

**PLAN FOR DEVELOPMENT OF
COMMUNICATION SECTOR
IN ARUNACHAL PRADESH
VISION 2020**

**PUBLIC WORKS DEPARTMENT
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Preface

This perspective plan of communication sector in Arunachal Pradesh, Vision 2020, was initially prepared for presentation in the meeting on preparation of Vision document for communication sector taken by Member (NEC), Dr. (Mrs.) I.K. Borthakur, in NEC office, Shillong on 25th and 26th July'2005.

The plan attempts to document the present status of development in communication sector in Arunachal Pradesh, especially the road communication and air transport. It further attempts to assess the needs for development of surface communication and bridges and air transport by horizon year 2020; estimate the plan resources likely to be available to sustain the development efforts required to bridge the gap in infra-structural needs; work out the objective targets aimed at; and evolve a plan to reach the goal by the horizon year 2020.

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I. OVERVIEW OF STATE

1.1 Introduction

Arunachal Pradesh, the 24th State of the India Union, lies in the north eastern tip of the country bordering the neighbouring countries of China, Myanmar and Bhutan and sharing inter-state boundaries with Assam and Nagaland. With an area of 83,734 sq.km, it is the largest geographical entity in North Eastern Region. Being a part of the Himalayas and the Patkai range, the state is predominantly hilly and is traversed by many major rivers and their numerous tributaries, all discharging into the Brahmaputra. The state receives heavy rainfall and substantial snow-melt. Major area of the state is under forest cover. It is sparsely populated. The indigenous population consists of 26 major tribes spread over different areas. The state is underdeveloped with major deficiency in infrastructure specially in communication sector with very poor density of road and practically no railway and air service or water transport.

1.2 Geo-climatic condition

Forming a part of the Himalayas in the north and the Patkai hills in the south, Arunachal Pradesh is a ruggedly mountainous region with altitude ranging from 150 m in the foothills adjacent to the plains of Brahmaputra valley to over 7300 m in the higher reaches towards the north. The hill slopes are steep, unstable and susceptible to wasting. Then again, falling under Zone V in the seismic map of the country, the whole state is prone to frequent earthquakes.

The area is drained by a number of major rivers like the Kameng, the Subansiri, the Siang, the Lohit, the Dibang, the Dihing and their numerous tributaries. The state receives heavy rainfalls (average over 2500 mm per annum) and good snowmelt.

Owing to the enabling geo-climatic conditions, about 82% of the area of the state is under forest cover, which thus helps to support a wide

spectrum of flora and fauna. The plant types have a wide range starting from broad-leaved rain forests in the foothills to temperate in the middle zone and alpine in the high altitude mountains above snow line. Numerous species of evergreen trees, suitable for timber or veneering, pines, shrubs, bamboos, canes, orchids, medicinal plants and vast collection of wild life like tigers, leopards, elephants, bears, deers, etc and different varieties of birds and reptiles abound in the rich forests of the state.

1.3 Population

With a total population of 10,19,117 (Census 2001) spread over an area of 83,734 sq.km the state has population density of 13 people/sq.km only, the lowest in the country. The indigenous population consists of 26 major tribes, which include Monpas, Sherdukpens, Akas, Mijis, Nyishis, Tagins, Boris, Bokaros, Ramos, Apatanis, Gallos, Adis, Membas, Khambas, Mishmis, Khamtis, Singphos, Tangsa, Tutsas, Noktes, Wanchoes etc. In the past these tribes lived in mutually exclusive pockets bounded by natural barriers like rivers, hills etc., and remained cut off from the people in other parts of the country and the world.

The average decadal growth rate of population in the state from 1991 to 2001 has been recorded as 26.20%. The growth rate of urban population, however, has been as high as 101.3%. This indicates to a possible migration of population from rural areas towards urban centers and/or influx of people from outside remaining concentrated in and around towns. The population projected for the horizon 2020 is about 19,80,800, which is an increase of about 94% over census 2001.

This increase in population especially in urban centres will give rise to greater needs for road connectivity to outlying areas, especially towards the outer periphery for serving the increasing demands for passenger and freight movements, both within and from outside the state. High concentration of population in urban centres will also

lead to increasing demands for urban infrastructure like water supply, roads sanitation etc.

1.4 Historical evolution

Having remained an un-administered territory during the British Raj the region evolved into what came to be popularly known as North East Frontier Agency (NEFA) in the post Independence period and then transformed into the Union Territory of Arunachal Pradesh in 1972, and finally to full fledged state in 1987. Having remained outside the planning process for whole of the pre Independence era and much of the post Independence years, Arunachal Pradesh did not inherit threshold infrastructure at the time of acquiring statehood and has remained in an under developed stage even today.

