safa Tempos (electric three wheelers) introduced

2000
Following removal of diesel three wheelers, the number of Safa tempos were increased to 600 and micro buses were introduced.

2007
Sajha Yatayat stops its service



November 2009
Trolleybus system formally closed end of an era of government direct role in public transportation service



April 2013
Sajha Yatayat restarts its service with 16 buses



There is a need to enhance the acceptability of public transport systems. More needs to be done to increase the reliability and efficiency of public transport services and make these services more secure and safe

– Dr. Joan Clos,
Under Secretary-
General and
Executive Director,
UN-Habitat



STATUS OF PUBLIC TRANSPORT SYSTEM IN KATHMANDU VALLEY

FLEET COMPOSITION AND TRAVEL MODE SHARE

Out of approximately 3.4 million one-way person trips made each day, nearly 41% percent are made on foot, while almost 28% are made on public transport (MoPIT/JICA, 2012 and SMEC, 2013). The travel pattern is highly radial with most trips starting or ending in the central business district (CBD) of Kathmandu. Public transport services are provided by several thousand private

operators, which are organized into mode-specific associations and operate along over 200 routes (see Fig 1). The share of low occupancy vehicles such as minibuses, microbuses and tempos operating within Kathmandu Valley accounts for 94% of total public transport vehicles, while share of large buses is only 6% (MoPIT/JICA, 2012)

Types of Public Transport	Passenger Capacity	Number of Operation Route	Number of Operating Vehicles
Tempo	11-13	21	913
Micro Bus	10-16	90	2,036
Minibus	26-35	107	2,036
Large Bus	35-50	4	336
Total		222	5,321

(Source: MoPIT/JICA, 2012; Sajha Yatayat, 2013)

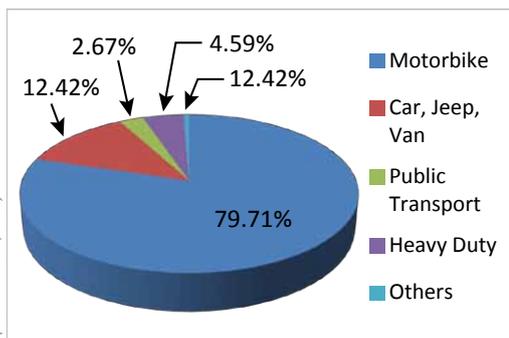
Fig. 1 Number of operating public transport vehicles and their routes within the Kathmandu Valley

Public transport vehicle represents less than 3% of total registered vehicle fleet in Kathmandu but their travel mode share is almost equal to that of private vehicles (cars and motorbikes), which constitute 93% of total vehicle fleet (see Fig 2 and 3). While

the modal share of private vehicles has increased by almost three times and non-motorized transport (walking and cycling) has declined significantly, the share of public transportation has almost remained same over the last two decades.

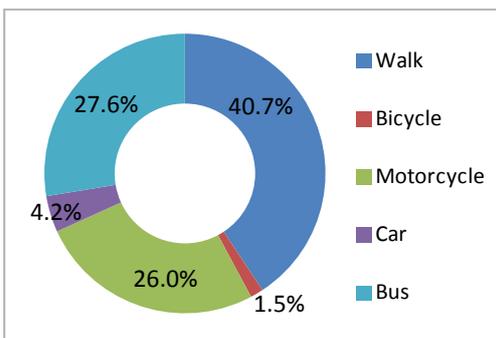
"If you provide good alternatives for public transport, you won't have traffic problems"

-Jamie Lerner, Former Mayor of Curitiba, Brazil



(Source: DoTM, 2013)

Fig. 2 Composition of registered vehicle fleet in Bagmati Zone



(Source: MoPIT/JICA, 2012)

Fig.3 Travel Mode Share of Kathmandu Valley in 2011

FARE COLLECTION AND REVENUE MODEL

The public transport service in Kathmandu Valley is fully operated by private sectors and self-financed i.e. without any government subsidies. The fare structure is set by the government and is based on the passenger kilometer travelled. However, there is no regular monitoring and no system for regularly reviewing the fare. The existing revenue model is based on the number of passengers carried by a vehicle. This has led to dangerous practices and poor

service quality to maximize profit, such as unhealthy competition among operators, overcrowding, picking up passengers from undesignated areas, longer waiting time and unreliability. Operators prefer profitable routes and timings, and public transportation service is almost non-existent after 8:00 pm. There is no ticketing system, except Sajha Yatayat, which issues paper tickets to passenger, and operators collect fare individually.



