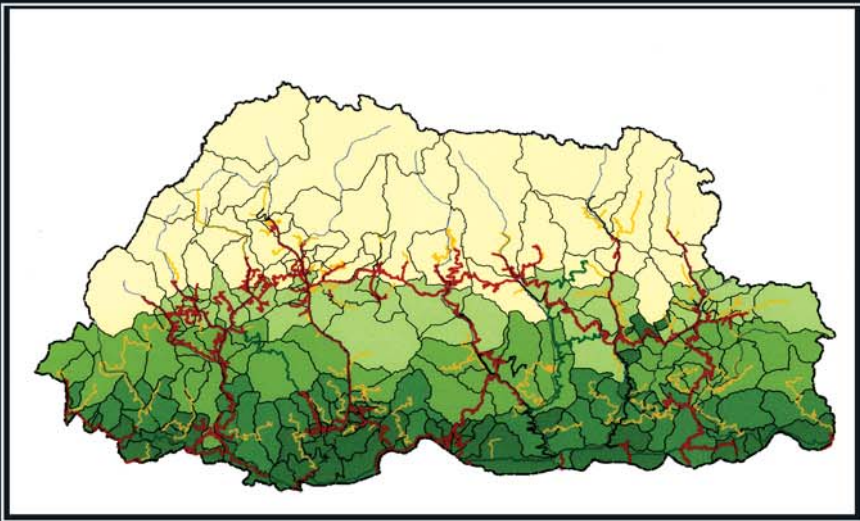




ROAD SECTOR MASTER PLAN (2007-2027)



MINISTRY OF WORKS & HUMAN SETTLEMENT
ROYAL GOVERNMENT OF BHUTAN

MAY 2006



ROAD SECTOR MASTER PLAN (2007-2027)

**MINISTRY OF WORKS & HUMAN SETTLEMENT
ROYAL GOVERNMENT OF BHUTAN**

MAY 2006



MINISTER

འབཅུ་རྒྱལ་ལྷན་ཁག་། དཔལ་ལྷན་འབྲུག་གཞུང་།
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 MINISTRY OF WORKS & HUMAN SETTLEMENT
 POLICY & PLANNING DIVISION
 THIMPHU : BHUTAN
 “Towards Quality Infrastructure”

Introduction

The Road Sector Master Plan (RSMP) is a 20-year programme (2007-2027) that includes road network expansion, road realignment, tunneling, roads for inter-dzongkhag connectivity and the second East-West highway. The RSMP is intended to be an initial screening of potential road projects at a level of detail that is appropriate to strategic planning. Detailed feasibility studies would be required in future to demonstrate economic viability and to determine exact alignments before individual projects can be implemented. Although not explicitly highlighted in the RSMP, options are open for construction of ropeways in any of the dzongkhags depending on its feasibility. Gasa is one of the dzongkhags where ropeways might be feasible.

The RSMP, which is proposed for implementation starting the 10th Five Year Plan, was prepared in close consultation with the 20 dzongkhags. To the extent possible, lengths of the feeder roads were verified through desk-top studies using topographic maps of 1:50,000 scale to ensure that the road lengths reflected in the RSMP are accurate. Where feasible, care was also exercised to ensure that feeder roads proposed in the RSMP did not conflict with the farm/power tiller roads programme of the Ministry of Agriculture (MoA). Where conflict with farm/power tiller road programmes of MoA was anticipated, feeder roads were dropped from the RSMP to avoid duplication of efforts.

About 132 new feeder roads with a total length of 2,654.4 km estimated at over Nu.13, 800 million have been prioritized for the master plan period from 2007 to 2027, which would benefit a total of 20,893 households excluding indirect beneficiary households.

The abstracts of feeder roads and priority ranking are shown in Annex-1 and Annex-3. Dzongkhag-wise feeder roads with corresponding priority rankings are shown in Annex-2. About 794 km of roads, which form a part of the proposed second East-West highway are shown in Annex-4. About 537 km of national highways proposed for providing interconnectivity among the Dzongkhags are shown in Annex-5. Major road realignments and tunnels proposed for shortening travel distances to save travel time and vehicle operating costs are shown in Annex-6 and Annex-7.