1.5 Agro-forestry activities

Its favourable geo-climatic conditions have bestowed the state with immense potentials for growth in the field of agriculture and horticulture. There has been a marked shift from jhumming, the traditionally practiced slash and burn form of agriculture, to settled cultivation. Where irrigation potentials are available like the foothill, the plains and hill spurs in valleys, people are taking to wet rice cultivation (WRC) and terraced rice cultivation (TRC). The major produces are rice, maize, millets, potatoes, ginger, mustard seeds etc. Commercial farming of vegetables is also picking up. Although the agriculture still remains at subsistence level, there is a scope for producing surpluses through multi-cropping and by improving the yield by adopting scientific methods of cultivation.

In some areas especially in the districts of Tirap, Changlang, Lohit, Lower Dibang Valley, East Siang, Upper Siang, West Siang, Papum Pare etc. tea plantation and processing are coming into practice.

Horticulture is a major area of promise. Apples, oranges, pineapples, kiwi fruits, passion fruits, bananas, jack fruits, walnuts etc. are grown in various pockets with different agro-climatic conditions. By

facilitating proper marketing linkages these produces could help to uplift the economy of the people.

The management of the agro and rich bio-resources of the state like aromatic plants, medicinal plants, orchids, bamboos, rattans and their harvesting, processing and marketing will also need good road network which will facilitate in flow of modern technical know-how in agro-forestry activities including processes like storage transportation and marketing.

1.6 Hydropower development

The favourable topography, sparse population and perennial river systems endow the state with huge potentials for development of hydropower, estimated to be around 50000 MW, which is about one third of the total potential in the country. The Central Electrical Authority of India (CEA) in its ranking studies of potential hydro power project sites in the country have identified about 50 small, large and mega hydro projects in various river basins of Arunachal Pradesh. Exploitation of these hydro potentials will require the support of good road network with required width and pavement capacity. Improvement and upgradation of existing road network and construction of new road linkages especially to the identified project sites will be essential to facilitate movement of personnel, construction materials, equipment etc. needed for developing these potential sites.

Opening of other means of transportation like air services will also help to faster development of hydro project in the state.

1.7 Growth of industry

The state has vast potential for forest based and agro-based industries. Though imposition of restriction on logging operation by the Supreme Court in 1995-96 told the death knell of many a timber and plywood industry in the state, some of the factories could easily

be converted for manufacture of alternative products based on non-conventional raw materials like bamboos, agricultural wastes etc. They could also be transformed as tea processing factories, extraction units for medical and aromatic plants or food processing plants. The state also has substantial mineral deposits like coal, oil, limestone, graphite etc which could sustain industries based on these raw materials.

Lack of proper road communication infrastructure has been one of the major bottlenecks standing in the way of development of industries in the state. Further, improvement in communication and availability of power would help in fast track growth of IT industries in the state.

1.8 Long international borders threats and potential

Arunachal Pradesh long international borders, as much as 1628 km, shared with China and Tibet China in the north, Bhutan in the west and Myanmar in east.

These long borders could pose as a source of immediate threat to the security integrity of the country. An obvious answer would lie in development of proper means of communication especially towards the deep borders for rapid movement and response of the defence forces.

On the other hand, those long borders could also offer immense potential for international trade and commerce with the neighboring country. In the past there were traditional trade routes to Tibet and Bhutan with trading done mainly through barter. These routes can now be reopened with the modern cross border facilities to be developed in collaboration with the government of the neighbouring countries. New cross border trade centres could also be identified and developed based on potentials, and demands from across and within the country. With the Government of India's look east policy, these trade routes could help to make Arunachal Pradesh a corridor

for international trades with the emerging economic giant China and other South East Asian countries.

1.9 Tourism

Tourism is one of the major growth potentials of the state. The state has many exotic and yet unexplored locations which, if developed, could become important destinations of tourists, both domestic and foreign. The lush green hills, snowcapped mountains, rich biodiversity with a number of national parks and wild life sanctuaries, pristine climate, mighty rivers with their surfs and rapids, culturally rich ethnic tribes – all these could support many types of tourism like culture tourism, eco-tourism, adventure tourism covering rafting, angling, surfing, canoeing, kayaking etc. Good communication facilities along with clean and reasonable accommodations would be one of the prerequisites for the growth of tourism industry in the state.

1.10 Road for social integration and delivery of services

As mentioned above, Arunachal Pradesh is inhabited by various tribes of different ethnic origin. In the past they had been living in mutually exclusive pockets bounded by natural barriers like rivers, hills, etc. Development of road network has brought the societies closer and united them for coherent efforts towards development activities. The roads are also needed to enable the people access social services like poverty alleviation programme, health, education etc. which are usually available in the abodes of administrative heads like the district, sub-divisional headquarters.