QUALITY OF PUBLIC TRANSPORT SERVICE

The quality of public transport service is poor and inefficient. There are no well-defined schedules, and the vehicles are generally poorly maintained, lack cleanliness, overcrowded and uncomfortable. As vehicles compete with one another for passengers, speeding is often a major concern for passenger safety, and vehicles wait for a longer time at stops resulting in vehicle stacking and congestion. A survey conducted by CEN/CANN (2011) showed that about 61.7% of female respondents said that they feel uncomfortable with the space in public transport because of overcrowding; 57.7% of passengers were not happy with the travel time in public transport; 69.1% of surveyed passengers perceived that the public transport drivers practice reckless driving making travel uncomfortable and unsafe; 24.9% passenger perceived service as unreliable; and 30.5 % of people said that they have to wait for more than 10 minutes during morning peak hour to get a ride.

Another survey conducted by the World Bank (2013) ranked the concerns of commuters as follows: overcrowding (75%), personal insecurity (26%) and reckless driving and fear of accidents (17%). Other concerns identified were rudeness of drivers and conductors, discomfort, problems travelling with children, fares, unpredictability and length of journeys. Women were twice as likely to mention personal insecurity, which included fear from pickpockets, personal abuse and various forms of sexual harassment, as a major concern compared to men. The study also found that 26% of women of age group 19-35 stated that they had experienced inappropriate touching on public transport during the last year. Another survey of university students found that 97% of those using public transportation had experienced some form of sexual harassment (Neupane and Chesney-Lind, 2013).

A study conducted by Kathmandu Sustainable Urban Transport Project (KSUTP) has identified the following problems associated with the public transport operation and existing route structures:

- Overlapping or duplication of routes
- Inefficient vehicle
- Concentration of route terminals in the city centre
- Poor passenger services at terminals
- Poor service quality

Overcrowding is blamed for personal insecurity. One in three women and one in six men feel insecure on public transport. This includes fear of pickpockets, sexual harassment and personal injury

– World Bank 2013



Public transport service is largely provided by low occupancy vehicles and are overcrowded mainly during the peak hours

(Source: www.economynepal.com)



INITIATIVE ON IMPROVING PUBLIC TRANSPORTATION

REINTRODUCTION OF SAJHA YATAYAT

In April 2013, Sajha Yatayat resumed its services with 16 large 55-seater buses with Euro 3 emission standard bringing new hopes of quality public transport service in the city. The main objective of the Sajha Yatayat is to operate as model public transport service provider providing efficient, affordable and safer services to the city commuters. Sajha Yatayat is currently running its service in two routes passing through CBD with an average daily ridership of 8,000 passengers per day. The buses stop at designated stops and the passengers are required to enter through one door and exit through the other. All buses are fitted with close circuit cameras for safety. This is the only public transport service provider that operates large buses inside Ring Road and provides service passing through CBD. The

drivers and driver assistants are well trained and provide comparatively better customer-friendly services with ticketing system. It also employs women as driver and conductor making it safer and gender-friendly.



Photo courtesy: Prashanta Khatiwada

Sajha Yatayat has reintroduced its service in Kathmandu valley with 16 large Euro 3 standard buses

