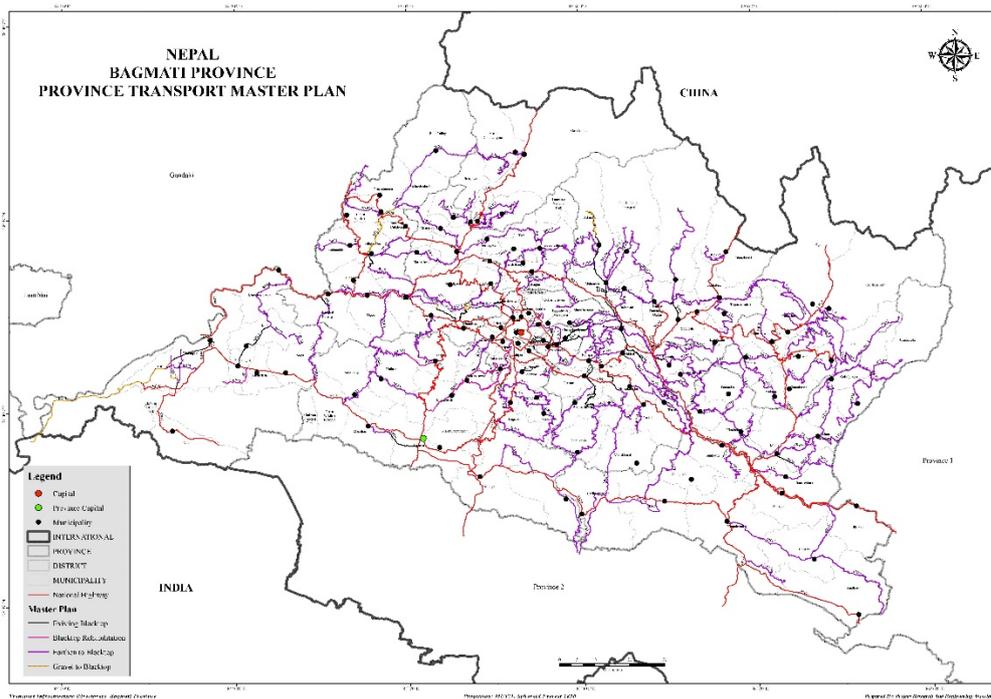




Province Government
Bagmati Province
Ministry of Physical Infrastructure Development
Transport Infrastructure Directorate
Hetauda, Makwanpur

Provincial Transport Master Plan (PTMP)



VOLUME
I
MAIN
REPORT

June,
2021

MESSAGE

MESSAGE

FOREWORD

It is my great pleasure to introduce the Provincial Transport Master Plan (PTMP) of Bagamati Province of Nepal. PTMP is a planned document for the development of the Provincial Roads to enhance the accessibility condition of transport infrastructure and services in the province to upgrade the road network and improve connectivity. The integrated road development approach has been envisaged to streamline the budget expenditure on priority investment on road infrastructure development.

I believe this document will be helpful to materialize the Provincial Public Road and Vehicle Infrastructure Act, through planning, resource mobilization, implementation, and monitoring of road development. This document is very essential in lobbying the donor agencies through the central government to attract the fund gap. Furthermore, this document will be supportive in avoiding prevailing duplication in resource allocation in the road interventions by considering the basket fund approach on the overall transport infrastructure of the province.

I would like to express my gratitude for the support of the Bagamati Province government for the financial support, especially Chief minister Mr. Dormani Paudyal, Minister (Ministry of Physical Infrastructure Development) Mr. Rameswar Phuyal, the secretaries Mr. Sanjeev Baral and Mr. Tejraj Bhatta, Senior Divisional Engineer Navin Kumar Singh, Engineer Punya Ram Sulu and Engineer Jyanendra Pun for the valuable input on finalization of the document. I would like to thank all six IDOs, Er. Hari Prasad Ojha and Road Expert Er. Aashish Khadka of the directorate for the valuable input and comments. I would like to thank Dr. Hare Ram Shrestha, Team Leader, and Raghab Bista, and team members from Project Research and Engineering Associates (PRENA) for their continuous dedication and technical input to prepare this document.

Last but not least, I would like to express my heartfelt gratitude to the all engineers and staff of the Transport Infrastructure Directorate and Ministry of Physical Infrastructure Development, Bagamati Province for providing valuable contribution to produce this report. Any pioneering and constructive suggestions regarding the document will be highly appreciated.

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May 2021

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ABBREVIATIONS

ADB	Asian Development Bank
AGT	Automated Guideway Transit
ARM	Araniko RajMarga
ARMP	Annual Road Maintenance Plan
BRT	Bus Rapid Transit
BT	Black Topped
BP	Bagmati Province
CBS	Central Bureau of Statistics
CRN	Central Road Network
DCC	District Coordination Committee
DoLIDAR	Department of Local Infrastructure Development and Agriculture Road
DOR	Department of Road
DPR	Detailed Project Report
DRCN	District Road Core Network
DSRM	Dhulikhel-Sindhuli-Bhittamod Rajmarg
ER	Earthen Road
GDP	Gross Domestic Products
GIS	Geographical Information System
GPS	Global Positioning System
GR	Gravel Road
GoN	Government of Nepal
IDO	Infrastructure Development Office
ICD	Inland Container Depot
JICA	Japan International Cooperation Agency
Km.	Kilometer
KSUTP	Kathmandu Sustainable Urban Transport Project
KVDA	Kathmandu Valley Development Authority
KVRR	Kathmandu Valley Ring Road
LGCDP	Local Governance and Community Development Programme
MoFAGA	Ministry of Federal Affairs and General Administration
MRM	Mahendra Rajmarga
MT	Metric Ton
NH	National Highway
NTP	National Transport Policy
PH	Provincial Highway
PPP	Purchasing Power Parity
PR	Provincial Roads
PRM	Prithivi Rajmarga
PRN	Provincial Road Network

PTMP	Provincial Transport Master Plan
SDC	Swiss Development Cooperation
SDG	Sustainable Development Goal
SRN	Strategic Road Network
TID	Transport Infrastructure Directorate
TRP	Tribhuvan Rajpath

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

Transport infrastructure is a key driver of the national, provincial, and local economy of the country through developing connectivity between province to province, cities to cities and rural to cities and through a physical network of goods, services, capital, and labor. The objective of the 15th Plan (Fiscal Year 2019/20 – 2023/24) of Nepal is to develop transport service competitive, accessible, reliable, safe, inclusive, disciplined, and to facilitate movement and transportation to achieve the goal of modern, accessible, reliable, environment-friendly, and infrastructure-friendly transport services under the long term vision and goal, “*prosperous Nepal, happy Nepali*”. In the last three consecutive budgetary policy, about 70 % of the total capital budget has been allocated to infrastructure development at the national, provincial, and local level for developing transport infrastructure for broader and long development perspective and macro and micro perspective for cost-effective and fast delivered international and national trade, fast flow of goods and services between production and market and quality national and international tourism for achieving higher economic growth.

As a major economic driver, transport infrastructure development is highly prioritized in three layers of government from the federal government to the provincial government to the local government for inclusive and bottom-up rapid development with its significant contribution to GDP, sector development, and household economy. In this context, out of Seven Provinces of the country, constitutionally endorsed in the new constitution of Nepal, 2015, Bagmati Province has given top priority on transport infrastructure development for better connectivity and better provincial economy for contributing national vision and mission, *prosperous Nepal, happy Nepali*. In the development policy perspectives, its reflection can be found with the following justifications; Firstly, the Bagmati Province is located in the central region of country and the capital of country, Kathmandu lies in this province. The poor and weak connectivity between Kathmandu and Hetauda is a major barrier to the movement of goods, services, investment, technology, and human resources for goods, service, capital, technology, and labor market for diverging development. Its result is poverty and inequality issue, despite higher rank in HDI. In addition, this province is naturally rich in high Himalayas (Gaurishankar, Langtang, Jugal, and Ganesh Himal), biodiversity, and natural resources (water, forest, and land). Its reflection is undervalue and volume in production, trade, and market. Lower production and productivity are major issues. Furthermore, the existing transport infrastructure at national highway and provincial road transport carries a probability of accident risk and collateral damages in the absence of traffic systems, although these roads are operational 24 hours.

Over three years, the Bagmati Province has been enabling to develop the foundation of the Province level structure, function, and system as per priority for developing governance system, economic plan and development and law and order for the people of the Province. At

the Province level, all the development activities are equally focused by Province Government. Out of it, transport infrastructure development is the most demanding and most prioritized. The numerous provincial levels and local level road transport infrastructure are operating the transport services and improving the connectivity in the districts, metropolitan cities, municipalities, and rural municipalities. Therefore, the Provincial Transport Master Plan (PTMP) is valid and highly relevant for technically and economically justified sustainable transport infrastructure development of the province for overall province development and national development.

1.2 OBJECTIVE OF PTMP STUDY

The main objective of the study is to prepare a comprehensive Provincial Transport Master Plan (PTMP) of the Bagamati Province for the integrated development of road transport, air transport, and water transport to improve its transport situation. The specific objectives of the PTMP are as follows;

- To assess the existing transport infrastructure of the Province
- Identification, Classification and Prioritization of Provincial Roads.
- Prepare Provincial Transport Perspective Plan.
- Prepare Provincial Transport Master Plan and Priority Investment Plan.

1.3 SCOPE OF PTMP

The scope of the the work is to prepare a Provincial Transport Master Plan (PTMP) based on the proposed Province Public Road and Transport Infrastructure Road Act, proposed Bagamati Province Road Standards and other guidelines. It includes specific scopes as follows:

1.3.1 Review of Province Public Transport Act (Draft)

To review the Province Public Transport Act, the road standards and criteria for the classification of roads.

1.3.2 Province Annual Plan on Transport Sector

To review annual plan and budget of the transport sector. The plan has envisaged developing the roads integrated budget funding to the various roads within the province.

1.3.3 Review Strategic Road Networks

To review strategic roads within the Bagamati Province and the length of the strategic roads is calculated based on the DoR data of the strategic roads.

1.3.4 Identification of Province Roads and Prepare Road Network

To identify provincial roads in consultation with Provincial Parliamentarian, Mayor and Deputy Mayors and local political leaders. The selection criteria should be developed for the selection of the Provincial Roads.

1.3.5 Prepare Road Inventory of Province Highway and Province Roads

To prepare road inventory of the province including the strategic roads within the province, feeder roads, district roads, municipality roads, air service and other transport related services.

1.3.6 Prepare Province Transport Perspective Plan

To prepare Provincial Transport Perspective Plan (PTPP) from the inventory of the roads by categorizing the Provincial Highway (PH) and Provincial Roads(PR) and to plan for 20 years long with financial projection.

1.3.7 Analyze the Financial Resources of PTMP

To analyze financial Resources for the preparation of PTMP from the Provincial Financial resources and budget and to project its budget for next five years for the implementation of the PTMP road development.

1.3.8 Prepare First Five Year PTMP

To deliver Provincial Transport Master Plan (PTMP) for next five year within the provincial budget and resources limitation, along with the implementation plan.

1.4 LIMITATION OF STUDY

The study is limited on secondary data and information of transport infrastructures published by the federal government of Nepal, the Provincial government and the Municipality, National Planning Commission, Ministry of Finance, Ministry of Physical Infrastructure and Transport, Central Bureau of Statistics, Ministry of Financial Affairs and Planning and Ministry of Physical Infrastructure Development for the preparation of the PTMP.

Besides it, TOR limits as follows.

- Identification of Provincial roads based on the consultation with Provincial Parliamentarian, Mayor and Deputy Mayor of Municipality and local leaders of the Province and District.
- In financial analysis, cost calculation of these roads construction is limited to mean rates of factors of construction within the district of the Province.

CHAPTER 2: METHODOLOGY OF PTMP

2.1 METHODOLOGICAL APPROACH

This study follows a multidisciplinary methodological approach including socio economic approach, road engineering approach, aviation engineering approach, tunnel engineering and geological approach to conduct as given objectives and scope of study and to prepare comprehensive PTMP, Integrated Transport Infrastructure development and Investment Plan (of road transport, tunnel transport, air transport and rail transport). Under this approach, there is explorative and descriptive research design. In this design, quantitative and qualitative approach is used. As per limitation of study, the study has used secondary and primary data information. Secondary data and information of road, air, tunnel and rail transport, budget and policy are collected mainly from the federal government of Nepal, the Provincial government and the Municipality, National Planning Commission, Ministry of Finance, Ministry of Physical Infrastructure, Central Bureau of Statistics, Provincial Infrastructure and Planning Ministry and Road Transport Department of Nepal Government. As a supplementary, primary data and information related to identification and need of road, air, tunnel and rail transport are collected from Key Informant Interviewed with Provincial Parliamentarian, Mayor, Deputy Mayor and Local Leaders of Province and Districts.

2.2. DATA COLLECTION METHODS

2.2.1. Review of the Documents

In the desk work all the related documents were collected and reviewed available from the Federal Government of Nepal, the Provincial government and the Municipality, National Planning Commission, Ministry of Finance, Ministry of Physical Infrastructure and Transport, Central Bureau of Statistics, Ministry of Physical Infrastructure Development, Bagmati Province. The reviewed documents are as follows.

- The 15th Periodic Plan (2017-2022)
- The Provincial Plan Perspectives
- Provincial Transport Master Plan guideline (2019)
- Tunnel Road Project Design
- Public Transport Act 2021
- Rail Way Act 2020
- Road Board Act 2058
- Economic Procurement Act 2055
- Private Investment on Infrastructure Operation and Construction Act 2063
- Vehicle and Transportation Management Act 2049
- National Transport Policy 2058
- Environment Friendly and Transport Policy 2071
- Infrastructure Development and Operation in the Conservation Area Procedure 2065

- National Budget 2075/76
- National Budget 2076/77,
- National Budget 2077/78,
- Provincial Budget 2075/76,
- Provincial Budget 2076/77,
- Provincial Budget 2077/78,
- Province Public Road Act, 2076

2.2.2. Workshop and Meetings

Under this study, orientation workshop and consultative meetings were major data collection methods to collect qualitative and quantitative primary data and information related to identification of road infrastructure and need of the community at Provincial and District level. The data collection methods are as follows:

Orientation Workshop

PTMP Orientation Workshop was organized by Transport Infrastructure Directorate and/or Ministry of Physical Infrastructure Development in January 26 2020. The consultant presented its objective, methods, and approaches of the study team to orient the representative of the different Provincial Ministries, Road Departments and Provincial Parliaments. After then, PTMP's multi dimensions and facets were discussed.

Consultative Meetings and Draft Report

Consultative meeting was carried at the Province level on December 17, 2020 at Chit-wan by the consultant team. The Draft Report was presented and discussed on the road network and selection of roads from the districts. The meeting was headed by Secretary, Ministry of Physical Infrastructure Development and Director, Transport Infrastructure Directorate, Hetauda and the IDO chiefs from the respective districts

2.2.3. Rapid Observation and Identification of Provincial Road Network

According to the proposed Province Public Road and Transport Infrastructure Road Act, the provincial roads are classified as follows:

- Province Expressway
- Province Highway
- Province Road
- Province Urban Road
- Province Other Transportation modes

Province Expressway

Province Expressway is highway with control entries and exists within the province running two way traffic lane separated by median restricting lateral access to change the lane and no intersection at the grade (elimination of grade crossings). These are developed for high speed traffic flow. Expressway is a highway especially planned for high-speed traffic, usually

having no intersection at a grade, limited points of access or exit, and a divider between lanes for traffic moving in opposite directions.

Province Highway

Province Highway is the road that connects to National Highway with province headquarters or district headquarters, or, that Connects province headquarter with district headquarters, or, connects district headquarter with district headquarter within the same province, or, National highway with national highway.

Province Road

Province Road means the road connecting the local center from the National Highway or the road connecting the local level center from the Province Highway or the road connecting the local level center from the province headquarters or the road connecting the district level from the district headquarters or the road connecting two or more local level centers; or national highway or province highways connecting important economic and market centers, religious, historical, tourist, industrial and other important places.

Province Urban Road

Urban Road" means urban ring road, road connecting important places within the city, flyover, elevated road, subway, sky (overhead) bridge or bypass (bypass).

Province Other Transportation

Other modes of transportation such as Rail Transport, Air transport, Water Transport, Cable etc. fall under this class.

Following methodology is adopted for identification of roads within the Province;

Identification of Provincial Highway

All the available data, reports and relevant were collected and studied. The study team consulted with the respective IDOs through email and telephonic conversation for initial identification of provincial highways. Then after the workshop was organized by TID with the presence of MOPID, TID and all IDOs. The detailed and in-depth discussion during the workshop finalized the Provincial highways within the province.

Identification of Provincial Road (PR)

All the available data, reports and relevant were collected and studied. The study team consulted with the respective IDOs through email and telephonic conversation for initial identification of provincial roads. During the workshop as mentioned above the list of provincial roads are finalized.

2.2.4. Identification and Preparation of Provincial Road Inventory Map (PRIM)

The GIS points of the Provincial Road were collected during the field visit and also Road Measurement was taken after consulting the concerned officials of Physical Infrastructure

Development and Transport Infrastructure Directorate for listing the Provincial roads. After then, the road transport network map of the federal government was collected following Province Public Road Act 2076 and its classifications.

A topo map (1:25000 or 1:50000) was prepared as base map to draw the road alignment on GIS system. Provincial Road Inventory Map was prepared on A3 size, with base and reference map on GIS indicating all roads and other information as follows;

- Province boundaries
- District boundaries (thin black line)
- Municipality boundaries (thin dashed black line)
- Names of surrounding districts/states/countries
- Province headquarters
- District headquarters (red circle, including name)
- Municipality headquarters (yellow circle, including name)
- Major waterways and water bodies (light blue lines or shapes)
- SRN roads (thick black line, including road code)
- Provincial Highway
- Provincial Roads
- Road conditions (Blacktopped, Gravel, Earthen)
- Development Potential Sites
- Scale
- Compass pointer

GIS Map Preparation

The soft copy of the Province and the overlay operation of the various spatial and shape files were purchased for overlay inputs of the strategic roads, overlay of DRCN roads, input of spatial data of the Province, shape file with attribute table and GIS map after taking GIS points including

- Connectivity to province headquarter, district headquarter and Municipality center
- Shortest connectivity among the alternate roads
- Inter and intra district connectivity
- Connectivity to historical, religious important places
- Connectivity to development potential sites
- Accessibility to remote areas

2.2.5. Prepare Status of railways, water ways, air transport, tunnel and fast track

Department of Railways, Kathmandu-Terai/Madhesh Fast Track (Expressway) Road Project and Civil Aviation Authority of Nepal were visited and consulted about operational, pipeline and future plan of railways, fast track, water ways and air services within the Bagmati Province.

2.2.6. Synchronize the road network

The road networks of the province were studied with their type, quality, status and connectivity. In the connectivity, it was observed connectivity between the national highway and the Provincial road including a) **Province Highway**– National Highway to Province Headquarters, District Headquarters, between two national highways network and b) **Province Roads** –Connects Province Highway to Palika Centers, Inter district centers at local level centres.

2.2.7. Road Code

The road code is designed as follows:

Provincial Highway Road Code

Provincial Highway Road Code	Province Highway	Highway Number
Bagamati Province = B	H	01

Provincial Road Code

Provincial Road Code	Province Road	Road Number
Bagamati Province = B	R	01

2.2.8. Provincial Road Network (PRN) Ranking

The PRN Ranking table was developed with appropriate criteria, weightage and score. In the table, Provincial Highway and Province Road were planned to be included in accordance with its score out of 100. Its relevance serves to determine the priority of the different provincial highway and road sections and, allowing them to be ranked in the order for budget allocation and priority. In general, high ranked highway and road sections receive budget allocation and priority higher and faster than low ranked highway and road sections.

2.2.9. PTMP Funding and Budget

For the PTMP Funding and budget, Provincial and National Budget Allocation and Procedure on PRN ranking Provincial Highway and Provincial road were studied by identifying sources of funding and budget including the federal equalization grant, conditional grant, complementary grant, and special grant, the grants from Roads Board Nepal, the provincial revenue, and allocations from donor projects (for the donor projects the name of the project should be entered in the second column). In the preparation, there are also several rows open where additional funding sources can be included. The names of the funding sources should be entered in the second column, while the expected amounts of funding should be entered in the remaining columns (in Nepali Rupees – NPR).

The expected funding and budget sources and amounts were calculated for the development of the roads and expected annual growth percentages, taking into account any specific changes that are expected (e.g. the start or end of a donor project).

2.2.10. Financial Resources for PTMP

The resources of the province for the development of transport sector were studied and identified. The available resource from the internal source as well as donors funding at the Provincial level were analyzed, along with analyzing the Province Budget for the Transport Development, Grants of the Federal Government on Transport Infrastructure, Internal Revenue of the Province Government and Foreign Assistance on Provincial Road development.

2.3. DATA ANALYSIS AND PROCESSING

All the collected secondary and primary information data were entered in excel format and also GIS information was entered in GIS software. Then after SPSS and GIS software were used for its further processing and analysis.

CHAPTER 3: PROVINCE SOCIO-ECONOMIC STATUS

As per mentioned in the Governance System of New Constitution of Nepal 2015, Seven Provinces were promulgated by the Federal Parliament of Nepal in 20 September 2015. Out of Seven Provinces, Bagamati Province is a Province including capital of Nepal, Kathmandu. Hetauda is the Capital of this Province. Its landscape size is 20,300 km² that is 14 % of total landscape of the country. The province is located at 26⁰ 55' to 28⁰ 23' north latitude and 83⁰ 55' to 86⁰ 34' east longitude in the map. This landscape spreads from the plain landscape to the high landscape in which hill and mountain mostly covers. In Mountain, there are Gaurishankar, Langtang, Jugal, and Ganesh Himal. In Terai region, there are deciduous, coniferous, and alpine forest and woodland. In three ecological belts, its weather, rainfall and temperature vary with altitude. Like as national rainfall patterns, monsoon rainfall has a similar pattern.

As per fixed its territory in the New Constitution 2015, this Province spreads to Tibet Autonomous Region of China at North side, Province No. 1 at East side, Gandaki Pradesh at West side, and both Province No. 2 and India (Bihar State) at the South side. In this territory, there are 13 districts namely; Bhaktapur, Chitwan, Dhading, Dolakha, Kathmandu, Kavrepalanchok, Lalitpur, Makwanpur, Nuwakot, Nuwakot, Ramechhap and Rasuwa district. A district is administered by the head of the District Coordination Committee and the District Administration Officer. The districts are further divided into municipalities or rural municipalities. Bagamati Province has three metropolitan cities, one sub-metropolitan city, 41 municipalities and 74 rural municipalities in the province. Its details are in figure 1 below.



Figure 1: Map of Bagamati Province with Districts

Constitutionally, this province is constituted with the 110 Member of Parliament(66 member from popular vote and 44 members from proportional). In the parliament, there are Province Relation Committee, Public Account Committee, Finance and Development Committee, Education, Health and Agriculture Committee, Industry, Tourism and Environment Committee.

Demographically, this Province is categorized into the most populous province of Nepal with caste, community and cultural diversity including Newar, Tamang, Sherpa, Tharu, Chepang, Jirel, Brahmin, Chhetri, Tharu, Chepang, Jirel, and more.

3.1.SOCIO ECONOMIC CHARACTERISTICS

Population

Out of 28.0 million total population of Nepal, the total population of the province shares 20.87 % (i.e.5.5 million) (CBS, 2011). By sex, male is 49.69 % and female is 50.31 %. Thus, female leads to this province in demography. Its population growth rate per annum is 1.91 %. Out of total Provincial Population, Kathmandu with 32% population and Chitwan with 10% population leads to 13 districts whereas Rasuwa has 1 % population. Its details distribution at district level is given as follows:

Table 1: Population of the Bagmati Province

S.No	District	Area	Population 2011	Population Density	Population %
1.	Sindhuli	2491	296192	119	5
2.	Ramechhap	1546	202646	131	4
3.	Dolakha	2191	186557	85	3
4.	Sindhupalchok	2542	287798	113	5
5.	Kavrepalanchok	1396	381937	274	7
6.	Lalitpur	385	468132	1216	8
7.	Bhaktapur	119	304651	2560	6
8.	Kathmandu	395	1744240	4416	32
9.	Rasuwa	1544	43300	28	1
10.	Nuwakot	1121	277471	248	5
11.	Dhading	1926	336067	174	6
12.	Makwanpur	2426	420477	173	8
13.	Chitwan	2218	579984	261	10
Total		20300	5529452	272	100
	Total Nepal		26494504		
	% of Province		20.9		

Source: Population Census 2011, CBS

In Table, Kathmandu district (32 %) has the highest population of all and Rasuwa (1%) has the lowest of all. In the Province, there are 1.27 million households. Mean family size is 4.35.

Economically Active Population

Out of Total population of the Province (5.5 million), the economically active population is 42.5 %, according to the Human Development Report, 2014. The economically active population of Nepal at the Province level is given below.

Table 2: Economically Active Population of the Province

Province	Economically Active Population	Economically Active (%)	Foreign Employment (No)
Province 1	1949164	35.5	614724
Province 2	1673177	38.2	608064
Bagamati Province	2348453	42.5	420193
Gandaki Province	1201320	35.0	359113
Province 5	1668383	32.2	352916
Karnali Province	671692	24.0	101656
Sudhur Paschim Province	1058519	23.8	86966

Source: Province Profile, 2019

In table, the distribution of economically active population of Bagamati Province that is 42.5 % is the highest of all six Provinces whereas of Sudhur Pashchin Province that is 23.8 % is the lowest of all in Sudhur Paschim Province. Similarly, out of total economically active population, foreign employment population of the Province 1 is the highest of all the Provinces whereas of Sudhur Pashchim Province is the lowest of all the Provinces.

Per Capita Income

At national level, the per capita income is \$ 1160 in 2020 and Province Per Capita Income is \$ 1767 (Source: Province Profile 2075). The distribution of the per capita income is given below;

Table 3: Per Capital Income of District in Bagamati Province

S.N.	District	GDP (Production Price) in 000	Per Capita Income (USD)	Per Capital (USD) PPP
1	Sindhuli	10822	509	822
2	Ramechhap	8579	588	951
3	Dolakha	7655	571	922
4	Sindhupalchowk	14208	687	1110
5	Kavrepalanchowk	23844	866	1399
6	Lalitpur	39612	1172	1894
7	Bhaktapur	17142	854	1379
8	Kathmandu	196723	1710	2764

S.N.	District	GDP (Production Price) in 000	Per Capita Income (USD)	Per Capital (USD) PPP
9	Rasuwa	2677	941	1520
10	Nuwakot	12267	672	1086
11	Dhading	13392	607	982
12	Makwanpur	24157	1767	1410
13	Chitwan	26271	951	1537

Source: Bagmati Province Profile, 2019.