1.11 Environmental concern

Construction of communication facilities like roads is an intrusive process. It can disturb the natural environment and cause landslides, floods, silting problems etc. It would, therefore, be necessary to adopt the least disturbing option and method. On the

other hand, road is an unavoidable and crucial infrastructure need especially in a state like Arunachal Pradesh where there is no other viable means of communication.

Then again, with a vast area of the state under forest cover, new proposals for road construction would require statutory clearances like environmental forest clearance from Government of India. Presently the procedures involved in obtaining E & F clearance for new road project is daunting to say the least. Because of daunting procedural imbroglio in obtaining the statutory clearance some of the essential road projects may never see light of the day.

Development of roads could also bring a train of changes that could assail and disturb the cultural ethos of a traditional society not yet ready to assimilate the changes. This will call for preparing the society to accept and assimilate changes without undergoing cultural shock, proper dose of education and involvement in development process could help in this context.

II. ROAD TRANSPORT

2.1 Roads only viable means of transport

With hilly topography, the hinterland state of Arunachal Pradesh has limited choices of transportation. Railways, water transport or air services not being present at all or not significantly road is the only available of means of transportation of men, materials and services within and from outside the state.

Because of the difficult hilly terrain, possibility of extending any railway line beyond the Assam plains to the hinterland of Arunachal Pradesh is rather remote. The two terminals on the border with Assam viz. Bhalukpong in West Kameng district and Murkongselek near Ruksin in East Siang district are unable to fulfill the real transport needs of the people of the area.

Arunachal Pradesh does not find a place in the air map of the country. There is no airport where a jet liner or higher pay load capacity ATR plane could land. The helipads and a few landing grounds in selected locations are used mostly for defence sorties. Limited services by Pawan Hans helicopters are priced beyond the affordable capacity of general public, even with highly subsidized fares.

Then again with most rivers having steep bed, turbulent flow and shallow draft, there is hardly any scope for developing inland water transport system.

Though road development has made considerable stride in the last few decades, yet the state still has a very low road density, the lowest in the country, and very poor status of village connectivity.

2.2 Road construction agencies

The two main agencies involved in construction and maintenance of roads in the state are Arunachal Pradesh PWD, and Border Roads Organisation (BRO). The PWD mostly takes up roads under State Plan which include and other Centrally loan schemes like RIDF fund programmes like NLCPR, NEC, NH and CRF. The BRO on the other hand takes up construction of the General Staff (GS) roads and projects under China Study Group (CSG) mostly in border areas with funding under Non-Plan from the Ministry of Road Transport and Highway, and works under the control of the Defence Ministry. BRO have also been entrusted with projects under NEC and NH works under the Ministry of Road Transport and Highways.

A third agency viz, Rural Works Department (RWD), another works department of the state government mandated for infrastructure development in rural areas, also takes up construction of short length rural link roads connecting villages. RWD has also been designated as the state executing agency for the remaining programmes under PMGSY, which earlier was implemented mainly by PWD.

The Environment and Forest Department also has constructed some project roads under the department. Rural Development Department, District Rural Development Agencies (DRDAs) and Panchayati Raj Institutes (PRI) too could take up small road works as a component of various poverty alleviation programmes targeted towards employment generation and creating of rural assets.

Similarly the Urban Development Department, the State Urban Development Agency (SUDA) and the District Urban development Agencies (DUDAs) could also play an important role in development of urban road infrastructure.

2.3 Problems of road development in Arunachal Pradesh

Given its topography, geo-climatic conditions and remoteness, both construction and maintenance of roads in Arunachal Pradesh are not difficult but costly. Steep and unstable slopes of young Himalayan hills, subjected to by frequent earth quakes, deforestation and heavy precipitations, are prone to wasting of land masses further leading to the problem of land slides, avalanches, rock falls, subsidence etc. The resulting damages to roads costly repairs and also call for heavy protection works. Removal of land slides, cleaning of clogged drains and culverts, jungle clearance trimming, operations at least twice a year - all add to the cost of maintenance both during and after construction. The cost of maintenance and upkeepment of ODR standard road as per norms of MoRT&H works out to about Rs. 1.80 lakhs per km (2005).

The cost of construction of new road is also high. Formation cutting in difficult hill terraces, the protection works like retaining and breast walls, and the long side drains and cross drainage works like the numerous culverts and bridges required to capture and drain off intense runoff and numerous water bodies are cost intensive. The need for culverts works out to an average of five for every kilometer. Then again, as per general experience, a small bridge upto 30 m is required in every 5 km, a medium bridge of length 30 to 60 m in every 25 km, a large bridge of 60 to 100 m in every 50 km and a very large bridge above 100 m in very 100 km. Added to all these is the high cost of pavement mainly due to the problem of transportation and poor CBR (California Bearing Ratio) of sub-grade materials. So construction of new ODR standard road would work out to about Rs. 1.00 crore per km., intermediate lane road to Rs. 1.20 crore km and double lane road to Rs. 1.50 crore per km.