SAFA TEMPO -ELECTRIC THREE-WHEELER



Photo courtesy: Binodhan Tuladhar

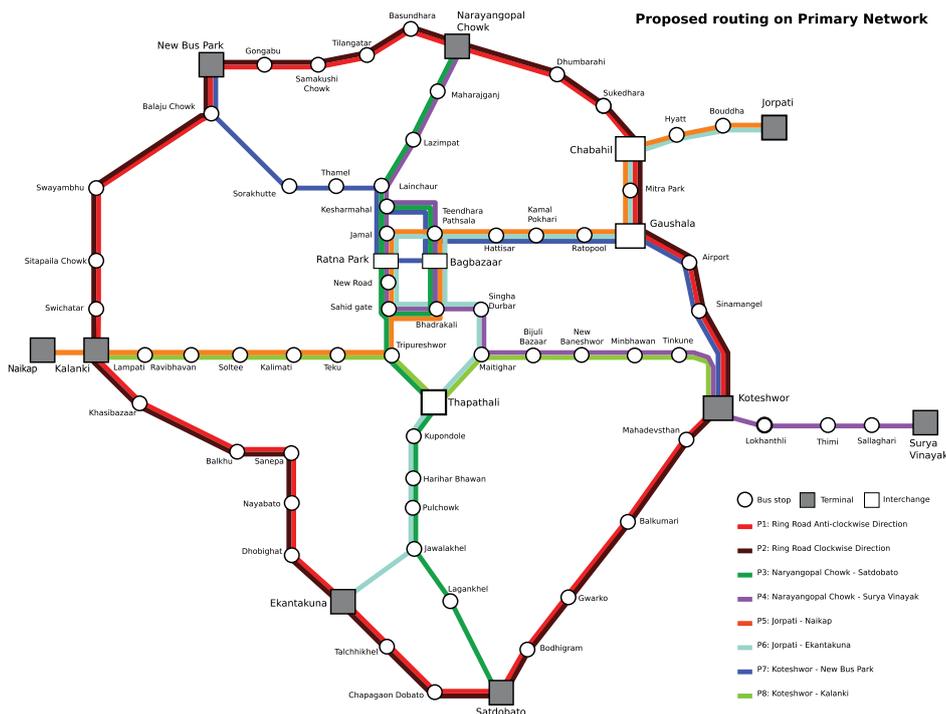
Around 600 Safa Tempos provides environment-friendly mobility to city commuters in the valley

In 1993, seven electric three wheelers, locally known as "Safa Tempo" were introduced in Nepal, as part of a USAID supported project. The number of Safa Tempos, increased significantly after diesel-powered three wheelers were banned in 1999. The Safa tempos are locally produced in Nepal. The introduction of electric vehicles in large masses for public transport is first kind in the world and has been a model for other cities. There are currently 600 Safa tempos operating in 17 routes within Kathmandu Valley, however this number has remained static since 2000 largely because of lack of proper support from the government. These Safa tempos provide environment-friendly mobility to about 100,000 commuters daily. Many of these three wheelers are operated by women.

“Special attention shall be given to improving the comfort, reliability, safety, frequency, availability and affordability of public transport and to reducing harmful emissions arising from public transport operations.”

- Nepal's National Transport Policy, 2058 (2001/02)

KATHMANDU SUSTAINABLE URBAN TRANSPORT PROJECT (KSUTP)



(Source: KSUTP)

Fig. 4 Restructuring of primary public transport network in Kathmandu valley as proposed by KSUT Project



Public transportation improvement is one of the four components of the KSUTP, which is supported by the ADB. The project has proposed three-tier hierarchy of public transport routes based on the demand and width of the road infrastructures. The project has proposed 8 primary routes, 16 secondary routes and 40 tertiary routes plus 2 in historic areas. It has envisaged to operate higher capacity mass

transit service with 12 meter or 18 meter articulated buses with dedicated bus-lanes, 9-10 meter buses in secondary routes providing feeder service to primary routes and low occupancy vehicles such as tempos, microbus and minibus in tertiary routes. The project is also planning to demonstrate formalization of operators and route contracting in two pilot routes.

POLICIES AND REGULATIONS

We support the development of sustainable transport systems, including energy-efficient multimodal transport systems, notably public mass transportation systems, clean fuels and vehicles.

-The Future We Want, UN Conference on Sustainable Development (Rio+20) 2012.

The Government of Nepal (GoN) has enacted several policies and regulations related to transportation. The Nepal Transport Policy 2001 was formulated to develop a transport system that is sustainable, dependable, less expensive, safe, comfortable and self-reliant. However the policy mainly focuses on road infrastructures rather than holistic approach of transport management. In the urban context, it recommends developing the transport infrastructure of the urban area in accordance with the master plan prepared for the urban development, to be implemented by local level with the support central level.

