

## **APPENDIX6    WORKSHOP**



**Data Collection Survey on  
Traffic Improvement in  
Kathmandu Valley**

**1<sup>ST</sup> WORKSHOP**

**INTERIM REPORT**

27<sup>th</sup> April, 2012  
H. Shinkai / JICA Survey Team

**OUTLINE OF THE SURVEY**

- Survey area
- Objectives of the Survey
- Work Schedule of the Survey
- Contents of Interim Report

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**Survey Area**



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**Objectives of the Survey**

- 1) Review of the Existing Information, Studies, Plans and Projects
- 2) Basic Data Collection of Urban Plan
- 3) Traffic Survey and Road Inventory Survey
- 4) Future Traffic Demand Forecast (Target Year: 2022)
- 5) Identification of Major Traffic Related Issue/Problems in Kathmandu Valley
- 6) Counterpart Training in Japan

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**Work Schedule of the Survey**

Work Item	Calendar Month											
	11	12	1	2	3	4	5	6	7	8	9	
[1] Preparatory Works and Data collection	[Gantt bar spanning months 11, 12, 1, 2, 3]											
[2] Traffic Survey & Data Processing	[Gantt bar spanning months 1, 2, 3, 4, 5]											
[3] Interim Report	[Gantt bar spanning months 4, 5]											
[4] Analysis of Survey Results	[Gantt bar spanning months 5, 6, 7]											
[5] Identification of Major Traffic Issues	[Gantt bar spanning months 7, 8]											
[6] Draft Final Report, Final Report	[Gantt bar spanning months 8, 9]											
• Traffic Surveys	[Detailed Gantt chart for various survey types]											
• Road Inventory Survey	[Detailed Gantt chart for road inventory]											
• Submission of Report (ICR, FIR, DPR, FR)	[Gantt bar with milestones]											
• Workshop	[Gantt bar with milestones]											
• Technical Committee (To be discussed)	[Gantt bar with milestones]											
• Technical Tour in Japan (8 C/P persons)	[Gantt bar with milestones]											

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**Contents of Interim Report**

- Chapter 1: Introduction
- Chapter 2: Overview of Kathmandu Valley
- Chapter 3: Road Development Policy and Existing Plans
- Chapter 4: Work Program and Method of Traffic Survey
- Chapter 5: Preliminary Result of Traffic Survey
- Chapter 6: Road Inventory Survey
- Chapter 7: Land-Use Survey and Urban Planning Study

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**Data Collection Survey on  
Traffic Improvement in  
Kathmandu Valley**

**1<sup>ST</sup> WORKSHOP**

**Chapter 2 Overview of Kathmandu Valley**

27<sup>th</sup> April, 2012  
H. Shinkai / JICA Survey Team

**CONTENTS**

2.1 Natural Conditions

- Geographical Feature and Climate, Geology, Earthquake, River and Hydrology

2.2 Socio-economy of Kathmandu Valley

- Administrative Division, Economic Profile, Population Growth, and Social Conditions & Environment Issues

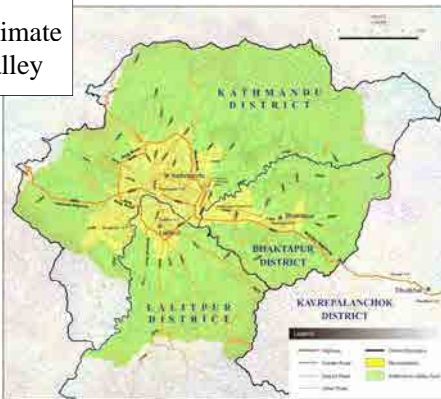
2.3 Transport Sector Status

- Road Sector, Vehicle Registered, and Public Transport Sector

**2.1 Natural Conditions**

**Topography and Climate  
of Kathmandu Valley**

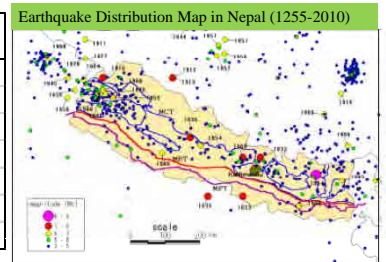
Topography and Climate	
Topography	Surrounded by mountains with 2000m in a height 650sqkm. with an average altitude 1300m approx.
Temperature	9°C -27°C in summer 2°C -20°C in winter 75% humidity
Rainfall	7mm in November and 364mm in July Monsoon season from July to September Mean annual rainfall 2000mm approx.



**2.1 Natural Conditions**

**Geological Feature and Earthquake**

Geological Characteristic of Kathmandu Valley	
Geological Features	- Alluvial Soil of the Cenozoic Era - Gokarna Formation - Chapagoan Formation - Kalimati Formation
Stratum:	sand, river gravel and silt
Thickness:	300m - 450m



Source: JICA Study on Earthquake Disaster Mitigation in the Kathmandu Valley, 2002

Note: Many risk management studies for earthquake reported that a devastating earthquake will hit the Kathmandu valley in the near future, leaving tens of thousands of residents homeless.

**2.1 Natural Conditions**

**River Conditions and Hydrology**

There four (4) major rivers, Bagmati, Manahara, Bishnumati and Dhobi Khola, flowing through the heart of Katmandu City.

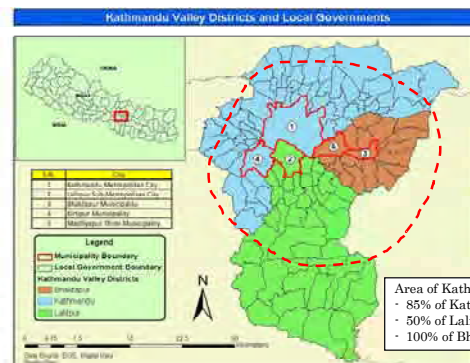
These rivers have a function not only as storm water drainage but also sewerage of Kathmandu valley.



DATA COLLECTION SURVEY ON TRAFFIC IMPROVEMENT IN KATHMANDU VALLEY

**2.2. Socio-economic Profile of Kathmandu Valley**

**(1) Administrative Division of Kathmandu Valley**



Area of Kathmandu Valley encloses:  
- 85% of Kathmandu district  
- 50% of Lalitpur district  
- 100% of Bhaktapur district

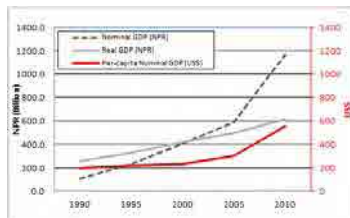
Source: Kathmandu Valley Profile, by Pradip Raj Pant & Devendra Dongol

## 2.2. Socio-economic Profile of Kathmandu Valley

### (2) Economic Profile of Nepal

Key Macro-economic Indices			
Particular			2010
Real GDP	Billion NPR		616.2
	Billion US\$		8.2
Average Growth Rate (5 years)	%		4.4%
Real GDP per capita	NRP		21,864
	US\$		293
Nominal GDP	Billion NPR		1,171.0
	Billion US\$		15.7
Average Growth Rate (5 years)	%		14.7%
Per-capita Nominal GDP	NRP		41,546
	US\$		558
Inflation (CPI)			9.0%
Exchange Rate	US\$		74.5
DGP by Sector			
	Agriculture	%	32.6
	Industry	%	15.8
	Services and others	%	51.6
Population below Poverty	%		24.7
Export (2009)	Billion US\$		0.85
Import (2208)	Billion US\$		5.26
Main Industry (Tourism, garment, food and beverages, metal manufactures, herbs)			
Source: ADB Key Indicators 2010, UNDP Human Development Report 2010			

Economic trend in the past two decades



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## 2.2 Socio-economic Profile of Kathmandu Valley

### (3) Population Increase

National Population Census in 2011/2011				
Particulars		2001 Census	2011 Census	Increase Ratio
Area (sq.km)		147,000	147,000	2011/2001
Population (person)	Total	23,151,423	26,620,809	15.0%
	Urban	3,227,879	4,525,787	17.0%
	Rural	19,923,544	22,095,022	10.9%
Population Density per sq.km	Average	157	181	15.3%
	Urban	985	1,380	40.1%
	Rural	138	153	10.9%
Average Annual Growth Rate in past 10 years	Average	2.25%	1.40%	
	Urban	6.65%	3.38%	
	Rural	1.72%	1.03%	
Sex Ratio of Male per 100 Female		99.8	94.4	
Population Absent (aboard)	Total	762,181	1,917,903	151.6%
	Male	679,469	1,663,237	86.7%
	Female	82,712	254,666	13.3%
Housing Unit	No.	3,598,212	4,767,196	32.5%
	No.	4,253,220	5,659,984	33.1%
Average Household Size	person	5.44	4.70	
Source: Preliminary Results of National Population and Housing Census 2011				

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## 2.2 Socio-economic Profile of Kathmandu Valley

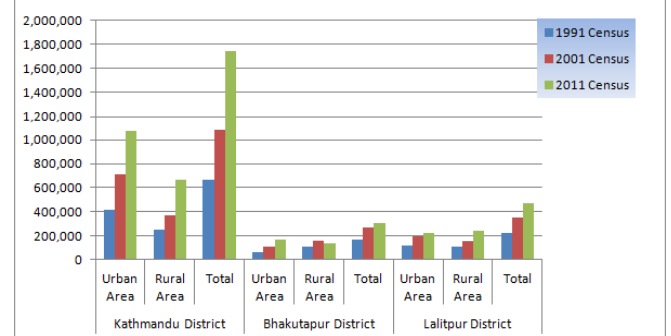
### Population of Kathmandu Valley

Kathmandu Valley Population Census in 2011									
Particulars	Kathmandu District		Bhaktapur District		Lalitpur District		Kathmandu Valley		
	area	%	area	%	area	%	area	%	
Area (km2)	Total	395	43.9%	119	13.2%	385	42.8%	899	(100%)
	Urban	69	17.5%	18	15.1%	15	3.9%	102	11.3%
	Rural	342	82.5%	52	84.9%	370	96.1%	764	88.7%
Population (person)	Total	1,740,977	69.3%	303,027	12.1%	466,784	18.6%	2,510,788	(100%)
	Urban	1,072,726	61.6%	168,152	55.5%	223,285	47.8%	1,464,164	58.3%
	Rural	668,251	38.4%	134,875	44.5%	243,499	52.2%	1,046,626	41.7%
Population Density (person/km2)	Total	4,407		2,546		1,212		3,184	(average)
	Urban	15,547		9,342		14,886		14,355	(average)
	Rural	1,954		2,594		658		1,370	(average)
Average Annual Growth Rate (past 10 years)	Total	4.87%		3.00%		3.28%		4.32%	(average)
	Urban	4.17%		3.41%		3.17%		3.92%	(average)
	Rural	6.11%		2.52%		3.37%		4.89%	(average)
Sex Ratio of Male per 100 Female		109		103		103		106	(average)
Population Absent (aboard)	Total	97,626		7,701		23,790		129,117	(total)
	Male	69,434	71.1%	7,588	98.5%	16,936	71.2%	93,960	72.8%
	Female	28,192	28.9%	113	1.5%	6,854	28.8%	35,159	27.2%
Housing Unit	No.	242,274	66.1%	50,586	13.8%	73,643	20.1%	366,503	(total)
	No.	469,145	71.4%	73,084	11.1%	114,443	17.4%	656,672	(total)
Average Household Size	person	3.71		4.15		4.08		3.94	(average)
Source: Preliminary Results of National Population and Housing Census 2011									
Note: Urban area includes five (5) municipalities, Kathmandu, Kirtipur, Lalitpur, Bhaktapur, Thimi									