Literacy

Literacy level is an important indicator measuring human development. In 2020, its national level is 75.14%. In 2019, its provincial level is 82.82%. Thus, Bagmati Province's literacy level is higher than national literacy level. At its district level, the distribution of literacy level is given below;

Table 4: Educational Status of the Province

S.No	District	Literate No.			Literacy Rate		
		Man	Woman	Total	Man	Woman	Total
1.	Sindhuli	88173	72385	160558	69.8	52.10	60.53
2.	Ramechhap	62003	54147	116150	72.64	53.47	62.24
3.	Dolakha	57989	49249	107238	73.34	53.67	62.78
4.	Sindhupalchok	86010	71459	157469	67.97	51.88	59.59
5.	Kavrepalanchok	134037	113012	247049	79.59	60.92	69.80
6.	Lalitpur	200577	161419	361996	90.11	74.72	82.53
7.	Bhaktapur	130526	102131	232657	90.48	72.65	81.68
8.	Kathmandu	786704	621495	1408199	92.18	79.77	86.25
9.	Rasuwa	11906	9291	21197	60.85	46.50	53.60
10.	Nuwakot	82642	70261	152903	67.95	52.41	59.80
11.	Dhading	101240	91097	192337	71.08	55.70	62.86
12.	Makwanpur	141190	118185	259375	75.41	60.59	67.85
13.	Chitwan	215282	198244	413526	83.87	70.68	76.98
Province		2098279	1732375	3830654	82.82	67.04	74.85
Nepal		8666282.	7111504	15777786	75.14	57.39	65.94

Source: Bagmati Province Profile, 2019

The highest literacy rate in Kathmandu district is the highest of all with 86.25 % and in Rasuwa district is the lowest of all districts with 53.60 %.

Poverty Level

The population below the poverty line has indicates poverty level of the province and the respective districts.

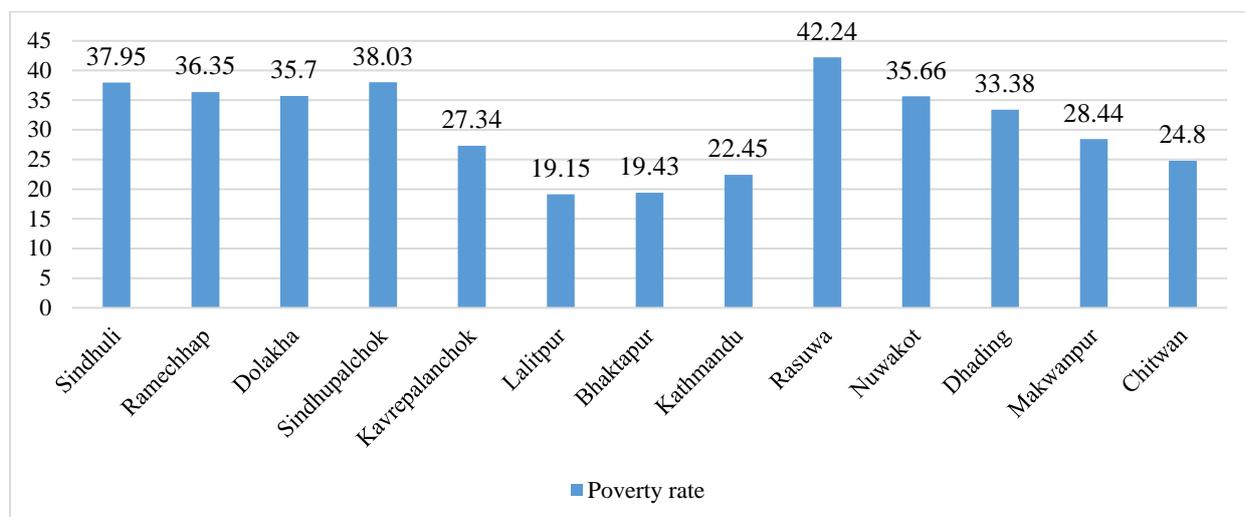


Figure 2: Poverty Rate

Source: Province Profile 2019.

The above figure shows the poverty rate. The highest poverty rate in Rasuwa district is 42.24 % and the lowest poverty rate in Lalitpur district is 19.15 %.

River System

In Bagmati Province, there are 33 river basins. Out of it, there are 10 river sub basins located in the different districts. Sunkoshi river basin is longest river with 160.19 km. and Lal Bakaiya River is shortest river with 1.89 km. Its details are as follows;

Table 5: Sub-basin System in the Province

S.N	Sub-basin River System	Area (Sq.km.)	Area (%)
1	Bagamati	2845.93	14.02
2	Budhi Gandaki	965.84	4.76
3	Kamala	967.43	4.77
4	TalloNarayani	3384.14	16.67
5	Tallo Sunkoshi	1361	6.70
6	Likhu	1304.46	6.43
7	Lal Bakaiya	374.49	1.84
8	Tamakoshi	2162.81	10.65
9	Trishuli	3928.56	19.35
10	Mathillo Sunkoshi	3005.53	14.61
Total			100.0

Source: Province Profile, 2019

Land Use

In Bagamati Province, there is total land of 2.0 million hectare of land. The land is used into nine including agriculture, forest, bush, open area, glacier, lake/pond, sand and water body. Its structure is as follows;

Table 6: Land Use Pattern of the Province

S.N.	Land Use	Area (Hectare)	Area (%)
1	Agriculture Land	494084	24.34
2	Forest Land	1090085	53.7
3	Bush	153759	7.57
4	Built Up Area	2720	0.13
5	Open Area	231324	11.4
6	Glacier	7395	0.36
7	Lake/pond	307	0.02
8	Sand	11133	0.55
9	Water Body	39193	1.93
Total		2030000	100.00

Source: Province Profile, 2019

3.2.HISTORICAL, RELIGIOUS AND TOURISM AREAS

Bagamati Province is culturally, historically, naturally and religiously rich. Kathmandu valley including Lalitpur, Bhaktapur and Kathmandu is a holy place with Pashupatinath Temple and Shoyambhu Temple, along with historical heritage of ancient Durbars. Out of 630 heritage sites, about eight world heritage sites are popular tourism sites to international and domestic tourists for visiting and studying history, art and culture. In addition, two conservation areas: Chitwan National Park and Langtang National Park are located in this Province. These are also tourist areas. The potential of historical, religious and tourism development potential areas are discussed below;

Table 7: Historical, Religious and Touristic Place in Bagamati Province

Areas	Development Potential Places
Hotel	Five Star Hotel (8 nos), Four Star Hotel (24 nos), Three Star Hotel (65 nos), Two star hotel (17 nos), One star hotel (7nos) Star Hotel 120 and non-star hotel 942 in 2016 Star hotel 125 and non-star hotel 977 in 2017
Tourist Standard Hotel	105nos
Home Stay	101 nos (community home stay 28 and private 72 nos)
World Heritage Places	Changu Narayan Temple, Bhaktapur Durbar Square, Shyambhu Stupa, Pashupati Temple,

(Touristic Places)	Patan Durbar Square, Hanumandhoka Durbar, BaudhanathMahachatyia, Chitwan National Park
Main Religious Places	Pashupatinath Mandir, Kalinchowk Bhagabati, Dolakha Bhimsen, Gosaikunda, Devighat, Dupcheshor, Jalpadevi, Betrawati, Khandadevi, Uma kunda, Lachigumba, Gaurati Bhimeshor, Palanchok Bhagawari, Tripurasundari Mai, Pachpokhari
Main Touristic Places and Center	Kathmandu, Bhaktapur, Lalitpur (World Heritage listed), Sauraha, Nagarkot, Jiri, Tatopani, Helambu
Touristic Places	Kakani, Sauraha, Nagarkot, Helambu, Tatopani, Jiri, Chitwan, Langtang National park, Parsa National Park, Gaurishankar Conservation Area, Ramsar area.
Main Simsar Area	Bishajari Tal, Gosaikunda, Indrsarobor Tal, Tatopani, Ranipokhari, Kamalpokhari, Nagpokhari, Umma kunda, Panchpokhari.

Trekking is one of popular activity of International and Domestic tourists. In the Province, there are 22 trekking trails. These trails have increased staying days of tourists in Nepal and also tourism activities based economic activities in rural areas. Its details are as follows.

Table 8: Trekking Places and spot in Bagmati Province

S.N	Trekking Places	S.N	Trekking Places
1	Langtank Valley Trekking	12	Kalinchowk Trekking
2	Langtang –Gosakunda Trekking	13	Ganesh Himal Trekking
3	Langtang Helambu Trekking	14	PanchPokhari Trekking
4	Langtang Valley Gosaikunda Trekking	15	BhairabKunda Trekking
5	Helambu Trekking	16	Seraichuli Trekking
6	Langtang Golnaja Pass Trekking	17	Langtang Tamang Heritage Trekking
7	Rolwaling Tashi Lapcha Pass	18	Nagarkot-Helambu valley Trekking
8	Budhanilkantha Gosai Kunda Trekking	19	Rubi Valley Trekking
9	Langtang Tilman Pass Trekking	20	Kathmandu Valley Trekking
10	Langtang Jugal Himal Trekking	21	Nagarkot Namobudha Trekking
11	Timal Trekking	22	Dhulikhel Namobudha Trekking

Source: Bagmati Province Profile, 2019.

Hiking is adventurous and popular event and activity attraction to urban youths living in Kathmandu valley and the cities of the outside Kathmandu valley. In every Saturday and other holiday, family and family friend groups prefer to hiking. Directly and indirectly, these activities have vibrated local economy of the rural areas. About 22 spots are popular for hiking. Its details are as follows.

Table 9: Hiking spot of the Province

S.N	Hiking Spots	S.N	Hiking Spots
1	Nagarkot	12	HetaudaManakamana
2	Chisapani	13	Daman
3	Shivapuri	14	DakshankaliChovar
4	Namobudha	15	Kakani
5	Godawari	16	Dhulikhel
6	Amitav Monastery	17	Jarsingpauwa
7	Sundarijal	18	Phulchowati Hight
8	Nuwakot Durbar	19	LakuriBhangyang
9	Tarakeshor Mahadev	20	ChandarigariBhaleshor Mahadev
10	MankwanpurGadhi	21	View Towar (Goldhunga)
11	Indrasarobar (Kulekhani)	22	Jama Chowk (ShivapurNagarjun)

Source: BagmatiProvince Profile, 2019.

3.3.MAIN ECONOMIC AND COMMERCE ACTIVITIES AND CENTERS

Agriculture

Like as National Economy, the economy of Bagmati Province is garaging with 40 % share, although this Province is a well-developed in industry, trade and service. In accordance with Agricultural Statistics 2019, agriculture is main economic activity of this Province. In agriculture, food crops including vegetables and cereal crops dominate. Its production hubs are Makwanpur, Dhading, Chitwan, Kavre, Lalitpur, Bhaktapur and Sindhupalachok districts. Despite such production, demand of agriculture products in Kathmandu valley is still a huge deficit. Therefore, agriculture products access big cities markets of this Province because of well-developed connectivity.

Industrial Development

Industrial development is an essential driver of output, income, employment and backward linkage with raw materials supply and production areas. In 1960s, the development of industrial estate received top priority for private sector and industrial development and investment promotion. In Bagmati Province, there are three Industrial Estates located in Kathmandu, Hetauda and Lalitpur. As per national and provincial demand, these industrial estates produce agriculture and non-agriculture based industries for import substitution and export promotion. In case of import substitution products, their market concentration is

mostly in Kathmandu Valley. In case of handicrafts products, its market is international. Its contribution to the Provincial economy is approximately 40 %. Its major reason is a good connectivity between market and industry and between industry and raw materials hubs. Therefore, this Province can be categorized into Industrial Hub.

Export and Import

Like as national economy, trade is a major activity of the Province not for export promotion but for import for maintaining excessive growth of consumer products demand in 45 major and minor cities. Its pattern and trend is similar like as National level. It means import dominated trade led a huge trade deficit with 1418.53 billion Rs import and 97.10 billion Rs export trade (TPC, 2075). Its export-import ratio is 1:14. Despite a prospect of self-reliant economy of this Province, the import trade from the outside of the Province and the import from China and India has killed all prospects in the absence of productivity and production, except higher rate of land transformation into settlements. In the import trade, the volume of essential and luxurious consumptions dominates to the volume of raw materials. May be a good reason is weak and poor supply chain of domestic products within the country.

Commercial Hub

Kathmandu is the Kingdom of Nepal located in Bagmati Province. Socio economically and commercially, this capital is of 10 million population's market of consumer and development products. In addition, there are three metropolitan cities, 1 sub metropolitan city and 41 municipalities expanding urbanization and market. Therefore, there is commercial hub of different products. Besides it, there are the following potentials.

Kathmandu Valley

The Kathmandu Valley is the capital of Nepal having 10 million populations with higher density and well developed urban center. It is politically and administratively power center accelerating economic and commercial activities. In addition, it is a hub of tourism, education, health, industry, investment and service generating employment, income and output. Prithivi Highway, Tribhuvan Highway, Arniko Highway and PasangLamu Highway are major driver of supply chain of goods, services and labor.

Chitwan

Chitwan is a commercial and trading center of this province as the main gateway to the Kathmandu Valley. Because of its center location and fast urbanization process. In addition, it is a production of green vegetables, livestock and cereal crops. It is a quiet popular for chicken and egg pocket areas. Furthermore, Chitwan National Park and the road connectivity is linked with Mahindra Highway (east-west) and the Kathmandu are major attraction.

Hetauda

Hetauda is the capital of this Province emerging big city center and commercial and industrial hub. The linkage with the Mahindra Highway (east-west) and the and nearest connectivity with Birgunj (Indian Border) is a key driver besides its Provincial Capital status. In addition, Hetauda Industrial Estate is a supplementary.

Dolakha

Dolakha is an ancient trading hub of the eastern part of this province located in the trading route between Tibet and Kathmandu. Higher and fast movement of goods and services has promoted trading activities in the catchment area of the eastern part of the Dolakha, Ramechhap and Okhaldhunga. Arniko Highway and Khadichour Jiri Road are key drivers.

Bidur

Bidur is an emerging commercial center of this province because of a trading route to Tibet Autonomous Region of China through the Kerung Pass. Trade flow and movements of goods and services from China has value added to its urbanization and trade. The Galchi-Bidur-Syphrubesi-Rasuwagadhi Road is a major driver.

Dhadingbeshi

Dhadingbeshi is city center having fast urbanization rate economically and commercially. Prithvi Highway's better connectivity has promoted commercialization of agriculture and livestock products by developing supply chain from production pocket areas to Kathmandu and Terai Cities.

Manthali

Manthali is a growing commercial center of the province located in the Ramechhap district. Agriculture and livestock production per annum has higher growth rate in the village. The good and fast connectivity of B.P. Highway may promote trade and market development.

Sindhulimadi

Sindhulimadi is emerging commercial center of Sindhuli district where B.P Highway and Madan Bhandari Rajmarg provide a good and fast connectivity to local, provincial and national market and international market. Its positive outcomes may be on production and productivity of agricultural products, livestock products and small and cottage industrial products.

3.4.FUTURE DEVELOPMENT POTENTIAL AREA

Bagmati Province carries a huge prospect on agriculture, horticulture, livestock, hydropower, tourism, mining etc. as follows.

Mining

As per statistics of approval and location of mining industries, this Province carries a huge prospect. In this Province, the Federal Government has approved 125 mining industries in Nepal and 45 mining industries. As per the information, there are 12 approval in Makwanpur by Shivam Cement (Shivam Cement, 5, Hetauda Cement 2 included), 8 Approvals in

Dhading, 7 Approval in Lalitpur, 5 Approval in sindhupalchowk, 4 Approval in Dolakha, 3 Approval in Kavrepalanchowk, 2 in Rasuwa/Dhading, 1 each in Sindhuli and Ramechhap district.

Industrial Estate

Bagmati Province has 4 industrial estates among the 11 industrial estate of the Nepal. Balaju Industrial Estate, Patan Industrial Estate, Bhaktapur Industrial Estate and Hetauda Industrial Estate is located in the province. These industrial estates have various industrial establishments operating and running for the production of the goods and services. The number of industries and the status of industrial districts are given below;

Table 10: Industrial Estate of the Bagmati Province

S.N.	Name of Industrial Estate	Establishment Year (B.S)	Area (Ropani)	Number of Industries				Employment	Main Products
				Total	Operating	Closed	Under construction		
1	Hetauda Industrial Estate	2020	2829	100	63	14	23	2415	Paint
2	Balaju Industrial Estate	2017	670	131	97	26	8	3506	Metal, Plastic
3	Patan Industrial Estate	2029	293	113	102	5	5	1586	Handicraft
4	Bhaktapur Industrial Estate	2036	71	37	35	2	0	825	Pashmina, Milk

Source: Bagmati Province Profile, 2019

The Industrial Estate located in the province has a base of industrial production which contribute on the revenue, employment and GDP. Four Industrial states are comprised of 381 industries. Out of these industries, about 297 industries are operational with 8332 person's employees. In the Province, Hetauda Industrial Estate is feasible for big manufacturing industries because of short distance between Hetauda and Birgunj Port.

Agriculture/Livestock Potentiality

This Province carries agriculture and livestock potentiality as follows.

Potato Cultivation

Potato is one of cash crop. Its total production of potato in Nepal is 2691037 MT per annum in which this Province shares 24.4% with 656789 MT per annum. The potential pocket area are Chitwan, Nuwakot, Bhaktapur, Lalitpur, Kavrepalanchowk and Dolakha district.

Coffee Production

Coffee is a cash crop cultivated in different districts of this Province. The national production of coffee is 466 MT per annum in which this Province shares is 29.8 % with 139 MT. The existing and potential pocket districts of coffee are Sindhupalchowk, Kavrepalanchowk, Nuwakot and Lalitpur.

Ginger Production

Ginger and garlic are produced in the various places in these Provinces. At national level, its production is 279504 MT per annum in which this Province shares 12.9% with 36027 MT per

annum. The existing and potential pocket districts of ginger are Sindhupalchowk, Dhading, Nuwakot, Makwanpur and Kavrepalanchowk.

Livestock-Milk Production

Milk production is one of the main livestock products of Nepal. In this product, this country is self-reliant with 1245954 MT productions in which this Province shares 8.6% with 107357 MT per annum. The existing and potential districts of milk products are Nuwakot, Kavrepalanchowk, Dhading, Makwanpur and Chitwan.

Meat Production

Meat is a main livestock product of the country. In chicken meat, this Province is self-reliant. Goat meat is nearly self-reliant. In national level, its production is 332544 MT per annum in which this Province shares only 22.56 %. The existing and potential livestock development districts are Chitwan, Kavrepalanchowk, Dhading, Makwanpur, Nuwakot, Sinduli and Ramechhap districts.

Fishery

Fishery is a highly potential farming in this Province to meet its national demand in the country. Market analysis indicates about 70000 MT national demand per annum in which 24559 MT supply per annum. This Province shares 12.3 % with 3025 MT production and supply. It shows market gaps with excessive demand of fish in this Province as well as in the country. In this Province, Chitwan and Makwanpur districts are potential districts for its production, employment and income.

CHAPTER 4: PROVINCIAL TRANSPORT REVIEW

4.1. TRANSPORT POLICY AND PLAN

4.1.1. National Transport Policy, 2058

In 21st century, multi model transport approach and advance technology in transport sector have revolved in the world particularly in trade liberalization and development. In developing country like Nepal, all these developments are gateway opportunities to achieve higher economic growth rate and poverty reduction. In this context, national transport policy is relevant.

With national vision and goal, “development of reliable, modern and organized international standard national transport networks all over the country”, National Transport Policy was formulated in 2001. Under this national vision, this policy carries a broaden objective to develop a reliable, cost effective, safe facility oriented and sustainable transport system that promotes and sustains the economic, social, cultural and tourism development of the Kingdom of Nepal as a whole. To achieve objectives and national vision and goal, the policy envisages strategy in accordance with three tiers government system: Federal, Provincial and local based on norms and philosophy of federal structure. It means decentralization of transport development in which the federal government is responsible for development of national high way, the Province government is for constructing province level high way and the municipality is for local connecting roads construction. In addition, the policy follows public private partnership approach in the development of transport system under which the private sector is encouraged to participate, operate and manage transport sector.

The policy includes sixteen policies focusing on connecting all district headquarters, east – west mid hill highway and north south corridor, maintenance of the existing transport infrastructure, upgrading of central level transport infrastructure, traffic safety, environment, electric vehicle etc., efficient public transport management and institutional management and rational investment modalities. The policy emphasizes to prepare the short, medium and long term Master Plan from the federal level to the Province level and to Municipality level before constructing transport system in accordance with the responsibility therein.

4.1.2. Province Vehicle and Transport Management Act 2075

As a spirit of New Constitution 2015, Nepal was politically, economically and administratively reengineered into the federal structure as the governance system. In the governance system, the constitution endorsed political, economic and administrative power devolution to the Province government. Under this governance system, the Province government has to formulate policy, plan and institution for effective and efficient function and development delivery to the people. In this process, Province Vehicle and Transport Management Act 2075 was formulated. As a supplementary, transport policy is in

the pipeline. Therefore, Bagmati Province uses this act as the framework of province vehicle and transport development within the Province.

This act has an objective to regulate, manage and control transport as required at the Province level to provide reliable, cost effective, safety and comfortable access and facility to the people for transporting goods and services from production to market and for promoting human mobility from home town to the provincial capital and the national capital. Based on uses and category of the vehicles, this act classifies 14 categories of vehicles: heavy, medium, small, motorized two wheeler, motorized three wheeler, construction equipment vehicle, off-road vehicle, special vehicle, public vehicle, tourist vehicle, non-commercial vehicle, government vehicle, corporation vehicle and diplomatic. In addition, most articles emphasizes on transport management provision (Article 6) and transport control mechanism (Article 7).

This act mentions a core policy issues and framework in clause 82 and 83 of Article 6. In this act, there is a provision of grant to the private sectors to facilitate the minimum services to operate the public transport to remote area and backward area people and of mass transport operation, management and development.

4.1.3. Draft Act on Province Public Road and Transport Infrastructure

To make legal arrangements for the province public road and transport infrastructure, to manage the road network at the province level for the convenience and economic interest of the common people living within the province, to prepare classification and criteria of all kinds of state public roads, to construct province level roads, for maintenance, expansion, improvement, operation and management, the Province Public Road and Transportation Infrastructure is developed. The PTMP is based on this act and meeting its strategy on transportation sector i.e.

- Improving Transportation Accessibility and Mobility
- Operating and Managing Province Road and Infrastructure by Business Principle
- Managing Transportation Operation System
- Improving Road Network

4.1.4. Bagmati Province First Periodic Plan (Fiscal Year 2076/77-2080/81)

The Bagmati Province First Periodic Plan (FY 2076/77-2080/81) is prepared with the long-term vision of “Development and Prosperity, Balanced Urban System and Quality Physical Infrastructure”. The target of the periodic plan in the sector of transportation is “Development of Province Transportation Network and Improvement in Structure and Management”. The PTMP are prepared based on planning and working strategy of periodic plan to meet the target of the plan and that are as follows;

Table 11: Planning and Working Strategy of First Periodic Plan

Planning Strategy	Working Strategy
Improvement in Transportation Accessibility	Provincial Transport Master Plan will be

and Mobility	formulated.
	The jurisdiction of the Province level roads and the width of the corridor will be determined and its definition, selection and regulations will be prepared
	The coordination will be done with the Centre level and Local level government to construct blacktopped road that connects local level centers
	The regular maintenance of roads connecting Province and Local level Centers will be prioritized.
Improvement in Road Network	Detailed study and Investigation will be carried out for construction of roads and bridges.
	The construction of roads and bridges will be managed yielding high economic benefits with least adverse environmental impact.
	Adaptation of Bioengineering and other favorable techniques for landslide control.
Operation and Management of Provincial Road and its Infrastructure by adaptation of Business Principle.	According to Provincial Physical Plan, road inventory of inter urban strategy road and trial bridges will be prepared and prioritized for maintenance.

4.1.5. Bagmati Province Road Standard, 2076

This standard provide guidance for the selection of geometric design parameters for preparing detailed project report and covers various aspects of design, construction and maintenance.

This road standard is to classify the operational roads for presenting road standard scenario for the Provincial Transport Policy and Program and the Provincial Budget and Periodic Planning. In these standard provisions, this classifies road into five administrative categories and four functional categories with technical standards of roads and design parameters.

4.2. ROAD NETWORK OF PROVINCE

Road network is categorically and un-categorically widely spread all over this Province. Previously, roads in Nepal were categorized as: Strategic Road Networks/SRN (Highway and Feeder Road) and Local Road Networks/LRN (District Roads Core Network and Village). The Department of Road (DOR) looked after SRN and the District Development Committees (DDCs) with technical support from the District Technical Offices (DTOs) were responsible for LRNs.

After the promulgation of the “Constitution of Nepal 2073”, all the three Government Levels have been giving the jurisdiction to roads. The roads have been now classified as

Federal Highway under Federal Government

Province Roads under Provincial Government

Local Roads under Local Government

4.2.1. Review of Strategic Road Network (SRN)

The status of provincewise length of SRN in the Nepal is shown in below **figure 3**;

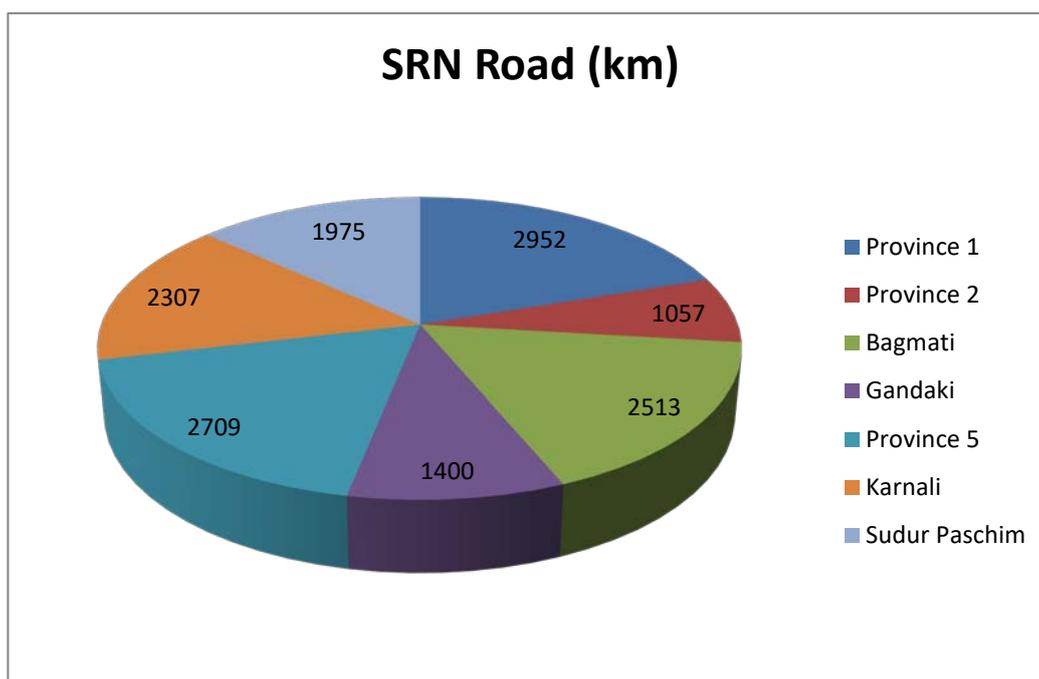


Figure 3: Distribution of SRN Road

The SRN roads length is 14913 km all over Nepal. Out of total SRN roads, the Bagmati Province has 17% of total length i.e. 2513 Km.