2.4 Present Status of road development

The total road network in the state constructed by various agencies like the state PWD, the BRO, the RWD, the Forest and Environment Department etc. aggregate to a length of 15,213.78 km (March,

2005). The Table 2.1 below presents the details of roads in the state under various agencies.

Table 2.1: Length of roads in Arunachal Pradesh under different agencies (March,2005)

S No	Agency	Length in km	Category	Source of funding
1	2	3	4	5
1	BRO	4523.73	NH/ODR/MDR	NH/GS/CSG
2	PWD	7286.85	NH/MDR/ODR	State Plan/NEC/NH
3	RWD/Forest	4403.20	ODR/VR	State Plan/Project
	Total	15213.78		

This gives an average road density of 18 km per 100 sq.km which is the lowest in the country (national average 84 km/100 sq.km and NE average 60 km/100 sq.km). Then again over 50% of these roads would provide just nominal connectivity only, being generally poor in geometrics and deficient in pavement strength and provision of CD structures. Then again, most roads are of ODR standards except a limited few under NEC and MORTH which have been constructed with double lane NH or MDR standards.

III. DEVELOPMENT OF NATIONAL HIGHWAY

3.1 Existing NH network

Coverage of National Highway network in Arunachal Pradesh is very poor. There are only three NHs in the state viz. NH 50, NH 50A and NH 153 with total length of barely 420.00 km as given in Table 3.1 below.

Table 3.1: Profiles of existing NH network in Arunachal Pradesh

S No	Reach covered	Length in KM	Agency	NH No
I.	NH 52 - Jonai to Sitpani			
1)	Jonai-Pasighat-Ranaghat-Mebo-Dambuk-Bomjur (570.00 to 613.50 km)	103.50	Project Udayak BRO	NH-52
2)	Bomjir-Ihipani-Roing(Meka)-Koronu-Paya (613.50 to 677.78 km)	64.29	-do-	NH-52
3)	Paya-Digar (km 677.78 to 688.00)	10.22	-do-	NH-52
4)	Digar-Tezu (688.00 to 705.90 km)	17.90	-do-	NH-52
5)	Tezu-Tohogam (705.90 to 735.10 km)	29.20	-do-	NH-52
6)	Tohogam-Brahmakund (705.10 to 749.80 km)	14.70	-do-	NH-52
7)	Brahmakund-Tri junction-Chowkham (749.80 to 805.93 km)	56.13	-do-	NH-52
8)	Chowkham-Sitapani (805.80 to 805.93 km)	39.00	-do-	NH-52
	Sub Total	335.94		
II.	NH 52A - Banderdewa to Gohpur			
1)	Banderdewa-Itanagar	31.50	Project Vartak BRO	NH-52A
2)	Itanagar-Gohpur	20.37	-do-	NH-52A
	Sub Total	51.87		
III.	NH 153 - Jairampur-Pangshu pass	32.52	PWD, Arunachal Pradesh	NH-153
	Total	419.33		

In the 20 Year Road Plan of India (Lucknow Plan), 1980-2000, it was envisaged that the length and breadth India would be covered by the NH network in a grid of 100 Km. In other word, every place of the country must be within a distance of less than 50 km from an NH. Under the scenario envisaged, the minimum length of NH network required to cover the state of Arunachal Pradesh would work out to

1675 Km. Considering the need for height compensation of road length in a hilly area, the actual requirement of NH in the state would be much more. Against this backdrop the aggregate length of the three existing NHs in Arunachal Pradesh works out to only 419.33 Km. It may also be appreciated that the existing NH network covers only a fringe area in the foot hills adjacent to Assam and leaves major areas of the state untouched.

3.2 East-West Highway: an NH along middle belt of Arunachal Pradesh

- a. Original proposal along the foothills.** A proposal for one East-West Highway running in east-west direction along the foothills from Balem in West Kameng district to Pasighat in East Siang district was mooted in 1989-1990 with a view to facilitate intra-state linkages within Arunachal Pradesh, and thus to avoid frequent incursions into Assam for movement from one district of the state to another. A pre-feasibility study by the RITES was funded by the NEC at a cost of Rs. 24.00 lakhs. Because of the very heavy investment required for constructing road in geologically fragile Siwalik region with extensive needs for bridges on a large number of rivers, emerging from the hills of Arunachal Pradesh to the plains of Assam, and also considering the fact that the proposed road was in close proximity to the NH-52, running along the north bank of the river Brahmaputra, the proposal in question, originally mooted for funding under NEC, could not find favour, and the project was thus shelved.
- b. Revised proposal along middle belt.** The need for the East-West Highway, a trunk route within the territory of Arunachal Pradesh to provide inter district linkages within the state, remained an unfilled need. The importance of this proposal has also been recognized by the Shukla Commission which has recommended an investment of Rs.509.00 crores (1996-1997) for it.