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## 2.2 Socio-economic Profile of Kathmandu Valley

### Population Growth Rate of Kathmandu Valley



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## 2.2. Socio-economic Profile of Kathmandu Valley

### (4) Social Conditions and Environment Issues

Social Conditions and Environmental Issues	
<b>Social Conditions</b>	
History	King of Gorkha united Kathmandu Valley in 1768
Religion	80% Hindus, 15% Buddhist, 3% Muslim, 2% others
People	Majority: Indo-Arian, the rest: Tibetan and Lopas
Culture	The ancient and traditional culture being maintained by Hindu and Buddhist communities
<b>Environmental Issues</b>	
River pollution	Open sewer and disposal of waste lead to the sever pollution of all the rivers in Kathmandu
Air pollution	Increase of vehicles emission and smoke from the cement factory lead to serious air pollution
Solid waste disposal	Illegal dumping of waste in the riverbank, public land, unplanned settlement, etc. is very common
Traffic congestion	Inadequate and insufficient road network are creating sever traffic congestion on city roads
Loss of cultural heritage	Cultural heritages are eroding and being converted into private building and property
Gaps in supply and demands for basic services	Rapid population and urbanization increase demands for basic services including water, electricity, road, drainage, housing, etc

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## 2.3 Transport Sector Status

### (1) Road Sector Status of Kathmandu Valley

#### Road Jurisdiction and Classification

Jurisdiction	Classification	Kathmandu District	Bhaktapur District	Lalitpur District	Total	Remarks
Department of Road (DOR)	Highway	39.9	14.1	18.0	72.0	H02, H03, H16
	Feeder Road (Primary)	136.0	70.5	112.6	319.0	14 Feeder roads
	Feeder Road (Secondary)	45.1	27.0	0.0	72.1	22 Feeder roads
	Strategic Urban Road	59.6	4.9	27.2	91.7	59 Urban Roads
	Total	280.5	116.5	157.8	554.8	
Local Government/ Municipality	District Road	400.4	36.0	90.6	527.0	
	Urban Road	269.6	116.0	127.3	512.9	
	Total	670.0	152.0	217.9	1,039.9	
Total		950.5	268.5	375.7	1,594.7	
Road Density per sq.km		2.41	2.26	0.98	1.77	
Road Density per 1000 person		0.55	0.89	0.80	0.64	
Source: DOR Statistic of Strategic Road Network 2009/2010						

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### 2.3 Transport Sector Status

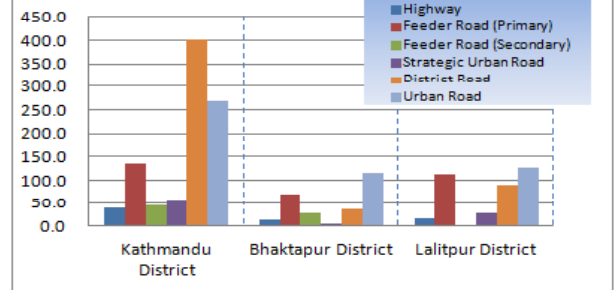
Road Network Map in Kathmandu Valley



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### 2.3 Transport Sector Status

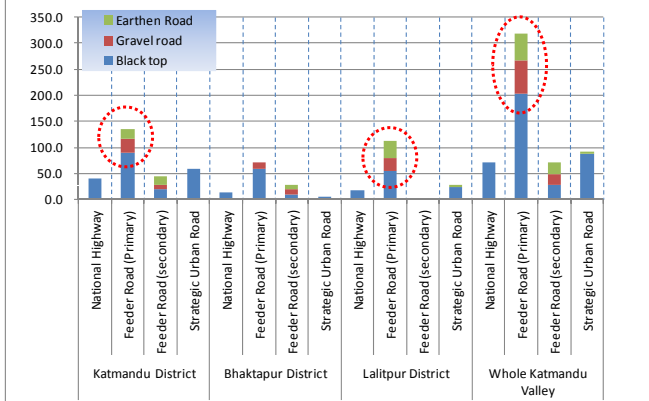
Road Length by Classification



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### 2.3 Transport Sector Status

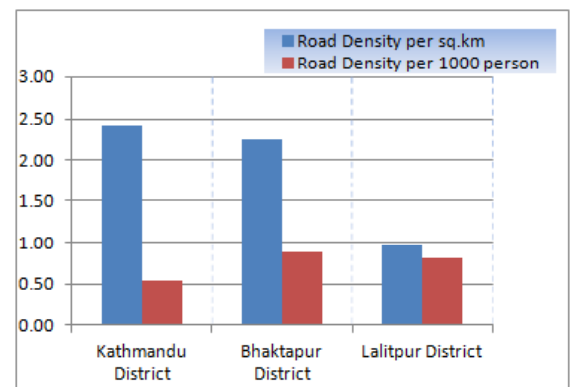
Road Length by Type of Surface



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### 2.3 Transport Sector Status

Road Density per sq.km and per 1,000 person



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### 2.3 Transport Sector Status

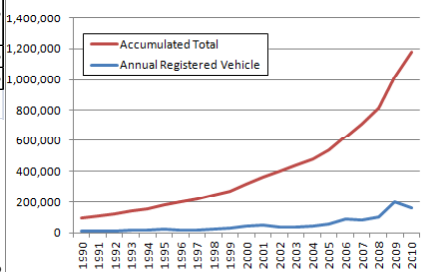
#### (2) Vehicles Registered

Number of Vehicles Registered (1989-2010)		
Bagmati Zone (Kathmandu, Bhaktapur and Lalitpur districts)	570,145	48.4%
Other 13 Zones	608,650	51.6%
Nepal (Total)	1,178,795	100%

Source: Registration of Transport up to Fiscal Year 2010, Department of Transport Management

Note:  
- There is the registration record of vehicle but no scraped car record in Nepal, therefore, it is difficult grasp the exact number of a vehicle in working condition.  
- If we assumed the car registered more than 20 years ago (120,000) to be a scraped car, the current effective registration number is estimated to be 1,050,000 approx.

Nos. of Vehicle Registered (1989-2010)



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### 2.3 Transport Sector Status

#### Vehicle Registered in Bagmati Zone (2000-2010)

Vehicles Registered in Bagmati Zone (2000-2010)						
Year	Bus, Mini, Micro&Tempo	Car/Jeep/Van	Motorcycle	Truck/others	Total	Accumulative
1989- 2000	10,150	44,777	89,782	7,453	152,162	152,162
2001	710	2,649	22,852	782	26,993	179,155
2002	760	2,999	21,558	811	26,128	205,283
2003	1,082	6,788	18,035	561	26,466	231,749
2004	1,353	12,287	20,003	512	34,155	265,904
2005	1,048	3,603	21,604	1,070	27,325	293,229
2006	868	4,235	33,022	678	38,803	332,032
2007	1,086	6,601	38,852	1,237	47,776	379,808
2008	1,214	6,019	35,365	1,891	44,489	424,297
2009	912	9,471	69,359	2,096	81,838	506,135
2010	737	8,069	53,960	1,244	64,010	570,145
Total	19,920	107,498	424,392	18,335	570,145	
	3.5%	18.9%	74.4%	3.2%	100%	

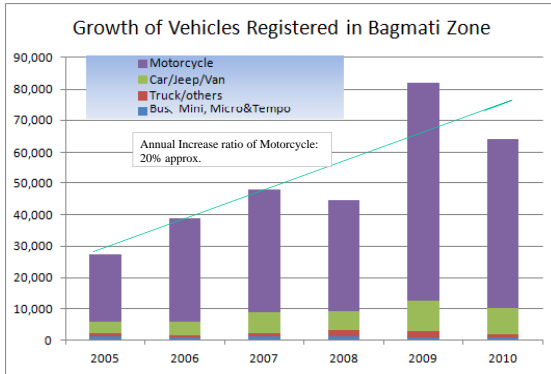
Source: DOTM Report (2010/2011)

Note: The share of vehicles for private transportation (car/jeep/van and motorcycle) came to very high, more than 93%. On the other hand, the number of buses registered for public transport has decreased year by year and the share of it accounts for only 3.5% as of 2010.

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## 2.3 Transport Sector Status

### Growth of Vehicle Registered in Bagmati Zone



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## 2.3 Transport Sector Status

### (3) Public Transport

#### Present public transport system of Kathmandu Valley;

- Public transport : buses, mini buses, micro buses and tempo
- Service level: far below satisfactory level
- Transportation-poor: People who cannot use any mode of transport is increasing due to growing demand of public transport

#### Bus network services;

- City bus services: within the built-up areas of Kathmandu valley generally within the Ring Road
- Commuter bus services: 1.0-1.5 hrs. travelling distance beyond the built-up areas to town and villages in Kathmandu valley
- Long distance bus services; Kathmandu and cities and town throughout Nepal

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## 2.2. Transport Sector Status

### Responsible Agency and Issues of Public Traffic;

- Department of Transport Management (DoTM)
- Function of DoTM is limited to: Issuing public transport routes permits, vehicle registration, transfer of vehicle ownership
- No planning and technical sections in the Department for promoting a public transport development plan and technical issues on environment, etc.
- The structure of DoTM will be strengthened through the implementation of KSUTP
- Issues: Absolute shortage in fleet numbers for growing traffic demand, Insufficient service routes and unbalanced size of demand, Non-systematic bus operation and no-coordinating among the bus companies, No-time table , route map and fare-rate.

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Ministry of Physical Planning and Works  
Department of Roads



### Data Collection Survey on Traffic Improvement in Kathmandu Valley

#### 1<sup>ST</sup> WORKSHOP

## Chapter 3 Road Development Policy and Existing Plans

27<sup>th</sup> April, 2012

H. Shinkai / JICA Survey Team

## CHAPTER 3

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- 3.1 Latest Policy of Road Development
- 3.2 Road Network Development Plan in 1993 M/P and Subsequent Progress
- 3.3 Existing Major Road Improvement Project

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## 3.1 Latest Policy of Road Development

### 3.1.1 Twenty Year Road Plan

1. Formulating the 20-Year Development Concept from Tenth Plan to Thirteenth Plan, Twenty Year Road Plan (2002 - 2021)
2. Major objectives
  - Strengthening political and administrative linkages
  - Poverty alleviation
  - Development and utilisation of social, economic and cultural potentials
  - Minimisation of total transportation cost and minimisation of adverse effects on the environment

### 3.1.2 Sector Wide Road Programme & Priority Investment Plan

1. This study is primarily concerned with the maintenance and development of the SRN to prepare a 10 year priority investment plan (2007-2016)
2. Major objectives
  - Regular Annual Maintenance and Periodic Maintenance Plan
  - Upgrading to Sealed Standards Plan
  - Expansion / Extension Plan by New Construction, Network Strengthening and Improvement

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### 3.1 Latest Policy of Road Development

#### 3.1.3 Business Plan

##### 1. Latest Road Development Plan in DOR

- Business plan was published on 2010 based on the performance evaluation of Three Year Interim Plan-I (2007-2010) and covering the plan period of Three Year Interim Plan-II (2010-2013)