The National Transport Management Act enacted in 1965 and traffic regulations that came into force in 1963 provide the legislation to license drivers and vehicle operators. The Vehicle and Transport Management act enacted in 1992 has regulations on operation of public transportation vehicles, insurance of passenger and driver, providing route permit and fare fixation.

The Public Transport Code of Conduct was brought in 2010 to ensure safe, easy and convenient ride especially for women, children and differently able people in public transport vehicles. It has also provision for implementation and monitoring of

code of conduct by central and regional committee, however this has not implemented effectively.

The Three Year Interim Plan (2010/11-2012/13) states that public transportation will be made safe, reliable, accessible, well organized, pollution free and service oriented in order to contribute towards economic development and employment generation. It also states that large public vehicles will be promoted in the Kathmandu Valley and public private partnership will be promoted for establishing bus terminals. The Approach Paper for the 13th Three year interim plan (2013-2016) states that "realizing the rapid urbanization Kathmandu, a safe, environment friendly, and disruption free transit systems will be promoted through proper enhancement of road networks."

The government has initiated the process of amending Transport Act, and formulation of National Transport Management Strategy with vision to provide safer, efficient, and environmentally-friendly transport in Nepal through enhanced institutional capacity, better management, and improved coordination with urban development and environmental policies. The government is also formulating Environment-friendly Sustainable Transport Strategy and Environment-friendly Vehicle and Transport Policy.

BUS RAPID TRANSIT SYSTEM

FEATURES OF BRT SYSTEM

- Segregated bus ways
- Rapid boarding and lighting
- Clean, secure and comfortable terminals
- Efficient pre-board fare collection
- Effective licensing and regulatory regimes for bus operators
- Clear and prominent signage and real-time information displays
- Transit prioritization at intersections
- Modal integration at stations and terminals
- Clean bus technologies
- Sophisticated marketing identity
- Excellence in customer service

Bus Rapid Transit (BRT) system is a high quality bus-based transit system that delivers fast, comfortable and cost-effective urban mobility through the provision of segregated lane or right-of-way. It combines best features of metro rail with the flexibility and cost advantage of road transit system.

The lower development and operational cost of BRT system compared to rail-based system but with comparable services and efficiency have attracted around 179 cities around the world, including several cities in India and China, to opt BRT system.

¹ Global BRT Data (<http://www.brtdata.org/>)



BENEFITS OF BRT

Apart from inexpensive and efficient transfer of large volume of passengers, it provides environmental and socio-economic benefits, eventually contributing to sustainable urban development.

- **BETTER AND EFFICIENT SERVICES:** A well-designed BRT system can efficiently transfer large volume of passengers, up to 45,000 passengers per hour per direction.
- **LOWER INFRASTRUCTURE COST:** The cost of development of BRT system is USD 0.5-15 million per kilometer compared to the costs USD 50-320 million per kilometer for underground metro system.
- **MODAL SHIFT FROM PRIVATE VEHICLES:** Studies on BRT show that nearly 30% of trips to BRT systems come from private vehicles and taxis. Around 34% of commutes have shifted from private vehicles in Ahmadabad.
- **ENVIRONMENTAL CO-BENEFITS:** According to ITDP, the BRT system in Jakarta had reduced 37,180 metric tons of CO2 emissions in 2010, equivalent to taking 6,800 cars off the road.

- **LAND USE BENEFITS:** Studies show that the BRT has contributed to compelling cases of transforming existing land use and provide co-benefits. It tends to discourage urban sprawl, contributes to transit orient development and raises property values of nearby residential and commercial areas.

Mass transit options	Cost per kilometer	Planning time (years)	Execution time (years)
LRT	15-40 million	2-3	>3
Metro	50-320 million	3-4	>5
BRT	0.5-15 million	1-1.5	1-3

Kathmandu Valley has a great potential in re-introducing trolleybus integrated with advanced BRT features in primary corridors. A comprehensive urban transport policy ensuring the right-of-way for buses and long-term strategic plans are of utmost priority.