The dream of East-West Highway in Arunachal Pradesh lives on. It is being conceived under a revised proposal. The new proposal will consist of a infra-state trunk road of two lane standard running through various contiguous areas in east-west direction by integrating the existing road networks and linking district headquarters and other towns in the higher populated and more productive zones along the middle belt of the sate. It will start from

or terminate on NH, State Highway or major State Roads within Arunachal Pradesh or in Assam.

The proposal will have two major sectors viz. Western Sector (WS), starting from Balipara on NH-52 in Assam and terminating again on NH-52 at Pasighat (939 Km) and Eastern Sector (ES), linking Mahadevpur on NH-52, lying on Assam-Arunachal Pradesh border to Bimlapur on Naharkatia to Sibsagar two lane State Highway of Assam (320 Km). Of the 939 Km in Western Sector, 32 Km falls in Assam. On the other hand, of the 320 Km in Eastern Sector, 14 Km lies in Assam. Profiles of different segments under the two sectors of East-West Highway are given in Table 3.2 below.

Table 3.2: East West Highway: Western Sector (WS) – Balipara to Pasighat (939 km)

Segment No.	Names of Segments	Length in km	Present Owner	Category of existing road	Approx. cost in crore
(1)	(2)	(3)	(4)	(5)	(6)
1/WS	Balipara-Bhalukpong (on NH-52 in Assam)	32.00	BRO	MDR	38.40
2/WS	Bhalukpong – Nichipu	47.00	BRO	ODR	56.40
3/WS	Nichipu – Seppa	99.00	BRO	ODR	118.80
4/WS	Seppa – Sagalee	170.00	PWD (NEC)	ODR	204.00
5/WS	Sagalee-Doimukh	75.00	PWD	ODR	90.00
6/WS	Nirjuli –Pottin	48.00	PWD (NEC)	ODR	57.60
7/WS	Pottin – Yazali	13.00	BRO	ODR	15.60
8/WS	Yazali – Ziro	42.00	BRO	ODR	50.40
9/WS	Ziro – Daporijo	162.00	BRO	ODR	194.40
10/WS	Daporijo – Bam	108.00	BRO	ODR	129.60
11/WS	Bam – Along	42.00	BRO	ODR	50.40
12/WS	Along-Pangin	26.00	BRO	ODR	31.20
13/WS	Pangin – Pasighat (on NH-52)	75.00	PWD	ODR	90.00
	Total	939.00			1126.00

In Arunachal Pradesh - 32.00 KM
 In Assam - 907.00 KM

Table 3.3: East-West Highway: Eastern Sector (ES)- Mahadevpur to Bimlapur (320 km)

Segment No.	Names of segments	Length in km.	Present Owner	Category of existing road	Approx. cost in crore
1	2	3	4	5	6
1/ES	Mahadevpur - Bordumsa (on NH-52 on Assam border)	22.00	PWD	ODR	26.40
2/ES	Bordumsa - Namchik	35.00	PWD	ODR	42.00
3/ES	Namchik - Jairampur	15.00	PWD	ODR	18.00
4/ES	Jairampur - Changlang	76.00	PWD	ODR	91.20
5/ES	Changlang - Khonsa	64.00	PWD	ODR	76.80
6/ES	Khonsa - Longding	52.00	BRO	ODR	62.40
7/ES	Longding - Ranglua	42.00	NEC	ODR	50.40
8/ES	Ranglua-Bimlapur (in Assam)	14.00	NEC	ODR	16.80
	Total	320.00			384.00

In Arunachal Pradesh - 14.00 KM
 In Assam - 306.00 KM

3.3 Lateral Highways and Spurs from East-West Highway

In order to improve its connectivity functions the proposed East-West Highway at selected nodal points will have to be linked to NH-52 in Assam by Lateral Highways. There will also be need to develop some spurs from East West Highway to connect important locations having tourism or growth potential; or serving as major administrative centres; or leading to the sites of major hydro power projects being taken up or planned in various river basins like Subansiri, Siang, Lohit, Kameng etc. The details of these proposed Lateral Highways and Spurs to East-West Highway are given in Table 3.4.

3.4 Investment proposal

Work involved for East-West Highway will mainly be upgradation of the existing 1259 Km of ODR standard roads. Similarly 1122.35 Km of Lateral Highways linking east-west highway to NH-52 and Spurs from the new highway to identified tourist destinations or project

sites will cost another Rs.950.90 crores. Thus, the total investment required will work out to about Rs.2460.90 crores.