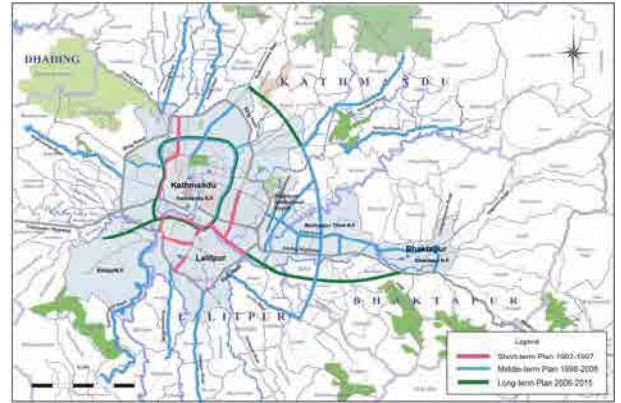
##### 2. Objectives

- Development of SRN
- Sustainable and efficient road service by managing main arterial road network, links to rural roads.
- Connectivity in potential touristic, hydropower, natural resources development areas and international trade routes.
- Contributing towards the betterment of living conditions of the people through the above development

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### 3.2 Road Network Development Plan in 1993 M/P and Subsequent Progress

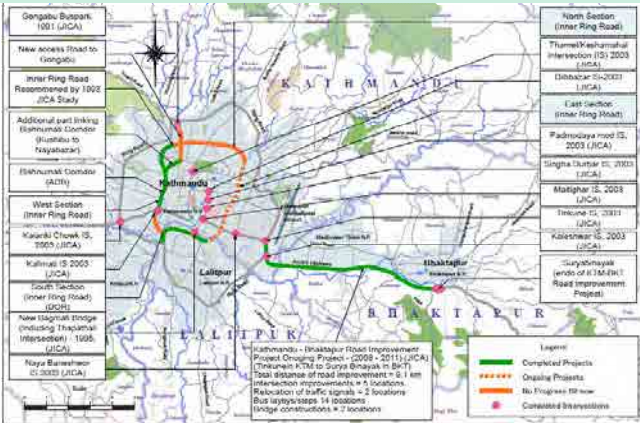
#### 3.2.1 Development concept of 1993 M/P



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### 3.2 Road Network Development Plan in 1993 M/P and Subsequent Progress

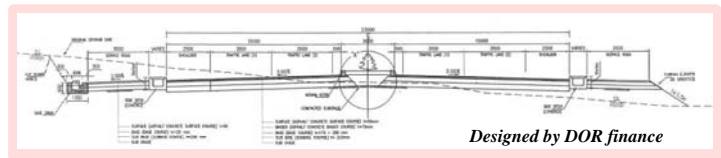
#### 3.2.2 Implemented Projects after 1993 JICA M/P



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### 3.2 Existing Major Road Improvement Project

#### 3.3.1 Bhaktapur – Dhulikel Road Widening Project



1. Bhaktapur-Dhulikel Road Widening Project was planned by DOR to mitigate the amount of plying the route of Kathmandu- Naubise- Birgunj as an alternative route
2. Detailed Engineering Survey and Design of Widening of Road to Six Lane Standard including Initial Environmental Examination, Preparation of contract documents for execution of construction works and preparation of Detailed Project Report were completed on 2011.

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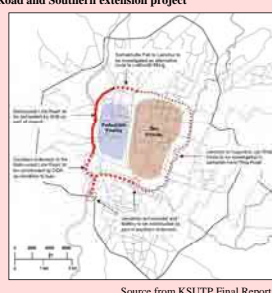
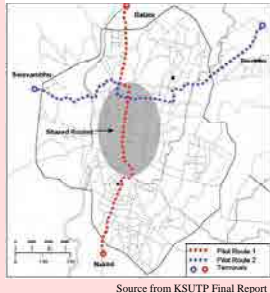
### 3.2 Existing Major Road Improvement Project

#### 3.3.2 Kathmandu Sustainable Urban Transport Project (KSUTP)

This report proposed 4 major improvement components comprising Public Transport, Traffic Management, Pedestrianisation and Air Quality. Based on these components, this project mainly focuses on the issues due to lack of adequate public transport management and poor conditions experienced by pedestrians within Kathmandu Valley Core Area.

*Proposed by ADB finance and Implementation will be financed by ADB, GON and GEF*

1. Two Pilot Routes for Public Bus Operation
2. Improvement of Inner Ring Road including Bishnumati Link Road and Southern extension project



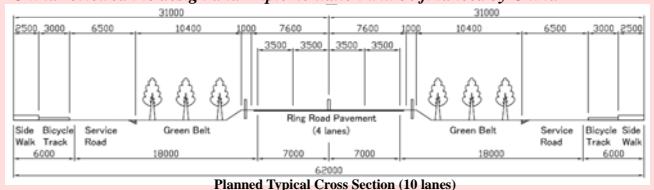
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### 3.2 Existing Major Road Improvement Project

#### 3.3.3 Ring Road Improvement Project

1. The existing Ring Road is characterized with rapid growth of the settlement on either side and high volume of traffic. Presently, the encroachment of the Ring Road, unaccounted number of access and poor service track have heightened the pollution in the road corridor and significantly reduced the vehicular traffic speed.
2. To address these issues, the KVTDC has initiated and studied the Ring Road Improvement Project comprising development and improvement of Service Track, conservation and management of Green Belts, Intersection improvement of access road with Ring Road and install of Road Furniture such as parking facilities for public vehicles in 2003.

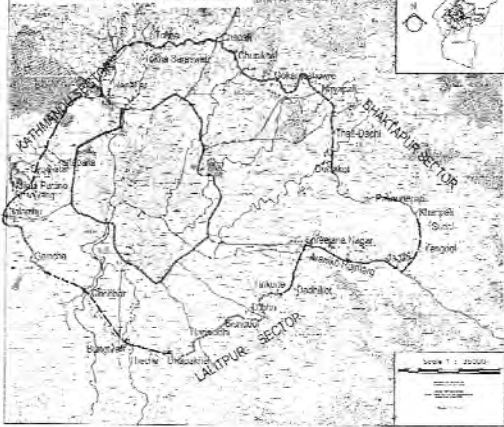
*China reviewed the design and Implementation will be financed by China*



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## 3.2 Existing Major Road Improvement Project

### 3.3.4 Outer Ring Road Development Project



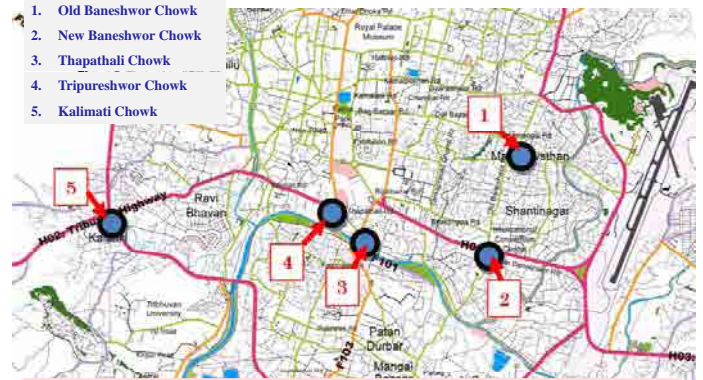
Latest Alignment for Outer Ring Road

1. Prefeasibility study of Outer Ring Road was conducted by NEPECON in 2000.
2. Total length for latest alignment is 72 km

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## 3.2 Existing Major Road Improvement Project

### 3.3.5 Flyover at 5 Major Intersection Project



Detailed Project Report conducted by DOR and Implementation will be financed by DOR

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## 3.2 Existing Major Road Improvement Project

### 3.3.6 Kathmandu Valley Road Widening Projects conducted by GON



In recent months after the end of 2011, Improvement of major roads within Kathmandu Valley Core Area has been conducted especially for land preparation works administrated by KVTDC cooperated with Municipality, MTP and DOR to facilitate the substantial progress. The houses which encroach within Right of Way have been dismantling.

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Ministry of Physical Planning and Works  
Department of Roads



Data Collection Survey on  
Traffic Improvement in  
Kathmandu Valley

**1<sup>ST</sup> WORKSHOP**

**Chapter 4 Working Programme and Method of  
Traffic Survey**

**Chapter 5 Preliminary Result of Traffic Survey**

27<sup>th</sup> April, 2012

Y. Ohwaki / JICA Survey Team

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1. Outline of Traffic Survey
2. Survey Method and Preliminary Result
  - 1) Household Survey
  - 2) Traffic Survey
  - 3) Bus Traffic Survey
3. Major Findings and Traffic Issues
  - 1) Road Traffic
  - 2) Public Transport

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## 1. Outline of Traffic Survey

1. Objective of Traffic Survey
  - (1) To grasp the variation of traffic movement from 1993 M/P
  - (2) To analyze the characteristics and issues of transport in Kathmandu Valley
  - (3) To formulate basic data for traffic demand in future
2. Basic Policy for Traffic Survey
  - (1) Consistency with the traffic survey in 1993 MP
  - (2) Reflection of urbanization in recent years
  - (3) Traffic surveys which considers countermeasure for improving existing traffic condition

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## 1. Outline of Traffic Survey

### Traffic Survey Items

1. Home Interview Survey
2. Traffic Survey
  - 2.1 Roadside OD Interview Survey
  - 2.2 Traffic Volume Survey
  - 2.3 Screen Line Survey
  - 2.4 Traffic count survey of major intersections
  - 2.5 Vehicle Speed Survey
  - 2.6 Parking Survey
3. Bus Transport Survey
  - 3.1 Bus Traffic Count Survey
  - 3.2 Bus OD Survey
  - 3.3 Bus Passenger Interview Survey
  - 3.4 Public Transport Firm Interview Survey

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## 1. Outline of Traffic Survey

### 3. Survey Schedule

	2011		2012	
	November	December	January	February
Preparation of traffic Survey	Field Survey	Office Work		
Household Interview Survey				
Traffic Survey				
Roadside Interview (OD) Survey		Field Survey		
Traffic Count Survey		Field Survey		
Screen Line Survey		Field Survey		
Traffic Count of Major Intersection		Field Survey		
Travel Speed Survey		Field Survey		
Parking Survey		Field Survey		
Bus Transport Survey				
Bus Traffic Count Survey			Field Survey	
Bus OD Survey			Field Survey	
Bus Passenger Survey			Field Survey	
Public Transport Firm Interview Survey			Field Survey	
Data Entry and Reporting	Office Work	Office Work	Office Work	Office Work

Legend: ■ Field Survey, ■ Office Work

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## 2. Survey Method and Preliminary Result

### (1) Household Interview Survey

#### Basic Concept of the Survey

- Person trip survey is based on the idea that person's movement is the source of traffic.
- In order to formulate comprehensive transport master plan in Kathmandu Valley, person trip survey is most appropriate method for the analysis and the forecast of transport.
- Household interview survey was conducted to obtain the information of persons' movements.

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### (1) Household Interview Survey

#### Questionnaire for Interview

- Household Information
  - Vehicle ownership
  - Household Income
- Household Member Information
  - Sex, Age
  - Occupation
  - Workplace, School
- Trip Information
  - Trip purpose
  - Origin and Destination
  - Departure time and arrival time
  - Travel Mode
  - Access mode

#### Household Information

#### Member Information

#### Trip Information

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### (1) Household Interview Survey

#### REMARKS

- Household interview survey is a sample survey.
- 18,100 households out of 643,300 households\* in 2011 in Survey Area were interviewed.
- \* Estimated by Survey Team based on preliminary result of 2011 Population Census
- Collected data is now under processing which includes procedure for data expansion.
- Today's report is by the data before expansion.