MINISTER

འབྲུག་རྒྱལ་ཁབ་ཀྱི་ དཔལ་ལྷན་འབྲུག་གཞུང་།
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The RSMP does not reflect the roads that are either under construction or are proposed for construction during the 9th Plan on the assumption that such roads would automatically spillover to the **10th Plan** if their constructions are not completed in the **9th Plan**.

Priority ranking of feeder roads

Four priority rankings of **A, B, C, D** and *cost per household (cphh)* were used as the basis to rank feeder roads included in the RSMP since *cphh* was the most reasonable indicator of cost-effectiveness of a road. *Cphh* of an individual feeder road was computed by dividing the estimated cost of the road by the number of direct household beneficiaries served by the road. A unit cost of **Nu. 5.21 million per km**, derived from the ongoing World Bank-assisted *Rural Access Project*, was adopted for computing the costs of feeder roads. Although a particular road would benefit additional households within its influence area, indirect household beneficiaries were not taken into account for simplicity. The ranges of *cphh* used in determining the priority ranking of feeder roads is shown in **Table 1**.

Table 1. Criteria adopted for Priority Ranking of Feeder Roads in RSMP

| Priority Ranking | Range of <i>cphh</i> (Nu.) million |
|------------------|------------------------------------|
| A | < 0.5 |
| B | 0.6 – 0.9 |
| C | 1.0 – 1.5 |
| D | > 1.5 |

Cphh range of less than **0.5 million** for *priority ranking A* was based on the assumption that improved accessibility would accelerate economic activities of the beneficiary households and enhance cash incomes of up to **Nu.0.5 million** per annum towards the end of road life, which is estimated at **15-20 years**. Roads for which priority ranking based on *cphh* could not be determined because of non-availability of information on beneficiary households, was assigned a priority ranking **D**.



འབྲུག་རྒྱལ་ཁབ་ཀྱི་རྒྱུ་རྐྱེན་དང་འཕེལ་རྒྱས་ལྟུང་ལྟུང་གི་འཕུལ་བྱུང་།
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Out of the **2,654.4 km** of feeder roads proposed in the RSMP, prioritization exercise has resulted in the rankings shown below:

| | | |
|------------|---|----------|
| Priority A | - | 515.8 km |
| Priority B | - | 978.8 km |
| Priority C | - | 595.5 km |
| Priority D | - | 564.3 km |

Explanatory remarks

The *cphh* used in the RSMP is just one option available for determining ranking of a road based on cost-effectiveness and therefore should not be considered as the only basis of prioritization. Other considerations (***social, economic, political and security***) might dictate changes in the priority rankings of feeder roads. The priority rankings suggested in the RSMP is provided for guidance of planners under normal planning circumstances. Even designation of roads suggested in the RSMP such as national highway, district road and feeder road etc. might need to be changed appropriately in future to match rapid socio-economic development and expansion of road network in the country. If need arises, roads can be re-designated from feeder road to district road or as national highway. Similarly, a national highway or a district road could be re-designated as a feeder road. The RSMP, therefore, should be considered as a dynamic document, which could be updated from time to time, to keep pace with the socio-economic development of the country.