Phasing and other parallel programme. The ultimate objective is to bring East-West Highway and the Later Highways and Spurs of East-West Highway and under the NH programme of the Ministry of Road Transport and Highways. However, because of the heavy investment required inclusion of these road proposals under NH programme could be possible in phases only. Hence initially upgradation works programme of selected reaches of the existing road network are proposed to be supported through parallel programmes like ADB and SARDP-NE. The details of such programmes are given in related chapters.

Table 3.4: Lateral Highways and Spurs to East-West Highway (937.50 Km)

S No	Name of road	Approx. length (km)	Scope	Approx. cost (crore)	Executing agency	Funding program
1	2	3	4	5	6	7
1	Daporijo-Menga	35.00	Upgradation	31.50	BRO	GS
2	Akajan(Assam)-Bam	109.00	"	98.00	BRO	GS
3	Roing-Anini	220.85	"	199.00	BRO	GS
4	Pangin-Yingkiong	126.00	"	113.00	BRO	GS
5	Yingkiong-Pugging	21.00	"	19.00	PWD	State Plan
6	Along-Reying	60.00	"	54.00	BRO	GS
7	Pohumara-Potin	64.00	"	58.00	BRO	GS
8	Nichipu-Tawang	204.00	"	184.00	BRO	GS
9	Tinsukia-Naharkatia	45.00	IRQ	23.00	Assam	NEC
10	Naharkatia-Khonsa	65.00	IRQ	33.00	PWD	State Plan
10	Changlang-Margherita	37.50	IRQ	19.00	PWD	State Plan
11	Hawai Camp-Hawai	118.00	Upgradation	106.00	BRO	GS
	Total	1177.85		937.50		

IV. ROAD DEVELOPMENT UNDER NEC

4.1 Completed works

NEC has played an important role in the development of communication sector in the states of North Eastern Region including Arunachal Pradesh. The Table:4.1 below shows the road projects in the state completed under NEC upto the end of 8th Plan. A few of these roads completed by the Border Roads component now form General Staff or GS road network of BRO. On the other hand some roads completed by BRO, on entrustment by NEC, have been transferred to state PWD for maintenance.

Table 4.1: Completed NEC roads in Arunachal Pradesh.

(road length in km)

S No	Name of road	Length In km	Agency
1	2	3	4
1	Shergaon-Kalaktang-Sikaridanga road	68.00	PWD
2	Jagun-Miao road	26.80	-do-
3	Longding-Bimlapur road	43.00	-do-
4	Dirok-Deomali road	16.00	-do-
5	Tezu-Sadiya road	13.20	-do-
6	Kumchai-Manabhum-Deban road	54.70	BRO (Transferred under PWD)
7	Pakke-Seijosa-Itakhola road	76.00	PWD
8	Paka-Gongo NT road (Motorable stretch)	30.00	PWD
9	Seppa-Sagalee-Yazali road	250.00	BRO (Transferred under PWD)
10	Kamlang-Tri Junction to Deban road	50.70	(Transferred to BRO)
11	Banderdewa-Itanagar Road	34.00	PWD (Transferred under BRO)
12	Gohpur-Itanagar Road	22.00	PWD (Transferred under BRO)
13	Bichom Bridge at Bana Road	1 No.	BRO
14	Kaying-Tato Road	97.00	BRO (Included under GS programme of BRO)
15	Taliha-Nacho Road	73.00	-do-
16	Ditte-Dime-Migging Road	200.00	-do-
17	Hunli-Anini Road	142.00	-do-
18	Orang-Mazbat-Rupa Road	142.00	PWD (40.00 Km from Rupa to Shergaon transferred under BRO)
	Total	1340.20	

Total length of NEC roads under maintenance of PWD, AP, works out to 675.36 km. As per the norm of MoRT&H, resources to the tune of Rs. 12.15 crore (at the rate of Rs.1.80 lacs/Km) would be required for their repairs and upkeepment.

4.2 9th Plan schemes

During 9th Plan four road projects involving improvement and upgradation works, were taken up. Three of them formed parts of Prime Minister's package for North Eastern Region announced in 1996. Table 4.2 below gives the details of projects taken up during 9th Plan. The projects at Sls.(1) and (2) are expected to be completed by March'2006 while Sl.(3) shall be completed by March'2007. The scheme at Sl. (4) has meanwhile been completed (2005).