Estimated Population 5years and above in 2011	Total Interviewed Household Members	Sample Ratio
2,235,900	72,062	3.2%



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### (1) Household Interview Survey – Survey Result

#### 1) Vehicle Ownership

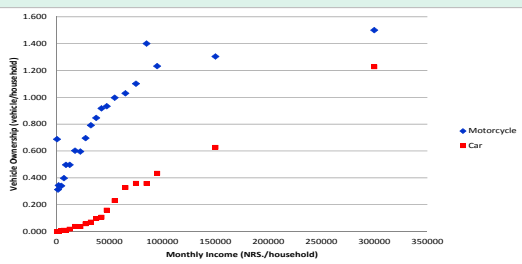
- Motorcycle is spreading among ordinary households. In average, 7 households out of 10 households are in possession of one motorcycle.
- 463 thousand motorcycles are owned in Survey Area.
- Compared with motorcycle, car owner is still fewer.

	Motorcycle	Car	Truck
Ownership Level (vehicle/household)	0.721	0.085	0.008
Estimated Total Number of Vehicle	463,600	54,700	5,100

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## 2) Income level and Vehicle Ownership

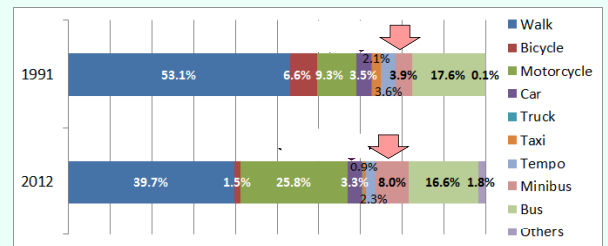
- ◆ Vehicle ownership is closely connected with income level.
- ◆ As the income level grows up, both motorcycle and car will increase.
- ◆ Measures to control Motorcycle is one of the key issues in Kathmandu.



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## 3) Travel Mode – Comparison with 1993 M/P

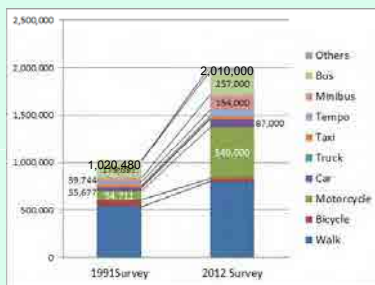
- 2.8 times increase of motorcycle. Large part of walking and bicycle was replaced by motorcycle.
- Proportion of car has not almost changed.
- Tempo and Bus decreased a little. Minibus replaced the decrease.



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## 4) Rough Estimation of Present Person Trip

- 1993 M/P shows total number of person trip generated by population in Kathmandu, Lalitpur and Bhaktapur N.P.
- Rough estimation of person trip in 2012 indicates number of trips has doubled.
- Person trip by motorcycle increased by 5.8 times and car increased by 2.8 times.

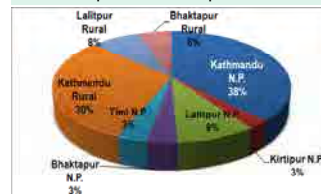


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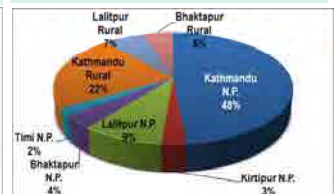
## 5) Population and Trip Generation/Attraction

- Population of Kathmandu N. P. occupies 38% of Survey area.
- Trip generation/attraction of Kathmandu N. P. occupies 48% of Survey area.
- Evidently Kathmandu N.P. is focus of every activity in Kathmandu Valley.

Proportion of Population



Proportion of trip generation/attraction



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## (2) Traffic Survey

### 1) Outline of Traffic Survey

Type of Survey	Objective	Method/Result
Roadside interview (OD) Survey	To capture vehicle's origin, destination, trip purpose and etc.	Interview to drivers at survey points on 18 arterial roads (17, 139 drivers are interviewed) on 1 workday
Traffic count survey	To count traffic volume on workday and holiday	Traffic counts by direction and by type of vehicles (44 points, 24 hours & 16 hours, workday & holiday)
Screen line survey	To confirm accuracy of person trip survey by counting number of vehicles crossing rivers	Traffic count at the crossing river points (10 points, 24 hours, 1 workday)
Traffic count survey of major intersections	To grasp the saturation at major intersections	Traffic count by vehicle type and by direction (straight, left-turn, right-turn) at 10 major intersections
Travel speed survey	To analyze vehicle speed affected by traffic congestion	Investigation of travel time by driving 18 arterial roads (3 times per day, workday & holiday)
Parking survey	To capture parking demand of heavy vehicles	Counting number of parking vehicles along Ring Road at midnight (11 pm-3 am)

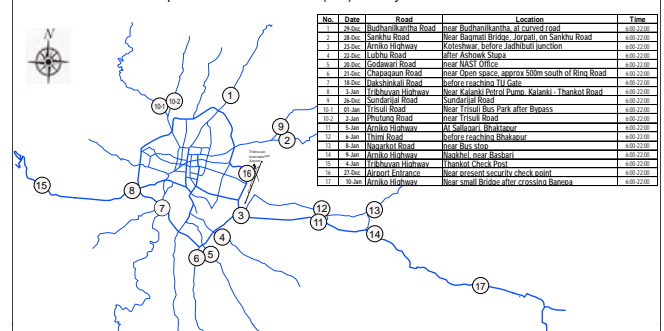
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## 2) Roadside Interview (OD) Survey

18 points, from 6:00 – 22:00 (16hr)

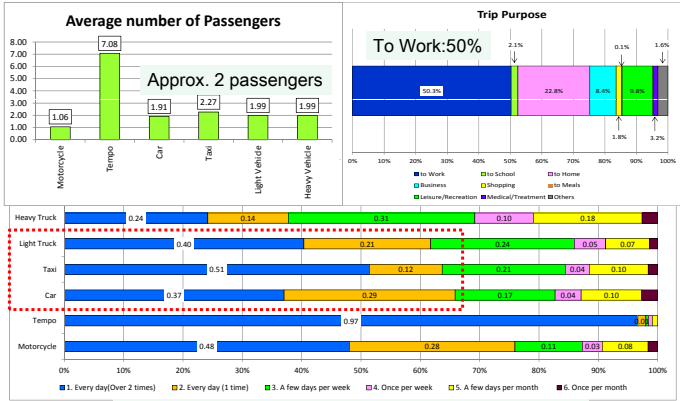
Total No. of Interviews: 17,139 out of 285,783 vehicles Sample Ratio: 6.0%

Location Map of Roadside Interview (OD) Survey



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### Result of Roadside OD Survey

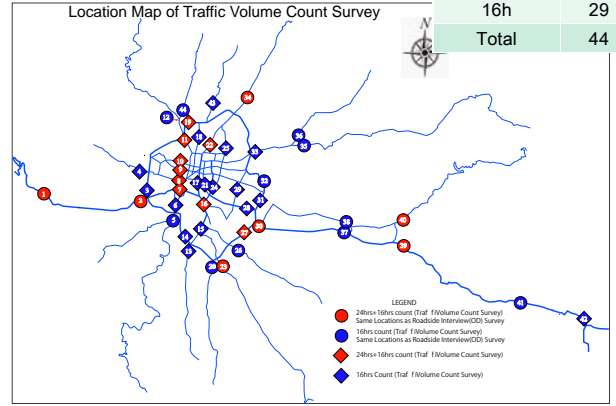


**Trip Frequency**  
more than once a day: 60% of the car, taxi and light truck

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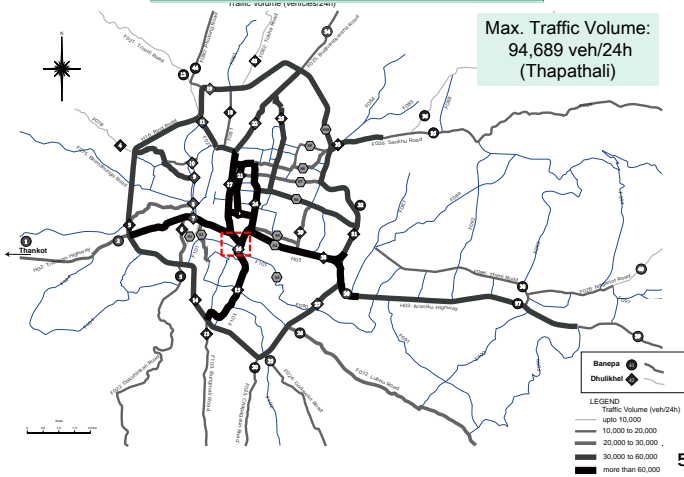
### 3) Traffic Volume Count Survey

Traffic Survey	No. of points
24h & 16h	15
16h	29
<b>Total</b>	<b>44</b>



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### Traffic Volumes (vehicles/24h)

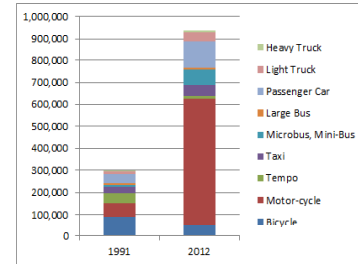


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### Comparison of Traffic Volumes with MP1993 (1)

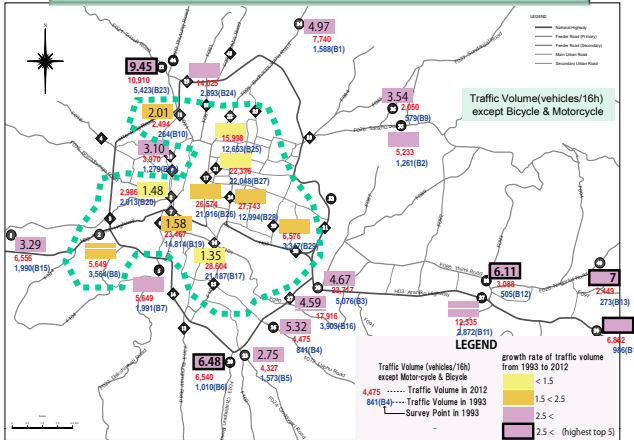
#### Comparison of Traffic Volume at 29 Points with 1991

	Bicycle	Motor-cycle	Tempo	Taxi	Microbus, Mini-Bus	Large Bus	Passenger Car	Light Truck	Heavy Truck	Total
1991	88,186	☆	46,469	26,699	10,659	5,116	42,827	10,454	6,710	237,020
2012	53,843	☆	13,397	51,674	68,839	5,625	125,240	41,667	8,785	369,070
2012/1991	0.61		0.29	1.94	6.52	1.10	2.92	3.99	1.31	1.56



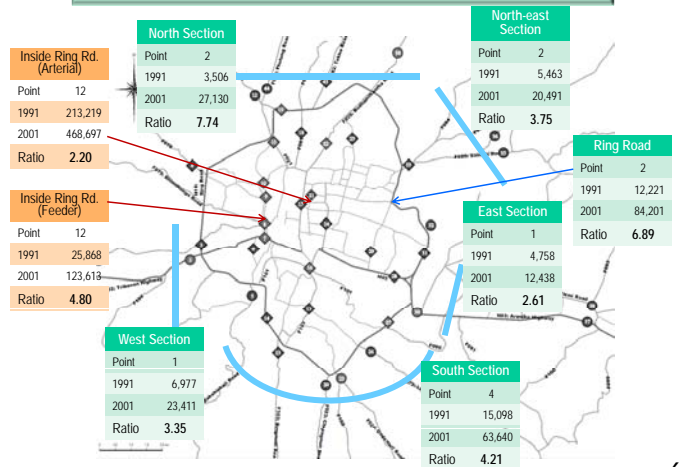
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### Comparison of Traffic Volumes with MP1993 (2)