The list of SRN roads (Highways and Feeder Roads) in the Bagmati Province are shown in **Table 12** and **Table 13**. The Table 12 shows list of Highways and Table 13 shows list of Feeder Road within the Bagmati Province.

Table 12: List of Highway Road in Bagmati Province

S. N.	District	Road Name	NH Number	Total Length (Km.)
1.	Chitwan- Makwanpur	Mahindra Rajmarga (East-West Highway)	NH01	92
2.	Ramechhap- Dolakha- Kavrepalanchok- Sindhupalchok- Nuwakot- Dhading	Puspalal Mid Hill Highway	NH03	270
3.	Chitwan	HulakiRajmarga	NH05	55
4.	Sindhuli- Makwanpur	Madan Bhandari Rajmarga (Bahundangi- Shantinagar- Dharan- Chatara- Gaighat- Ramdi- Ridi- Tamghas- Pyuthan- Ghorahi- Tulsipur- Botechour- Bhedabari- Duiyabit- Baddichour- Sahajpur- Budar- Jogbudha- Rupal)	NH09	190
5.	Sindhuli- Kavrepalanchok	B.P Rajmarga (Bardibas-Sindhuli- Khurkot- Dhulikhel)	NH13	148
6.	Lalitpur- Kavre	Gwarko- Lubhu- Lakuribhanjyang- Kusadevi- Panauti- Dahaltar road	NH15	37.1
7.	Dhading	Prithivi Rajmarga (Naubise- Mugling- Pokhara)	NH17	83
8.	Kathmandu- Nuwakot- Rasuwa	Balaju- Trishuli- Dhunche- Syphrubesi Road	NH18	65
9.	Kathmandu- Dhading	Sitapaila- Dharke Road	NH21	24
10.	Ramechhap- Dolakha	Diktel- Solu- Jubesi- Khahare- Jiri Bazar- Tamakoshi- Charikot- Khadichour Road	NH23	183
11.	Ramechhap- Dolakha	Bhittamod- Jaleshor- Bardibas, Khurkot- Manthali- Tamakoshi- Singati- Lamabagar- Lapchegaun Road	NH28	239
12.	Kavrepalanchok- Sindhupalchok	Dolalghat- Chautara Road	NH31	25
13.	Makwanpur- Kathmandu	Fast Track (Nijhgad- Kathmandu) Road	NH33	66
14.	Kathmandu- Bhaktapur- Kavrepalanchok- Sindhupalchok	AranikoRajmarga (Kathmandu- Dhulikhel- Dolalghat- Khadichour- Kodari)	NH34	112
15.	Makwanpur, Sindhuli	Chandranigapur- Gaidatar- Kapilakot Road	NH36	35
16.	Makwanpur- Lalitpur	Kanti Rajpath (Hetauda- Bagamati- Tikabhairab- Bhaisepati- Ekantakuna)	NH37	86
17.	Kathmandu- Lalitpur- Bhaktapur	Kathmandu Valley Outer Ringroad	NH38	68
18.	Lalitpur- Kathmandu	Kathmandu Valley Ringroad	NH39	27
19.	Kathmandu- Nuwakot	Samakhusi- Tokha- Gurje- Bidur Road	NH40	26

S. N.	District	Road Name	NH Number	Total Length (Km.)
20.	Makwanpur- Dhading- Kathmandu	Tribhuban Rajpath (Sirsiya- Pathalaiya- Hetauda- BhaisePalung- Naubise- Kathmandu)	NH41	127
21.	Chitwan- Dhading- Nuwakot- Rasuwa	Thori- Bhandara- Malekhu, Galchi- Tribhuli- Betrabari- Mailung- Shyaphrubesi- Rasuwagadhi Road	NH42	97
22.	Dhading	Malekhu- Dhading- Salyantar	NH43	57
23.	Chitwan	Thori- Bharatpur- Mugling- Abukhairani- Gorakha- Ghyampesal, Arughat- Sirdibas- RoiyalaBhanjyang Road	NH44	105
24.	Chitwan	BharatpurMahanagariyaBrihat Ring Road	NH77	105
		Total		2322.10

Source: Department of Roads, 2019.

Table 13: List of Feeder Road on Bagmati Province

Road Code	Name of Road	Length (km)
F19	Bhaise-Bhimphedi	12
F20	Kunchal-Kulekhani	21
F21	Balaju-Nagarjun-Kakani-Batar-Dhunche-ShyaphruRasuwagadhi	144
F22	Balkhu-Chovar-Chhaimale-Kulekhani	42
F23	Satdobato-Sunakothe—Tikabhairab	12
F24	Satdobato-Godavari-Phulchoki	21
F25	Lainchaur-Maharajgunj-Bansbari-Budhanilkantha	8
F26	Chabahil-Sankhu-Lapsephedi-Bhotechaur-Bahunepati; Melamchi, Chautara	79
F27	Jorpati-Sundarijal	7
F28	Bhaktapur-Nagarkot	19
F29	Banepa-Panauti-Khopasi	10
F30	Panchkhal-Melamchi-Helambu	63
F31	Dolalghat-Chautara	25
F32	Khadichaur(H03)-Charikot-Tamakosh-Manthali-Ramechhap	124
F33	Tamkoshi(F32)-Jiri	38
F34	Malekhu(H04)-Dhading Besi	18
F37	Bharatpur Bypass Road	5
F57	Hetauda-Gurji-Sindhulibazar-Bhiman-Baireni-Katari-Gaighat-Murkucha-Phattepur-Chatara-Dharan	346
F69	Galchhi-Baghmara-Devighat	20
F70	Khurkot (H06)-Manthali	11
F71	Panchkhal-PalanchokBhagawati	11
F72	Gwarko-Lubhu-LankuriBhanjyang-Panauti-Namobudha-DSRM(H06)	41
F73	Bakhundol-Bogatigaun (Kathmandu University Road)	2

Road Code	Name of Road	Length (km)
F74	Damki-Phalante (Nuwakot Darbar Access Road)	8
F75	Kalimati-Bahiti-Sitapaila-Bhimdhunga-Dharke	33
F76	Ringroad-Tinpipale-Okarpauwa-Kolpu	35
F77	Budhanilkantha-Dandagaun;Gurje-Kuwapani-Kakani-Kaulethana(F21)	25
F78	HalChok-Narayanthan(KVRR)	8
F79	ThuloBharyang (Ring Road)-Raniban Post	2
F80	Balaju-Nepaltar-Sangla Bazar	12
F81	Baniyatar-SamakhushiChok-Lainchaur	4
F82	Samakhushi Chok-Tokhagaun-Chandeshwarigaun-Dandagaun-Gurjebhanjyang-Chhahare-Tadi-Gangate (F21)	50
F83	Kapan-Mandikatar-Damaged Bridge South	5
F84	Chuchhepati-Mahankal-Kapan-Dandagaun-Gamcha	8
F85	Mahankal-Atterkhel	3
F86	Jadibuti (ARM)-Sinamangal-Manohara-Thimi-Sallaghari	7
F87	Pepsikola-Gothetar(KVRR)	4
F88	Gokarna-Jorpati-Gothatar(KVRR)	4
F89	Pepsicola-Karkigaun(KVRR)	6
F90	Thimi (SOS)-Lokanthali-Dharmeshwar-Tikathali-Manohara	5
F91	Kausaltar-Balkot-Sirutar-Biruwa(KVRR)	8
F92	Thimi-Bode-Karkigau-Mulpani-Gokarna	8
F93	Sallaghari (Bhaktapur)-Duwakot(KVRR)	8
F94	Byasi (Bhaktapur)-Changunarayan	6
F95	Mulpani-Phuyalgaun-Changunarayan-Phedigaun	14
F96	Nagarkot-Kattike-Sakhu	6
F97	Chyamasingh-Amaldol-Nala-Banepa	12
F98	Kamalbinayak-Sudal-Adikarigaun-Nagarkot	12
F99	Trolley bus(ARM)-Suryabinayak-Chamelidanda-Bhujunge	12
F100	Sallaghari (ARM)-Katunje-Sumlingtar-Lubhu	5
F101	Manohara bridge (Balkumari)-Shankhamul-TekuDobhan-Balkhu	6
F102	Satdobato (Ring Road)-Dhapakhel –Thecho	5
F103	Jayanepal-Thapathali-Tikabhairab	19
F104	Kashibazar-Kirtipur-Machhegaun-Tinthana	11
F105	Nagdhunga(TRP)-Tankeswor(KVRR)	11
F106	Charikot-Dolakha-Lamabagar-Lapchegaun	90
F120	Kanti Rajpath (Hetauda-MakawanpurGadhi)	82
F121	Pharping(Dakshinkali)-Pakhelchaur-Kulekhani	25
F122	Bhimphedi-Kulekhani	15
F123	Dhading Besi-Aarughat-Dharapani-Gorkha	71
F124	Tandi, Ratnanagar (MRM)-Sauraha	7
F125	Bharatpur-Meghauli Airport—Dhruwa(PR)	33

Road Code	Name of Road	Length (km)
F126	Aaptari (H05)-Devghat	4
F159	Khurkot-Ramechhap-Sanghutarr-Okhaldhunga	98
F180	Ganesh M.Singh Marg (Thankot-ChitlangBhanjyang Chandragadhi-Markhu)	20
F201	Jiri-Puma-Khahare-Dhaule-Pekarnas-Junbesi-Salleri	160
F202	Jiri-Siurani-Those-Bamti Road	44
	Total	2090

Source: Department of Roads, 2019.

4.2.2. Review of Local Road Network (LRN)

The Local Road Network (LRN) within this province are based on previous District Transport Master Plan (DTMP). The list of Local Road Network within this province are given below in **Table 14**.

Table 14: List of Local Road Networks with Surface type in Bagmati Province

S.N.	District	BT (km.)	GR (km.)	ER (km.)	Total (km.)
1	Rasuwa			137.79	137.79
2	Nuwakot	5.93	75.16	437.83	518.92
3	Ramechhap		69	619.41	688.41
4	Dolakha		91.7	224.44	316.14
5	Kathmandu	82.51	57.7	69.31	209.52
6	Makwanpur		69.16	200.98	270.14
7	Chitwan	67.77	160.66	75.22	303.65
8	Dhading	13.87	22.74	415.88	452.49
9	Sindhupalchowk	17.15	42.8	540.74	600.69
10	Kavrepalanchowk	12.2	170.9	498.5	681.6
11	Lalitpur	49.73	37.4	155.53	242.66
12	Sindhuli	1	32	260.71	293.71
13	Bhaktapur	12.88	5.37	2.9	21.15
Total		263.04	834.59	3639.24	4736.87

Source: DTMPs of Districts.

Table 15: Summary of the Road Inventory Network in the Province

S.N.	Road Description	Length (km)
1	Highway Roads	2268.0
2	Feeder Road	2090.0
3	Local Road	4736.87
Total		9,239.87

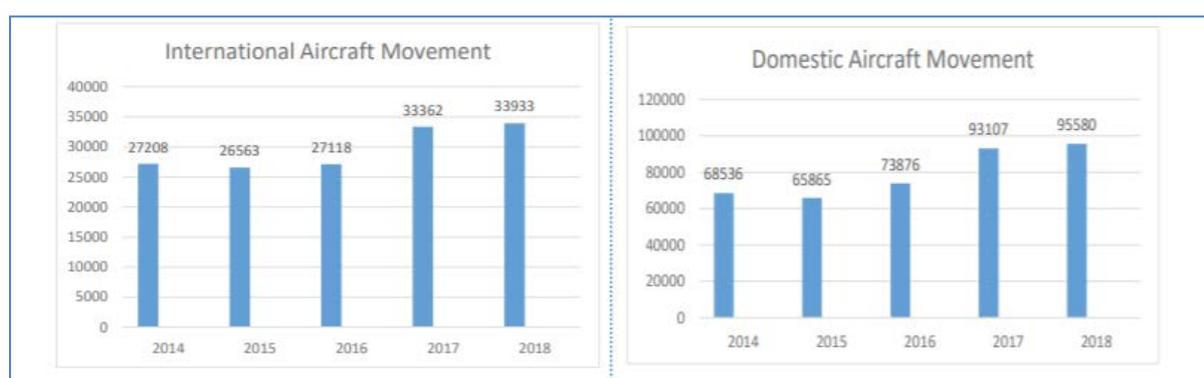
Source: DoR, DoLIDAR Report, 2019

4.3. AIR TRANSPORT

This Province is rich for four Airports: Tribhuvan International Airport (TIA) in Kathmandu, and three domestic airports: Ramechhap Airport, Bharatpur Airport and Jiri Airport. Out of three domestic airports, Ramechhap and Bharatpur Airports are operational but Jiri Airport is not operational. Thus, air linkage and network have been serving alternative fast connectivity to domestic and international tourist and Nepalese people.

Tribhuvan International Airport (TIA)

Tribhuvan International Airport (TIA) is an international airport constructed in 1955 in Kathmandu. In the federal structure, it lies in this Province. Its structure comprises of two channels: International and National Airports. In the international level, this airport connects 40 destinations of 17 countries. In 2019, there is about 7.3 million international passenger departures in this airport. Nepal Airlines covers 49% share. At domestic level, there are five private airlines (Buddha Airlines, Nepal Airlines, Himalayan Airlines, Yeti Airlines and Surya Airlines) providing connectivity and air services to domestic and international tourists in different time and different locations of this country. Buddha Airlines shares 46% market. In case of cargo, this airport handles 10570 tons in 2019. Its details are below.





Ramechhap Airport, Ramechhap

Ramechhap Airport is a domestic airport at the bank of Tamakoshi River and at proximity to Manthali, District Headquarter situated at Manthali Municipality of Ramechhap District, Bagamati Province. The aerodrome reference code of the airport is 1B. Due to congestion at Tribhuvan International Airport during tourist seasons, most of the flights bound to Lukla Airport (the Gateway to Mount Everest) and Phaplu Airport take place from this airport. The aircraft, passenger and cargo operation on the airport is summed up as:

Table 16: Aircraft and Passenger Movement in Ramechhap

Year	Aircraft Movement	Passenger Movement	Cargo Movement
2017	468	23	19,605
2018	1,304	3,165	215,715
2019	6,958	33,424	1,327,010

Source: CAAN, Airport Profile (www.caanepal.gov.np)

Bharatpur Airport, Chitwan

Bharatpur Airport is situated at Bharatpur Metropolitan Municipality of Chitwan District, Bagamati Province. The airport is a fast-growing domestic airport in terms of aircrafts and passengers' movement. The aerodrome reference code of the airport is 2C. This airport has significant aircraft, passenger and cargo movement as highlighted in the table below;

Table 17: Aircraft and Passenger Movement in Bharatpur

Year	Aircraft Movement	Passenger Movement	Cargo Movement
2017	8,182	257,709	163,297
2018	7,774	229,495	138,806
2019	6,488	182,280	134,236

Source: CAAN, Airport Profile ([www: caanepal.gov.np](http://www.caanepal.gov.np))

Jiri Airport

Jiri Airport is located at Dolakha District, Bagmati Province. The aerodrome reference code of the airport is 1B, but the airport is not in operation since a long time.

Tribhuvan International Airport operates more than 30 international airlines and around 10 domestic airlines as listed below:

Table 18: List of International Airlines in Nepal

S.No.	List of International Airlines	S.No.	List of International Airlines
1	Air Arabia	16	Jet Airways (India) Pvt. Ltd.
2	Air Asia	17	Korean Air
3	Air China	18	Malaysian Airlines
4	Air India Limited	19	Malindo Air
5	Biman Bangladesh Airlines	20	Nepal Airlines Corporation
6	Bhutan Airlines (Tashi Air Pvt. Ltd.)	21	Oman Air
7	Buddha Air Pvt. Ltd	22	Qatar Airways
8	Cathay Dragon Air	23	Regent Airways
9	China Eastern Airlines	24	Sichuan Airlines
10	China Southern Airlines	25	Silk Air (Singapore)Private Limited
11	Dubai Aviation Corporation (Fly Dubai)	26	Thai Airways International
12	Druk Air (Royal Bhutan Airlines)	27	Tibet Airlines Co. Ltd.
13	Etihad Airways	28	Turkish Airlines Inc.
14	Himalaya Airlines	29	US -Bangla Airlines
15	IntrGlobe Aviation Limited (IndiGo)	30	Wataniya Airways

Source: CAAN, Airport Profile ([www: caanepal.gov.np](http://www.caanepal.gov.np))

Table 19: List of Domestic Airlines in Nepal

S.No.	Domestic Airlines
1	Buddha Air Pvt. Ltd
2	Nepal Airlines Corporation MA-60
3	Nepal Airlines Corporation DHC-6
4	Saurya Airlines
5	Shree Airlines
6	Simrik Airlines Pvt. Ltd.
7	Sita Air
8	Summit Air
9	Tara Air
10	Yeti Air Pvt. Ltd.

Source: CAAN, Airport Profile ([www: caanepal.gov.np](http://www.caanepal.gov.np))

4.4. RAILWAY

Railway is new approach in multimodal transport system. Its initiation is Kathmandu Metro Railway Project, Feasibility Study of Metro Rail in 2012 by Ministry of Physical Planning, Works and Transport Management. As endorsement of alternative mass transport, two modules: heavy metro rail and light metro rail are surveyed at 21 locations in Kathmandu Valley. The study identifies Automated Guided Transit (AGT) as the most appropriate technology (rubber-tyred train sets running on elevated or underground guide ways). The study identifies 5 Lines to meet the expected demand in 2030 and their initial analysis assumed that all lines were built at the same time.

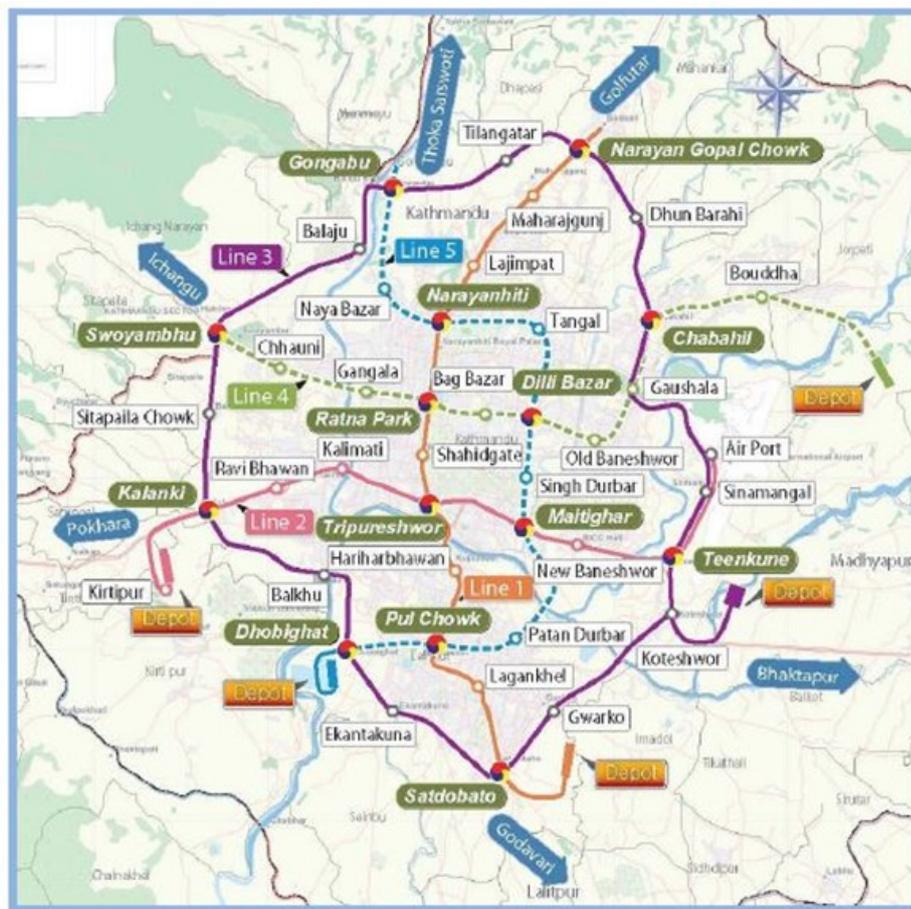


Figure 4: Proposed Railway Lines in Kathmandu Valley

This feasibility study focuses on five metro lines in Kathmandu Valley with the projection of 1.02 million riders per day and 20.4 million revenue in 2019 if it is constructed in 2015. This projection is based on a fare of NRP 20 per trip (2012 prices). If fare is increased at NRP 30 per trip, its projection is 0.6 million riders per day and 19.1 million Rs revenue. In the projection, the maximum potential revenue income will be earned with 6% increments. In its initial procedure of the construction, Railway Department has called RFP document to DPR of Maharjgunj to Satdobato railway, Satdobato to Khokana and Maharajgunj to Budhanilkanta under way and Nagdhunga to Dhulikhel railway.

Similarly, the Department of Railway has conducted the feasibility study of Kathmandu – Rashuwagadi and Kathmandu–Raxual, along with East West Railway (945 km) and Kathmandu -Pokhara-Lumbini railway. Bagmati Province is a major stakeholder of these three railway projects.

4.5. ROPEWAY

Ropeway is a feasible alternative transport mode in hill and mountain regions, where road connectivity is tough and its maintenance is costlier. In this Province, Kathmandu-Hetauda Cargo rope way (42km) is old one constructed in 1964. After then, there are three ropeways

in operations: Kurintar–Manakamana, Thankot–Chandragiri and Kalinchowk temple. In addition, few rope ways are under study in this Province. Its details is in figure 5.



Figure 5: Ropeway in Nepal

4.6. FREIGHT TRANSPORT

Freight Transport is a transporting commodities, goods and cargo by land from India and China. This transport is quiet popular in Nepal from Calcutta Port to Dry Port (Brijung). About 60% container comes from India and the remaining container comes from China in Rashuwagadhi dry port.

4.7. OTHER INFRASTRUCTURES

Fast Track (Kathmandu- Nijhgadha)

Fast track is 76.2 km express highway from Sano Khokana, Kathmandu to Nijhagadha, Bara district. This mega project is national pride project of around Rs 13.5 Billion. This road is six lane. The feasibility study projects 5 hours’ time saving, 155 km distance shorter, less value addition of transportation and promotes trade volume, value and size of goods and services. This connectivity changes Kathmandu and Birgunj’s connectivity and its economic implications. It facilitates to the second international airport.

Nagdhunga Tunnelway

The Nagdhunga Tunnel (SisneKhola to Nagh-dunga) is the first tunnel project in road sector. Its length is 2.5 km. Its objective is to improve the road condition around Nagdhunga pass by constructing a tunnel, thereby contributing to the smooth transportation network between Kathmandu and other principal cities/areas in Nepal. The Japanese International Co-

operation Agency (JICA) has provided financial and technical assistance to construct this project.

Additionally, the pipelined tunnel projects are Lambagar-Lapcha Tunnel, Tokha–Gurjebhangyag Road and Siddha Baba section of Palpa road. Bagmati Province has been undertaking the Tunnel at Sisneri-Bhimphedi Tunnel.

Waterway

Nepal has 6000 river rivulets out of which big rivers are feasible for water transports. In Naryaani River, it is experimental.

Cycle lane

Cycle lane is well demand in urban areas, particularly Kathmandu, Lalitpur and Bhaktapur. Two cycle lanes are constructed and operated in Sinamangal to Tilganga section and Tinkune to Maitighar.

4.8. URBAN TRANSPORT

Urban Transport is a vehicle of rapid urbanization to develop new mega city with commercial hubs. In the budget 2018-19 and 2019-20, budget is allocated on the construction of five smart city projects in the periphery of Kathmandu valley. In 1970s, urban development corporation was established with objective of urbanization and urban transport. In 1993, the government of Nepal conducted the Study on Kathmandu Valley Urban Road Development. In 2017, the Federal Democratic Republic Government has conducted the review study on the project on Urban Transport Improvement for Kathmandu Valley. Their objective is to execute a comprehensive urban transport master plan in Kathmandu Valley.

In Urban Transport Master Plan, there are three components, namely, Land Use Plan, Road Plan and Public Transport Plan. In the Public Transport Plan, 0.1 million persons per day demands daily public transport in Kathmandu Valley. In accordance with population growth per annum, demand of public transport per day may be more. In Population Census 2011, population size is 2.47 million population. Based on it, the study projects 3.74 million population by 2030 and 10,000 to 15,000 PHPDT capacity of public transport as of 2035. The plan recommends two modes of public transports: namely, Automated Guide way Transit (AGT) in the urban area and Bus Rapid Transit (BRT) system, where dedicated bus lanes is sufficient.

The Public Transport Plan carries three phases – Phase I (~2020), Phase II (2021-2025) and Phase III (2026~2030). In the Phase I, the plan focuses on institutional improvement and development of a new bus terminal at Tinkune, along with the rerouting of the existing bus system along primary, secondary and the tertiary routes. In the Phase II, the plan initiates a new BRT system in the existing ring road and inner ring road, and new bus terminals at Sundhara and Satdobato. In the Phase III, the plan recommends new AGT system in the North-South (Narayangopal Chowk – Satdobato) and East-West (Kalanki- Airport) routes. In addition, there is a plan of expansion of the East- West route by 2030, strengthening the BRT

system by establishing new bus terminals at Narayan Gopal Chowk in the North and Naikap in the West of the existing Ring Road. Their detail is in Figure 6.