Table 4.2: Roads under NEC taken up during 9th Plan

S No	Name of roads	Length In KM	Project cost (in lakhs)	Cumulative expenditure upto 31.03.06	Balance funds required for completion	PDC	Remarks
1	2	3	4	5	6	7	8
1	Changlang-Margherita	37.48	2493.30	2363.83	129.47	3/07	PM package
2	Khonsa-Hukanjuri	35.00	2692.75	2536.48	156.27	3/07	-do-
3	Jote-Balijan	47.00	4017.96	3124.64	893.32	3/07	-do-
4	Dirok-Deomali (SH: RCC bridges 6 Nos)	16.00	588.95	588.95	-	Completed	Conversion of timber bridge
	Total	135.48	9792.96	8613.90	1179.06		

4.3 10th Plan schemes

Initially 13 projects, both new and upgradation works, covering inter state as well as works of economic importance were short-listed for survey and investigation by the Working Group constituted by the Council. An interim revised list was approved with number of

projects brought down to nine with a few replacements from the original list. The final approved list consist of five projects as follows :

Table 4.3: Roads finally selected by NEC for 10th Plan

S No	Name of roads	Length in KM	Project cost in lakhs	Cumulative expenditure upto 31.03.05	Balance funds required for completion	PDC	Remarks
1	2	3	4	5	6	7	8
1	Pasighat-Koyu road	60.00	4636.00	994.72	3641.00	3/06	
2	Laimekuri-Nari-Telam road (60 KM under AP)	60.00	6420.00	499.62	5921.00	3/07	
3	Digboi-Pengri-Bordumsa-Mahadevpur (40 KM in AP)	40.00	4313.00	-	4313.00	-	Not sanction
4	Seppa-Chyangtajo road	81.00	6773.00	-	6773.00	-	Not sanction
5	Bleeting-Namtsering-Khungba-Honglo Road	76.00	9896.00	-	9896.00	-	Not yet sanctioned
	Total	317.00	32038.00	1494.34	30544.00		

4.4 Projects identified for 11th Plan and post 11th Plans

The following road projects have been identified for implementation during 11th and post 11th Plan periods under NEC. The roads identified are mainly from the original list recommended by the Working Group for S&I at the onset of 10th plan but finally not selected. Some important new projects have also been included in this list given in Table 4.4 below.

Table 4.4: Roads projects identified for implementation under 11th and post 11th Plans of NEC

S No	Name of roads	Length in km	Approx. cost in crores	Scope
1	2	3	4	5
1	Paka-Gongo NT road (phase-II)	70.00	84.00	New work
2	Pasighat-Koyu-Ego road (phase-II)	34.00	30.60	Upgradation New work
3	Wak-Liromoba road	64.00	57.60	Upgradation work
4	Changlang-Khonsa road	65.00	58.50	Upgradation work
5	Longding-Bimlapur road	43.00	38.70	Upgradation work
6	Nyapin-Chayangtajo road	65.00	58.50	Upgradation work
7	Koloriang to Parsi Parlo road	70.00	84.00	New work

S No	Name of roads	Length in km	Approx. cost in crores	Scope
1	2	3	4	5
8	Pasighat-Pangin road	76.00	68.40	Upgradation work
9	Mirem-Mikong-Jonai road	16.00	14.40	Upgradation work
10	Raga-Yorkum-Tali road via Luba	135.00	162.00	New work
11	Tamen-Dollungmukh road	89.00	106.80	New work
12	Lumla-Bleeting-Dudunghar-Khobletang- BTK	62.00	68.40	New work/ Upgradation
13	Shergaon-Doimara road	110.00	132.00	New work
14	Orang-Mazbat-Kalaktang road	103.00	92.70	Upgradation work
15	Seijosa to Pake-Kessang road	66.00	59.40	Upgradation work
	Total	998.00	1116.00	

4.5 Investment need

Funds to the tune of Rs.18.00 crore would be required for completion of 9th project. For 10th Plan roads investment needed will work out to Rs. 224.20 crores. On the other hand, the investment required for projects identified for 11th and post 11th Plans is assessed to be around Rs. 1116.00 crores (2005). Considering the deficiency in road infrastructure in Arunachal Pradesh, lagging far behind other states even of the NE region, NEC will have to focus its efforts towards development of this state.

4.6 A need for review of NEC policy on qualifying criteria for projects selection

It needs to be understood that in a state with vast area like Arunachal Pradesh with long international borders with three neighbouring countries viz. China, Bhutan and Myanmar with added problem of remoteness and inaccessibility, there would be many potential projects, especially under road transport sector, which though of immense economic importance, but because of the locational compulsion cannot be given the attribute of interstate character, the main criteria for selection of projects under programme of NEC. Thus, preponderance on interstate nature of projects will prevent states like Arunachal Pradesh from availing the

opportunities under the Council. The selection criteria of projects with overriding importance given to interstate nature of projects thus need a review with higher priority accorded to economically important projects also.