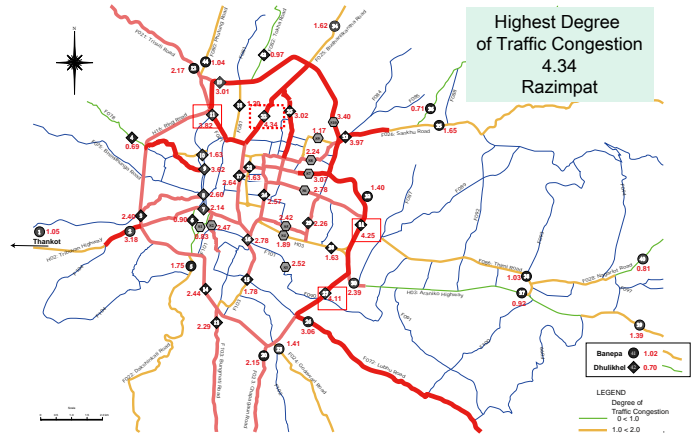
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### Comparison of Traffic Volumes with MP1993 (3)



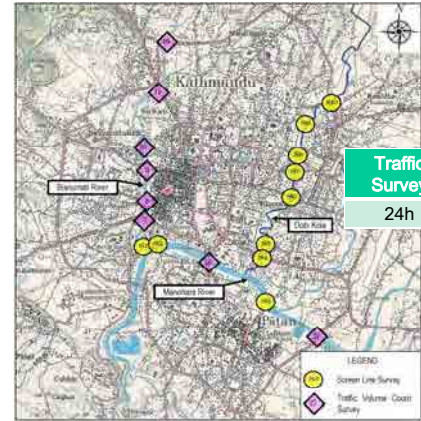
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### Degree of Traffic Congestion



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### 4) Screen Line Survey

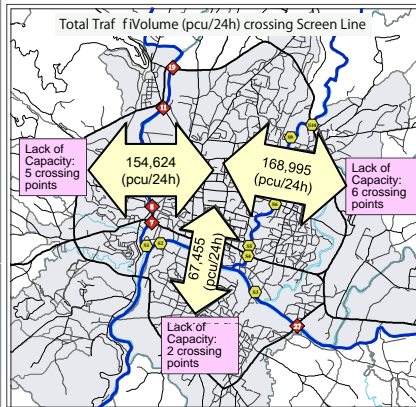


Traffic Survey	No. of points
24h	10

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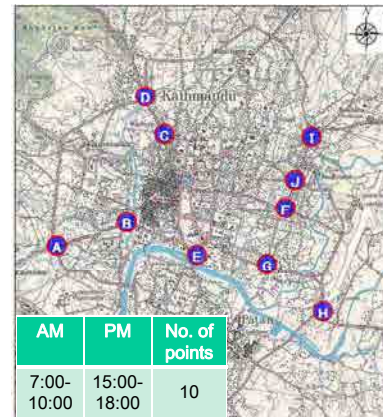
### Traffic Volumes across Screen Line

- Lack of Capacity across Screen Line
  - Eastern Line → 6 bridges necessary
  - Western Line → 5 bridges necessary
  - Southern Line → 2 bridges necessary



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### 5) Intersection Traffic Count Survey

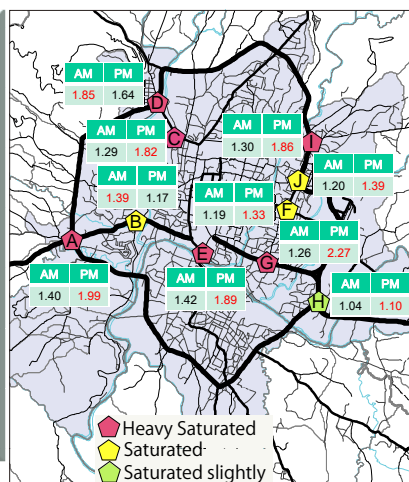


AM	PM	No. of points
7:00-10:00	15:00-18:00	10

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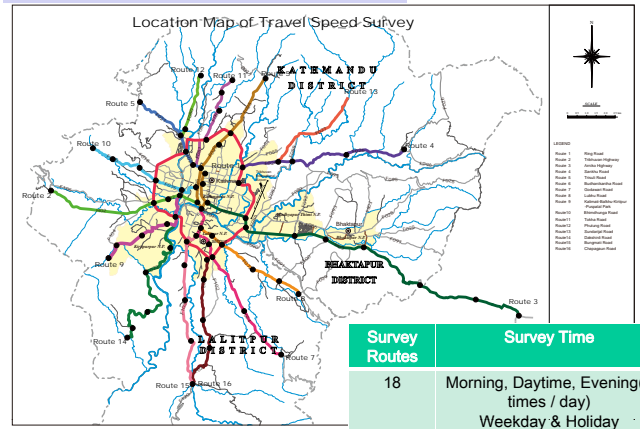
### Saturated Intersections

- 10 major intersections are saturated (more than 0.9).
  - New Baneshwor(G), Kalanki(A), Thapathali(E), Chabahil(I), Balaju(D), Sorakhutte(C) → more than 1.8



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### 6) Travel Speed Survey

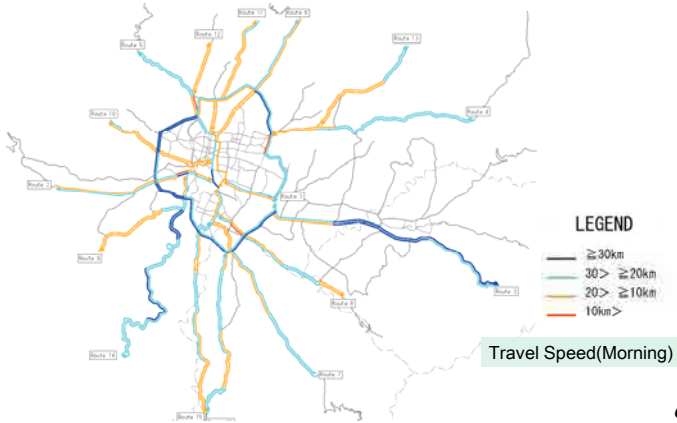


Survey Routes	Survey Time
18	Morning, Daytime, Evening (3 times / day) Weekday & Holiday

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### Result of Vehicle Speed Survey

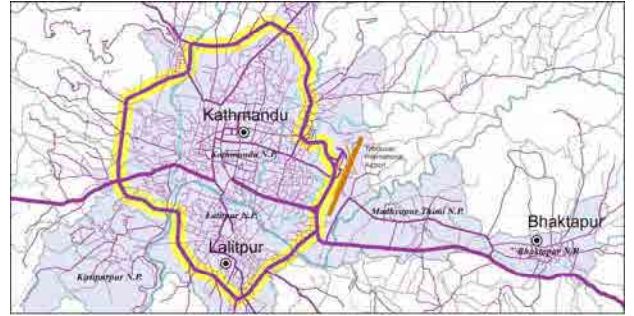
- Most of radial roads except Arnicco highway shows less than 20km/h.
- Roads inside Ring Road show less than 30km.



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### 7) Parking Survey

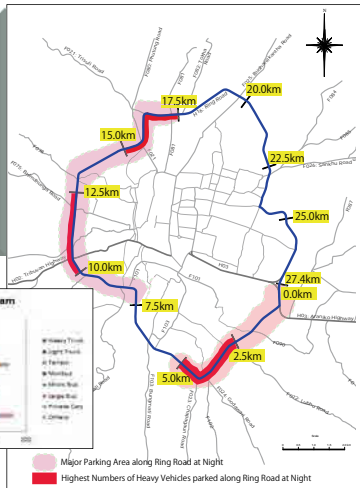
Survey Routes	Survey Time	Surveyed Vehicle Type
Ring Road (within ROW)	Midnight (from 11pm to 3am) Weekday	Heavy Truck, Light Truck, Large Bus, Minibus, Micro Bus, Tempo, Car



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### Result of Parking Survey

- Heavy Vehicles (Heavy Trucks & Large Buses) parking along Ring Road at Night (Balaju, Kalanki, Sadibato Intersection)



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### (3) Bus Transport Survey

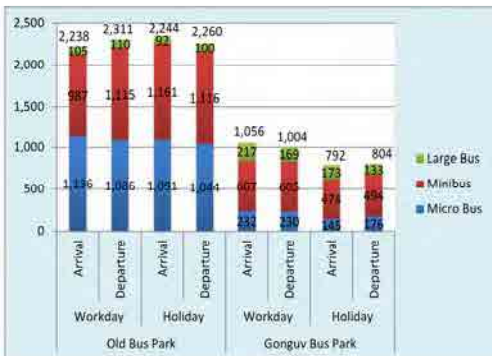
#### 1) Outline of Bus transport Survey

Type of Survey	Objective	Method/Result
Bus Traffic Count Survey	Counting bus numbers at Old Bus Park and Gonguv Bus Park	24hour count on one workday and one holiday
Bus OD Survey	Capturing bus OD by interview to bus drivers at Old Bus Park and Gonguv Bus Park	1,157 drivers at Old Bus Park and 693 drivers at Gonguv Bus Park were interviewed during 24hours on one workday.
Bus Passenger Interview Survey	Grasping of characteristics of passenger activity at Old Bus Park and Gonguv Bus Park	2010 passengers at Old Bus Park and 517 passengers at Gonguv Bus Park were interviewed during 24hours on one workday.
Public Transport Firm Interview Survey	Obtaining information of bus operation and administration	80 public transport firms including associations of operators were interviewed.

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### 2) Bus Traffic Count Survey

At Old Bus Park, 2,200-2,300 buses depart on every workday and holiday. At Gonguv Bus Park, 1,000 buses depart on workday and the number decreases to 800 on holiday.



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### 3) Bus OD Survey

Number of passenger was estimated by applying average passenger to the number of buses. As a total, 68,000 passenger which account for 2.8% of population in Survey Area, is presumed to be using Old Bus Park.

Average Number of Passenger on a Bus (person/vehicle)

	Micro Bus	Minibus	Large Bus	
Old Bus Park	Arrival	7.3	12.3	18.4
	Departure	16.0	22.4	43.7
Gonguv Bus Park	Arrival	4.2	6.1	15.2
	Departure	6.2	8.9	30.5

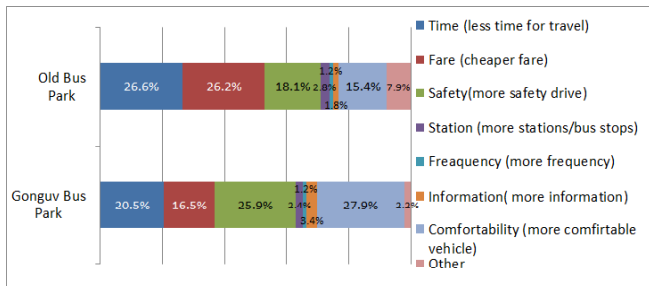
Estimated Number of Passenger

	Micro Bus	Minibus	Large Bus	Total	
Old Bus Park	Arrival	8,300	12,100	1,900	22,400
	Departure	17,400	25,000	3,600	46,000
Gonguv Bus Park	Arrival	1,000	3,700	3,300	8,000
	Departure	1,400	5,400	5,200	12,000

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#### 4) Bus Passenger Interview Survey

- One of the questions is requirement for bus operation. Largest requirements by Old Bus Park passenger are time and fare.
- On the other hand, requirements by Gonguv bus park are safety and comfortability.