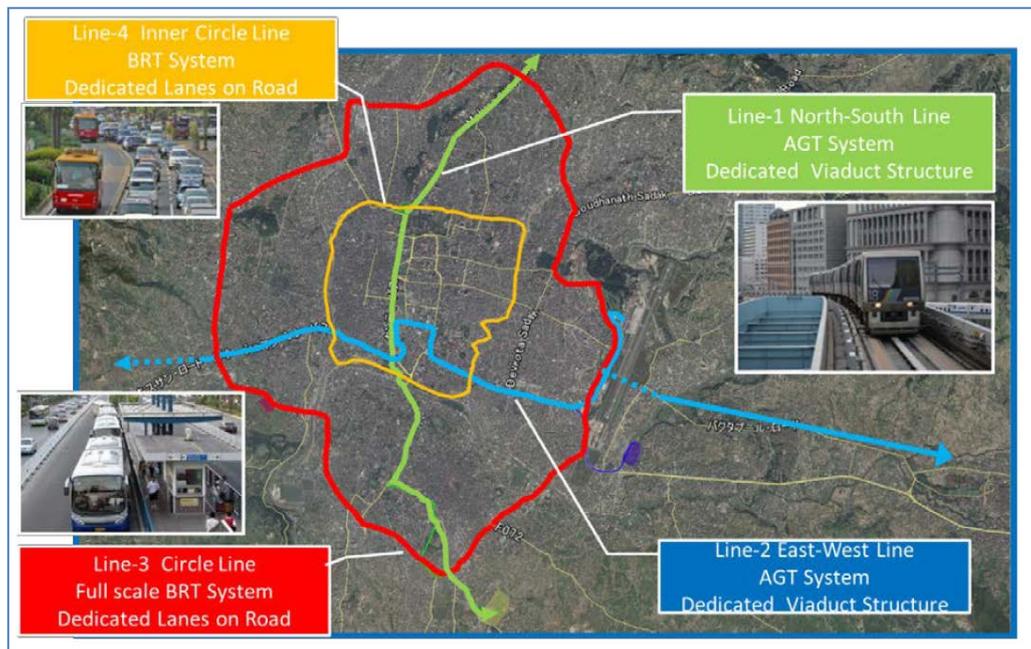


Figure 6: Kathmandu Road System

In Kathmandu, the JICA Urban Transport Master plan envisages the completion of an Inner Ring Road (IRR), mostly along ‘river corridors’, and the creation of new development areas to the south and east of the existing urban area, linked by sections of the proposed Outer Ring Road (ORR). The plan proposes the introduction of the initial phases of a mass transit system within the existing Ring Road by 2030, but for only two lines – roughly equivalent to Lines 1 and 2 of the Korean study. The Master plan also recommends that these lines use AGT (Automated Guideway Transit) technology. It claims that this would provide adequate capacity at an acceptable cost.

This plan is based on the Data Collection Survey on Traffic Improvement (2012) and Detailed Planning Survey (2013-2015) both undertaken by JICA for Kathmandu Valley Development Authority (KVDA) & the Department of Roads (DoR).

The JICA Master Plan recommends BRT as a best cost effective option for the other routes in comparison with LRT per km. in the condition of a significant dedicated ground-level right-of-way (RoW) and an adequate road width. Hence the Master Plan limits the introduction of BRT to the existing Ring road and possibly the Arniko Highway from Maitighar to Koteshwor and thence Bhaktapur whereas an elevated AGT can be constructed above major roads with a RoW of at least 15m, and is sufficiently flexible to accommodate the required gradients and horizontal radii. The details of the Public Transport Plan is give in figure 7.

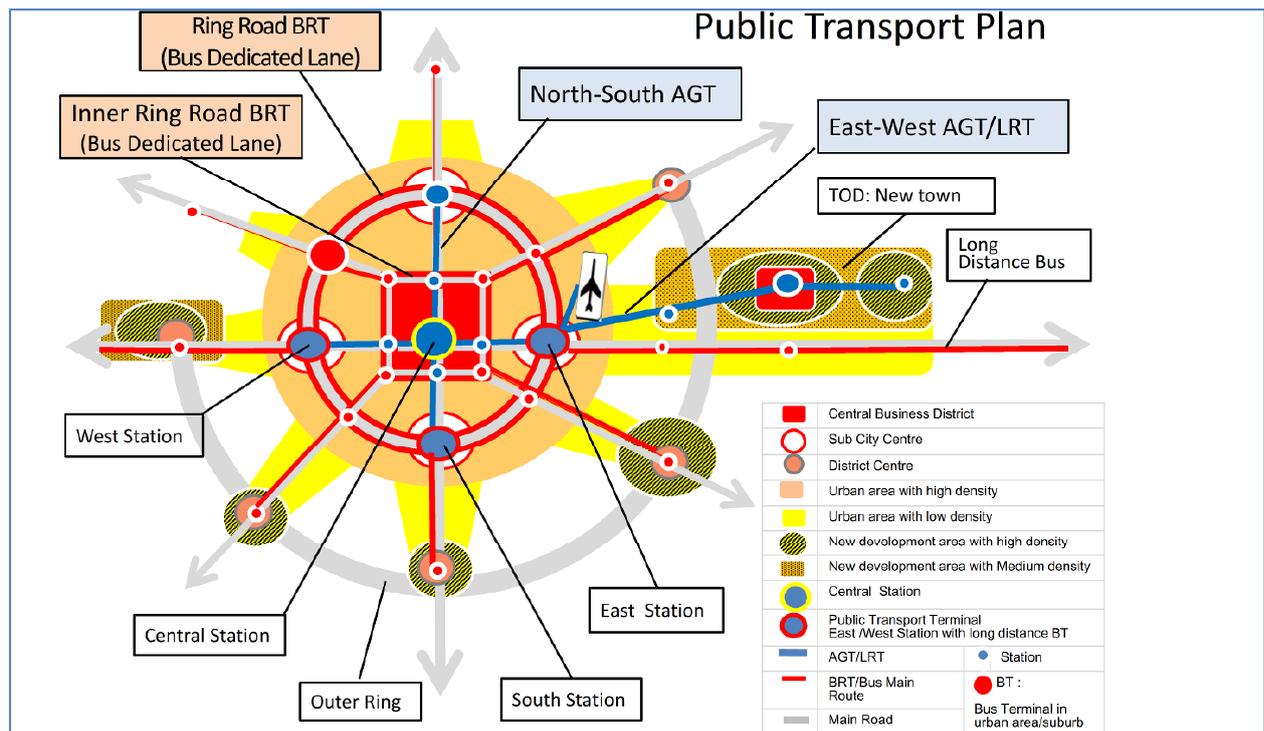


Figure 7: Public Transport Plan

Kathmandu Sustainable Urban Transport Project (KSUTP)

Kathmandu Sustainable Urban Transport Project (KSUTP) aims to improve the overall transport system and reducing congestion and pollution in Kathmandu Valley by developing a series of traffic and transport improvement programs. In public transport, the project aims to upgrade public transport (management, facilities, and operations), improve traffic management and make the city centre more pedestrian-friendly through improved sidewalks and pedestrian within the historic core. Specifically, the project proposes the rationalization and reorganization of the existing bus services, with larger buses operating on longer cross-town trunk routes, medium sized buses operating on secondary routes and smaller vehicles operating feeder routes within the more densely developed residential and commercial areas. The network of primary routes operating cross-town services is illustrated in Figure 8. It can be seen that the proposed JICA AGT routes closely follow the main corridors as identified by the KSUTP.



Figure 8: Proposed routing on Primary Network

Urban Transport and mobility policy

Urban population growth in Nepal is one of the fastest in the world. Bagamati province is the fastest urban growth area in Nepal, especially in Kathmandu valley, Bharatpur and Hetauda along with other urban growth centres in the province.

Bagamati Province covers the important urban centres of the country – the capital city Kathmandu Metropolitan City, Lalitpur metropolitan city, Bharatpur metropolitan city, Hetauda Sub-metropolitan city and many other municipalities. Many cities and urban centres are emerging in the province. City mobility behaviour is to be dealt separately in terms of transport policy, plan and management viewpoints. Sustainability issues have to be considered in the mobility. Sidewalks for pedestrians, pedestrianization of streets for the vibrant urban society are now the growing trend elsewhere in the world. Cycling is a very important mode for urban mobility. Non-motorized transport modes are receiving the priority in urban mobility all over the world as a sustainable transportation mode.

Large and densely populated Kathmandu Valley with a population of five million inhabitants is in big demand to develop an efficient public city mobility mechanism such as metro train, bus rapid transit system etc.

Therefore Bagamati province has to develop and adopt an urban mobility policy, plan and management. A separate integrated urban mobility implementation plan has to be prepared to address the city transportation in its ever-growing urban population of the province.

4.9. ROAD SAFETY

Road safety is a measure used to prevent road accidents. As an essential measure, this is a well practice in the World. Still, road accidents happen. In 2018, road traffic death was 1.35 million and countless morbidity cases (Global Road Safety Report, 2018). In the report, low and middle income countries share about 90% in total road traffic deaths. By age, there are children's and young people (5-29 years). About 50% death relates to motorist, cyclist and pedestrian, thus called vulnerable road users

As global commitment on road safety, the government of Nepal plans to reduce road fatalities by 50% by implementing Nepal Road Safety Action Plan (NRSAP) (2013-2020) and also SDG goal 3.6 and 11.2. Instead of decreasing road fatalities, its growth statistics in 2075/76 shows more than 10000 crashes. About 5000 peoples have lost their lives. About 40 % people are less than 26 years age groups.

Similarly, statistics of crashes are significant with low fatality rate in Bagmati Province. In 2075, vehicles crashes are 15190 only in Kathmandu valley and 1097 in the remaining districts of the Province. Thus, its total is 16287 (74% of total crashes of Nepal (22087)). No of fatalities is 731 (26% of total national fatalities (2789)). By sex and age, there is 76% male, 17% female and 6.4% children. Similarly, major injure cases are 1,079 and minor injury cases are 6832. Behind the crashes, there are 84% driver negligence, 9% high speed, 4% drunk driving and 3% other reasons.

4.10 Road Asset Management and Maintenance

Road Asset Management (RAM) is a major neglected issue in Nepal in the absence of systematic maintenance system and in the absence of road ownership, operation and management, although the government invests a huge to road construction and road asset. The result of the poor maintenance system is deteriorating road asset and shortening its life. Then after, road rehabilitation may be an alternative. The new constitution 2015 gives mandatory authority and responsibility to the Province Government to establish maintenance management in terms of institutional/organizational provision, financial resource, and managerial provisions. Therefore, the Province Government has prepared Annual Road Maintenance Plan (ARMP) and included maintenance cost for budget planning. Coordination with Roads Board Nepal for maintenance fund and to synchronize the maintenance activities and budget. Maintenance works is also open bid to the contractor to maintain quality and performance.

4.11 Organizations Structure

Bagmati Province has set up the organizational portfolio for the development of the infrastructure. The Provincial organizational structure is outlined with the Ministry of Physical Infrastructure Development (MoPID). Under, MoPID, the Transport Infrastructure Directorate (TID) is functioned. Under the TID, there are two Provincial Road Division Offices located in Sindhuli and Nuwakot district. Infrastructure Development Offices are

located in Ramechhap, Sindhupalchowk, Kavrepalanchowk, Lalitpur, Chitwan and Nuwakot district. The organization and its manpower are responsible for planning of infrastructure development projects, implementation of the project and monitoring and evaluation of the project.

CHAPTER 5: PROVINCIAL TRANSPORT PERSPECTIVE PLAN

5.1. BACKGROUND

Provincial Transport Perspective Plan (PTPP) of Bagmati Province is a long term perspective plan for next 20 years. In this PTPP, there are two roads: Provincial Highway (PH) and Provincial Roads (PR). The plan focuses on black topped roads to improve the accessibility in all the palikas and improve the connectivity with Provincial Headquarter, District Headquarter and Palika Centers.

5.2. PTPP PRINCIPLES

Bagmati Province is a main province of Nepal, where the capital of the country is located. This Province is commercial, industrial and agriculture hub having access of SRN and DRCN roads to road linkage in the settlement level to urban center as well as province capital. The approach and principles of preparation of the PTPP are as follows;

5.2.1. Improvement of Connectivity

Connectivity is first approach and principle of PTPP. Under this approach, SRN road connectivity between the Province Capital and Province District headquarters, DRCN road connectivity between urban roads and SRN and road connectivity between DRCN and village roads are criteria for road improvement plan with the high archery of the roads with their standard, norms and capacity of traffic flow for effective and efficient transport system.

5.2.2. Improvement of Accessibility

In PTPP, accessibility is also one of the principle to select provincial road. Its process is assessment of the operational transport services and transport accessibility to and from the settlement in one hand and the travel time taken to reach the market center, service center and delivery of agriculture products. Based on transport services and travel time, PTPP finds alternative connectivity for easy accessibility, cost effective and shortest time for connectivity between the Province Capital and District headquarters.

5.2.3. Quality Standard of Road

In PTPP, quality standard of road is also one of the principle to improve quality standard of the operational roads in the Province. For this objective, the operational roads are categorically divided into Black Topped, Graveled and Earthen Roads. In accordance with RoW and the standard specification, the quality standard of above categorical roads is assessed. The standard specification for strategic roads are comparatively higher than standard specification for DRCN and other local roads. It is challenge for the maintaining the standard specification of DRCN and local roads. PTPP has considered the quality standard of the provincial roads. The specification shall be considered of the National Standard of SRN and Local roads.

5.2.4. Integrated Transport System

The approach of PTPP is an integrated approach of the transport system including road transport, air transport, rail transport, tunnel, fast track etc for perspective development of their connectivity. The transport system should be developed as an integration of all mode, methods and model of the transport to provide the easy, fast, economy, efficient transportation system. The integrity and effectiveness of transport service to the people is the motto of the transport plan.

5.2.5. Economy of Transport Service

Economy of transport service is also one of the principle of PTPP. In PTPP, this approach aims to find out best cost effective transport service so that the value added of transport service on production and distribution will be least for their minimum production cost and maximum competitive capacity in market. Thus, producer and consumer surplus will be higher. Its result may be significant contribution to local, provincial and national GDP, along with private investment prospects on different transport sector: air plane, ship, train, buses, trucks and other vehicles. Therefore, the economy of transport services is considered in the preparation of PTPP.

5.2.6. Sustainable Transport Infrastructure

Sustainable Transport Infrastructure development is the approach of PTPP on order to maintain sustainability of transport system in the province. As a sector plan of transport, PTPP is a plan to maintain sustainable transport infrastructure. In PTPP, the SDG indicators are considered as target of the plan. The SDG road density in the targeted year is as follows;

2015	2019	2022	2025	2030
9.1.1.a. Road density (Kilometer per Square Kilometer)				
0.55	1.3	1.35	1.41	1.3

Source: SDGs, Status and Road Map 2016-2030, NPC, 2017.

5.2.7. Transport policy and Strategy

Transport policy and strategy is well preferred by the Province Government to develop transport and connectivity of major cities, metropolitan, municipalities, and rural municipalities. The policy aims to upgrade the road condition and linkages and transport services for better connectivity and easy accessibility. In PTPP, transport policy and strategy are considered for priority areas of the Province.

5.2.8. Road Safety

Road safety is approach of PTPP. In this approach, PTPP aims to reduce road accidents induced death and casualties of the people. The road planner has to consider the road safety aspect for the minimization of road accident. PTPP has considered the road safety measures on the Provincial Roads.

5.3.PERSPECTIVE PLAN OF PTPP

5.3.1. Upgrading of Roads

The perspective plan of PTPP envisages planning of the roads identified and selected from the list of inventory. The existing conditions of the roads like; graveled and earthen roads will be upgraded into the black topped in the future. The perspective plan is outlined for 20-25 years long period.

The perspective plan of the roads carries a long term vision for roaddevelopment in the Bagmati Province. The cost is calculated for upgrading roads based on the rates of the province (average district rate).

5.3.2. Identification and Preparation of Perspective Plan of Provincial Roads

The Perspective Plan of Provincial Roads is prepared on the PTMP planning. The identification of roads for perspective planning is based on the Bagmati Provincial Road Standard, Draft Act on Province Public Road and Transport Infrastructure.

In this Bagmati Province, the total number of identified Provincial Highways are 18 and the the total length is 1516.20 Km. Out of it, 176.54 Km is Blacktopped road, 198.04 is Graveled and 1142.62 Km is Earthen.

The total numbers of identified Provincial Roads are 155 and the total length of road is 4067.30 Km. Out of it, 601.10 Km road is Blacktopped road, 420.40 Km road is Graveled and 3045.80 Km road is Earthen.

Similarly, the total number of identified Provincial Urban and Rural Roads are 72 and its total length is 1427.19 Km. Out of it, 219.69 Km road is Blacktopped road, 128.90 Km road is Graveled and 1078.60 Km road is Earthen.

The list of identified Provincial Highways, Provincial Roads and Provincial Urban and Rural Roads along with its perspective plan is given below in **Table 20, 21 and 22** respectively.

The perspective plan is prepared under the basis of first periodic plan (Fiscal Year 2076/77-2080/81) of Bagmati Province. The plan is based on the assumption that all the roads within the province will be blacktopped.

Table 20: Perspective Plan of Provincial Highway

Road Code	Road Name	BT (km)	GR (km)	ER (km)	Total (km)	Perspective Plan BT (km)
BH01	Chaubis Kothi (Bharatpur)-Mangalpur-Sardanagar-Gunjanagar-Divyanagar-Meghauri-Jitpur-Golaghat Road	13.00	20.56	0.00	33.56	20.56
BH02	Bakular (Ratnanagar)-Jutpani- Saktikhor-Upardangadi- Terse- Mayatar- Bashpur-Fishling Road	16.16	0.00	39.51	55.67	39.51
BH03	Manahari (Simpani)- Daupur- Sarikhet-Lawati- Dogota- Tamlang- Baikuntha- Adamghat Road	0.00	0.00	76.49	76.49	76.49
BH04	Dhadingbesi Sankosh Tipling Somdang -Gatlang- Suphrubesi Road	0.00	29.20	84.55	113.75	113.75
BH05	Dharkeswara-Jibanpur-Patale Pokhari-Barabise-Bedkotgadhi-Ratmate Road	7.38	5.00	12.94	25.32	17.94
BH06	Balephi- Naubise - Chautara- Sipaghat- Churithumki – Kartike – Sankhu Road	10.00	32.30	30.00	72.30	62.30
BH07	Jadibuti-Thimi-Sallaghari-Kamalbinayak-Kharipati-Nagarkot-Hinguwapati- Dolalghat Road	26.53	0.00	40.17	66.70	40.17
BH08	Madan Bhandari Marga (Balkhu-Chovar-Chhaimale-Kulekhani-Bhimphedi-Bhaise) Road	25.90	36.20	0.00	62.10	36.20
BH09	Banepa-Panauti-Khopasi- Kamidanda -Taldhunga -Sikredovan-Bhorleni-Bagmati Road	6.00	3.54	76.90	86.44	80.44
BH10	Dolalghat- Falante- Kolati- Dhadkharka- Chauri-Gurase- Galpa-Makadum-Manthali Road	0.00	0.00	107.02	107.02	107.02
BH11	Panchkhal-Melamchi-Helambu-Timbu-Melamchigyang Road	22.40	17.00	11.28	50.68	28.28
BH12	Mude- Bagkhor- Melung- Budhachowk- Sitali Road	0.00	0.00	51.74	51.74	51.74
BH13	Jiri- Siurani- Those- Sivalaya- Bamti -Thadokhola-Solu Road	2.00	3.00	33.00	38.00	36.00
BH14	Manthali-Sunarpani-Salu-Sanghutar-Ghorakhori Road	6.59	0.00	22.63	29.22	22.63
BH15	Sindhulimadi-Bhimsthan- Chakmake-Udayapur(Katari) Road	1.80	49.30	32.20	83.30	81.50
BH16	Province Ringroad	15.63	0.00	401.44	417.06	401.44
BH17	Karmya-Bakafar-Hatmara-Jhyadi-Baseri-Sepa-Gaabesi-Dovan Road	9.18	0.00	82.25	91.43	82.25
BH18	Thulokhola- Lamidada- Galchhi-Phorsetar- Sunaula Bazar- Dhadhingbesi Road	12.99	1.95	40.50	55.43	42.44
	Total	175.54	198.04	1142.62	1516.20	1340.66

Table 21: Perspective Plan of Provincial Road (PR)

Road Code	Name	BT (km)	GR (km.)	ER (km.)	Total (km.)	PTMP BT (km)	District
BR01	Byasi(Bhaktapur)- Changunarayan Road	7.0			7.0	0.0	Bhaktapur
BR02	Kamalbinayak- Sudal- Adikarigaun- Nagarkot Road	7.0	8.0		15.0	8.0	Bhaktapur
BR03	Sallaghari (Bhaktapur)- Duwakot- Phuyalgaun-Mulpani-Dasindhoka (Gokarna) Road	8.0	2.0		10.0	2.0	Bhaktapur
BR04	Chyamasingh- Amaldol- Nala- Banepa Road	10.7			10.7	0.0	Bhaktapur
BR05	Thimi-Gamcha-Tarkhel-Anantalingeshor-Lamatar Road	4.0	3.6		7.6	3.6	Bhaktapur
BR06	Jagati-Doleshor-Ashapuri-Sanga Road	10.0	4.0		14.0	4.0	Bhaktapur
BR07	Mahuwa khola-Hattibang (Kaule)Tindovan Road	0.0	0.0	15.0	15.0	15.0	Chitwan
BR08	Khurkhure (Highway)- Samitar- Thakurivanjyang (Korak) Road	11.0	0.0	6.3	17.3	6.3	Chitwan
BR09	Bharatpur- Gaurigunj (Health Post)- Prembasti Chowk-Fulbari Chok-Shivanagar- Parbatipur- Sukranagar- Budhanagar- Maghauri Airport-Dhruwa Road	27.4	0.0	0.0	27.4	0.0	Chitwan
BR10	Shaktikhor-Siddhi-Ramtresh- Thakuribhanjyang, Chepang Marga	0.0	4.0	11.7	15.7	15.7	Chitwan
BR11	Chainpur-Khairhani-10 Jibanpur-Rapti-Madanpur-Road (Purbi Chitwan)	8.4	0.0	0.0	8.4	0.0	Chitwan
BR12	Chiraulichowk-Simrahani- Hudai Khairhani Chharchhare Road	0.0	5.3	0.0	5.3	5.3	Chitwan

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BR13	Ratnanagar-3-Belsi- Phasera-Jhuwani-Mamabhanjchowk- Badreni Khorsor-Hatti Prajanan Road	12.2	0.0	0.0	12.2	0.0	Chitwan
BR14	Sano Bhorle to Upardangadhi Paryatan Marga, Ichhakamana Road	0.0	0.0	30.3	30.3	30.3	Chitwan
BR15	Pulchowk-Baraghare-Shivaghat-Gajipur -Meguali Road	38.4	0.0	0.0	38.4	0.0	Chitwan
BR16	Jagatpur-Krishnachowk-Manipur-Shankarchowk-Bhimnagar-Saradanagar (HealthPost)-Bijayanagar-Shivaghat (Narayani) Road	3.1	8.6	0.0	11.7	8.6	Chitwan
BR17	Chanauli-Dadarani-Amritchowk-Dhurba-Jagat Road	5.8	0.0	0.0	5.8	0.0	Chitwan
BR18	Gitanagar-Shivanagar-Laurechowk-Kanchichowk-Bhimnagar-Chanauli Road	11.0	0.0	0.0	11.0	0.0	Chitwan
BR19	Jagatpur-Parbatipur-Rampur-Gautambudha Stidium-Narayani River Road	0.0	11.7	0.0	11.7	11.7	Chitwan
BR20	Ramailodada-Chharchhare Road	0.0	0.0	4.8	4.8	4.8	Chitwan
BR21	Palpabhangyang-Sadhbhanjyang-Khari-Bhunkotghat-Road		7.0	15.3	22.3	22.3	Dhading
BR22	Siktar-Budhathum-Baseri-Manbu- Lapa Road			85.0	85.0	85.0	Dhading
BR23	Mahadevbeshi-Tasarpur-Ratmate-Chalti-Chisapani-Phedigaun-Phatbazar-Pulkomukha Road			46.9	46.9	46.9	Dhading
BR24	Phosretar Parewatar Benidovan Baikalpik Sadak		3.0	34.7	37.7	37.7	Dhading
BR25	Dhadingbesi- Syaule- Bodarthok-Kafalpani- Mandredhunga (Bidur) Road	20.0	12.5	8.7	41.2	21.2	Dhading
BR26	Khambu-Manetari-Darkha-Dundure Road			12.6	12.6	12.6	Dhading

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BR27	Sikatar- Aginchowk- Salyankot- Sukbhanjayng- Phulkharka- Ri Road		10.0	10.0	20.0	20.0	Dhading
BR28	Chauki Bidhan (Benighat)- Nabagufa Road	2.0	6.4		8.4	6.4	Dhading
BR29	Dhadingbesi-Bharangbhurang Road	8.5	12.0	1.7	22.2	13.7	Dhading
BR30	Todke-Semjung (Netrawati Gaunpalika Center) Road			12.0	12.0	12.0	Dhading
BR31	Charikot-Deurali- Kalinchok Road			17.5	17.5	17.5	Dolakha
BR32	Yarsha-Lwasa-Jatapokhari-Pachpokhari Road			17.3	17.3	17.3	Dolakha
BR33	Melghumti- Gaighat-Birendra Ma Bi (Katakuti)- Dudhpokhari- Dase 21 Kilo Road			44.0	44.0	44.0	Dolakha
BR34	Bhirkot-Sahare-Hawa Road	25.6			25.6	0.0	Dolakha
BR35	Ghyawapani-Shera-Surke-Nigale Road			18.0	18.0	18.0	Dolakha
BR36	Jiri Mali Shyama Road		4.0	22.0	26.0	26.0	Dolakha
BR37	Makaibari-Deurali-Paanighat Road	3.0		8.6	11.6	8.6	Dolakha
BR38	Pumpa-Dhunge-Gumba Road			10.8	10.8	10.8	Dolakha
BR39	Suri (Gurumphi Mulabari) Masding Road		4.0	11.0	15.0	15.0	Dolakha
BR40	Jiri-Salleri-Dhingri (Tibbet Boarder) Road			18.0	18.0	18.0	Dolakha
BR41	Namdu- Jugu- Jhyaku- Bhorle Road			29.0	29.0	29.0	Dolakha
BR42	Nayapul- Pawati- Dandakharka Road	10.0	2.0	16.0	28.0	18.0	Dolakha
BR43	Sunkhani- Sangwa Road		26.0	5.0	31.0	31.0	Dolakha

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BR44	Anathalay-Gaighat Road			10.0	10.0	10.0	Dolakha	
BR45	Bhorle-Tinekhu (Gaurishankar Gaupalika) Road			9.0	9.0	9.0	Dolakha	
BR46	Mainapokhari-Jyamire-Hiti-Khahare-Pokhare-Mirge Farm(Agriculture Pocket)	Krishi	1.0	6.0	7.0	6.0	Dolakha	
BR47	Sitakothan-Jugu-Jhyaku Gaurishankar Gaupalika Road			37.0	37.0	37.0	Dolakha	
BR48	Kharidhunga Film City Access Road			8.0	8.0	8.0	Dolakha	
BR49	Chuchchepati- Kapan- Dandagaun- Gamcha-Mahankal Road		9.4	0.0	0.0	9.4	0.0	Kathmandu
BR50	Thimi-Bode-Mulpani-Gokarna-Baluwa-Tare Bhir-Narayansthan Road		7.9	0.0	0.0	7.9	0.0	Kathmandu
BR51	Sankhu- Palubari- Nagarkot Road		0.0	0.0	11.2	11.2	11.2	Kathmandu
BR52	Satungal- Matatirtha- Deurali- Mahalaxmi Dovan Road		0.0	0.0	17.3	17.3	17.3	Kathmandu
BR53	Gosaikunda Marga (Kathmandu-Sundarijal-Chisapani-Kutumsang)		15.1	0.0	41.1	56.2	41.1	Kathmandu
BR54	Pharping (Dakshinkali)- Humane-Pakhelchaur- Kulekhani Road		15.0	10.0	0.0	25.6	10.0	Kathmandu
BR55	Thankot- Chitlang Bhanjyang (Ganesh M. Singh Marg)- Chandragadhi- Kunsal-Markhu -KulekhaniRoad		0.0	0.0	19.6	19.6	19.6	Kathmandu
BR56	Kalanki-Purano Naikap-Thankot Road		8.8	0.0	0.0	8.8	0.0	Kathmandu
BR57	Loktantrik Sahid Marga(Brahmakhel-Satghatte-		2.5	0.0	8.9	11.4	8.9	Kathmandu
BR58	Panchkahal-Palanchowk Bhagawari-Koshidekha -Timalbesi Thulo Parsel Road		18.0	0.0	15.5	33.5	15.5	Kavrepalanchowk
BR59	Bohore Dovan- Aadha Bato- Sarsyunkharka (Danda Gaun)-		0.0	0.0	31.0	31.0	31.0	Kavrepalanchowk