Number of people transported is more important than number of vehicle transported

- National Transportation Policy, 2005, India

(Source: ITD/IEPC, 2011)

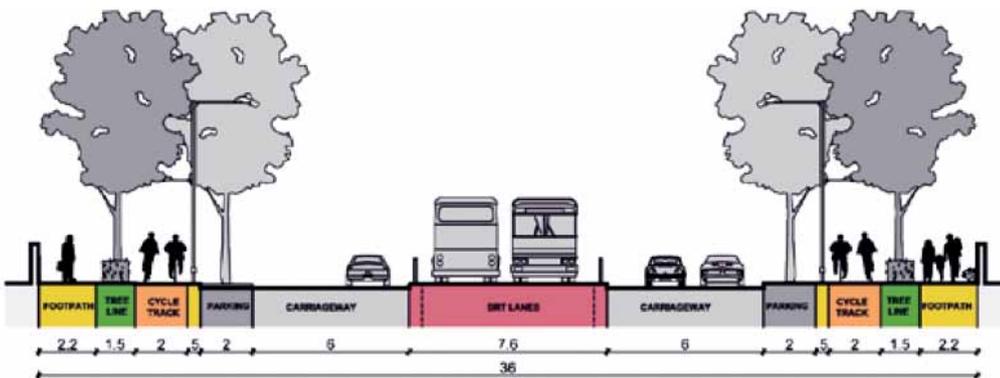


Fig. 5 Cross-section design with dedicated lanes for buses



Photo courtesy: ITDP, India

Bus Rapid Transit System in Ahmedabad, India (Janmarga)



CONCLUSIONS AND RECOMMENDATIONS

As the existing public transport system in Kathmandu Valley is poorly organized and highly inefficient, there is an urgent need to reform the public transport system to improve mobility, decrease dependency on private vehicles, and improve accessibility, air quality and road safety. Here are the key recommendations for improving the public transportation system:

INSTITUTIONAL REFORM AND STRENGTHENING: A separate and unified body such as 'Urban Transport Authority' is required to exclusively oversee the urban mobility issues, develop integrated strategic plans and coordinate with all concerned governmental agencies for proper management of transport sector. The National Transport Policy 2001 and three year interim plan (2011-2014) have also provision to establish a separate autonomous National Transport Board in national level.

POLICY AND REGULATORY FRAMEWORK: A comprehensive urban transport policy is required to guide the development of inclusive, equitable, safer, integrated and sustainable transport system. Strategies, regulations and standards needs to be formulated to regulate, manage and promote public transportation.

RESTRUCTURING OF PUBLIC TRANSPORT SYSTEM: Improvement of public transport system requires a complete restructuring of existing operation and management of the system. Existing public transport routes need to be restructured into primary, secondary and tertiary routes depending upon the demand and road infrastructures. The existing

individual operator regime needs to be restructured to formal public transport operation companies. In this process, the existing fare collection and revenue model should also be improved. Intelligent transport system, such as the use of GPS and smart card ticketing systems, should be introduced for efficient fleet management.

DEVELOPMENT OF INTEGRATED MASS TRANSIT SYSTEM: Kathmandu needs affordable and efficient mass transit system like Bus Rapid Transit (BRT), integrated with other public transport systems, which serve as feeder services. BRT system may be feasible along the Ring Road and other primary corridors. They can be integrated with good pedestrian and cycling facilities, and other modes of transport. The integration needs to happen at three levels:

- Physical, which allows direct connection between different services, including transfer facilities;
- Operational, which consists of coordination of schedules and frequencies; and
- Fare, which involves reduced cost of transfer

ENFORCEMENT OF REGULATIONS AND STANDARDS: Effective enforcement of Public Transport Code of Conduct, 2011 as well as other regulations and standards is necessary to ensure that the commuters feel results of policies and programs. Operators need to be aware of the regulations and standards and a "carrot and stick" approach should be used to motivate them to follow the regulations and standards.

"The declining market share of trips served by public transport is a cause of concern since they are the most efficient forms of motorized mobility, particularly for low-income earners."

– UN-Habitat, 2013

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Clean Air Network Nepal/Clean Energy Nepal

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