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#### 5) Public Transport Firm Interview Survey

6,590 Buses and Tempos are owned by 72 public transport firms, and 6,010 Buses and Tempos are operating within Kathmandu Valley.

Number of Buses Owned by Public Transport Firms

	Large Bus	Minibus	Microbus	Tempo	Total
Within Kathmandu Valley	1,270	2,070	1,800	890	6,010
Out of Kathmandu Valley	380	30	160	0	570
Total	1,650	2,100	1,950	890	6,590

191 operation routes for Minibus, Micro Bus and Tempo. Most of their terminals are concentrating to Kathmandu City Center.

Number of Operation Route and Its Terminal (within Kathmandu Valley)

	Kathmandu Center	Gonguv Bus Park	Lagankhel	Others	Total
Minibus	49	4	27	15	95
Micro Bus	51	1	5	18	75
Tempo	14	0	3	4	21
Total	114	5	35	42	191

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Bus Stations in City Center and Estimated Operation

	Large Bus	Minibus	Micro Bus	Total
Ratnapark	45	288	3,438	3,771
NAC	0	367	2,042	2,409
Sahidget	0	69	833	902
Total	45	724	6,313	7,037



- According to the Firm Interview, there are 191 operation routes in Kathmandu Valley. 60% of routes has its terminal in City Center Area.
- Roadside area of major road in City Center is provided for terminals except for Old Bus Park.
- Number of operation from these roadside terminals exceeds the operation from Old Bus Park.

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### 3. Major Findings and Traffic Issues

#### Road Traffic

1. Road structure: Overconcentration to Kathmandu City Center
  - Concentration of city functions, concentration of road network
  - Citizens' activity in Kathmandu Valley is heavily dependent on functions in City Center.
2. Roads inside Ring road: Roads inside the Ring Road are already saturated
  - Result of speed survey → Less than 20km/h on major arterial roads
  - Intersection congestion → Major intersections are saturated
  - Partial Improvement of roads cannot solve the situation.
3. Roads outside Ring road: Insufficient road capacity in north-south direction
  - Urban expansion to north/south direction will continue.
4. Traffic Mode: Drastic increase of Motorcycle
  - Not negligible effect on traffic. In short term, measures to control motorcycle are most essential.

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#### Public Transport

In order to alleviate traffic congestion, use of public transport should be promoted more. Improvement of public transport is required from this viewpoint.

1. Concentration to City Center
  - Concentration of bus routes to Kathmandu City Center
  - Scatter of bus terminals around Kathmandu City Center
  - Function of Old Bus Park is not sufficient for the central terminal of Kathmandu Valley
2. Inefficient transportation by Minibus, Micro Bus and Tempo
  - Small passenger capacity for mass transportation
  - Individualistic operation by small operators: Necessity of organized and systematic operation
3. Improvement of services for passengers
  - Irregular operation without timetable
  - Overcrowded passenger cabin
  - Passengers have to wait long at bus stops.

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Ministry of Physical Planning and Works  
Department of Roads



#### Data Collection Survey on Traffic Improvement in Kathmandu Valley

#### 1<sup>ST</sup> WORKSHOP

#### Chapter 6 ROAD INVENTORY SURVEY

27<sup>th</sup> April, 2012  
M. Toriu / JICA Survey Team

CHAPTER 6

CONTENTS

- 6.1 Outline of Road Inventory Survey
- 6.2 Target Road of the Survey
- 6.3 Survey Items and Output

6.1 Outline of Road Inventory Survey

6.1.1 Road Inventory Survey

Road Inventory Survey was conducted on major arterial roads constituting the frame of Kathmandu Valley which includes National Highways, Feeder Roads and Urban Roads in December, 2011 to identify the existing characteristics, problems and issues on the traffic and road network in Kathmandu Valley.

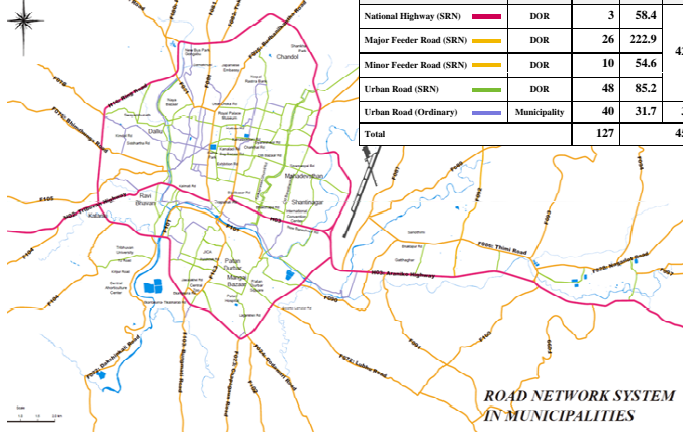
6.1.2 Roadside Condition Survey

Roadside Condition Survey was conducted on National Highways, Feeder Roads and Major River Corridors to clarify the possibility of improvement for future road widening in terms of the difficulty of land acquisition.

6.2 Target Road of the Survey

6.2.1 Road Inventory Survey

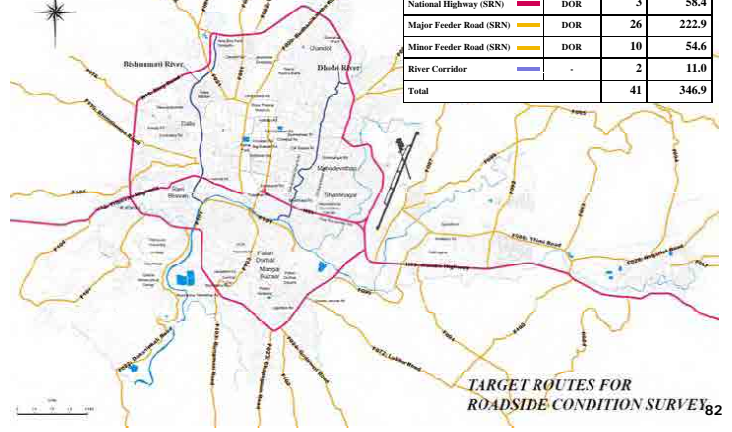
Class of Roads	Jurisdiction	Number of Routes	Length	
			Total km	SRN Total km
National Highway (SRN)	DOR	3	58.4	421.1
Major Feeder Road (SRN)	DOR	26	222.9	
Minor Feeder Road (SRN)	DOR	10	54.6	
Urban Road (SRN)	DOR	48	85.2	
Urban Road (Ordinary)	Municipality	40	31.7	
<b>Total</b>		<b>127</b>	<b>452.8</b>	



6.2 Target Road of the Survey

6.2.2 Roadside Condition Survey

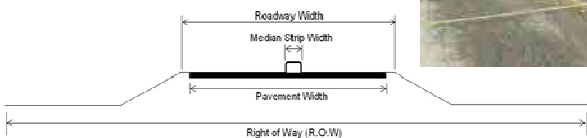
Class of Roads	Jurisdiction	Number of Routes	Length km
National Highway (SRN)	DOR	3	58.4
Major Feeder Road (SRN)	DOR	26	222.9
Minor Feeder Road (SRN)	DOR	10	54.6
River Corridor	-	2	11.0
<b>Total</b>		<b>41</b>	<b>346.9</b>



6.3 Survey Items and Output

6.3.1 Measurement Items (Road Inventory Survey)

- (a) Road Width (Roadway Width, Pavement Width)
- (b) Pavement (Pavement Type, Pavement Condition)
- (c) Bridge and Box Culvert (Length, Width)
- (d) Sight Distance (Location of Short Sight Distance)
- (e) Condition of Traffic Control
- (f) Parking Place (Roadside)



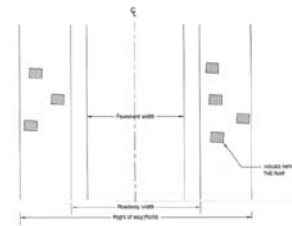
6.3 Survey Items and Output

6.3.1 Measurement Items (Roadside Condition Survey)

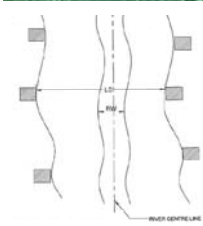
- (a) Number of Houses encroached inside Right of Way
- (b) River Width
- (c) Land Clearance



Satellite Image



Roadside Condition Survey Cross Section



River Corridor Cross Section [RW=River Width, LC=Land Clearance]

### 6.3 Survey Items and Output

#### 6.3.2 Survey Outputs (National Highway & Major Feeder Road)

Route No.	Name of Road	Ref No-1	Ave. Lane No-2	Pavement Type				House within ROW	
				BT (km)	GR (km)	ER (km)	Total (km)	Total No.	No. per km
National Highway	1 Tribuvan Highway	H02	2.0	12.1	0.0	0.0	12.1	935	77
	2 Arniko Highway	H03	4.0	18.7	0.0	0.0	18.7	230	12
	3 Ring Road	H16	4.0	27.6	0.0	0.0	27.6	210	8
Major Feeder Road	4 Trisuli Road	F021	1.5	11.6	0.0	0.0	11.6	336	29
	5 Dakshinkali Road	F022	1.5	10.1	0.0	0.0	10.1	341	34
	6 Chappagaun Road	F023	1.5	8.6	2.6	0.0	11.2	707	63
	7 Godswari Road	F024	1.5	9.5	0.0	0.0	9.5	698	73
	8 Budhanikantha Road	F025	2.0	10.8	0.0	0.0	10.8	726	67
	9 Sankhu Road	F026	1.5	13.4	2.1	0.0	15.5	1028	66
	10 Nagarkot Road	F028	1.5	18.0	0.0	0.0	18.0	507	28
	11 Lubhu Road	F072	1.0	9.3	0.0	3.9	13.2	617	47
	12 Bhimdhunga Road	F075	1.5	6.1	1.9	0.0	8.0	522	65
	13 Phulung Road	F080	1.5	3.6	2.6	0.0	6.2	557	90
	14 Tokha Road	F082	1.5	4.1	1.5	0.0	5.6	414	74
	15 Thimi Road	F086	2.0	7.5	0.0	0.0	7.5	738	98
	16 Bungmati Road	F103	2.0	12.0	6.2	0.0	18.2	899	49

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### 6.3 Survey Items and Output

#### 6.3.2 Survey Outputs (National Highway & Major Feeder Road)

##### (a) National Highway

- Tribuvan Highway (H02) is the most important highway carrying heavy traffics in and outward of Kathmandu valley, however, the present road conditions are very low and too sever when a function and traffic density of the road is considered.
- Improvement and strengthening of this highway is needed urgently.
- However, along this highway, there are many encroached houses within right of way. The study on an alternative road detouring around the existing road will be necessary.