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	Saramthali- Maure Road						
BR60	Dolalghat- Sallebhumlu- Chaubas- Lauredeurali- Nagregagarche Road	8.0	0.0	11.1	19.1	11.1	Kavrepalanchowk
BR61	Khopasi- Dhungkharka- Chyamrangbesi- Milche Borang-Taldgunga- Banakhu-Kartike-Khalanga-Gandawa Road	5.0	9.0	58.9	72.9	67.9	Kavrepalanchowk
BR62	Kamidanda Bhanjyang- Medhamsu- Falamsangu- Sikhar Ambote- Mahadevtar- Sisakhani (Pita dhovan) Road	0.0	0.0	25.9	25.9	25.9	Kavrepalanchowk
BR63	Ravi opi (Dundamukh)- Devitar- Anekot (Ghumani Chour)- Nayagaun Road	0.0	0.0	25.0	25.0	25.0	Kavrepalanchowk
BR64	Dolalghat-Silame-Ritthe-Simthali-Beksimle-Wafal (Sindhupalchowk) Road	0.0	0.0	25.0	25.0	25.0	Kavrepalanchowk
BR65	Pingthali-Rajbas-Bhumichuli-Budhakhani-Devitar-Ghartichhap-Gokule Road	0.0	0.0	48.0	48.0	48.0	Kavrepalanchowk
BR66	Dhulikhel-Ravi Opi-Nagarkot Road	1.0	0.0	17.7	18.7	17.7	Kavrepalanchowk
BR67	Parkhalchour-Thadachour-Budhapokhari-Ranikot-Suryabinak Road	4.0	0.0	9.0	13.0	9.0	Kavrepalanchowk
BR68	Banepa- Raviopi- Panchkhal Road	8.0	0.0	8.0	16.0	8.0	Kavrepalanchowk
BR69	Bhakunde- Pokhari Narayansthan- Mechhe Road	7.0	5.0	13.0	25.0	18.0	Kavrepalanchowk
BR70	Banepa-Nala- Kashibhangyang-Nayagaun-Kunta Road	4,5	2.0	15.5	17.5	17.5	Kavrepalanchowk
BR71	Rangcha khola-Banakhu-Ghartichhap-Chotesang-Bhorleni Road	0.0	0.0	40.0	40.0	40.0	Kavrepalanchowk
BR72	Panchkhal-Bohare Dovan-Thulo Parsel-Mamti-Nepalthok Road	2.0	4.0	44.0	50.0	48.0	Kavrepalanchowk
BR73	Dhulekhel-Panauti Road	0.0	3.0	3.0	6.0	6.0	Kavrepalanchowk

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BR74	BP Highway (Chaukidada)-Sipali- Budhakhani-Phoksingtar- Gokule Road	0.0	0.0	40.0	40.0	40.0	Kavrepalanchowk
BR75	Belarani (B.P Highway)-Baluwa-Tinpipe (Arniko Rajmarga) Road	0.0	0.0	12.0	12.0	12.0	Kavrepalanchowk
BR156	Kavrebhangyang-Dapcha-Pipaltar-Sikhar Ambote-Sanakot-Tara Khasne Lekh-Gokule Road	11.0		39.0	50.0	39.0	Kavrepalanchowk
BR157	Chubas-Gumati-Salambu Kafle-Kilpubatar Road			15.0	15.0	15.0	Kavrepalanchowk
BR76	Bishankhunarayan-Taukhel-Chapagaun-Champi- Pharsidole-Pharping Road	6.7	0.0	27.2	33.9	27.2	Lalitpur
BR77	Birkhedhara- Dalchoki- Ikudole- Sankhu- Bhattedada Road	0.0	0.0	28.0	28.0	28.0	Lalitpur
BR78	Tikabhairab- Debichour- Ghusel- Malta-Baguwa connect Kanti Rajpath Road	9.0	0.0	11.0	20.0	11.0	Lalitpur
BR79	Godawari-Phulchoki Road	0.0	0.0	12.0	12.0	12.0	Lalitpur
BR80	Lele-Chandanpur- Manikhel-Gotikhel-Gimdi-Simle-Baguwa Road	0.0	0.0	75.1	75.1	75.1	Lalitpur
BR81	Godawari-Chapakharka-Bhardev-Jorghatta-Bhumidanda-Panauti Road	0.0	0.0	9.2	9.2	9.2	Lalitpur
BR82	Piple-Makranchuli-Makwanpur Gadhi Road	8.7	0.0	0.0	8.7	0.0	Makwanpur
BR83	Kunchhal-Markhu Road	0.0	0.0	18.0	18.0	18.0	Makwanpur
BR84	Manahari-Chainpur Road	0.0	0.0	5.8	5.8	5.8	Makwanpur
BR85	Chuniya-Namtar- Kalikatar-Bharta-Khairang Road	0.0	0.0	24.6	24.6	24.6	Makwanpur
BR86	Samaripul- Dumrekuna- Sukaura Road (Sahid Basudev Marg)		6.0		6.0	6.0	Makwanpur

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BR87	Gairigaun-Pakani- Dadakharka- Bharta- Chainpur- Manahari Road	12.6		49.0	61.6	49.0	Makwanpur
BR88	Hattisude- Shikarpur- Phaparbari Road	0.0	5.0	6.0	11.0	11.0	Makwanpur
BR89	Panchpandav- Raigaon- Canteen Road			32.0	32.0	32.0	Makwanpur
BR90	Pashupatinagar- Padampokhari- Handikhola- Rajaiya Road	10.6		9.9	20.5	9.9	Makwanpur
BR158	Sirsire Kapase Chyauchau Thingen Road	0.0	4.0	21.0	25.0	25.0	Makwanpur
BR159	Phaparbari Beteni Road	0.0	0.0	15.0	15.0	15.0	Makwanpur
BR160	Hattisude-Pangdure-Bhirkot-Man Damar-Tin Bhangale Mahadevdada-Gaidatar-Chandranigahapur Road	0.0	20.0	20.0	40.0	40.0	Makwanpur
BR161	Hetauda Kulekhani Phakhel pharping Road	36.0	22.0	0.0	58.0	22.0	Makwanpur
BR162	Bagamati ga. Pa.Karyalaya Bhorleni chilime road		7.0	8.0	15.0	15.0	Makwanpur
BR91	Chaukidanda- Hattiwang- Paryatan Marga	0.0	0.0	12.0	3.8	12.0	Chitwan
BR92	Trishuli(coloni)-Deurali-Megang-Kimtang-Thambukhola-Sikatar Road	2.0	15.0	48.8	65.8	63.8	Nuwakot
BR93	Chahare-Likhukhola-Kabilas-Ghalebhanjyang-Thaprek-Betini-Golfubhanjyang Road		14.0	17.2	31.2	31.2	Nuwakot
BR94	Gurje- Aaitaram Parti- Maidan- Chhap- Talakhu Road			17.6	17.6	17.6	Nuwakot
BR95	Kolputar-Duipipal-Patle Road		2.0	29.7	31.7	31.7	Nuwakot
BR96	Sole-Satdobato-Bhalche-Salme Road			23.3	23.3	23.3	Nuwakot
BR97	Ringroad- Tinpipale- Okarpauwa- Kolpu khola Road	10.0	8.0	11.9	29.9	19.9	Nuwakot

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BR98	Ranipauwa-Chaturale-Dhadphedi-Basuki Narayan-Bidur Road		5.0	14.1	19.1	19.1	Nuwakot
BR99	Kaulethana- Mahendra Ma.Vi- Thansingphat Road		4.0	7.8	11.8	11.8	Nuwakot
BR100	Gerkhutar-Chokade Road	14.1			14.1	0.0	Nuwakot
BR101	Mandredhunga-Gauribeshi-Kalikhola-Bhattagaun-Kha.Bha. Road		1.5	10.5	12.0	12.0	Nuwakot
BR102	Barahi-Shakti Ma.Bi.-Bidur Road	1.4		20.3	21.7	20.3	Nuwakot
BR103	Gurjebhangyang-Mahattole-Manebhangyang-Samundratar-Ghyangphedi Road		7.0	24.5	31.5	31.5	Nuwakot
BR104	Kamidada-Thandapani-Kaule (Kispang Palika Center) Road			10.0	10.0	10.0	Nuwakot
BR105	Khimti-Pharpu-Namadi-Betali-Rasnal-Gargyang- Deurali-Gumdel Road	11.4	10.0	29.1	50.5	39.1	Ramechhap
BR106	Khairenighat- Galba- Doramba- Kholakharka-Sailunge Road	4.3		50.7	55.0	50.7	Ramechhap
BR107	Devitar- Doramba- Paseban- Koilibagar Road	5.0	9.0	33.2	47.2	42.2	Ramechhap
BR108	Rasnal- Bhitrikhani- Gupteshor- Kaileshor- Dhungebhir-Bhujikoldanda Road	0.0	0.0	18.0	18.0	18.0	Ramechhap
BR109	Sitkha- Bhirpani-Goganpani- Phulpa-Dhule-Nigarpa-Bhadaure-Deurali (Bhotnagi) Road	10.3	0.0	22.2	32.5	22.2	Ramechhap
BR110	Likhu Corridor (Kolanjorghat Sanghutar Sirise Bimire Gelu Korandu Thadakhola Umatirtha Lahachhewar Road	0.0	0.0	85.5	85.5	85.5	Ramechhap
BR111	Manthali -Bhutiakhola- Kathjor Dhobi Road	5.0	0.0	16.3	21.3	16.3	Ramechhap
BR112	Thamchaur (Tokarpur)-Gunsal- Tharbhanjyang Thapagaun Pudi Kafle	0.0	0.0	30.2	30.2	30.2	Ramechhap

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	Road						
BR113	Duragaun Bhujji Priti Kubukasthali Bamdi Deurali Gumdel Road	1.5	20.0	23.1	44.6	43.1	Ramechhap
BR114	Bhujidada- Kalochautara-Singati-Galab-Priti Road	1.5	0.0	17.8	19.3	17.8	Ramechhap
BR115	Halede-Dhobi-Dhade-Khilji Phalate (Okhaldhunga) Road	0.2	4.0	32.1	36.3	36.1	Ramechhap
BR116	Bogatitar-Simle-Bhorle-Parchyang-Yarsa-Doklang Road		6.0	35.7	41.7	41.7	Rasuwa
BR117	Kalikaasthan-Dhunge-Karmi dada-banuwa Road		5.0	4.8	9.8	9.8	Rasuwa
BR118	Satdobato(Nuwakot)- Thulogaun- Dandagaun- Siruchet- Karumryan-Haku-Gre-Gatlang Road		2.0	31.5	33.5	33.5	Rasuwa
BR119	Dharapani-Bhadaure-Rupsepani- Jibjibe - Jyanglang Aledanda hudai Pasang Lhamu Rajmarga Road			13.4	13.4	13.4	Rasuwa
BR120	Dhunche- khodol Road			6.3	6.3	6.3	Rasuwa
BR121	Kalikaasthan -Gairighar-Dhaibungkot-Chitrepani-Prasgse Muralibhangynag Lokil Road			18.7	18.7	18.7	Rasuwa
BR122	Ronga-Goljung-Bahundada-Gatlang Road			6.1	6.1	6.1	Rasuwa
BR123	Kapilakot- Madhubani- Rampur- Netrakali- Kusheshwor Dumja Road	0.0	0.0	32.3	32.3	32.3	Sindhuli
BR124	Sindhuligadhi- Majhuwa- Kaphalchauri Dumja Road	10.0	0.0	48.8	58.8	48.8	Sindhuli
BR125	Hariwan- Kyaneswor- Bhitri- Jamune- Boteni Road	4.0	0.0	17.8	21.8	17.8	Sindhuli
BR126	Khaniyakharka- Kamarebhanjyang- Dhapchauki- Tiplung- Mahadevdanda-Tinkhande Road	5.0	15.0	68.4	88.4	83.4	Sindhuli

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BR127	Pipalbhanjyang-Hayutar- Sole- Netrakali Road	4.0	25.0	10.0	39.0	35.0	Sindhuli
BR128	Nawalpur Bahuntilpung Chisapani Road	5.0	0.0	73.0	78.0	73.0	Sindhuli
BR129	Bandipur Jaghadi Khaniya Mahadevdanda Damar Road	0.0	0.0	42.0	42.0	42.0	Sindhuli
BR130	Ruchani Madaha Gagan Road	0.0	1.0	18.8	19.8	19.8	Sindhuli
BR131	Ramtar- Littebhanjyang-Bandipur-Ghyanglekh Road	0.0	0.0	19.6	19.6	19.6	Sindhuli
BR132	Dadi Aanpchaur Bhalumara Bakhphar Bhutaha Kimalchuli Atauli Road	0.0	0.0	36.0	36.0	36.0	Sindhuli
BR133	Gurjimadi Hariharpurgadhi Killa Road	0.0	0.0	27.4	27.4	27.4	Sindhuli
BR134	Jagadi-Dhansari-Aadheri-Charnath-Ganeshman Na Pa. Road	0.0	0.0	17.8	17.8	17.8	Sindhuli
BR135	Mulkot- Nagedanda- Amare- Majhuwa Road	2.5	0.0	24.9	27.4	24.9	Sindhuli
BR136	Barabise- Sunkoshi-Dhuskun-Piskar-Tauthali- Sildhunga Road			32.8	32.8	32.8	Sindhupalchowk
BR137	Balkar-Tekanpur-Tauthali-Kharidhunga Road		21.1		21.1	21.1	Sindhupalchowk
BR138	Jyamiremane-Nawalpur-Guphadanda Road			12.4	12.4	12.4	Sindhupalchowk
BR139	Kothe-Binjel-Chilaune-Dhuskot-Hagam Road	1.0		12.5	13.8	12.5	Sindhupalchowk
BR140	Chanaute-Ichok-Tartung-Ghopte GhangNalung-Kharka-Kutumsang Road			31.4	31.4	31.4	Sindhupalchowk
BR141	Dauchet-Keureni-Baskharka-Baruwa -Yangri Road			25.3	25.3	25.3	Sindhupalchowk
BR142	Siyale-Yamuna Danda-Sunkhani-Ghichhet-Tamchet-Sikre-21 kilo Road		1.5	26.8	28.3	28.3	Sindhupalchowk

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BR143	Balephi-Jalbire-Tembathan Road	20.0		25.7	45.7	25.7	Sindhupalchowk
BR144	Sukute-Mildanda-Bagbhairab-Wafal-Lishanku-Ghyangdanda-21 Kilo Road	12.0		12.9	24.9	12.9	Sindhupalchowk
BR145	Barhabise-Maneswara-Ghumthang-Listi-Bhairavkunda Road			48.8	48.8	48.8	Sindhupalchowk
BR146	Melamchi-Tipeni-Bhotang Road	10.0		16.6	26.6	16.6	Sindhupalchowk
BR147	Chautara-Syaule-Okhreni-Gobre Road	7.0	4.0	14.0	25.0	18.0	Sindhupalchowk
BR148	Melamchi Phatte-Dubachaur-Kakani-Shermathang Road	6.5	2.5	11.0	20.0	13.5	Sindhupalchowk
BR149	Majhirumti Tar-Lekhharka-Gunsa-Raithane Road			11.0	11.0	11.0	Sindhupalchowk
BR150	Timbu-syugunche-Sermathang Road	1.0		12.0	13.0	12.0	Sindhupalchowk
BR151	Daklang-Listi- Bhairabkunda Road			20.4	20.4	20.4	Sindhupalchowk
BR152	12 Kilo-Timure-Thokarpa Road		6.7	4.0	10.7	10.7	Sindhupalchowk
BR153	Barabise- Thotniri-Ratamate-Chulthidamar- Ghunde- Ompark Road	5.8			5.8	0.0	Sindhupalchowk
BR154	Chaku-Marmi-Chanraku-Daudhunga -Singati (Dolkha)Road			9.1	9.1	9.1	Sindhupalchowk
BR155	Jalbire-Yakrang-Chanaute-Dhungre Road			11.5	11.5	11.5	Sindhupalchowk
	Total	601.1	420.4	3045.8	4067.3	3466.1	

Table 22: Perspective Plan of Urban and Rural Roads

Road Code	Name	BT (km)	GR(km)	ER (km)	Total (km)	PTMP BT (km)	Districts
BUR01	Kathmandu Valley Kath Ringroad (Lele-Godawari-Bistachap-Godamcour-Jyamirkot-Sisneri-Gundu-Suryabinayak-Doleshor-Palase-Daujagaun-Sudal-Adhikarigaun-Bageshori-Telkot-Sakhu-phyaulgaun-Sundarjal-Tarebhir-Taulng-Gairigaun-Bishnughat-Bhasanthali-Chadeshori-Sangla-Tarakeshor-Balaju-Ichhangu-Dahachowk-Thankot-Matathirtha-Machhegaun-Taudaha-Chalnakhel-Bungmati-Pharsidole-Salyantar-Tikabhairab-Lele)	34.79	0.0	122.0	156.79	122.0	Kathmandu, Lalitpur, Bhaktapur
BUR02	Purbi Chitwan Ringroad (Daduwa chowk-Lalpur-Raichowk-Shivlaychowk-Kayarkhola pul-Tilakbahadur chowk-Brahma chowk-Kholesimal-Kamalcowk-gaduwa chowk-Ratnagar Tikauli Pul-Sauraha-Ecopark-Harnari-Simarani-Kathar-Kusaha muhan-Padariya-Lothar Partikaya Marga Samma)	20.6	38.4	1.0	60.0	39.4	Chitwan
BUR03	Balkumari- Dadhikot- Kapitole- Chakrapath- Ghyampedanda-Tarkhel Road	2	4.35		6.4	4.4	Bhaktapur
BUR04	Thimi (SOS)- Lokanthali- Dharmeshwar-Tikathali- Manohara-Balkot Road	3.12			3.1	0.0	Bhaktapur
BUR05	Nikosea- Sallaghari-Dudhapati Road	2.35	0.0	0.0	2.4	0.0	Bhaktapur
BUR06	Sallaghari(ARM)- Katunje- Simlingtar- Lubhu Road	2	3		5.0	3.0	Bhaktapur
BUR07	Bhaktapur Chakrapath (Kaushaltar-Biruwa-Gundu-Suryabinayak-Nangkhel-Chitapol-Nagarkot -Telkot Road	10	2	8	20.0	10.0	Bhaktapur
BUR08	Duwakot-Swarswatikhel Bus park- Bhaktapur Samthali-Byashi Shiva Mandir- Manohara -Mulpani Road	2	2.18		4.2	2.2	Bhaktapur
BUR09	Nilbarahi-Nepal Engineering College- Indrekholchha- Telkot Road		2	11	13.0	13.0	Bhaktapur
BUR10	Kausaltar-Biruwa-Tarkhagal Road (Katha Ringroad)	2	4	2	8.0	6.0	Bhaktapur
BUR11	Devendrapur-Sanimandir-Syaulibas-Mudhedhukurbari Hudai Sahariswashya Chauki Road	0.0	0.0	6.6	6.6	6.6	Chitwan
BUR12	Baharatpur 11- Gardas -Dahakhani Road	0.0	22.9	0.0	22.9	22.9	Chitwan
BUR13	Ratnanagar-Chitrasari-Sauraha-chitrasahi	9.5	0.0	0.0	9.5	0.0	Chitwan
BUR14	Hakimchowk-Dharechowk-Makhanchowk-Ashokchow-Padeghumti-Dairy Chowk-Sitamai Road	12.0	4.5	0.0	16.5	4.5	Chitwan

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BUR15	Bha na pa 26,27- Sisuwa-Sisai-Bankatta-Pipra-Dadrani- Amritchowk-Jagatpur Road	6.0	5.4	0.0	11.4	5.4	Chitwan
BUR16	Sauraha- Bisajarital-Devnagar-Gitanagar Road	2.3	0.0	14.2	16.5	14.2	Chitwan
BUR73	Muglin Ichhakamana Sadak	0.0	0.0	18.0	18.0	18.0	Chitwan
BUR74	Hattidhap Surkhandi Road	0.0	0.0	17.0	17.0	17.0	Chitwan
BUR75	Chainpur Purano Parsa Kumroj Kapiya Road	8.0	4.0	0.0	12.0	4.0	Chitwan
BUR76	Chainpur Chowk-Shabalaya Chowk-Kankalini Road	5.5	0.0	0.0	5.5	0.0	Chitwan
BUR77	Ratnanagar-Tandi Subha Chowk-Madhavpur Road	7.5	0.0	0.0	7.5	0.0	Chitwan
BUR17	Sutkeridhunga-Karkidada-Rele-Sagarbhangyang Road	0.0	0.0	16.4	16.4	16.4	Dhading
BUR18	Busti-Putalikath-Thulopatal-Laharemane Road	0.2	5	9.8	15	14.8	Dolakha
BUR19	Kashibazar- Kirtipur- Machhegaun- Tinthana Road	9.5	0.0	0.0	9.5	0.0	Kathmandu
BUR20	Balaju- Nepaltar- Sangla Bazar Road	0.0	8.2	0.0	8.2	8.2	Kathmandu
BUR21	Pepsikola- Karkigaun(KVRR) Road	1.9	0.0	4.9	6.8	4.9	Kathmandu
BUR22	Tripureshwar-Lainchaur-Maharajgunj-Bansbari-Budhanikantha Road	13.5	0.0	0.0	13.5	0.0	Kathmandu
BUR23	Tinpiple- Baluwa-Boaredovan Road	7.0	0.0	5.0	12.0	5.0	Kavrepalanchowk
BUR24	Kartike Deurali (madhya pahadi Lokmargar)- Pokhari-Khar- Rumti-Majhipheda Road	0.0	0.0	20.5	20.5	20.5	Kavrepalanchowk
BUR25	Bhakundebesi-Tallo Hatiya-Barbote-Pangtangkharka-Pipaltar- Phalame Sanghu Road	0.0	0.0	15.0	15.0	15.0	Kavrepalanchowk
BUR26	Malpi-Gagal-Kolati-Simpani-Pokharidada-Parthali Bhangyang Road	0.0	0.0	10.0	10.0	10.0	Kavrepalanchowk
BUR27	Dapcha-Nepane-Gahate-Phalamesaghu Road	0.0	0.0	10.0	10.0	10.0	Kavrepalanchowk
BUR28	Nala Kavrekobot -Ghimire Gaun-Nagarkot Road	3.0	0.0	4.0	7.0	4.0	Kavrepalanchowk
BUR29	Sitalbasti (BPH)- Thulitar-Tinpiple (ARM) Road	0.0	0.0	8.4	8.4	8.4	Kavrepalanchowk
BUR78	Arniko Rajmarga-Sanga-Byangdhungs-Kalammasi-Nagarkot Road			15.0	15.0	15.0	Kavrepalanchowk
BUR30	Manohara bridge (Balkumari)- Shankhamul- Teku Dobhan- Balkhu Road	5.8	0.0	0.0	5.8	0.0	Lalitpur
BUR79	Damandadabash-Galchhi-Kailash Road	12.00	2.00	15.00	29.0	17.0	Makwanpur
BUR80	Pulkhomukh-Indrayanichaur-Phedigaun-Chisapani-Chalti Road	0.00	0.00	30.00	30.0	30.0	Makwanpur
BUR81	Hetauda Ringroad	7.00	20.00	5.00	32.0	25.0	Makwanpur
BUR82	Janyuddha Marg Kutibhakhari Gajan Deujar Road	0.00	0.00	20.00	20.0	20.0	Makwanpur
BUR83	Naukhande Jagdanda Road	0.00	0.00	15.00	15.0	15.0	Makwanpur

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BUR31	Sole-Sahugaun-Bhumidevi U.Ma.Vi. Road			11.9	11.9	11.9	Nuwakot
BUR32	Bogatigau-Keurani-Bhutiya- Chinnedada Road		1	4.8	5.8	5.8	Nuwakot
BUR33	Manthali- Chisapani- Puranagaun (Healthpost)- Thanapati Road	0.0	0.0	20.0	20.0	20.0	Nuwakot
BUR34	Manthali- Gelu- Pokharidanda Road	1.0	0.0	16.7	17.7	16.7	Ramechhap
BUR35	Ramechhap- Rampur- Kolunjorjhar Road	0.0	0.0	24	24	24.0	Ramechhap
BUR36	Manthali-Bhadau-Raltar-Samalithan-Salu Road	7.7	0.0	7.3	15	7.3	Ramechhap
BUR37	Kukurkate Bhangyang-Gothgaun-Ratamata-Sirise Road	0.0	0.0	12.5	12.5	12.5	Ramechhap
BUR38	Dhobi -Belauri-Saipu-Duragaun Road	0.15	0.0	10.15	10.3	10.2	Ramechhap
BUR39	Ramechhap-Bhalukhop-Okhreni-Dharapani Baseri Road	0.0	0.0	18.5	18.5	18.5	Ramechhap
BUR40	Sitkha-Aapchour- Rayagau Road	0.0	0.0	10.8	10.8	10.8	Ramechhap
BUR41	Manthali-Bhaluwajor-Ramechhap Road	1.0	0.0	13.1	14.1	13.1	Ramechhap
BUR42	Mangaltar (Kaldhunga BPH)- Rampur Road	0.0	0.0	32.6	32.6	32.6	Sindhuli
BUR43	Thulo Garduwa-Khalanga-Kartike-Banakhu Road	0.0	0.0	17.0	17.0	17.0	Sindhuli
BUR44	Archale-Chainpur-Singpal-Jungepani Road	0.0	0.0	19.5	19.5	19.5	Sindhuli
BUR45	Mahutar-Ratmate dada-Silame Road	1.6	0.0	3.4	5.0	3.4	Sindhuli
BUR46	Sithauli-Badigaun-jinakhu-Thaliya-mahadevdada Road	0.0	0.0	25.0	25.0	25.0	Sindhuli
BUR47	Solabhangyanj-Taruphedi- Khurkot Road	0.0	0.0	17.0	17.0	17.0	Sindhuli
BUR48	Chautara-Batase-Kumbeshwor Road	0.0	0.0	17.5	17.5	17.5	Sindhupalchowk
BUR49	F30-Kiwool-Bagar-Nigale-Sermathang	0.0	0.0	10.6	10.6	10.6	Sindhupalchowk
BUR50	Bahunepati-Khatritole-Bhanjyang-Thakle-Sindhukot	0.0	0.0	27.7	27.7	27.7	Sindhupalchowk
BUR51	Dhande-Biplum-Yanlakot-Hagam	2		15	17.0	15.0	Sindhupalchowk
BUR52	Melchaur(F31)-Bhaise(H03)	0.0	0.0	9.5	9.5	9.5	Sindhupalchowk
BUR53	Sukute-Purankot-Mildada	0.0	0.0	10.6	10.6	10.6	Sindhupalchowk
BUR54	Sermathang-Chhimi-Ghangyul-Tarkeghyang Road	0.0	0.0	9.7	9.7	9.7	Sindhupalchowk
BUR55	Tipeni-Bhotenamlang Road	0.0	0.0	7.5	7.5	7.5	Sindhupalchowk
BUR56	Khaldekhola-Lagarche-Okhreni	0.0	0.0	16.0	16.0	16.0	Sindhupalchowk
BUR57	Melamchi-Jyamire-Sunkhani-Dablang	0.0	0.0	7.6	7.6	7.6	Sindhupalchowk
BUR58	Syaule-Bhadgaun-Simpalkavre-Nawalpur	0.0	0.0	16.0	16.0	16.0	Sindhupalchowk
BUR59	Okhreni-Selanng-Golche-Baikunthe	0.0	0.0	26.3	26.3	26.3	Sindhupalchowk
BUR60	F32-Kakling-Pedku-7 kilo	1.2		13	14.2	13.0	Sindhupalchowk
BUR61	H03-Sukute-Sheradanda-Mahendrakanti Ma vi-Chhap			10.1	10.1	10.1	Sindhupalchowk
BUR62	F31-Jalkeni-Narshindada-Archale-Jhyadi Road	3.4		8	11.4	8.0	Sindhupalchowk
BUR63	Dauthedada-Bhotsipa-Gaitar-Bhimtar	3		9	12.0	9.0	Sindhupalchowk
BUR64	Manmohan Marga (Sankhu-Phatkeshwor-Chautara-Balephi)			30.5	30.5	30.5	Sindhupalchowk