 Zhabtob Lyonpo

Thimphu, May, 2006

ROAD SECTOR MASTER PLAN (2007-2027)
ABSTRACT OF FEEDER ROADS

| SL. NO | DZONGKHAG | LENGTH (KM) | COST (Nu.) MILLION | TOTAL HH SERVED (DIRECT) | % ROAD LENGTH |
|--------|-----------------|---------------|--------------------|--------------------------|---------------|
| 1 | BUMTHANG | 23.5 | 122.435 | 229 | 0.89 |
| 2 | CHHUKHA | 143.5 | 747.635 | 952 | 5.41 |
| 3 | DAGANA | 137.5 | 716.375 | 1084 | 5.18 |
| 4 | GASA | 19.0 | 98.990 | 11 | 0.72 |
| 5 | HAA | 141.5 | 737.215 | 173 | 5.33 |
| 6 | LHUENTSE | 128.5 | 669.485 | 1181 | 4.84 |
| 7 | MONGAR | 211.5 | 1101.915 | 2298 | 7.97 |
| 8 | PARO | 41.0 | 213.610 | 235 | 1.54 |
| 9 | PEMAGATSEL | 140.0 | 729.400 | 1657 | 5.27 |
| 10 | PUNAKHA | 68.8 | 358.448 | 740 | 2.59 |
| 11 | SAMTSE | 174.3 | 908.103 | 1761 | 6.57 |
| 12 | SAMDRUPJONGKHAR | 179.5 | 935.195 | 1011 | 6.76 |
| 13 | SARPANG | 106.0 | 552.260 | 870 | 3.99 |
| 14 | THIMPHU | 115.0 | 599.150 | 132 | 4.33 |
| 15 | TRASHIGANG | 326.5 | 1701.065 | 3864 | 12.30 |
| 16 | TRASHIYANGTSE | 116.0 | 604.360 | 1435 | 4.37 |
| 17 | TRONGSA | 131.0 | 682.510 | 504 | 4.94 |
| 18 | TSIRANG | 100.5 | 523.605 | 697 | 3.79 |
| 19 | WANGDUEPHODRANG | 163.8 | 853.398 | 1109 | 6.17 |
| 20 | ZHEMGANG | 187.0 | 974.270 | 950 | 7.04 |
| | Total | 2654.4 | 13829.424 | 20893 | 100 |

**ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|------------------|--------------------------------------|---------------------------------|-------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| BUIMTHANG | Tokto Zam | Nasphe | 10.0 | 52.100 | 144 | 0.4 | A |
| | Pralang | Ugyenchholing | 6.0 | 31.260 | 42 | 0.7 | B |
| | Chenrezigthang (Nangar-Ura H-way) | Chungphel (Community school) | 7.5 | 39.075 | 43 | 0.9 | B |
| | Total | | 23.5 | 122.435 | 229 | | |

ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|----------------|---|----------|--------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| CHHUKHA | Meritsemo | Bongo | 17.5 | 91.175 | 161 | 0.6 | B |
| | Bongo | Getana | 42.5 | 221.425 | 255 | 0.9 | B |
| | Doyagaon (existing suspension bridge) | Lokchina | 18.5 | 96.385 | 115 | 0.8 | B |
| | Lokchina | Dungna | 20.0 | 104.200 | 124 | 0.8 | B |
| | Dungna | Metakha | 7.0 | 36.470 | 65 | 0.6 | B |
| | Lokchina | Chimuna | 18.0 | 93.780 | 98 | 1.0 | C |
| | Chimuna | Malbasey | 20.0 | 104.200 | 134 | 0.8 | B |
| Total | | | 143.5 | 747.635 | 952 | | |

**ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|---------------|--------------|-------------|------------|-----------------------|----------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| DAGANA | Drujeygang | Lhaling | 30.0 | 156.300 | 403 | 0.4 | A |
| | Gaserling | Nimtola | 10.0 | 52.100 | 68 | 0.8 | B |
| | Nimtola | Sama Dhoban | 30.0 | 156.300 | 57 | 2.7 | D |
| | Nimtola | Bang Gale | 25.0 | 130.250 | 89 | 1.5 | C |
| | Drujeygang | Balung | 42.5 | 221.425 | 467 | 0.5 | A |
| | Total | | | 137.5 | 716.375 | 1084 | |

**ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|-----------|--------------|----------|-------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| GASA | Damji | Samechu | 12.0 | 62.520 | 7 | 8.9 | D |
| | Barsha | Panikong | 7.0 | 36.470 | 4 | 9.1 | D |
| | Total | | 19.0 | 98.990 | 11 | | |

**ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|-----------|--------------|-----------|--------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| HAA | Yaba | Sombaykha | 24.5 | 127.645 | 106 | 1.2 | C |
| | Haa | Sombaykha | 117.0 | 609.570 | 67 | 9.1 | D |
| | Total | | 141.5 | 737.215 | 173 | | |

**ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|-----------|----------------|--------------|--------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| LHUE NTSE | Autsho | Gumbrang | 19.0 | 98.990 | 411 | 0.2 | A |
| | Autsho | Yumchey | 18.5 | 96.385 | 170 | 0.6 | B |
| | Gorgan | Ungar | 20.0 | 104.200 | 184 | 0.6 | B |
| | Khoma Bridge | Tsikang | 30.0 | 156.300 | 117 | 1.3 | C |
| | Khoma | Gangla Khema | 21.0 | 109.410 | 156 | 0.7 | B |
| | Thrima (Rotpa) | Shawa | 10.0 | 52.100 | 54 | 1.0 | C |
| | Lingabee | Ney | 10.0 | 52.100 | 89 | 0.6 | B |
| | Total | | 128.5 | 669.485 | 1181 | | |

ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|---------------|----------------|-----------------------|------------|-----------------------|-----------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| MONGAR | Drametse | Muhung | 18.0 | 93.780 | 320 | 0.3 | A |
| | Drametse | Narang | 7.0 | 36.470 | 235 | 0.2 | A |
| | Narang | Khalong | 4.5 | 23.445 | 34 | 0.7 | B |
| | Khalong | Gongthung | 14.0 | 72.940 | 25 | 2.9 | D |
| | Junme | Kengkhar | 9.0 | 46.890 | 457 | 0.1 | A |
| | Gorbaktang | Gumbrang | 37.0 | 192.770 | 471 | 0.4 | A |
| | Kheng Yangbari | Pemagatshel border | 2.0 | 10.420 | 54 | 0.2 | A |
| | Mongar Dzong | Drepong | 23.0 | 119.830 | 196 | 0.6 | B |
| | Kheng Yangbari | Daksa | 26.0 | 135.460 | 90 | 1.5 | C |
| | Daksa | Wirringla | 14.0 | 72.940 | 86 | 0.8 | B |
| | Wirringla | Nagor | 7.0 | 36.470 | 124 | 0.3 | A |
| | Nagor | Silambi | 26.0 | 135.460 | 153 | 0.9 | B |
| | Gyelposhing | Resa | 24.0 | 125.040 | 53 | 2.4 | D |
| | Total | | | 211.5 | 1101.915 | 2298 | |

**ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|-------------|--------------|-----------|-------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| PARO | Pangbesa | Nabesa | 4.0 | 20.840 | 50 | 0.4 | A |
| | Tsento Shari | Gunitsawa | 20.0 | 104.200 | 115 | 0.9 | B |
| | Lhazugkha | Jillikha | 8.0 | 41.680 | 45 | 0.9 | B |
| | Rashigang | Tshegen | 9.0 | 46.890 | 25 | 1.9 | D |
| | Total | | 41.0 | 213.610 | 235 | | |

**ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|------------------|------------------|----------------|------------|-----------------------|----------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| P/GATSHEL | P/Gatshel border | Shinchungri | 5 | 26.05 | D | | |
| | Shinchungri | Mikuri-Tsebar | 61.0 | 317.810 | 453 | 0.7 | B |
| | Tsebar | Khar-Khothakpa | 10.0 | 52.100 | 350 | 0.1 | A |
| | Tsebar | Yurung | 15.0 | 78.150 | 546 | 0.1 | A |
| | Yurung | Nyaskhar | 45.0 | 234.450 | 198 | 1.2 | C |
| | Labar | Khengzor | 4.0 | 20.840 | 110 | 0.2 | A |
| | Total | | | 140.0 | 729.400 | 1657 | |

ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) | |
|----------------|------------------|------------|-------------|-----------------------|--------------|---------------------------------|------------------------------------|--|
| | From | To | | | | | | |
| PUNAKHA | Dawakha | Tamedamchu | 11.3 | 58.873 | 186 | 0.3 | A | |
| | Sirigang | Tongshuna | 13.5 | 70.335 | 220 | 0.3 | A | |
| | Yungu | Phulumsum | 4.0 | 20.840 | 55 | 0.4 | A | |
| | Samdingkha | Seula | 15.0 | 78.150 | 69 | 1.1 | C | |
| | Tashithang | Goen Shari | 9.0 | 46.890 | 55 | 0.9 | B | |
| | Tashithang Damji | Goen Nubri | 8.0 | 41.680 | 45 | 0.9 | B | |
| | Tsho Chagsa | Limukha | 4.0 | 20.840 | 83 | 0.3 | A | |
| | Tsho Chagsa | Omteka | 4.0 | 20.840 | 27 | 0.8 | B | |
| | Total | | 68.8 | 358.448 | 740 | | | |

**ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|---------------|--------------|----------|--------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| SAMTSE | Halhalay | Dorokha | 23.0 | 119.830 | 96 | 1.2 | C |
| | Dorokha | Rangtse | 40.0 | 208.400 | 258 | 0.8 | B |
| | Rangtse | Yaba | 11.3 | 58.873 | 20 | 2.9 | D |
| | Dorokha | Sengdhen | 30.0 | 156.300 | 81 | 1.9 | D |
| | Peljoreling | Lahirini | 25.0 | 130.250 | 454 | 0.3 | A |
| | Tendru | Bara | 16.0 | 83.360 | 690 | 0.1 | A |
| | Panbari | Gomtu | 29.0 | 151.090 | 162 | 0.9 | B |
| | Total | | 174.3 | 908.103 | 1761 | | |

ROAD SECTOR MASTER PLAN (2007 -2027)
FEEDER ROADS

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|-------------------|---------------------------|------------------------------|--------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| S/JONGKHAR | Tokarong | Samdrup Choeling (Raitar) | 79.0 | 411.590 | 272 | 1.5 | C |
| | Jomoisangkha (Daipham) | Lauri | 65.0 | 338.650 | 437 | 0.8 | B |
| | Menjiwoong | Monmola (Serthi) | 22.0 | 114.620 | 178 | 0.6 | B |
| | Jompa | Zangthi | 13.5 | 70.335 | 124 | 0.6 | B |
| | Total | | 179.5 | 935.195 | 1011 | | |

**ROAD SECTOR MASTER PLAN (2007 -2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|----------------|---------------------|--------------------------|--------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| SARPANG | Kerabari | Sama Dhoban | 20.0 | 104.200 | 176 | 0.6 | B |
| | Tajaythang (Taklai) | Dalim | 25.0 | 130.250 | 230 | 0.6 | B |
| | Dekiling (Leopani) | Pangkhey via Kharpani | 61.0 | 317.810 | 464 | 0.7 | B |
| Total | | | 106.0 | 552.260 | 870 | | |

**ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|-----------|--------------|------------|--------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| THIMPHU | Genekha | Tshochekha | 10.0 | 52.100 | 53 | 1.0 | C |
| | Dodena | Lingzhi | 105.0 | 547.050 | 79 | 6.9 | D |
| | Total | | 115.0 | 599.150 | 132 | | |

ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|------------|-------------------------------------|--------------------------|--------------|--------------------|-------------|---------------------------|------------------------------|
| | From | To | | | | | |
| TRASHIGANG | Thrimshing (Phegpari) | Thungkhar via Ramchongma | 8.0 | 41.680 | 231 | 0.2 | A |
| | Kharungla | Kangpara | 28.0 | 145.880 | 249 | 0.6 | B |
| | Kangpara | Ramchongma | 15.5 | 80.755 | 256 | 0.3 | A |
| | Kangpara | Mankhar | 20.0 | 104.200 | | | D |
| | Kangpara | Chema | 15.0 | 78.150 | 30 | 2.6 | D |
| | Ngangshing (NH) | Yechen | 15.0 | 78.150 | 96 | 0.8 | B |
| | Yechen | Tshatse | 23.5 | 122.435 | 254 | 0.5 | A |
| | Tshatse | Kurchilo | 15.0 | 78.150 | 297 | 0.3 | A |
| | km 67.5 (S/Jongkhar-T/gang Highway) | Berdungma | 9.5 | 49.495 | 115 | 0.4 | A |
| | Dawzor (Khaling) | Jeri-Lemi | 5.0 | 26.050 | 200 | 0.1 | A |
| | Bidung | Yabrang/Phinsum | 10.0 | 52.100 | 210 | 0.2 | A |
| | Yabrang/Phinsum | Thongrong | 5.0 | 26.050 | 200 | 0.1 | A |
| | Yonphupam | Benshingmo-Jomtshang | 6.0 | 31.260 | 201 | 0.2 | A |
| | Chaling | Mendrulla | 5.0 | 26.050 | 310 | 0.1 | A |
| | Mendrulla | Merak | 27.0 | 140.670 | 329 | 0.4 | A |
| | Merak | Sakteng | 40.0 | 208.400 | 260 | 0.8 | B |
| | Bidung | Rangjung | 22.0 | 114.620 | 94 | 1.2 | C |
| | Rangjung | Joenkhar | 20.0 | 104.200 | 359 | 0.3 | A |
| | Joenkhar | Sakteng | 37.0 | 192.770 | 173 | 1.1 | C |
| | Total | | 326.5 | 1701.065 | 3864 | | |

ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|------------------|--------------|------------------------------|--------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| T/YANGTSE | Bumdeling | Tobrang | 27.0 | 140.670 | 132 | 1.1 | C |
| | Tongshang | Tokaphu | 10.0 | 52.100 | 282 | 0.2 | A |
| | Bayling | Womanang (Dechenphodrang) | 12.0 | 62.520 | 200 | 0.3 | A |
| | Womanang | Rigsum Goempa | 12.0 | 62.520 | 44 | 1.4 | C |
| | Tokaphu | Zhadi | 28.0 | 145.880 | 187 | 0.8 | B |
| | Ramjar | Phungyang | 11.0 | 57.310 | 348 | 0.2 | A |
| | Jamkhar | Larjab | 16.0 | 83.360 | 242 | 0.3 | A |
| | Total | | 116.0 | 604.360 | 1435 | | |

**ROAD SECTOR MASTER PLAN (2007 -2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|----------------|--------------|------------|------------|-----------------------|----------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| TRONGSA | Kakeling | Sinphu | 12.0 | 62.520 | 57 | 1.1 | C |
| | Sinphu | Bemji | 10.0 | 52.100 | 63 | 0.8 | B |
| | Bemji | Thrisipang | 6.0 | 31.260 | 14 | 2.2 | D |
| | Trongsa | Jongthang | 27.5 | 143.275 | 55 | 2.6 | D |
| | Refe | Kela | 7.5 | 39.075 | 40 | 1.0 | C |
| | Nimshong | Phumzor | 18.0 | 93.780 | 13 | 7.2 | D |
| | Berte | Korphu | 30.0 | 156.300 | 79 | 2.0 | D |
| | Korphu | Nabji | 5.0 | 26.050 | 53 | 0.5 | A |
| | Korphu | Reti | 15.0 | 78.150 | 130 | 0.6 | B |
| | Total | | | 131.0 | 682.510 | 504 | |

ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|----------------|-------------------------|------------------------------------|--------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| TSIRANG | Burichu | Patale | 11.0 | 57.310 | 76 | 0.8 | B |
| | Patale | Kereni | 13.0 | 67.730 | 22 | 3.1 | D |
| | Dunglegang | Katike | 14.0 | 72.940 | 371 | 0.2 | A |
| | Patale | Tsirang Dangra Burichu School** | 35.0 | 182.350 | 129 | 1.4 | C |
| | Mendegang (Lamidara) | Barshong (Gairigaon) | 17.5 | 91.175 | 50 | 1.8 | D |
| | Bantauli | Jaubari (Betnigaon) | 10.0 | 52.100 | 49 | 1.1 | C |
| | Total | | 100.5 | 523.605 | 697 | | |

ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|--------------|-----------------------------------|----------------|----------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| WANGDUE | Tikizam | Trashila | 26.5 | 138.065 | 158 | 0.9 | B |
| | Phobjikha | Zizigompa | 12.0 | 62.520 | 51 | 1.2 | C |
| | Rikheyzam | Goenkhar | 14.0 | 72.940 | 80 | 0.9 | B |
| | Nobding (Jangchucholing) | Chubar chorten | 19.3 | 100.553 | 168 | 0.6 | B |
| | Takshachu | Silli | 18.0 | 93.780 | 61 | 1.5 | C |
| | Beychu | Umakhatoe | 8.0 | 41.680 | 63 | 0.7 | B |
| | Takshachu | Pemithang | 18.0 | 93.780 | 152 | 0.6 | B |
| | Khotokha | Gogona | 10.0 | 52.100 | 107 | 0.5 | A |
| | Busa School | Lubzibur | 8.0 | 41.680 | 41 | 1.0 | C |
| | Nenzerang | Tilekha | 6.0 | 31.260 | 55 | 0.6 | B |
| | Shemina | Changchey | 8.0 | 41.680 | 40 | 1.0 | C |
| | Kotrana | Komathang | 7.0 | 36.470 | 60 | 0.6 | B |
| | Kotana (on way to Bay Langdra) | Pangkha | 9.0 | 46.890 | 73 | 0.6 | B |
| Total | | 163.8 | 853.398 | 1109 | | | |