##### (b) Major Feeder Road

- Lubhu Road (F072) is most narrow road which is just 1 lane only. Furthermore the earthen road is remaining only along this road. The Lubhu is planned to be one of the section point for planned Outer Ring Road. Therefore, the improvement and upgrading of the pavement are required for future traffic demand.
- Almost all the major feeder roads have been upgraded to black top pavement already. However there still exist the gravel sections which need to be upgraded as soon as possible.
- Excluding Budhanikantha Road (F025), Thimi Road (F086) and Bungmati Road (F103), the lanes for each road is less than 2.0. These major feeder roads play an important role to deal with the expanding city area. Therefore, upgrading of these roads by widening are required to meet the future traffic demand.

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### 6.3 Survey Items and Output

#### 6.3.2 Survey Outputs (Major Urban Road)

Route No.	Name of Road	Ref No-1	Ave. Lane No-2	Pavement Type				House within ROW	
				BT (km)	GR (km)	ER (km)	Total (km)	Total No.	No. per km
Major Urban Road	17 TU Gate - Naya Bazar (TU Road)	KMU001	2.0	1.7	0.0	0.0	1.7	No Data	
	18 Kalimati - Balkhu (TU Road)	KMU002	4.0	1.7	0.0	0.0	1.7	No Data	
	19 Kalimati - Bijeshwari - Sorhakhutte	KMU004	1.5	3.5	0.0	0.0	3.5	No Data	
	20 Tripura Marga	KMU012	6.0	0.5	0.0	0.0	0.5	No Data	
	21 Prithvi Path	KMU013	6.0	0.9	0.0	0.0	0.9	No Data	
	22 Sinamangal Road - Dilli Bazar Road - Bag Bazar Road - Ratnapark Road	KMU014	2.0	4.2	0.0	0.0	4.2	No Data	
	23 Gyanseshwor Road	KMU016	2.0	3.0	0.0	0.0	3.0	No Data	
	24 Chabahil - Narayanhili Path	KMU017	2.0	3.5	0.0	0.0	3.5	No Data	
	25 Durbar Marg	KMU021	4.0	1.6	0.0	0.0	1.6	No Data	
	26 Maharajgunj - Dilli Bazar - Kumari Galli 2	KMU024	1.5	4.0	0.0	0.0	4.0	No Data	
	27 Pattisputali Road - Old Baneshwor Road	KMU026	4.0	2.2	0.0	0.0	2.2	No Data	
	28 Teku - Kalo Pul Road	KMU029	1.5	0.5	0.0	0.0	0.5	No Data	
	29 Gwarko - Pulchowk - Sanepa - Kalo Pul Road	LMU001	2.0	4.8	0.0	0.0	4.8	No Data	
	30 Lagankhel Road	LMU004	4.0	2.3	0.0	0.0	2.3	No Data	

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### 6.3 Survey Items and Output

#### 6.3.2 Survey Outputs (Major Urban Road)

##### (c) Major Urban Road

- All major urban roads have already been upgraded to black top pavement. However, Kalimati-Bijeshwari-Sorhakhutte (KMU004), Maharajgunj-DilliBazar-Kumari Galli2 (KMU024) and Teku-Kalo Pul Road (KMU029) have only 1.5 lanes though they are carrying a large traffic.
- Kalimati-Bijeshwari-Sorhakhutte (KMU004) is under improvement by Kathmandu Sustainable Urban Transport Project to reduce the traffic congestion within Kathmandu city core area.
- Maharajgunj-DilliBazar-Kumari Galli2 (KMU024) will be widened within a year under the project administrated by KVTDC cooperated with MTP and DOR.
- However, the improvement of the Teku-Kalo Pul Road (KMU029) is also needed to improve the capacity of Bagmati river crossing as soon as possible.

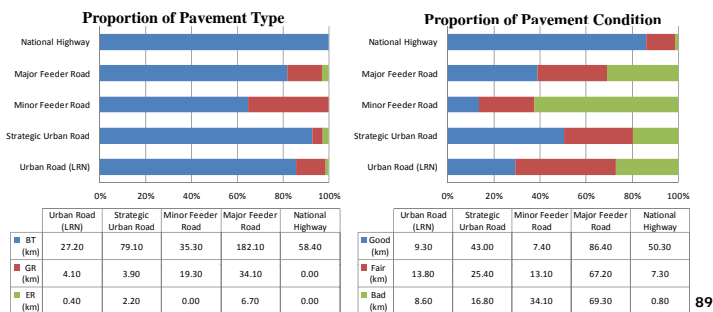
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### 6.3 Survey Items and Output

#### 6.3.2 Survey Outputs (Summary of Road Condition)

##### (a) Pavement type and its conditions

- All national highways are already improved with an asphalt pavement (black top) and maintained in relatively good condition.
- However, there are still gravel and earthen roads on major feeder roads and strategic urban roads, and only 40% - 50% of their surface is in good condition



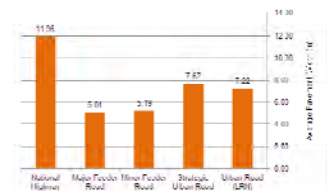
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### 6.3 Survey Items and Output

#### 6.3.2 Survey Outputs (Summary of Road Condition)

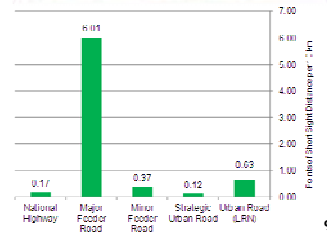
##### (b) Road Width

- Road width of major feeder road is only about 5.0m which is equivalent to the road width of 1.5 lanes road.
- These roads should be widened to 2 lanes at least, so that a large bus can run and operated on these roads efficiently and effectively to cope with the rapid increase of traffic demand.



##### (c) Sight Distance

- About 6 points in 10km are found where the sight distance is too short to drive safely.
- Therefore, the improvement of road alignment or some safety provision seems to be required.



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Data Collection Survey on  
Traffic Improvement in  
Kathmandu Valley

1<sup>ST</sup> WORKSHOP

Chapter 7 Land-Use Survey and  
Urban Planning Study

27<sup>th</sup> April, 2012

A. Otake/ JICA Survey Team

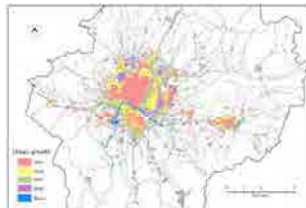
CONTENTS

- 7.1 Outline of Land-Use Survey and Urban Planning Study
- 7.2 History and Urbanization of Kathmandu Valley
- 7.3 Development activities in Kathmandu Valley
- 7.4 Policy, Institution and Legal Framework
- 7.5 Key Urban Sector Issues

7.1 Outline of Land-Use Survey & Urban Planning Study

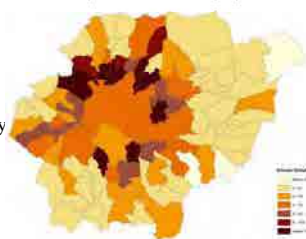
7.1.1 Land use survey

- Satellite image mapping and analysis
- Population growth trend
- Development project survey
- Field survey and interview survey
- Types of Development Activities



7.1.2 Urban Planning Study

- History of urban growth
- Law and policy study
- Analysis on Administration
- Development Vision and Scenarios study
- Population projection and distribution study



7.2 History and Urbanization of Kathmandu Valley

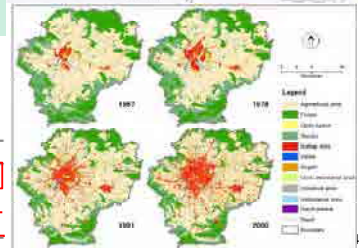
7.2.1 History of KV

- Before Gorkha kingdom
  - Urbanized area was limited within old town area between Vishnumathi river and Kanti Path.
- After Gorkha kingdom
  - Urban area expanded to west before Dhobi Khola during Gorkha era.



7.2.2 Urban Area Expansion

- From 1967 to 2000, urban/buildup area increased about 8,000ha. At the same time, shrubs and forest area reduced 9,000ha.
- Agricultural land changed not so much.



Tab. 7.1 Land use statistics

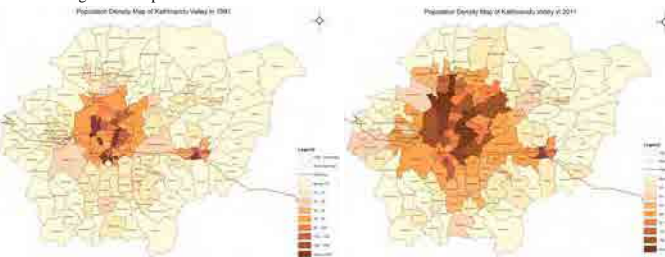
Land use type	1967		1978		1991		2000	
	ha	%	ha	%	ha	%	ha	%
Shrubs	13,563	19.81	12,124	17.71	8,129	11.87	7,150	10.44
Forest	25,800	37.84	16,311	23.83	13,887	20.29	13,261	19.43
Water	1,337	1.95	1,380	2.02	1,34	1.96	1,266	1.85
Urban build-up area*	2,010	2.94	3,367	4.91	6,313	9.32	9,717	14.19
Open space	100	0.15	95	0.14	135	0.20	171	0.25
Agricultural area	34,440	50.97	34,186	50.40	38,457	56.46	38,854	53.83
Total	68,458	100.00	68,458	100.00	68,458	100.00	68,458	100.00

7.2 History and Urbanization of Kathmandu Valley (cont.)

7.2.3 Population Growth in Kathmandu Valley

- Major population settlement was within the Ring Road in 1991.
- But in 2011, most of the area inside of Ring Road, population density of was jumped up to more than 160 p/ha and some area reached 200 p/ha.
- Population density outside of the Ring Road also went high over 80 p/ha.

City	Area (sq km)	Population (million)	Ave. density (p/ha)	Highest density (p/ha)
Dhaka, Bangladesh	324	11.17	350.0	
Mumbai, India	777	20.90	271.0	
Macau, China	71	0.56	773.1	600.0
Paris, France	105	2.167	205.6	249.3
London, GB	1,479	7.55	47.8	162.0
Tokyo Metro, Japan	622	8.95	143.8	218.7
Osaka city, Japan	222	2.67	119.9	200.0



7.3 Development activities in Kathmandu Valley

7.3.1 Current situation

- Law & regulation
  - Series of Land Reform.
  - Apartment Ownership Act 1997
- Private sector
  - A growth of 300 % from 2003 to 2008 has been widely reported..
- Housing loan
  - Number of financial institutes increased rapidly.
- Phenomenon changed
  - Central bank policy change to reduce real estate loan to 25% in the bank portfolio by the end of fiscal year 2012/13.
  - Ceiling of housing loan was reduced to NRs. 8million.
- After earthquake in eastern Nepal in 2011, people avoid high rise apartment.
- Private sector is an engine for economic development. So that it should be controlled by the good manner.