BUR65	Talarang-Manebhanjyang-Thakani			18.6	18.6	18.6	Sindhupalchowk
BUR66	Majhirumti Tar-Lekkharka-Gunsa-Raithane Road	0.0	0.0	36.6	36.6	36.6	Sindhupalchowk
BUR67	Bhatamase-Jilu-Sattari Golai Road	0.6		10.4	11	10.4	Dolakha
BUR68	Dolakha-Nagdaha Road			9	9	9.0	Dolakha
BUR69	Charnawati-Fasku-Bhaise Road			21.4	21.4	21.4	Dolakha
BUR70	Jagat-Tasinam-Simigaun-Beding Road			50	50	50.0	Dolakha
BUR71	Malepu-Mildanda-Campus Sandhikhola Road			20	20	20.0	Dolakha
BUR72	Kageshwori Ring Road (Danchi-Bhadrabas-Aalapot-Shatghatte-Indrayani)	8.5	0.0	0.0	8.5	0.0	Kathmandu
	Total	219.69	128.9	1078.6	1427.19	1207.5	

Table 23: Summary of Province Roads (Inventory and Prespective Plan)

Road Category	Inventory				Prespective Plan
	BT (km)	GR (km)	ER (km)	Total (km)	BT (km)
Provincial Highway	175.50	198.04	1142.62	1516.20	1340.66
Provincial Road	601.10	420.40	3045.80	4067.20	3466.10
Urban Road	205.80	128.90	1078.60	1413.30	1207.50
Total	982.40	747.34	5267.02	6996.70	6014.26

Cost of Upgrading

The upgrading cost is categorically calculated and projected in accordance with Provincial Highway and Provincial Roads, along with the widening to two lanes with sufficient shoulder, structure, and black topped works of the roads. Its bases are the average district rate and the provincial DPR reports and estimates. The Cost of Upgrading Road Per km and cost of upgrading Provincial Highways, Provincial Roads, Urban and Rural Roads are given in **Table 24**, **Table 25**, **Table 26** and **Table 27** respectively.

Table 24: Costs of Upgrading Road per KM

S.N.	Roads	Cost per km.
1	Provincial Highway	4,00,00,000
2	Provincial Roads & Urban Roads	3,00,00,000

Table 25: Cost for Upgrading-Provincial Highway- Black Topped as Perspective Plan

Road Code	Name of Road	Total (km)	Perspective Plan for BT (km)	Cost Estimate (000)
BH01	Chaubis Kothi (Bharatpur)-Mangalpur-Sardanagar-Gunjanagar-Divyanagar-Meghauli-Jitpur-Golaghat Road	33.6	20.6	822217
BH02	Bakular (Ratnanagar)-Jutpani- Saktikhor-Upardangadi- Terse- Mayatar- Bashpur-Fishling Road	55.7	39.5	1580356
BH03	Manahari (Simpani)- Daupur- Sarikhet-Lawati- Dogota- Tamlang- Baikuntha- Adamghat Road	76.5	76.5	3059594
BH04	Dhadingbesi Sankosh Tipling Somdang -Gatlang- Suphrubesi Road	113.7	113.7	4549921
BH05	Dharkeswara-Jibanpur-Patale Pokhari-Barabise-Bedkotgadhi-Ratmate Road	25.3	17.9	717498
BH06	Balephi- Naubise - Chautara- Sipaghat- Churithumki – Kartike – Sankhu Road	72.3	62.3	2492000
BH07	Jadibuti-Thimi-Sallaghari-Kamalbinayak-Kharipati-Nagarkot-Hinguwapati- Dolalghat Road	66.7	40.2	1606834
BH08	Madan Bhandari Marga (Balkhu-Chovar-Chhaimale-Kulekhani-Bhimphedi-Bhaise) Road	62.1	36.2	1448000
BH09	Banepa-Panauti-Khopasi- Kamidanda -Taldhunga -Sikredovan-Bhorleni-Bagmati Road	86.4	80.4	3217600
BH10	Dolalghat- Falante- Kolati- Dhadkharka- Chauri-Gurase- Galpa-Makadum-Manthali Road	107.0	107.0	4280760

BH11	Panchkhal-Melamchi-Helambu-Timbu-Melamchigyang Road	50.7	28.3	1131200
BH12	Mude- Bagkhor- Melung- Budhachowk- Sitali Road	51.7	51.7	2069796
BH13	Jiri- Siurani- Those- Sivalaya- Banti -Thadokhola-Solu Road	38.0	36.0	1440000
BH14	Manthali-Sunarpani-Salu-Sanghutar-Ghorakhor Road	29.2	22.6	905393
BH15	Sindhulimadi-Bhimsthan- Chakmake-Udayapur(Katari) Road	83.3	81.5	3260000
BH16	Province Ringroad	417.1	401.4	16057438
BH17	Karmya-Bakafar-Hatmara-Jhyadi-Baseri-Sepa-Gaabesi-Dovan Road	91.4	82.3	3290041
BH18	Thulokhola- Lamidada- Galchhi-Phorsetar- Sunaula Bazar- Dhadhingbesi Road	55.4	42.4	1697692
Total		1481.2	1304.8	53626337

Table 26: Cost of Upgrading-Provincial Roads- Black Topped as Perspective Plan

Road Code	Road Name	Perspective Plan for BT (km)	Perspective Plan Cost for BT (000)
BR02	Kamalbinayak- Sudal- Adikarigaun- Nagarkot Road	8.0	240000
BR03	Sallaghari (Bhaktapur)- Duwakot- Phuyalgaun-Mulpani-Dasindhoka (Gokarna) Road	2.0	60000
BR05	Thimi-Gamcha-Tarkhel-Anantalingeshor-Lamatar Road	3.6	108900
BR06	Jagati-Doleshor-Ashapuri-Sanga Road	4.0	120000
BR07	Mahuwa khola-Hattibang (Kaule)Tindovan Road	15.0	449479
BR08	Khurkhure (Highway)- Samitar- Thakurivanjyang (Korak) Road	6.3	189600
BR10	Shaktikhor-Siddhi-Ramtesh- Thakuribhanjyang, Chepang Marga	15.7	469500
BR12	Chiraulichowk-Simrahani- Hudai Khairhani Chharchhare Road	5.3	159581
BR14	Sano Borle to Upardangadhi Paryatan Marga, Ichhakamana Road	30.3	909654
BR16	Jagatpur-Krishnachowk-Manipur-Shankarchowk-Bhimnagar-Saradanagar (HealthPost)-Bijayanagar-	8.6	258600

Road Code	Road Name	Prespective Plan for BT (km)	Prespective Plan Cost for BT (000)
	Shivaghat (Narayani) Road		
BR19	Jagatpur-Parbatipur-Rampur-Gautambudha Stidium-Narayani River Road	11.7	349614
BR20	Ramailodada-Chharchhare Road	4.8	144629
BR21	Palpabhangyang-Sadhbhanjyang-Khari-Bhunkotghat-Road	22.3	667800
BR22	Siktar-Budhathum-Baseri-Manbu- Lapa Road	85.0	2550000
BR23	Mahadevbeshi-Tasarpur-Ratmate-Chalti-Chisapani-Phedigaun-Phatbazar-Pulkomukha Road	46.9	1407000
BR24	Phosretar Parewatar Benidovan Baikalpik Sadak	37.7	1130400
BR25	Dhadingbesi- Syaule- Bodarthok-Kafalpani- Mandredhunga (Bidur) Road	21.2	634500
BR26	Khambu-Manetari-Darkha-Dundure Road	12.6	379200
BR27	Sikatar- Aginchowk- Salyankot- Sukbhanjayng- Phulkharka- Ri Road	20.0	600000
BR28	Chauki Bidhan (Benighat)- Nabagufa Road	6.4	190500
BR29	Dhadingbesi-Bharangbhurang Road	13.7	411600
BR30	Todke-Semjung (Netrawati Gaunpalika Center) Road	12.0	360000
BR31	Charikot-Deurali- Kalinchok Road	17.5	525000
BR32	Yarsha-Lwasa-Jatapokhari-Pachpokhari Road	17.3	519000
BR33	Melghumti- Gaighat-Birendra Ma Bi (Katakuti)- Dudhpokhari- Dase 21 Kilo Road	44.0	1318500
BR35	Ghyawapani-Shera-Surke-Nigale Road	18.0	540000
BR36	Jiri Mali Shyama Road	26.0	780000
BR37	Makaibari-Deurali-Paanighat Road	8.6	258000
BR38	Pumpa-Dhunge-Gumba Road	10.8	322800
BR39	Suri (Gurumphi Mulabari) Masding Road	15.0	450000
BR40	Jiri-Salleri-Dhingri (Tibbet Boarder) Road	18.0	540000
BR41	Namdu- Jugu- Jhyaku- Bhorle Road	29.0	870000
BR42	Nayapul- Pawati- Dandakharka Road	18.0	540000
BR43	Sunkhani- Sangwa Road	31.0	930000
BR44	Anathalay-Gaighat Road	10.0	300000
BR45	Bhorle-Tinekhu (Gaurishankar Gaupalika) Road	9.0	270000

Road Code	Road Name	Prespective Plan for BT (km)	Prespective Plan Cost for BT (000)
BR46	Mainapokhari-Jyamire-Hiti-Khahare-Pokhare-Mirge Krishi Farm(Agriculture Pocket)	6.0	180000
BR47	Sitakothan-Jugu-Jhyaku Gaurishankar Gaupalika Road	37.0	1110000
BR48	Kharidhunga Film City Access Road	8.0	240000
BR51	Sankhu- Palubari- Nagarkot Road	11.2	335661
BR52	Satungal- Matatirtha- Deurali- Mahalaxmi Dovan Road	17.3	518130
BR53	Gosaikunda Marga (Kathmandu-Sundarijal-Chisapani-Kutumsang)	41.1	1231800
BR54	Pharping (Dakshinkali)- Humane-Pakhelchaur- Kulekhani Road	10.0	300000
BR55	Thankot- Chitlang Bhanjyang (Ganesh M. Singh Marg)- Chandragadhi- Kunsal-Markhu – KulekhaniRoad	19.6	588280
BR57	Loktantrik Sahid Marga(Brahmakhel-Satghatte-	8.9	268200
BR58	Panchkahal-Palanchowk Bhagawari-Koshidekha -Timalbesi Thulo Parsel Road	15.5	464700
BR59	Bohore Dovan- Aadha Bato- Sarsyunkharka (Danda Gaun)- Saramthali- Maure Road	31.0	929700
BR60	Dolalghat- Sallebhumlu- Chaubas- Lauredeurali- Nagregagarche Road	11.1	333900
BR61	Khopasi- Dhungkharka- Chyamrangbesi- Milche Borang-Taldgunga-Banakhu-Kartike-Khalanga-Gandawa Road	67.9	2036100
BR62	Kamidanda Bhanjyang- Medhamsu- Falamsangu- Sikhar Ambote- Mahadevtar- Sisakhani (Pita dhovan) Road	25.9	777300
BR63	Ravi opi (Dundamukh)- Devitar- Anekot (Ghumani Chour)- Nayagaun Road	25.0	750000
BR64	Dolalghat-Silame-Ritthe-Simthali-Beksimle-Wafal (Sindhupalchowk) Road	25.0	750000
BR65	Pingthali-Rajbas-Bhumichuli-Budhakhani-Devitar-Ghartichhap-Gokule Road	48.0	1440000
BR66	Dhulikhel-Ravi Opi-Nagarkot Road	17.7	529500
BR67	Parkhalchour-Thadachour-Budhapokhari-Ranikot-Suryabinak Road	9.0	270000
BR68	Banepa- Raviopi- Panchkhal Road	8.0	240000
BR69	Bhakunde- Pokhari Narayansthan- Mechhe Road	18.0	540000
BR70	Banepa-Nala- Kashibhangyang-Nayagaun-Kunta Road	17.5	525000
BR71	Rangcha khola-Banakhu-Ghartichhap-Chotesang-Bhorleni Road	40.0	1200000
BR72	Panchkhal-Bohare Dovan-Thulo Parsel-Mamti-Nepalthok Road	48.0	1440000
BR73	Dhulekhel-Panauti Road	6.0	180000

Road Code	Road Name	Prespective Plan for BT (km)	Prespective Plan Cost for BT (000)
BR74	BP Highway (Chaukidada)-Sipali- Budhakhani-Phoksingtar- Gokule Road	40.0	1200000
BR75	Belarani (B.P Highway)-Baluwa-Tinpiple (Arniko Rajmarga) Road	12.0	360000
BR156	Kavrebhangyang-Dapcha-Pipaltar-Sikhar Ambote-Sanakot-Tara Khasne Lekh-Gokule Road	39.0	1170000
BR157	Chubas-Gumati-Salambu Kafle-Kilpubatar Road	15.0	450000
BR76	Bishankhunarayan-Taukhel-Chapagaun-Champi- Pharsidole-Pharping Road	27.2	814717
BR77	Birkhedhara- Dalchoki- Ikudole- Sankhu- Bhattedada Road	28.0	840000
BR78	Tikabhairab- Debichour- Ghusel- Malta-Baguwa connect Kanti Rajpath Road	11.0	330000
BR79	Godawari-Phulchoki Road	12.0	360379
BR80	Lele-Chandanpur- Manikhel-Gotikhel-Gimdi-Simle-Baguwa Road	75.1	2252361
BR81	Godawari-Chapakharka-Bhardev-Jorghatta-Bhumidanda-Panauti Road	9.2	277158
BR83	Kunchhal-Markhu Road	18.0	540000
BR84	Manahari-Chainpur Road	5.8	173895
BR85	Chuniya-Namtar- Kalikatar-Bharta-Khairang Road	24.6	738417
BR86	Samaripul- Dumrekuna- Sukaura Road (Sahid Basudev Marg)	6.0	180300
BR87	Gairigaun-Pakani- Dadakharka- Bharta- Chainpur- Manahari Road	49.0	1469700
BR88	Hattisude- Shikarpur- Phaparbari Road	11.0	330000
BR89	Panchpandav- Raigaon- Canteen Road	32.0	960000
BR90	Pashupatinagar- Padampokhari- Handikhola- Rajaiya Road	9.9	297300
BR158	Sirsire Kapase Chyauchau Thingen Road	25.0	750000
BR159	Phaparbari Beteni Road	15.0	450000
BR160	Hattisude-Pangdure-Bhirkot-Man Damar-Tin Bhangale Mahadevdada-Gaidatar-Chandranigahapur Road	40.0	1200000
BR161	Hetauda Kulekhani Phakhel pharping Road	22.0	660000
BR162	Bagamati ga. Pa.Karyalaya Borleni chilime road	15.0	450000
BR91	Chaukidanda- Hattiwang- Paryatan Marga	12.0	360000
BR92	Trishuli(coloni)-Deurali-Megang-Kimtang-Thambukhola-Sikatar Road	63.8	1914300
BR93	Chahare-Likhukhola-Kabilas-Ghalebhanjyang-Thaprek-Betini- Golfubhanjyang Road	31.2	934500
BR94	Gurje- Aaitaram Parti- Maidan- Chhap- Talakhu Road	17.6	528000

Road Code	Road Name	Prespective Plan for BT (km)	Prespective Plan Cost for BT (000)
BR95	Kolputar-Duipipal-Patle Road	31.7	951600
BR96	Sole-Satdobato-Bhalche-Salme Road	23.3	699000
BR97	Ringroad- Tinpipale- Okarpauwa- Kolpu khola Road	19.9	596100
BR98	Ranipauwa-Chaturale-Dhadphedi-Basuki Narayan-Bidur Road	19.1	573900
BR99	Kaulethana- Mahendra Ma.Vi- Thansingphat Road	11.8	352800
BR101	Mandredhunga-Gauribeshi-Kalikhola-Bhattagaun-Kha.Bha. Road	12.0	359400
BR102	Barahi-Shakti Ma.Bi.-Bidur Road	20.3	609600
BR103	Gurjebhangyang-Mahattole-Manebhangyang-Samundratar-Ghyangphedi Road	31.5	944700
BR104	Kamidada-Thandapani-Kaule (Kispang Palika Center) Road	10.0	300600
BR105	Khimti-Pharpu-Namadi-Betali-Rasnal-Gargyang- Deurali-Gumdel Road	39.1	1173600
BR106	Khairnighat- Galba- Doramba- Kholakharka-Sailunge Road	50.7	1521000
BR107	Devitar- Doramba- Paseban- Koilibagar Road	42.2	1265400
BR108	Rasnal- Bhitrikhani- Gupteshor- Kaileshor- Dhungebhir- Bhujikoldanda Road	18.0	540600
BR109	Sitkha- Bhirpani-Goganpani- Phulpa-Dhule-Nigarpa-Bhadaure- Deurali (Bhotnagi) Road	22.2	665700
BR110	Likhu Corridor (Kolanjorghat Sanghutar Sirise Bimire Gelu Korandu Thadakhola Umatirtha Lahachhewar Road	85.5	2565900
BR111	Manthali -Bhutiakhola- Kathjor Dhobi Road	16.3	487500
BR112	Thamchaur (Tokarpur)-Gunsal- Tharbhanjyang Thapagaun Pudi Kafle Road	30.2	904800
BR113	Duragaun Bhuj Priti Kubukasthali Bamdi Deurali Gumdel Road	43.1	1294200
BR114	Bhujidada- Kalochautara-Singati-Galab-Priti Road	17.8	534600
BR115	Haleda-Dhobi-Dhade-Khilji Phalate (Okhaldhunga) Road	36.1	1082400
BR116	Bogatitar-Simle-Bhorle-Parchyang-Yarsa-Doklang Road	41.7	1250700
BR117	Kalikasthan-Dhunge-Karmi dada-banuwa Road	9.8	294000
BR118	Satdobato(Nuwakot)- Thulogaun- Dandagaun- Siruchet- Karumryan- Haku-Gre-Gatlang Road	33.5	1004700
BR119	Dharapani-Bhadaure-Rupsepani- Jibjibe - Jyanglang Aledanda hudai Pasang Lhamu Rajmarga Road	13.4	402900
BR120	Dhunche- khodol Road	6.3	187500
BR121	Kalikasthan -Gairighar-Dhaibungkot-Chitrepani-Prasgse Muralibhangynag Lokil Road	18.7	560700

Road Code	Road Name	Prespective Plan for BT (km)	Prespective Plan Cost for BT (000)
BR122	Ronga-Goljung-Bahundada-Gatlang Road	6.1	183600
BR123	Kapilakot- Madhubani- Rampur- Netrakali- Kusheshwor Dumja Road	32.3	969300
BR124	Sindhuligadhi- Majhuwa- Kaphalchauri Dumja Road	48.8	1464221
BR125	Hariwan- Kyaneswor- Bhitri- Jamune- Boteni Road	17.8	534713
BR126	Khaniyakharka- Kamarebhanjyang- Dhapchauki- Tiplung- Mahadevdanda-Tinkhande Road	83.4	2502881
BR127	Pipalbhanjyang-Hayutar- Sole- Netrakali Road	35.0	1050000
BR128	Nawalpur Bahuntilpung Chisapani Road	73.0	2190000
BR129	Bandipur Jaghadi Khaniya Mahadevdanda Damar Road	42.0	1260000
BR130	Ruchani Madaha Gagan Road	19.8	593794
BR131	Ramtar- Littebhanjyang-Bandipur-Ghyanglekh Road	19.6	588600
BR132	Dadi Aanpchaaur Bhalumara Bakhphar Bhutaha Kimalchuli Atauli Road	36.0	1080000
BR133	Gurjimadi Hariharpurgadhi Killa Road	27.4	820800
BR134	Jagadi-Dhansari-Aadheri-Charnath-Ganeshman Na Pa. Road	17.8	533138
BR135	Mulkot- Nagedanda- Amare- Majhuwa Road	24.9	746560
BR136	Barabise- Sunkoshi-Dhuskun-Piskar-Tauthali- Sildhunga Road	32.8	983100
BR137	Balkar-Tekanpur-Tauthali-Kharidhunga Road	21.1	632400
BR138	Jyamiremane-Nawalpur-Guphadanda Road	12.4	372656
BR139	Kothe-Binjel-Chilaune-Dhuskot-Hagam Road	12.5	373500
BR140	Chanaute-Ichok-Tartung-Ghopte GhangNalung-Kharka-Kutumsang Road	31.4	942300
BR141	Dauchet-Keureni-Baskharka-Baruwa -Yangri Road	25.3	759900
BR142	Siyale-Yamuna Danda-Sunkhani-Ghichhet-Tamchet-Sikre-21 kilo Road	28.3	849000
BR143	Balephi-Jalbire-Tembathan Road	25.7	769800
BR144	Sukute-Mildanda-Bagbhairab-Wafal-Lishanku-Ghyangdanda-21 Kilo Road	12.9	387000
BR145	Barhabise-Maneswara-Ghumthang-Listi-Bhairavkunda Road	48.8	1464000
BR146	Melamchi-Tipeni-Bhotang Road	16.6	498300
BR147	Chautara-Syaule-Okhrene-Gobre Road	18.0	540000
BR148	Melamchi Phatte-Dubachaur-Kakani-Shermathang Road	13.5	405000

Road Code	Road Name	Prespective Plan for BT (km)	Prespective Plan Cost for BT (000)
BR149	Majhirumti Tar-Lekhharka-Gunsa-Raithane Road	11.0	330000
BR150	Timbu-syugunche-Sermathang Road	12.0	360000
BR151	Daklang-Listi- Bhairabkunda Road	20.4	612900
BR152	12 Kilo-Timure-Thokarpa Road	10.7	321000
BR154	Chaku-Marmi-Chanraku-Daudhunga -Singati (Dolkha)Road	9.1	272100
BR155	Jalbire-Yakrang-Chanaute-Dhungre Road	11.5	345900
	Total	3466.1	103983516

Table 27: Cost of Upgrading-Urban Roads- Black Topped

New Code	Name	PTMP BT (km)	Prespective Plan Cost for BT (000)
BUR01	Kathmandu Valley Kath Ringroad (Lele-Godawari-Bistachap-Godamcour-Jyamirkot-Sisneri-Gundu-Suryabinayak-Doleshor-Palase-Daujagaun-Sudal-Adhikarigaun-Bageshori-Telkot-Sakhu-phyaulgaun-Sundarijal-Tarebhir-Taulng-Gairigaun-Bishnughat-Bhasanthali-Chadeshori-Sangla-Tarakeshor-Balaju-Ichhangu-Dahachowk-Thankot-Matathirtha-Machhegaun-Taudaha-Chalnakhel-Bungmati-Pharsidole-Salyantar-Tikabhairab-Lele)	122.0	3659630
BUR02	Purbi Chitwan Ringroad (Daduwa chowk-Lalpur-Raichowk-Shivlaychowk-Kayarkhola pul-Tilakbahadur chowk-Brahma chowk-Kholesimal-Kamalchowk-gaduwa chowk-Ratnagar Tikauli Pul-Sauraha-Ecopark-Harnari-Simarani-Kathar-Kusaha muhan-Padariya-Lothar Partikaya Marga Samma)	39.4	1182000
BUR03	Balkumari- Dadhikot- Kapitole- Chakrapath- Ghyampedanda-Tarkhel Road	4.4	130500
BUR06	Sallaghari(ARM)- Katunje- Simlingtar- Lubhu Road	3.0	90000
BUR07	Bhaktapur Chakrapath (Kaushaltar-Biruwa-Gundu-Suryabinayak-Nangkhel-Chitapol-Nagarkot -Telkot Road	10.0	300000
BUR08	Duwakot-Swarswatikhel Bus park- Bhaktapur Samthali-Byashi Shiva Mandir- Manohara -Mulpani Road	2.2	65400
BUR09	Nilbarahi-Nepal Engineering College- Indrekholchha- Telkot Road	13.0	390000
BUR10	Kausaltar-Biruwa-Tarkhagal Road (Katha Ringroad)	6.0	180000
BUR11	Devendrapur-Sanimandir-Syaulibas-Mudhedhukurbari Hudai Sahariswasthya Chauki Road	6.6	198376
BUR12	Baharatpur 11- Gardas -Dahakhani Road	22.9	685977
BUR14	Hakimchowk-Dharechowk-Makhanchowk-Ashokchow-Padeghumti-Dairy Chowk-Sitamai Road	4.5	135000
BUR15	Bha na pa 26,27- Sisuwa-Sisai-Bankatta-Pipra-Dadrani- Amritchowk-Jagatpur Road	5.4	162000
BUR16	Sauraha- Bisajarital-Devnagar-Gitanagar Road	14.2	425208
BUR73	Muglin Ichhakamana Sadak	18.0	540000
BUR74	Hattidhap Surkhandi Road	17.0	510000
BUR75	Chainpur Purano Parsa Kumroj Kapiya Road	4.0	120000
BUR17	Sutkeridhunga-Karkidada-Rele-Sagarbhangyang Road	16.4	492985
BUR18	Busti-Putalikath-Thulopatal-Laharemane Road	14.8	444000
BUR20	Balaju- Nepaltar- Sangla Bazar Road	8.2	245216
BUR21	Pepsikola- Karkigaun(KVRR) Road	4.9	147490