**ROAD SECTOR MASTER PLAN (2007-2027)
FEEDER ROADS**

| Dzongkhag | Feeder Roads | | Length(km) | Cost (Nu.) Million | HH Served | Cost per HH (Nu.) Million | Priority Rating (A, B, C, D) |
|-----------------|--------------|--------------------|--------------|-----------------------|--------------|---------------------------------|------------------------------------|
| | From | To | | | | | |
| ZHEMGANG | Gomphu | Edhi | 20.0 | 104.200 | 101 | 1.0 | C |
| | Pangkhar | Bjoka | 61.5 | 320.415 | 282 | 1.1 | C |
| | Buli | Bardo via Nimshong | 52.5 | 273.525 | 406 | 0.7 | B |
| | Buli | Digala | 44.0 | 229.240 | 140 | 1.6 | D |
| | Tingtibi | Berte | 9.0 | 46.890 | 21 | 2.2 | D |
| | Total | | 187.0 | 974.270 | 950 | | |

ROAD SECTOR MASTER PLAN (2007-2027) ABSTRACT OF PRIORITIZED FEEDER ROADS

| SL. No. | DZONGKHAG | LENGTH (KM) | | | |
|---------|--------------|--------------|--------------|--------------|--------------|
| | | PRIORITY A | PRIORITY B | PRIORITY C | PRIORITY D |
| 1 | BUMTHANG | 10.0 | 13.5 | 0.0 | 0.0 |
| 2 | CHHUKHA | 0.0 | 125.5 | 18.0 | 0.0 |
| 3 | DAGANA | 72.5 | 10.0 | 25.0 | 30.0 |
| 4 | GASA | 0.0 | 0.0 | 0.0 | 19.0 |
| 5 | HAA | 0.0 | 0.0 | 24.5 | 117.0 |
| 6 | LHUENTSE | 19.0 | 69.5 | 40.0 | 0.0 |
| 7 | MONGAR | 80.0 | 67.5 | 26.0 | 38.0 |
| 8 | PUNAKHA | 32.8 | 21.0 | 15.0 | 0.0 |
| 9 | PEMAGATSHEL | 29.0 | 61.0 | 45.0 | 5.0 |
| 10 | PARO | 4.0 | 28.0 | 0.0 | 9.0 |
| 11 | SAMTSE | 41.0 | 69.0 | 23.0 | 41.3 |
| 12 | SARPANG | 0.0 | 106.0 | 0.0 | 0.0 |
| 13 | S/JONGKHAR | 0 | 100.5 | 79.0 | 0.0 |
| 14 | TRONGSA | 5.0 | 25.0 | 19.5 | 81.5 |
| 15 | THIMPHU | 0.0 | 0.0 | 10.0 | 105.0 |
| 16 | TSIRANG | 14.0 | 11.0 | 45.0 | 30.5 |
| 17 | TRASHIGANG | 149.5 | 83.0 | 59.0 | 35.0 |
| 18 | T/YANGTSE | 49.0 | 28.0 | 39.0 | 0.0 |
| 19 | WANGDUE | 10 | 107.8 | 46.0 | 0.0 |
| 20 | ZHEMGANG | 0.0 | 52.5 | 81.5 | 53.0 |
| | Total | 515.8 | 978.8 | 595.5 | 564.3 |