Planning Permit from Municipalities

Year	Kathmandu			Lalitpur			Bhaktapur		
	No. of Project	Area (m <sup>2</sup> )	Unit/Plot	No. of Project	Area (m <sup>2</sup> )	Unit/Plot	No. of Project	Area (m <sup>2</sup> )	Unit/Plot
2003	3	31,370	11	3	31,370	11			
2004	3	36,201	89	4	45,217	222			
2005	7	101,347	544	2	31,404	0	1	32,682	101
2006	5	69,017	375	2	20,907	227	2	20,711	45
2007	27	159,909	1,395	2	8,942	265	1	4,749	7
2008	29	190,318	2,250	13	131,836	1,408	1	17,607	88
2009	22	174,290	2,038	9	69,565	898	2	19,876	64
2010	19	191,157	2,023	11	76,221	2,660	1	1,725	10
2011	10	83,593	577	7	51,885	509			
Total	122	1,005,872	9,253	53	468,047	5,320	10	86,760	3,274

Number of Financial Institutions

Types of Financial Institutions	Number of Institutions in Mid July					
	1980	1985	1990	2000	2005	2010
Commercial Banks	-	2	3	5	10	13
Development Banks	2	2	2	3	7	26
Financial Companies	-	-	-	21	45	60
Micro Credit Development Banks	-	-	-	4	7	11
Total	4	5	7	38	72	114
Saving and Credit Cooperatives	-	-	-	6	19	20

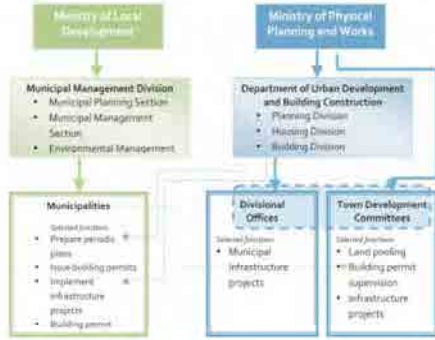
### 7.3 Development activities in Kathmandu Valley (cont.)

#### 7.3.2 Key player

- KVTDC & Municipalities
- Demarcation is not clear. Overlapping.
- Law capacity of municipalities to issue completion certificate.



- Strong planning is required to set up harmonized plan and regulation for the Kathmandu Valley.
- Municipalities should be strengthen their capacity to implement plan and to control development activities.

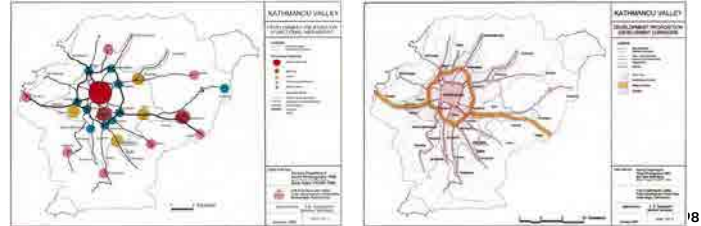


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### 7.4 Policy, Institution and Legal Framework

#### 7.4.1 Policy on Urban Development

- Neglected sector in the National Plans (UN-HABITAT, 2010)
- Only 0.5% of budget allocated for urban and housing sector in 10<sup>th</sup> Five Year Plan.
- National Urban Policy (2007)
- It prepared by the MPPW/DUDBC in 2007, attempts to address the considerable challenges apparent in the urban sector at present in an integrated and well-coordinated manner.
- Kathmandu Valley Long Term (2002-2020) Development Concept (KVLTDTC)
- The KVLTDTC was prepared in 2002 by the MPPW/KVTDC, and remains the guiding framework for most of Government's urban development planning and investment in the Kathmandu Valley, including the proposal for formation of the KVUDC.



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### 7.4 Policy, Institution and Legal Framework (cont.)

#### 7.4.2 Legal and Regulatory Frameworks on Urban Planning

- Town Development Committee Act(1963)
- Town Development Implementation Act (1972)
- KVTDC was established.
- Town Development Act (1988)
- The Town Development Act (TDA) is intended to facilitate the reconstruction, development and expansion of urban areas, by means of a series of measures giving municipalities and town councils the authority to development activities such as Land Pooling project.
- Local Self-Governance Act (1999)
- Giving municipalities and Village Development Committees authority to raise funds by taking loans and levying taxes and carry out town development plans and housing programs .

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### 7.4 Policy, Institution and Legal Framework (cont.)

#### 7.4.3 Legal and Regulatory Frameworks on Building Construction

- Building Act (1997), National Building Code (1996) and Building By-laws
- Building Act of Nepal was enforced in 1997, applicable for all municipalities and villages in Nepal.
- Apartment Ownership Act (1997) and Apartment Ownership Regulation (2003)
- Promulgation of *Apartment Ownership Act* (1997) paved road for private sector to intervene into the housing sector.
- Kathmandu Valley Building By-law (2007)
- The Building Byelaws were prepared by the KVTDC including general land use zoning maps for the entire Kathmandu Valley.

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### 7.4 Policy, Institution and Legal Framework (cont.)

#### 7.4.4 Urban development permission system

##### ■ Procedure

Process	Authority	Remarks
1 Planning permit	KVTDC	In KV, KVTDC is in charge of issuing planning permit. Check BD level documents.
2 Initial Environmental Examination (IEE)	Related ministry	For urban development, MPPW is in charge for IEE.
3 Environmental Impact Assessment (EIA)	MOE	If necessary. Depend on the project size.
4 Structure safety permit	Division office of DUDBC	Check all technical function based on National Building Code
5 Building permit	Municipality or VDC	
6 Completion certificate	Municipality or VDC	Necessary IEE/EIA certificate and Structure safety permit
7 Registration of property	Land Revenue Office	

##### ■ Effectiveness of the permission system

- Developer or owner of group housing and joint housing (apartment) cannot sell any housing units without registration of the property at Land Revenue Office. It is quite functioning to avoid low quality or illegal building.
- However, mainly for individual building, building owners don't want to register their building at Land Revenue Office to avoid taxation. So that it is not necessary to have a structure safety permit and completion certificate for their building.

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### 7.5 Key Urban Sector Issues (Proposed from DUDBC and KVTDC)

#### 7.1.1 Key Urban Sector Issues

- Existing Road Network Deficiencies
- Land Management Policy for the Kathmandu Valley

#### 7.5.2 Key Urban Sector Issues

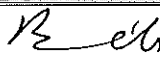





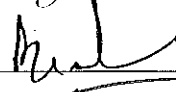


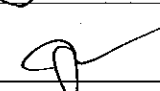


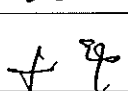
Initiative	Rationale
Prepare a Comprehensive Development Plan for the Kathmandu Valley	The lack of any comprehensive guiding framework for all ongoing and proposed future development.
Review & Update the KV Land Use, Zoning Plan & Development Control Regulations & Building Byelaws	The existing KV Land Use Plan was prepared in 1976 and only partially updated in the 1990's.
Prepare a Strategic Transportation Plan for the Kathmandu Valley	Rapid urbanization in recent years has brought about a significant increase in the volume of private motor vehicles in the KV, as well as related problems of traffic congestion and pollution.
Institutional Strengthening, Capacity Building & Training	Unprecedented population growth and urbanization in recent years has placed an excessive burden on institutions at all levels responsible for urban management. Capacity building & training.

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**DATA COLLECTION SURVEY  
ON  
TRAFFIC IMPROVEMENT  
IN  
KATHMANDU VALLEY  
INTERIM REPORT WORKSHOP**

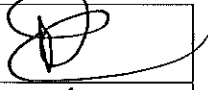

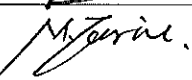
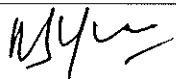
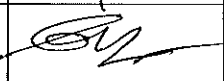
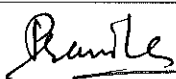
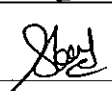


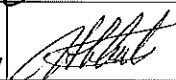

**PARTICIPANTS LIST**

Date : April 27<sup>th</sup>, 2012  
Time : 14:00(PM) to 16:30(PM)  
Venue : Everest Hotel Conference Room

No	NAME	ORGANIZATION	POSITION	SIGNATURE
1	BINDU S. RAWA	SRMU JICA	Road & dm	
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3	Yam Narayan Joshi	SRMU	Engineer	
4	Bhushan Tuladhar	UN Habitat	CTA, South Asia	
5	Sagar Krawali	Roads board Nepal	Technical Dirct	
6	Mukunda Raj Adhikari	DRO Kathmandu	Engineer	
7	Devi Prasad Acharya		Project Co-Ord	
8	Manjul K. Manandhar	PullBright.com	Director	
9	Satoshi Fujii	JICA	Sensor Representative	
10	Ken C/2012	JICA	King	
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12	Sang K. Bhandari	DOR	SDE	
13	Nishu K. Bhandari	JICA	HR	

	Name	organization	position	signature
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15	Dinker Sharm	DOR	DC	
16	Al KOSTI YIJIM	JICA	HR	
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18	Amit K. Shrestha	DOR	engineer	
19	Bindu Adhikari	DOR	Sub-Engineer	
20	Bishwo Khanal	SILT	Engineer	
21	Dan Kumar Shaky	DOR	Engineer	
22	Krishna Bdr. P...	"	"	
23	Karuna Ratna Shaky	KUDA	SDE	
24	Pashupati Gyawali	BsBRP-Thapathali	Engineer	
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26	Durga D. Joshi	full time	consultant	
27	Yogendra Rai	DDG/DOR	DOR	
28	Prakash Bhandari	P.C./DOR	DOR	
29	Pawan Giri	MTAD	Dy.S.P.	
30	Bishnu Om Bede	DDG (DOR)	DDG	
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32	Bimal Rijal	KMPC	Dept Chief	
33	Suman Udas	CEN	Prog coordinator	
34	Kapil Dngol	DOTM	Dir.	
35	Saurab Rana	JICA	Program officer	
36	Shyam Kharel	DOR	SDE	

	Name	organization	position	signature
37	Go Shrestha	DOR	SDE	Ma
38	Suresh Srisdal	DOR	SDE	Sury
39	Subasaa Joshi	GEODE	MO	Joshi
40	SHIVA ADHIKARI	DOR	SDE	Su
41	Padma Bdr. Jha	P. Khark Union	Prof	Jha
42	Thussitha C. Shah	NEC	Ass. Prof.	Shah
43	Suresh Poudel	DOR	Engineer	Suresh
44	Mina Gyawali	DVDBC	SDE	Mina
45	Purna S. Shrestha	DOR	SDE	Srestha
46	Indu S. Dhakal	DOR	PT	Dhakal
47	Ayodhya Shrestha	DOR	DE	Suresh
48	Niraj Sharm	RSUTP	SDE	Niraj
49	Shiva Lal Dahel	DOR	Engineer	Su
50	Madhus Karki	DOR	ODG	Karki
51	PARHAD AHMED	WORLD BANK		Ahmed
52	Xerendra Karki	DOR	RD/CRED	Karki
53	Bhimraj Karki	DOR, RTU	Er.	Karki
54	Suresh Neupane	MOPW	Er.	Neupane
55	Bandana Acharya	Foot track	Er.	Acharya
56	Anil Marsani	IOE	lecturer	Marsani
57	Chandra Subedi	DOR	Unit Chief	Subedi
58	Lal Kc.	FBC	Principal	Kc
59	Ku Dele	China	Chief Secretary	Dele

	Name	organization	position	signature
60	Saraj Khandel	Road Safety	Secretary	
61	Tej Raj Bhatt	MOPPH	J. S.	
62	Masahiro Torii	NK	JICA Survey Team	
63	Jaganmohan Ghimire	MOPDW	Tech. officers	
64	Udeependra Bhatt	Kantipur		
65	Pramila Bajracharya	ACAMP/DOR	PM	
66	Dr. Shyams K. Manandhar	Soil Test (Dtd)	M.S.	
67	Ajayra Sharna	NEP-Times	Journalist	
68	Mika MATSUMURA	KRI	Consultant	
69	Hiroki SHINKAI	NK	Team Leader JICA Survey Team	
70	Yasushi OHWAKI	EJEC	JICA Survey Team	
71	Akiro ODAKE	NK	"	J.T.T