New Code	Name	PTMP BT (km)	Prespective Plan Cost for BT (000)
BUR23	Tinpile- Baluwa-Boaredovan Road	5.0	150000
BUR24	Kartike Deurali (madhya pahadi Lokmargar)- Pokhari-Khar-Rumti-Majhipheda Road	20.5	613500
BUR25	Bhakundebesi-Tallo Hatiya-Barbote-Pangtangkharka-Pipaltar-Phalame Sanghu Road	15.0	450000
BUR26	Malpi-Gagal-Kolati-Simpani-Pokharidada-Parthali Bhangyang Road	10.0	300000
BUR27	Dapcha-Nepane-Gahate-Phalamesaghu Road	10.0	300000
BUR28	Nala Kavrekobot -Ghimire Gaun-Nagarkot Road	4.0	119700
BUR29	Sitalbasti (BPH)- Thulitar-Tinpile (ARM) Road	8.4	250504
BUR78	Arniko Rajmarga-Sanga-Byangdhungs-Kalammasi-Nagarkot Road	15.0	450000
BUR79	Damandadabash-Galchhi-Kailash Road	17.0	510000
BUR80	Pulkhomukh-Indrayanichaur-Phedigaun-Chisapani-Chalti Road	30.0	900000
BUR81	Hetauda Ringroad	25.0	750000
BUR82	Janyuddha Marg Kutibhakhari Gajan Deujar Road	20.0	600000
BUR83	Naukhande Jagdanda Road	15.0	450000
BUR31	Sole-Sahugaun-Bhumidevi U.Ma.Vi. Road	11.9	357000
BUR32	Bogatigau-Keurani-Bhutiya- Chinnedada Road	5.8	174000
BUR33	Manthali- Chisapani- Puranagaun (Healthpost)- Thanapati Road	20.0	599134
BUR34	Manthali- Gelu- Pokharidanda Road	16.7	501000
BUR35	Ramechhap- Rampur- Kolunjorghar Road	24.0	720000
BUR36	Manthali-Bhadau-Raltar-Samalithan-Salu Road	7.3	219000
BUR37	Kukurkate Bhangyang-Gothgaun-Ratamata-Sirise Road	12.5	375000
BUR38	Dhobi -Belauri-Saipu-Duragaun Road	10.2	304500
BUR39	Ramechhap-Bhalukhop-Okhrene-Dharapani Baseri Road	18.5	555000
BUR40	Sitkha-Aapchour- Rayagau Road	10.8	324000
BUR41	Manthali-Bhaluwajor-Ramechhap Road	13.1	393000
BUR42	Mangaltar (Kaldhunga BPH)- Rampur Road	32.6	977934
BUR43	Thulo Garduwa-Khalanga-Kartike-Banakhu Road	17.0	510000
BUR44	Archale-Chainpur-Singpal-Jungepani Road	19.5	585872

New Code	Name	PTMP BT (km)	Prespective Plan Cost for BT (000)
BUR45	Mahutar-Ratmate dada-Silame Road	3.4	102000
BUR46	Sithauli-Badigaun-jinakhu-Thaliya-mahadevdada Road	25.0	750000
BUR47	Solabhangyanj-Taruphedhi- Khurkot Road	17.0	510000
BUR48	Chautara-Batase-Kumbeshwor Road	17.5	524412
BUR49	F30-Kiwool-Bagar-Nigale-Sermathang	10.6	317861
BUR50	Bahunepati-Khatritole-Bhanjyang-Thakle-Sindhukot	27.7	831271
BUR51	Dhande-Biplum-Yanlakot-Hagam	15.0	450000
BUR52	Melchaur(F31)-Bhaise(H03)	9.5	283715
BUR53	Sukute-Purankot-Mildada	10.6	318992
BUR54	Sermathang-Chhimi-Ghangyul-Tarkeghyang Road	9.7	290014
BUR55	Tipeni-Bhotenamlang Road	7.5	226278
BUR56	Khaldekhola-Lagarche-Okhreni	16.0	480491
BUR57	Melamchi-Jyamire-Sunkhani-Dablang	7.6	228908
BUR58	Syaule-Bhadgaun-Simpalkavre-Nawalpur	16.0	478708
BUR59	Okhreni-Selanng-Golche-Baikunthe	26.3	789960
BUR60	F32-Kakling-Pedku-7 kilo	13.0	390000
BUR61	H03-Sukute-Sheradanda-Mahendrakanti Ma vi-Chhap	10.1	303000
BUR62	F31-Jalkeni-Narshindada-Archale-Jhyadi Road	8.0	240000
BUR63	Dauthedada-Bhotsipa-Gaitar-Bhimtar	9.0	270000
BUR64	Manmohan Marga (Sankhu-Phatkeshwor-Chautara-Balephi)	30.5	915000
BUR65	Talarang-Manebhanjyang-Thakani	18.6	558000
BUR66	Majhirumti Tar-Lekkharka-Gunsa-Raithane Road	36.6	1098538
BUR67	Bhatamase-Jilu-Sattari Golai Road	10.4	312000
BUR68	Dolakha-Nagdaha Road	9.0	270000
BUR69	Charnawati-Fasku-Bhaise Road	21.4	642000
BUR70	Jagat-Tasinam-Simigaun-Beding Road	50.0	1500000
BUR71	Malepu-Mildanda-Campus Sandhikhola Road	20.0	600000

Provincial Transport Master Plan (PTMP) of Bagmati Province

New Code	Name	PTMP BT (km)	Prespective Plan Cost for BT (000)
	Total	1207.5	36224073

The table below shows the total cost for the perspective plan;

Table 28: Total Cost for the Perspective Plan

Roads	PTMP length (km)	PTMP Cost Estimate (000)
Provincial Highway	1340.8	53626337
Provincial Road	3466.1	103983516
Urban Road	1207.5	36224073
Total	6014.4	193833926

5.4. PROVINCIAL TRANSPORT MANAGEMENT PLAN (PTMP)

Nepal has slowly and gradually achieved political stability with the Federal Democratic Republic System. In recent years, the country envision with a national goal of prosperous Nepal, happy Nepali. In this context, the achievement of SDG depends mostly on connectivity and transport services development by 2030.

As mandatory authority and responsibility of transport management mentioned in the newly promulgated Federal Constitution of Nepal, Provincial Transport Management and its planning are major mandatory authority of Bagmati Province in the provincial transport system. In this management system, the Province carries authority to issue license and vehicle permit. Therefore, this PTMP is valid and important.

Vision and Goal of PTMP

Vision of PTMP is to develop transport system capable to establish as a dynamic and prosperous country of 21st century.

Goal of PTMP is safe, efficient, reliable and sustainable transport system.

Objectives of PTMP

The objective of PTMP is to operate, maintain and manage transport system including road network, road safety, road asset, new road technology and new transport system for safe, reliable and cost effective road and transport.

Policy of PTMP

- PTMP will consider three broader aspects of economic, social and environmental issues for the sustainable transport management.
- PTMP will employ management aspect interconnects the broader principles of mobility, assets, safety and technology.
- PTMP will consider general principles of transport management includes – functional transport classification, well-connected transport network infrastructure, traffic regulating mechanisms, traffic incident management, lifecycle asset management (O & M), integrated transport management, parking management, travel demand management, safety system approach, transport sustainability and resilience, stakeholder collaboration and coordination etc.
- PTMP will manage the whole transport system with integrated approach.

Strategies of PTMP

To achieve above goal and objectives, PTMP will adopted strategies under the policy framework as follows:

- A network operation plan will be prepared for implementing PTMP.
- Five year investment plan will be formulated for allocating budget on transport management of the entire road network in accordance with budget resources.
- Maintenance fund is set to transport management for development of transport infrastructure, upgrading and new networks.
- A separate comprehensive network manage plan (NMP) will be prepared as supplementary to PTMP.
- Traffic standards and system will be developed and established.
- Safety technology and measures will be installed in the whole roads.
- Public Information system will be set up to access information about road assets quality and standard.
- The road construction standards will be improved, checked and monitored with punishment and reward system.
- Road tax collection system will be improved through technology and digitalization mechanism.
- Vehicle and Passengers insurance will be made mandatory.
- Mass transportation system will be preferred instead of private vehicles.

In addition, PTMP will follow Vehicle and Transport Management Act 2075.

Act has 13 Articles with 221 Clauses and 8 annexes. All articles, Clauses, Sub-clauses and Annexes provisioned in the Act are a part of Province Transport Management system. Following are the transport management provisioned in thirteen articles;

- Article 1: Introduction
- Article 2: Classification of vehicles.
- Article 3: Vehicle Registration Management System
- Article 4: Driving License Management System
- Article 5: Conductor License Management System
- Article 6: Transport Management
- Article 7: Traffic control
- Article 8: Insurance Management System
- Article 9: Driver and Conductor's Services, Facilities and Vehicle Tax

- Article 10: Formation of Committees, Role, Responsibility and Authority
- Article 11: Management for Penalty of Traffic Violation
- Article 12: Operation of Province Public transport.
- Article 13: Miscellaneous

All articles are related to Province Transport Management for operation and regulation of transport related activities in the province. Article 12 clauses 200 have mandated the Province government to operate public transport by establishing a company on PPP model.

Following are the sub-clause under Operation of Province Public Transport;

- [1] Realizing the responsibility of public transport sector, government can operate to provide the service to the people for smooth, affordable, and well-facilitated public transport service.
- [2] For the service committed in the sub-clause 1 and according the demand, Province shall manage to operate a safe, standard and modern large scale public transport vehicle.
- [3] Ministry shall arrange the joint financing from government, public cooperatives and private sector for the transport service provisioned in sub-clause 1.
- [4] Environment-friendly and electric vehicle shall be given the priority to operate the public transport as defined in sub-clause 3.
- [5] Bus Company shall be registered in province level and government shall operate the public transport through this company.
- [6] Required arrangement shall be made to provide the discount and facilities to the vehicles as defined in sub-clause 1.
- [7] Other arrangement shall be as defined according to the public transport related management system.

Above provisions in the existing Act facilitates the many aspects of transport management for immediate use, which are mostly the functions of regulatory framework of the province. Thus it is recommended to prepare a dedicated document of province transport management plan amalgamating the provisions mentioned in existing Act and the principles of transport management framework. This will fulfill the legislative commitment made in the article 12 (Operation of Province Public transport) of the Bagamati Province Vehicle and Transport Management Act 2075.

5.5. PROVINCIAL ROAD SAFETY ACTION PLAN (PRSAP)

Since road safety is one of the most important component of transportation infrastructure, PRSAP consider this road safety aspect in design stage, road safety audit approach and budget allocation, although the implementation of Road Safety Audit, i.e. proposed road safety features, including safety barrier, signs, marking, reflector, cat's eye, delineator post, safety mirror, traffic calming measures and budget limitation are big challenge. In this context, PRSAP will be prepared for 2021-2030 to prepare its own action plan targeting province with compliance with National Action Plan and also global

commitment as per Sustainable Development Goal and Stockholm Convention, like as National Road Safety Action Plan 2013-20. In PRSAP, national commitment of Nepal to reduce road fatalities by 50% by 2030 will be made a goal of the Province Government. The provincial action plan is as follows:

Goal:

- 50% reduction in road deaths by 2030 and 25% reduction on road crashes on Bagmati Province.

Strategies:

- Create Empowering Legal Framework including strong Provincial Road Safety Council with clear defined responsibilities between National Road Safety Council and Provincial Road Safety Council
- Take road safety into consideration from the conceptualization stage to the design stage and ongoing even in operation stage.
- Proper Road Safety Database System.
- Adaptation of Speed Management and Traffic Calming techniques
- Ensuring vehicle safety through strict enforcement of road worthiness or vehicle testing mechanism.
- Promote PPP as the financing model for road safety related infrastructure and services
- Capacity building of the stakeholder working in the field of road safety.
- Timely emergency care with proper provision of rescue operation; first aid services and trauma care facilities.

5.6. PROVINCIAL PUBLIC TRANSPORT MASTER PLAN (PPTMP)

Interdistrict public transport system is a major dimension in the preparation of transportation master plan for improving accessibility and connectivity. In the public transport system, public bus departs from the capital of Nepal to all districts of Bagmati Province, although Hetauda is the capital of Bagmati Province.

In simple, the capital of Bagmati Province has not direct connectivity to all districts through public transport. Based on such connectivity, Kathmandu is the central point of Bagmati Province. In addition, COVID 19 destroyed public transport system in 2020. The public could not access goods and services and facility to their mobility. Its negative impact was estimated at macro and micro level within this Province. In the abnormal situation, Bagmati Province should learn lesson and to increase public investment on public transport to maintain connectivity and accessibility.

The Bagmati Province has around 47% of total vehicle and the number of vehicle is increasing rapidly in this province. In comparison to 2000 AD with 2019, the total number of vehicle has increased upto 67% and with 17% per year. The increased in vehicles will help in

the increase in the market growth rate and development of city. But, the increase in the vehicle also increases consumption of fuels that will have adverse impact on existing condition of energy. In the fiscal year 075/76, Nepal has imported fuel of around 216.42 Billion Nepalese Rupees. The increase in the vehicle and fuel consumption has increased loss in the Nepal economy, decrease in air quality and increase in the air polluted disease. To cope with this problems, Bagamti Province Government has planned to develop cities within the province by switching fossil fuel vehicle by electrical vehicle. In this regard, Bagamati Province has formulated Provincial Transport Operation and Management Board (PTOMB) as per Province Good Governance Act 2077, article 5. The PTOMP will operate and manage electrical vehicle within this province.

In recent years, there are emerging multimodal technology mass transport system and approach. For a better connectivity between Kathmandu and Kavrepalanchowk, Mass Transit System can be explored with DPR in the consultation with all stakeholder including municipalities, Department of Roads, Department of Railways, Kathmandu Valley Development Authority, Investment Board Nepal and recently established Provincial Transport Operation and Management Board (PTOMB).

Additionally, alternative mass transit system needs to be explored at least to develop fast and better connectivity between Chitwan and Makwanpur. Thus study regarding Public transportation master plan is highly recommended to the Province Government.

CHAPTER 6: PROVINCIAL TRANSPORT MASTER PLAN

6.1. PROVINCIAL TRANSPORT MASTER PLAN (PTMP)

Provincial Transport Master Plan (PTMP) initiated by the Bagmati Province is to integrate development of transport system and provide comfortable and cost effective transport facilities to the people within the Province. PTMP is a vital to develop the public transportation system, to enhance the standard of the transportation mechanism and to improve the service delivery to the people. The transport system constitutes infrastructure development of roads, railways, air transport, and water ways under transport modalities.

PTMP envisages developing the province transport system more effective, efficient and cost benefit model appropriate with the capacity and proposition of the planning approach.

6.2. PRIORITIZATION OF ROADS

The roads mentioned in the perspective plan areas prioritize roads for setting up budget allocation priority for upgrading of Provincial Highway (PH) and Provincial Road (PR). The prioritization criteria according to PTMP Guidelines, 2019 and considered the population served by the particular roads are made. Its criteria and weightage are given below.

Table 29: Prioritization criteria and weightage

S.N	Prioritization Criteria	Weightage (score)
1	Palika Center Connected	15
2	Population Served	30
3	Population unnerved	20
4	Traffic Category	20
5	Road Class	5
6	Provincial Priority	10
Total		100

Rank of priority road as per the prioritization criteria is based on the score of the each road. The higher score get higher priority rank and accordingly the ranking order is given.

6.3. FINANCIAL OF PTMP

The implementation of PTMP requires sufficient financial resources to upgrading roads. The perspective plan envisages its estimated total fund required for its implementation. Its estimated total financial resources are 193.8 billion Rs. for upgrading and maintaining 6014.40 km long roads (PH & PR) of the Province for next five years.

In the annual budget, the Province Government should allocate budget on the prioritized roads per annum for next five years to achieve sustainable transport system in the Province for easy accessibility and better connectivity.

Existing and Projected Budget for PTMP

In the last year (2020), the province budget allocated 12 billion NRs on road development. As reference budget allocation, the estimated budget for road construction is based on the base year 2077/78 and 10 % increment in each year. Its details are as follows.

Table 30: Province Fund for Roads

in (000) NRs

S.N	Source	2077/78	2078/79	2079/80	2080/81	2081/82	Total
1	Province Fund for Roads	12000000	13200000	14520000	15972000	17569200	73261200

6.4. EXPENDITURE ON PTMP

The expenditure modality should be given priority on the maintenance of the operational roads (PH and PR). Then after, the remaining road budget should be spent on the upgrading of the operational roads and road safety. Its details are as follows:

Table 31: Expenditure Pattern for PTMP Implementation

Items	First year	Second Year	Third year	Fourth Year	Fifth Year	Increment
Road Safety Audit	3,000,000	3,300,000	3,630,000	3,993,000	4,392,300	10%
Road Safety Audit Implementation (Infrastructures)	200,000,000	240,000,000	288,000,000	345,600,000	414,720,000	20%
Research on Transportation sector (Provincial Guidelines preparation, public transportation study, other master plan)	50,000,000	65,000,000	84,500,000	109,850,000	142,805,000	25%
Investment on Public Transport Sector	-	100,000,000	150,000,000	225,000,000	337,500,000	50%
Investment on Transportation based Technology	30,000,000	36,000,000	43,200,000	51,840,000	62,208,000	20%

6.5. FIRST FIVE YEAR PTMP

PTMP is prepared with five year implementation plan of transport system. The prioritized roads are considered in the master plan. The upgrading interventions are proposed for the development of provincial roads. The annual breakdown of target and budget is prepared as follow

Table 32: First Five Year PTMP Implementation Plan

PTMP Implementation Plan for First Five Year														(NRs. '000')											
Implementation Year (F.Y.)		2077/78				2078/79		2079/80		2080/81		2081/82		Total											
Available Budget					12000000				13200000				14520000				15972000				17569200				73261200
Allocated for Maintenance of Roads (10 %)					1200000				1320000				1452000				1597200				1756920				3663060
Budget Allocated for Upgrading of Roads					10800000				11880000				13068000				14374800				15812280				69598140
Upgrading of PTMP Roads (Black Topped)																									
Road Code	Name of Road	Length	Cost	km	Cost	km	Cost	km	Cost	Km	Cost	km	Cost	km	Cost										
BH08	Madan Bhandari Marga (Balkhu-Chovar-Chhaimale-Kulekhani-Bhimphedi-Bhaise) Road	36.2	1448000	18	720000	18.2	728000	0	0	0	0	0	0	0	0	36.2	1448000								
BH01	Chaubis Kothi (Bharatpur)-Mangalpur-Sardanagar-Gunjanagar-Divyanagar-Meghauri-Jitpur-Golaghat Road	20.6	824000	10	400000	10.6	424000	0	0	0	0	0	0	0	0	20.6	824000								
BH02	Bakular (Ratnanagar)-Jutpani- Saktikhor-Upardangadi- Terse- Mayatar- Bashpur-Fishling Road	39.5	1580356	15	600000	15	600000	9.5	380000	0	0	0	0	0	0	39.5	1580000								
BH03	Manahari (Simpani)- Daupur- Sarikhet-Lawati- Dogota- Tamlang- Baikuntha-Adamghat Road	76.5	3059594	15	600000	15	600000	15	600000	15	600000	16.5	660000	16.5	660000	76.5	3060000								
BH04	Dhadingbesi Sankosh Tipling Somdang - Gatlang- Suphrubesi Road	113.7	4549921	15	600000	15	600000	15	600000	15	600000	15	600000	15	600000	75	3000000								
BH05	Dharkeswara-Jibanpur-Patale Pokhari-Barabise-Bedkotgadhi-Ratmate Road	17.9	717498	10	400000	7.9	316000		0	0	0	0	0	0	0	17.9	716000								
BH06	Balephi- Naubise - Chautara- Sipaghat-Churithumki – Kartike – Sankhu Road	62.2	2488000	15	600000	15	600000	15	600000	17.2	688000	0	0	0	0	62.2	2488000								
BH07	Jadibuti-Thimi-Sallaghari-Kamalbinayak-Kharipati-Nagarkot-Hinguwapati- Dolalghat Road	40.2	1606834	10	400000	10	400000	10	400000	10.2	408000	0	0	0	0	40.2	1608000								
BH09	Banepa-Panauti-Khopasi- Kamidanda - Taldhunga -Sikredovan-Bhorleni-Bagmati Road	80.4	3217600	15	600000	15	600000	15	600000	15	600000	20.4	816000	20.4	816000	80.4	3216000								

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BH10	Dolalghat- Falante- Kolati- Dhadkharka- Chauri-Gurase- Galpa-Makadam- Manthali Road	107.0	4280760	15	600000	15	600000	10	400000	0	0	0	0	40	1600000
BH11	Panchkhal-Melamchi-Helambu-Timbu- Melamchigyang Road	28.3	1131200	10	400000	10	400000	8.3	332000	0	0	0	0	28.3	1132000
BH12	Mude- Bagkhor- Melung- Budhachowk- Sitali Road	51.7	2069796	10	400000	10	400000	10	400000	21.5	860000	0	0	51.5	2060000
BH13	Jiri- Siurani- Those- Sivalaya- Bamti - Thadokhola-Solu Road	36.0	1440000	0	0	0	0	10	400000	10	400000	16	640000	36	1440000
BH14	Manthali-Sunarpani-Salu-Sanghutar- Ghorakhori Road	22.6	905393	0	0	0	0	10	400000	12.6	504000	0	0	22.6	904000
BH15	Sindhulimadi-Bhimsthan- Chakmake- Udayapur(Katari) Road	81.5	3260000	0	0	0	0	15	600000	20	800000	30	1200000	65	2600000
BH16	Province Ringroad	401.4	16057438	0	0	0	0	40	1600000	40	1600000	70	2800000	150	6000000
BH17	Karmya-Bakafar-Hatmara-Jhyadi-Baseri- Sepa-Gaabesi-Dovan Road	82.3	3290041	0	0	0	0	10	400000	20	800000	52.3	496000	82.3	1696000
BH18	Thulokhola- Lamidada- Galchi- Phorsetar- Sunaula Bazar- Dhadhingbesi Road	42.4	1697692	0	0	0	0	10	400000	15	600000	17.4	496000	42.4	1496000
		1340.6	53624120	158.0	6320000	156.7	6268000	202.8	8112000	211.5	8460000	237.6	7708000	966.6	368680000
	Budget Available for Provincial Road				4680000		5812000		5296000		6602800		8104280	0	34158140
	Upgrading into Black Topped Road of Provincial Roads													0	
BR54	Pharping (Dakshinkali)- Humane- Pakhelchaur- Kulekhani Road	10.0	300000	10	300000	0	0	0	0	0	0	0	0	10	300000
BR05	Thimi-Gamcha-Tarkhel- Anantalingeshor-Lamatar Road	3.6	108900	3.6	108000	0	0	0	0	0	0	0	0	3.6	108000
BR03	Sallaghari (Bhaktapur)- Duwakot- Phuyalgaun-Mulpani-Dasindhoka (Gokarna) Road	2.0	60000	2	60000	0	0	0	0	0	0	0	0	2	60000
BR06	Jagati-Doleshor-Ashapuri-Sanga Road	4.0	120000	4	120000	0	0	0	0	0	0	0	0	4	120000
BR73	Dhulekhel-Panauti Road	6.0	180000	6	180000	0	0	0	0	0	0	0	0	6	180000
BR55	Thankot- Chitlang Bhanjyang (Ganesh M. Singh Marg)- Chandragadhi- Kunsal- Markhu -KulekhaniRoad	19.6	588280	10	300000	9.6	288000	0	0	0	0	0	0	19.6	588000
BR75	Belarani (B.P Highway)-Baluwa- Tiniple (Arniko Rajmarga) Road	12.0	360000	12	360000	0	0	0	0	0	0	0	0	12	360000
BR02	Kamalbinayak- Sudal- Adikarigaun- Nagarkot Road	8.0	240000	8	240000	0	0	0	0	0	0	0	0	8	240000
BR07	Mahuwa khola-Hattibang (Kaule)Tindovan Road	15.0	449479	10	300000	5	150000	0	0	0	0	0	0	15	450000

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BR57	Loktantrik Sahid Marga(Brahmakhel-Satghatte-	8.9	268200	8.9	267000	0	0	0	0	0	0	0	0	8.9	267000
BR10	Shaktikhor-Siddhi-Ramtesh-Thakuribhanjyang, Chepang Marga	15.7	469500	10	300000	5.7	171000	0	0	0	0	0	0	15.7	471000
BR12	Chiraulichowk-Simrahani-Hudai Khairhani Chharchhare Road	5.3	159581	5.3	159000	0	0	0	0	0	0	0	0	5.3	159000
BR16	Jagatpur-Krishnachowk-Manipur-Shankarchowk-Bhimnagar-Saradanagar (HealthPost)-Bijayanagar-Shivaghat (Narayani) Road	8.6	258600	8.6	258000	0	0	0	0	0	0	0	0	8.6	258000
BR20	Ramailodada-Chharchhare Road	4.8	144629	4.8	144000	0	0	0	0	0	0	0	0	4.8	144000
BR24	Phosretar Parewatar Benidovan Baikalpik Sadak	37.7	1130400	10	300000	10	300000	17.7	531000	0	0	0	0	37.7	1131000
BR25	Dhadingbesi- Syaule- Bodarthok-Kafalpani- Mandredhunga (Bidur) Road	21.2	634500	10	300000	11.2	336000	0	0	0	0	0	0	21.2	636000
BR51	Sankhu- Palubari- Nagarkot Road	11.2	335661	11.2	336000	0	0	0	0	0	0	0	0	11.2	336000
BR161	Hetauda Kulekhani Phakhel pharping Road	22.0	660000	10	300000	12.6	378000	0	0	0	0	0	0	22.6	678000
BR26	Khambu-Manetari-Darkha-Dundure Road	12.6	379200	12.6	378000	0	0	0	0	0	0	0	0	12.6	378000
BR52	Satungal- Matatirtha- Deurali-Mahalaxmi Dovan Road	17.3	518130	0	0	10	300000	7.3	219000	0	0	0	0	17.3	519000
BR29	Dhadingbesi-Bharangbhurang Road	13.7	411600	0	0	13.7	411000	0	0	0	0	0	0	13.7	411000
BR53	Gosaikunda Marga (Kathmandu-Sundarijal-Chisapani-Kutumsang)	41.1	1231800	0	0	10	300000	10	300000	10	300000	11.1	333000	41.1	1233000
BR19	Jagatpur-Parbatipur-Rampur-Gautambudha Stidium-Narayani River Road	11.7	349614	0	0	11.7	351000	0	0	0	0	0	0	11.7	351000
BR21	Palpabhangyang-Sadhbhanjyang-Khari-Bhunkotghat-Road	22.3	667800	0	0	10	300000	12.3	369000	0	0	0	0	22.3	669000
BR30	Todke-Semjung (Netrawati Gaunpalika Center) Road	12.0	360000	0	0	6	180000	6	180000	0	0	0	0	12	360000
BR31	Charikot-Deurali- Kalinchok Road	17.5	525000	0	0	10	300000	7.5	225000	0	0	0	0	17.5	525000
BR76	Bishankhunarayan-Taukhel-Chapagaun-Champi- Pharsidole-Pharping Road	27.2	814717	0	0	10	300000	17.2	516000	0	0	0	0	27.2	816000
BR92	Trishuli(coloni)-Deurali-Megang-Kintang-Thambukhola-Sikatar Road	63.8	1914300	0	0	10	300000	15	450000	15	450000	23.8	714000	63.8	1914000
BR08	Khurkhure (Highway)- Samitar-Thakurivanjyang (Korak) Road	6.3	189600	0	0	6.3	189000	0	0	0	0	0	0	6.3	189000
BR63	Ravi opi (Dundamukh)- Devitar- Anekot (Ghumani Chour)- Nayagaun Road	25.0	750000	0	0	10	300000	15	450000	0	0	0	0	25	750000