Total of all Dzongkhags

2654.4 km

ROAD SECTOR MASTER PLAN (2007-2027) SECOND EAST-WEST HIGHWAY

| Sl. No. | FROM | TO | LENGTH (km) | STATUS | PRIORITY * RANKING |
|---------|------------------------------|----------------------------|-------------|---|--------------------|
| 1 | Sipsoo | Samtse | 49 | Upgradation | |
| 2 | Samtse | Phuentsholing | 69 | New construction | 1 |
| 3 | Phuentsholing | Raidak | 88 | Upgradation | |
| 4 | Raidak | Kalikhola | 23 | New construction | 8 |
| 5 | Kalikhola | Kerabari | 15 | Upgradation | |
| 6 | Kerabari | Phipsoo | 65 | New construction | 7 |
| 7 | Phipsoo | Sarpang | 35 | Upgradation | |
| 8 | Sarpang | Gelephu | 30 | Upgradation | |
| 9 | Gelephu | Gelezam | 9 | Upgradation | |
| 10 | Gelezam | Umling (Lalai) | 12 | Upgradation | |
| 11 | Umling (Lalai) | Panbang | 85 | New construction | 5 |
| 12 | Panbang | Amshingwoong | 35 | New construction | 3 |
| 13 | Amshingwoong | Nganglam | 14 | New construction (part of Gyalposhing- Nganglam road) | 4 |
| 14 | Nganglam | Dewathang | 105 | New construction | 2 |
| 15 | Dewathang (Bhangtar) | Samdrupcholing | 50 | Upgradation | |
| 16 | Samdrupcholing (Bhangtar) | Jomotshangkha (Daipham) | 110 | New construction | 6 |
| | | Total | 794 | | |

*: Based on strategic importance and National Assembly decisions

**ROAD SECTOR MASTER PLAN (2007 -2027)
HIGHWAYS FOR INTER-DZONGKHAG CONNECTIVITY**

| Sl. NO. | FROM | TO | LENGTH (km) | STATUS | PRIORITY RANKING* |
|---------|--|-------------------------------|-------------|------------------|-------------------|
| 1 | Gomphu (Zhemgang) Shingkhari (Zhemgang) | Thidangbi (Mongar) via | 162 | New construction | 4 |
| 2 | Shingkhari (Zhemgang) | Ura (Bumthang) | 49 | New construction | 1 |
| 3 | Shingkhari (Bumthang) | Ungar (Lhuentse) via Singmala | 76 | New construction | 2 |
| 4 | Daga Dzong (Dagana) | Genekha (Thimphu) | 123 | New construction | 3 |
| 5 | Minjay (Lhuentse) | Dongla (border T/Yangtse) | 67 | New construction | 5 |
| 6 | Dongla | Dongde Dzong (T/Yangtse) | 60 | New construction | 6 |
| | Total | | 537 | | |

*: Based on strategic importance and National Assembly decisions

**ROAD SECTOR MASTER PLAN (2007-2027)
MAJOR REALIGNMENTS**

| S/no. | Name of road realignment | Existing road length (km) | Length of realignment (km) | Reduction in road length (km) | Priority** Ranking |
|-------|--|---------------------------|----------------------------|-------------------------------|--------------------|
| 1 | Serpang-Sengor (East-West Highway) | 18 | 6.14 | 11.86 | 3 |
| 2 | Reffe-Khosala (Trongsa-Gelephu Highway) | 29 | 17 | 12 | 5 |
| 3 | Damchu-Chukha (P/ling-Thimphu Highway) | 48 | 23 | 25 | 1 |
| 4 | Wangdigang-Mangdichu (Trongsa-Gelephu Highway) | 55.3 | 16 | 39.3 | 2 |
| 5 | Yadi-Trashigang Chazam (East-West Highway) | tbd* | tbd* | tbd* | 4 |
| | | | | | |

tbd* : to be determined

** : Based on strategic importance and National Assembly decisions

ROAD SECTOR MASTER PLAN (2007-2027)
TUNNELS

| Tunnels Between | Name of existing road | Priority Ranking** |
|---------------------------|-------------------------------|--------------------|
| Thimphu and Paro | tbd* | 2 |
| Thimphu and Wangdue | East-West highway | 3 |
| Gedu and Ganglakha | Thimphu-Phuentsholing highway | 1 |
| Nobding and Chendebeji | East-West highway | 4 |
| Dorji Goenpa and Geytsa | East-West highway | 5 |
| Gayzamchu and Sengor | East-West highway | 6 |
| Kilikhar and Ningala | East-West highway | 7 |
| Tama and Surey | Trongsa-Gelephu highway | 8 |
| Sunkosh and Sarpang | Wangdue-Sarpang highway | 9 |
| Trashigang and S/Jongkhar | T/Gang-S/Jongkhar highway | 10 |

tbd* : to be determined

** : Based on strategic importance and National Assembly decisions

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