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BR78	Tikabhairab- Debichour- Ghusel- Malta-Baguwa connect Kanti Rajpath Road	11.0	330000	0	0	11	330000	0	0	0	0	0	0	11	330000
BR68	Banepa- Raviopi- Panchkhal Road	8.0	240000	0	0	8	240000	0	0	0	0	0	0	8	240000
BR93	Chahare-Likhukhola-Kabilas-Ghalebhanjyang-Thaprek-Betini-Golfubhanjyang Road	31.2	934500	0	0	10	300000	10	300000	11.2	336000	0	0	31.2	936000
BR42	Nayapul- Pawati- Dandakharka Road	18.0	540000	0	0	10	300000	8	240000	0	0	0	0	18	540000
BR58	Panchkhal-Palanchowk Bhagawari-Koshidekha -Timalbesi Thulo Parsel Road	15.5	464700	0	0	0	0	10	300000	5.5	165000	0	0	15.5	465000
BR43	Sunkhani- Sangwa Road	31.0	930000	0	0	0	0	10	300000	10	300000	11.1	333000	31.1	933000
BR46	Mainapokhari-Jyamire-Hiti-Khahare-Pokhare-Mirge Krishi Farm(Agriculture Pocket)	6.0	180000	0	0	0	0	6	180000	15	450000	0	0	21	630000
BR97	Ringroad- Tinpipale- Okarpauwa- Kolpu khola Road	19.9	596100	0	0	0	0	10	300000	9.9	297000	0	0	19.9	597000
BR61	Khopasi- Dhungkharka- Chyamrangbesi-Milche Borang-Taldgunga-Banakhu-Kartike-Khalanga-Gandawa Road	67.9	2036100	0	0	0	0	20	600000	20	600000	27.9	837000	67.9	2037000
BR67	Parkhalchour-Thadachour-Budhapokhari-Ranikot-Suryabinak Road	9.0	270000	0	0	0	0	0	0	9	270000	0	0	9	270000
BR37	Makaibari-Deurali-Paanighat Road	8.6	258000	0	0	0	0	0	0	8.6	258000	0	0	8.6	258000
BR98	Ranipauwa-Chaturale-Dhadphedi-Basuki Narayan-Bidur Road	19.1	573900	0	0	0	0	0	0	10	300000	9.1	273000	19.1	573000
BR156	Kavrebhangyang-Dapcha-Pipaltar-Sikhar Ambote-Sanakot-Tara Khasne Lekh-Gokule Road	39.0	1170000	0	0	0	0	0	0	15	450000	24	720000	39	1170000
BR90	Pashupatinagar- Padampokhari-Handikhola- Rajaiya Road	9.9	297300	0	0	0	0	0	0	9.9	297000	0	0	9.9	297000
BR48	Kharidhunga Film City Access Road	8.0	240000	0	0	0	0	0	0	8	240000	0	0	8	240000
BR94	Gurje- Aaitaram Parti- Maidan- Chhap-Talakh Road	17.6	528000	0	0	0	0	0	0	10	300000	7.6	228000	17.6	528000
BR79	Godawari-Phulchoki Road	12.0	360379	0	0	0	0	0	0	12	360000			12	360000
BR70	Banepa-Nala- Kashibhangyang-Nayagaun-Kunta Road	17.5	525000	0	0	0	0	0	0	10	300000	7.5	225000	17.5	525000
BR62	Kamidanda Bhanjyang- Medhamsu-Falamsangu- Sikhar Ambote-Mahadevtar- Sisakhani (Pita dhovan) Road	25.9	777300	0	0	0	0	0	0	10	300000	15.9	477000	25.9	777000
BR74	BP Highway (Chaukidada)-Sipali-Budhakhani-Phoksingtar- Gokule Road	40.0	1200000	0	0	0	0	0	0	20	600000	20	600000	40	1200000

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BR81	Godawari-Chapakharka-Bhardev-Jorghatta-Bhumidanda-Panauti Road	9.2	277158	0	0	0	0	0	0	9.2	276000			9.2	276000
BR69	Bhakunde- Pokhari Narayansthan-Mechhe Road	18.0	540000	0	0	0	0	0	0	10	300000	8	240000	18	540000
BR66	Dhulikhel-Ravi Opi-Nagarkot Road	17.7	529500	0	0	0	0	0	0	10	300000	7.7	231000	17.7	531000
BR148	Melamchi Phatte-Dubachaur-Kakani-Shermathang Road	13.5	405000	0	0	0	0	0	0	13.5	405000			13.5	405000
BR14	Sano Bhorle to Upardanggadhi Paryatan Marga, Ichhakamana Road	30.3	909654	0	0	0	0	0	0	10	300000	20.3	609000	30.3	909000
BR22	Siktar-Budhathum-Baseri-Manbu- Lapa Road	85.0	2550000	0	0	0	0	0	0	20	600000	20	600000	40	1200000
BR28	Chauki Bidhan (Benighat)- Nabagufa Road	6.4	190500	0	0	0	0	0	0	0	0	6.4	192000	6.4	192000
BR95	Kolputar-Duipipal-Patle Road	31.7	951600	0	0	0	0	0	0	0	0	15	450000	15	450000
BR140	Chanaute-Ichok-Tartung-Ghopte GhangNalung-Kharka-Kutumsang Road	31.4	942300	0	0	0	0	0	0	0	0	15	450000	15	450000
BR154	Chaku-Marmi-Chanraku-Daudhunga - Singati (Dolkha)Road	9.1	272100	0	0	0	0	0	0	0	0	9.1	273000	9.1	273000
BR33	Melghumti- Gaighat-Birendra Ma Bi (Katakuti)- Dudhpokhari- Dase 21 Kilo Road	44.0	1318500	0	0	0	0	0	0	0	0	20	600000	20	600000
BR106	Khairenighat- Galba- Doramba-Kholakharka-Sailunge Road	50.7	1521000	0	0	0	0	0	0	0	0	20	600000	20	600000
BR36	Jiri Mali Shyama Road	26.0	780000	0	0	0	0	0	0	0	0	15	450000	15	450000
BR124	Sindhuligadhi- Majhuwa- Kaphalchauri Dumja Road	48.8	1464221	0	0	0	0	0	0	0	0	20	600000	20	600000
BR41	Namdu- Jugu- Jhyaku- Bhorle Road	29.0	870000	0	0	0	0	0	0	0	0	20	600000	20	600000
BR107	Devitar- Doramba- Paseban- Koilibagar Road	42.2	1265400	0	0	0	0	0	0	0	0	20	600000	20	600000
BR45	Bhorle-Tinekhu (Gaurishankar Gaupalika) Road	9.0	270000	0	0	0	0	0	0	0	0	9	270000	9	270000
BR136	Barabise- Sunkoshi-Dhuskun-Piskar-Tauthali- Sildhunga Road	32.8	983100	0	0	0	0	0	0	0	0	20	600000	20	600000
BR147	Chautara-Syaule-Okhrenei-Gobre Road	18.0	540000	0	0	0	0	0	0	0	0	18	540000	18	540000
BR150	Timbu-syugunche-Sermathang Road	12.0	360000	0	0	0	0	0	0	0	0	12	360000	12	360000
BR72	Panchkhal-Bohare Dovan-Thulo Parsel-Mamti-Nepalthok Road	48.0	1440000	0	0	0	0	0	0	0	0	20	600000	20	600000
BR77	Birkhedhara- Dalchoki- Ikudole- Sankhu-Bhattedada Road	28.0	840000	0	0	0	0	0	0	0	0	20	600000	20	600000
BR102	Barahi-Shakti Ma.Bi.-Bidur Road	20.3	609600	0	0	0	0	0	0	0	0	20.3	609000	20.3	609000

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BR117	Kalikaasthan-Dhungre-Karmi dada-banuwa Road	9.8	294000	0	0	0	0	0	0	0	0	9.8	294000	9.8	294000
BR87	Gairigaun-Pakani- Dadakharka- Bharta-Chainpur- Manahari Road	49.0	1469700	0	0	0	0	0	0	0	0	20	600000	20	600000
BR99	Kaulethana- Mahendra Ma.Vi-Thansingphat Road	11.8	352800	0	0	0	0	0	0	0	0	11.8	354000	11.8	354000
BR123	Kapilakot- Madhubani- Rampur-Netrakali- Kusheshwor Dumja Road	32.3	969300	0	0	0	0	0	0	0	0	20	600000	20	600000
BR155	Jalbire-Yakrang-Chanaute-Dhungre Road	11.5	345900	0	0	0	0	0	0	0	0	11.5	345000	11.5	345000
BR80	Lele-Chandanpur- Manikhel-Gotikhel-Gimdi-Simle-Baguwa Road	75.1	2252361	0	0	0	0	0	0	0	0	20	600000	20	600000
BR91	Chaukidanda- Hattiwang- Paryatan Marga	12.0	360000	0	0	0	0	0	0	0	0	12	360000	12	360000
	Total	1763.5	52904464	157.0	4710000	200.8	6024000	182.0	5460000	291.8	8754000	598.9	17967000	1430.5	42915000
	Budget Balance (-/+)				-30000		-212000		-164000		-2151200		-9862720		-8756860
	Total Budget Available		65935080												
	Total Cost estimate		79783000												
	Deficit Amount		-3165320												

6.6.PTMT OUTCOMES

After implementation of the PTMP of the Bagmati Province, the outcomes of the upgrading of roads will be as follows;

PTMT Roads	Blacktopped (km)
Provincial Highway	966.6
Province Road	1430.5
Total	2397.1

Table 33: Annual Road Maintenance Plan (ARMP) of Roads

Road Code	Name of Road	Road Length	Periodic Maintenance (000)
BH01	Chaubis Kothi (Bharatpur)-Mangalpur-Sardanagar-Gunjanagar-Divyanagar-Meghauri-Jitpur-Golaghat Road	13.0	78000
BH02	Bakular (Ratnanagar)-Jutpani- Saktikhor-Upardangadi- Terse- Mayatar-Bashpur-Fishling Road	16.2	96939.
BH05	Dharkeswara-Jibanpur-Patale Pokhari-Barabise-Bedkotgadhi-Ratmate Road	7.4	44294
BH06	Balephi- Naubise - Chautara- Sipaghat- Churithumki – Kartike – Sankhu Road	10.0	60000
BH07	Jadibuti-Thimi-Sallaghari-Kamalbinayak-Kharipati-Nagarkot-Hinguwapati-Dolalghat Road	26.5	159158
BH08	Balkhu-Chovar-Chhaimale-Kulekhani-Bhimphedi-Bhaise Road	69.2	415478
BH09	Banepa-Panauti-Khopasi- Kamidanda -Taldhunga -Sikredovan-Bhorleni-Bagmati Road	28.5	171289.
BH11	Panchkhal (Zero Kilo)-Melamchi-Helambu-Timbu-Melamchigyang Road	31.9	191271
BH14	Manthali-Sunarpani-Salu-Sanghutar-Ghorakhori Road	6.6	39528
BH16	Province Ringroad	15.6	93756
BH17	Karmya-Bakafar-Hatmara-Jhyadi-Baseri-Sepa-Gaabesi-Dovan Road	9.2	55073
BH18	Thulokhola- Lamidada- Galchhi-Phorsetar- Sunaula Bazar- Dhadhingbesi Road	13.0	77914
	Total for Province Highway	247.1	1482705
BR02	Kamalbinayak- Sudal- Adikarigaun- Nagarkot Road	9.1	45734.
BR03	Sallaghari (Bhaktapur)- Duwakot- Phuyalgaun-Mulpani-Dasindhoka (Gokarna) Road	3.9	19416
BR04	Chyamasingh- Amaldol- Nala- Banepa Road	11.5	57513
BR05	Thimi-Gamcha-Tarkhel-Anantalingseshor-Lamatar Road	5.2	25894
BR08	Khurkhure (Highway)- Samitar- Thakurivanjyang (Korak) Road	5.0	24938
BR16	Jagatpur-Krishnachowk-Manipur-Shankarchowk-Bhimnagar-Saradanagar (Health Post)-Bijayanagar-Shivaghat (Narayani) Road	3.1	15463
BR09	Bharatpur- Gaurigunj (Health Post)- Prembasti Chowk-Fulbari Chok-Shivanagar- Parbatipur- Sukranagar- Budhanagar- Maghauri Airport-Dhruwa Road	27.4	137223
BR11	Chainpur-Khairhani-10 Jibanpur-Rapti-Madanpur-Road (Purbi Chitwan)	8.4	42174.
BR13	Ratnanagar-3-Belsi- Phasera-Jhuwani-Mamabhanjachowk- Badreni Khorsor-Hatti Prajanan Road	12.2	61244
BR15	Pulchowk-Baraghare-Shivaghat-Gajipur -Meguali Road	38.4	192150
BR17	Chanauli-Dadarani-Amritchowk-Dhurba-Jagat Road	5.8	28975
BR49	Chuchchepati- Kapan- Dandagaun- Gamcha-Mahankal Road	9.4	47189.
BR54	Pharping (Dakshinkali)- Humane-Pakhelchaur- Kulekhani Road	25.6	128062
BR50	Thimi-Bode-Mulpani-Gokarna-Baluwa-Tare Bhir-Narayansthan Road	7.9	39500
BR53	Pepsicola-Gothatar-Jorpati-Gokarna-Sundarijal-Mahankal-Chisapani Road	4.6	22988
BR56	Kalanki-Purano Naikap-Thankot Road	8.8	43950
BR57	Loktantrik Sahid Marga(Brahmakhel-Satghatte-	8.7	43268

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BR58	Panchkahal-Palanchowk Bhagawari-Koshidekha -Timalbesi Thulo Parsel Road	9.4	47083
BR60	Dolalghat- Sallebhumlu- Chaubas- Lauredeurali- Nagregagarche Road	6.9	34392
BR72	Panchkhal-Bohare Dovan-Thulo Parsel-Mamti-Nepalthok Road	1.6	8247
BR76	Bishankhunarayan-Taukhel-Chapagaun-Champi- Pharsidole-Pharping Road	6.7	33660
BR87	Gairigaun-Pakani- Dadakharka- Bharta- Chainpur- Manahari Road	12.6	63000
BR90	Pashupatinagar- Padampokhari- Handikhola- Rajaiya Road	10.6	52963
BR82	Piple-Makranchuli-Makwanpur Gadhi Road	5.6	28058.
BR97	Ringroad- Tinpipale- Okarpauwa- Kolpu khola Road	6.9	34712
	Total of Province Road	255.6	1277806

Note: The maintenance of the road cost is calculated based on the cost mentioned in DTMP Guidelines of (DoLIDAR in 2012 mentioned cost of NRs 5,00,000.00 per km. The present cost is the increment of labour cost and estimated of NRs. 6,00,000.00 per km.

CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

Transport System is an important driver for safe and easy accessibility and better connectivity in the Province in the condition of indirect connectivity between the Province capital and district headquarters and non inter district connectivity among 13 districts of the Province. Despite multiple model transport system, this province depends massively on road transport connectivity indirectly and unsafely. The operational road transport connectivity is not safe when data of crash and death indicate because almost all Provincial Highway and Provincial Roads are not black topped, neither two lanes nor not traffic systems. In addition, there are not executed safety measures and audit. This is an issue to be considered on road planning, construction and maintenance of roads. In mega and major cities, traffic congestion is a big issue but still there are no 100 % traffic systems, except manual traffic system and main road traffic system. Furthermore, these cities havenot road lights in all roads, except few main roads. Similarly, road asset management is a big issue because of poor quality standard road construction, poor tracking system and road information. Time to time road asset maintenance is poor with budget constraints. Therefore, this Provincial Transport Master Plan (PTMP) is relevant. This is a good output of this study.

This PTMP rank roads with priority for budget allocation and budget demand projection for next five year. For this implementation of PTMP, the following recommendations are given below.

7.2 Recommendations

- PTMP should be executed properly within the mentioned time and budget allocation as soon as possible.
- As a supplementary plan, transport management plan and public transport management should be prepared after its detail and in-depth study.
- As a supplementary, Urban Mobility plan should be prepared to address the mobility needs of city area in sustainable manner with adequate transport infrastructures in place along with its appropriate operational modality. It should integrate public transportation network with possible Non Motorized Transport Network.
- Preparation of Provincial Road Safety Action Plan and Provincial Public Transportation Master Plan is highly recommended.
- Road Safety Audit is highly recommended to carry out at frequent interval at least on Provincial Highway and Provincial Road.

- A comprehensive road maintenance management policy and plan has to be prepared. Province has to establish and develop its capacity to maintain to upkeep the transport infrastructure in intact and in good condition.
- A proper coordination mechanism is to be established with federal transport office and local level transport offices of municipalities to operate all levels of transport operation smoothly in the province.

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GLOSSARY

Accessibility: Ability to reach opportunities/facilities that is beneficial and not the movement.

Base map: A map depicting background reference information such as landforms, roads, landmarks, and political boundaries, onto which other thematic information is placed. A base map is used for location reference and often includes a geodetic control network as part of its structure.

Capacity: The maximum number of vehicles that can pass over a given section of a lane or roadway in one direction (or in both directions for a two-lane or three-lane highway) during conditions.

Emergency maintenance: Maintenance works that are to be carried out due to unexpected and sudden blockage of roads that stop vehicular movement due to natural disaster

Land Use: Land use highlight on what purpose the land is being used

Local road: These roads provide direct property access in residential, industrial, commercial and downtown areas. With local streets connecting primarily to collector roads, travel distances are short, speeds are relatively low and volumes are modest, as their primary function of accommodating traffic from adjacent lands.

Maintenance: The process of preserving the original condition or function of an asset

Mobility: Efficient and effective movement of people and goods

PTMP: The PTMP is a strategic planning document designed to identify and address the provincial needs to the year 2025 and beyond. The PTMP is the document that identifies, classify and prioritize the provincial roads; identify possible sources of funds and materials for the construction of the prioritized roads according to their respective standards and scientific mobilization of the available resource.

Network: Set of nodes and links that represent transportation facilities in an area.

Origin: The location of the beginning of a trip or the zone in which a trip begins.

Periodic maintenance: Maintenance works to be carried out in intervals of years and of large-scale.

Public Transport: Shared passenger transport service which is available for use by the general public

Recurrent maintenance: Small maintenance works not falling under routine maintenance that are carried out a few times a year in all roads to repair minor damage resulting from traffic and rainfall

Right of Way: A general term denoting land, property of interest therein, usually in a strip, acquired for or devoted to transportation purposes

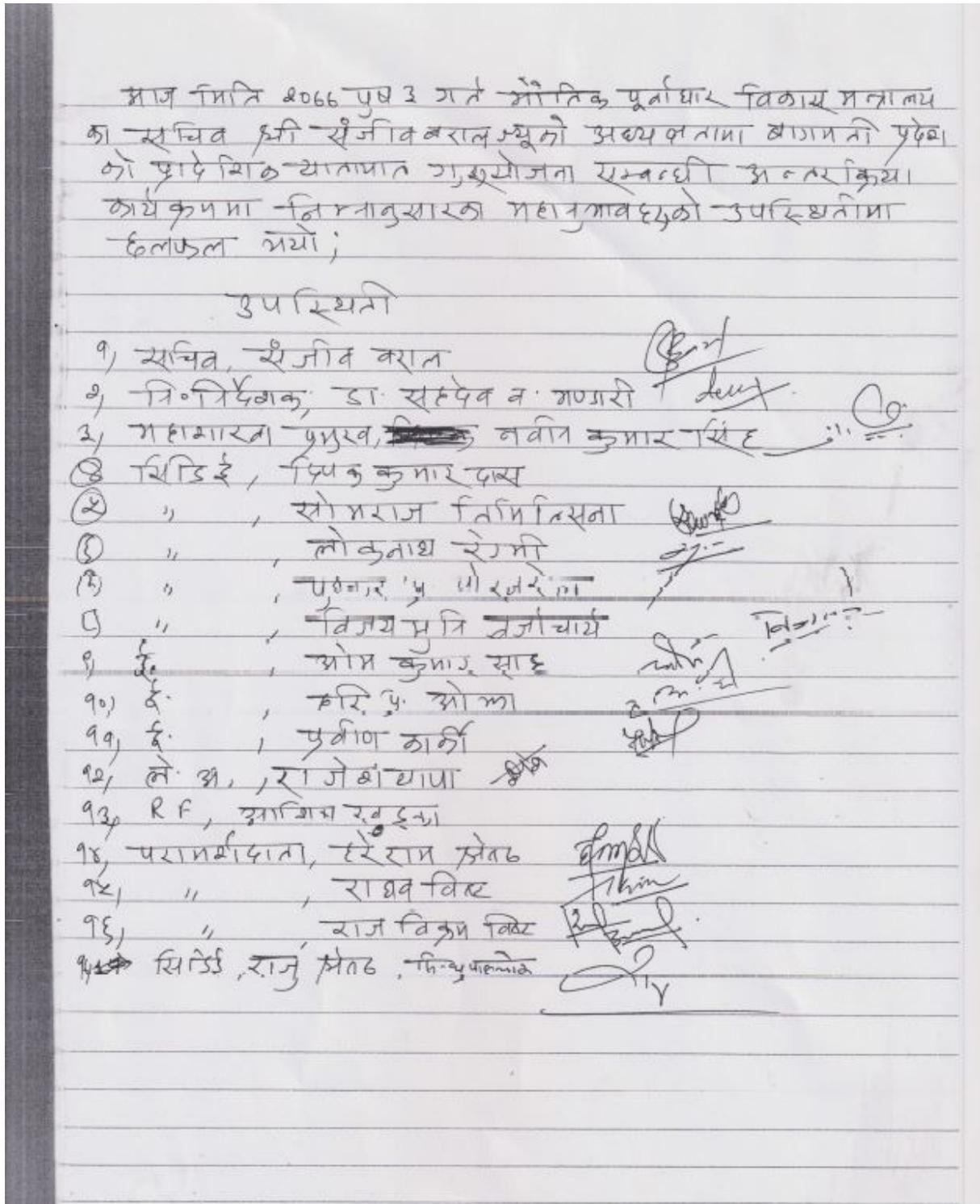
Routine maintenance: Small maintenance works that are to be carried out in all the seasons on all roads on a regular basis

Specific maintenance: Spot treatments and repairs that do not occur every year or in every road, and which are very specific in nature and location.

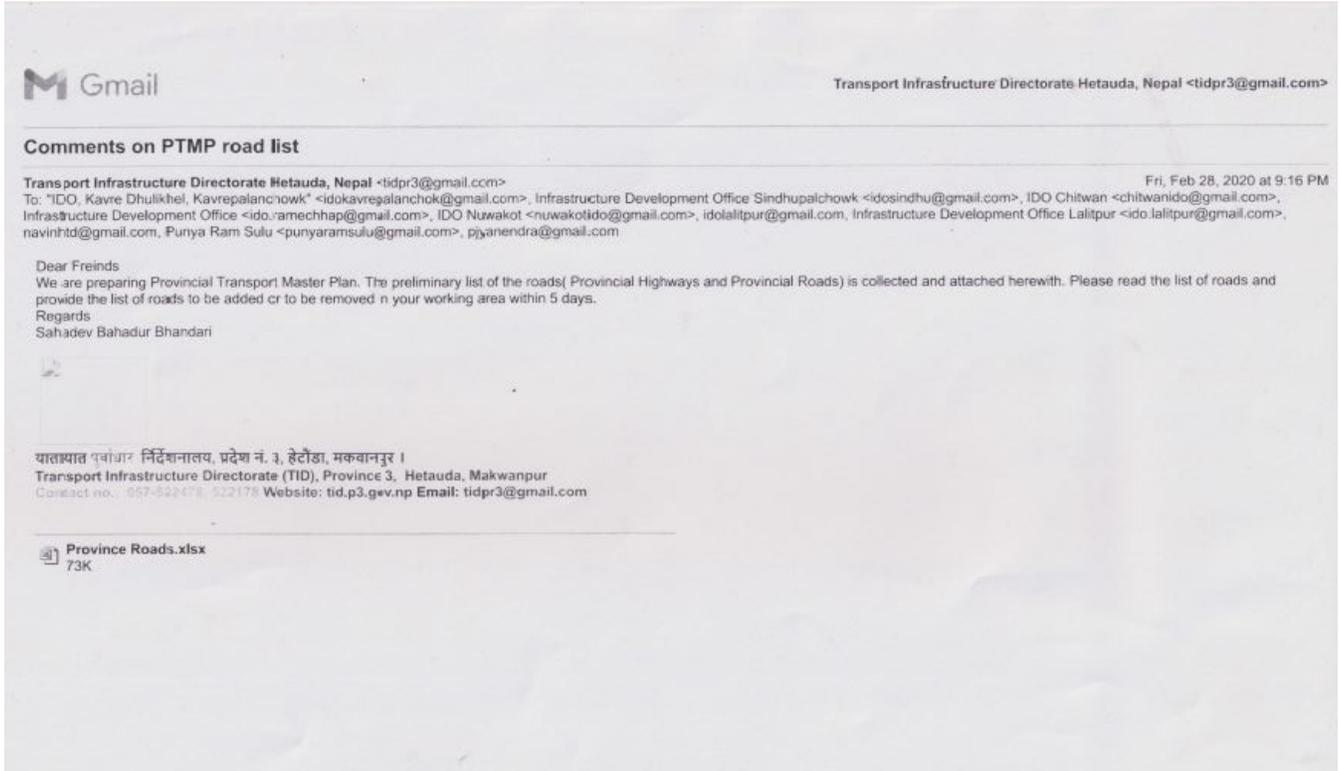
Traffic Volume: Number of vehicle passed through the considered section per unit time

Upgrading: The process of addition or change that makes something better than it was before

APPENDIX- I; MINUTES



Minutes of Workshop on Draft PTMP Reports at Sauraha, Chitwan



Email correspondence from TID for initial screening of roads for inclusion in PTMP

APPENDIX- II; PHOTOGRAPHS



Inception Report Presentation at Ministry of Physical Infrastructure Development, Bagamati Province



PTMP Workshop at Sauraha, Chitwan