V. ROAD DEVELOPMENT THROUGH EXTERNAL AID PROGRAMMES

5.1 Need for tapping external funding sources

From the experience of near stagnating plan outlay over the last few Five Year Plans, the possibility of significant increase in grants for bridging the resource gap for critical infrastructure development would appear to be remote. On the other hand, the state lagging far behind other states, even of the NE region, in the field of infrastructure development specially in communication sector, Arunachal Pradesh will to leap-frog in its efforts if it ever could dream of catching up with other parts of the country. For this a hike in resource inputs would be a must. A time has, therefore, come to look for non-traditional sources funding by tapping external funding agencies such as the World Bank, Asian Development Bank etc.

5.2 North Eastern State Road Project

Under the aegis of the Ministry of Development of North Eastern Region (MDONER), Govt. of India, the Asian Development Bank (ADB) has sanctioned the North Eastern State Roads Project (ADB TA 4378-IND), a project for providing technical assistance to the eight states of NE region in the field of road communication sector. The job is to be undertaken by the consultant appointed by the Bank with active inputs from the concerned road development agencies of the states.

a. Project goal. *The overall sectoral goal of the project is: To facilitate economic growth, poverty reduction, and environmental action by improving the North Eastern State Roads network and road connectivity to the national and sub-regional road networks.*

b. Project goal envisioned Three board objective outputs for this TA, envisioned are as follows:

- (a) Board prioritization of the regional roads network in the North Eastern Region (NER) covering National Highways (NH), State

Roads (SR) and Major District Roads (MDR) in order to enhance the national and sub-regional level roads connectivity.

- (b) Undertake a Project Preparation Feasibility Study for an investment project in the NER for rehabilitation, improvement, upgrading and new roads construction, in each of the eight states in the NER.
- (c) Investigate existing needs and gaps in the various road sector institutions in the NER, and prepare a preliminary Institutional Development/Capacity Building (ID/CB) Action Plan to support implementation of the investment project as well as longer term improvements in the efficiency and effectiveness of the relevant institutions, with a focus on key concerns including staff training of the required ongoing investment programme and longer term sustainable maintenance of road assets in the region.

5.3 Constitution of project cell

It is proposed to constitute a project cell which, under direction and control of the Chief Engineer, (Eastern Zone), PWD, AP, Itanagar, will be responsible for formulating DPRs, submitting data inputs monitoring reports and returns and conducting quality audit etc in regards to the NESR project and the subsequent investment package likely to follow the present TA project.

Subsequently the project cell could also take up survey and investigation (S&I) jobs, design works including referred cases on (possibly on payment of nominal fees). Supervision activities and quality auditing of other projects. In course of time this cell could be given a legal entity by registering it as a society under the Societies Registration Act or as corporation under the Company's Act. It is also envisioned that this unit in the long run will function on a self sustaining basis with minimum support from the government budget.

5.4 Identification of roads for investment project

One of the three envisaged outputs of the present TA project of ADB is to undertake a project preparation feasibility study for an investment package in each state of NER. The feasibility study will cover rehabilitation, improvement or upgradation package and even or new construction work. The TA project in hand is thus likely to be followed by an investment project, sometime in 2006-2007.

- a. Initial list of proposals.** The initial investment package is sleighted to be limited to IR 12,000 millions, (1200 crore) spread across eight states under NE Council including Sikkim. With counter part funding obligations against the loan likely to be covered by MDONER, and also taking into view that the size of the loan itself is limited, the share of each state is likely to be restricted beyond a point. Then again, though in principle construction of new road is also included under the purview of the investment project, definite preference exists for improvement/up-gradation works, which will not only be less cost intensive but also have lower gestation period and lesser environmental impact tentative proposals from the state. These roads are shown in Map 5.1. Within these parameters the following seven roads were initially identified.

Table:5.1 List-Proposals under Arunachal Pradesh initially for investment project under ADB

Sl. No.	Name of roads	Length	Scope of work
1)	Nirjuli-Potin Road	42.95 KM	Upgradation to double lane NH
2)	Hoj to Seppa Road	218.00 KM	Upgradation to MDR
3)	Namdang-Changlang-Khonsa-Hukanjuri Road	132.50 KM	Improvement of riding quality-72.50 KM Upgradation 64.00 KM

Sl. No.	Name of roads	Length	Scope of work
4)	Pakke-Kesang-Seijosa Road	75.00 KM	Rehabilitation
5)	Roing-Shantipur Road	35.00 KM	IRQ
6)	Longding-Bimlapur Road	56.00 KM	Upgradation
7)	Pasighat-Pangin Road	76.00 KM	Upgradation
Total:		663.45 KM	

b. Prioritised list as per ADB. With the initial size of the loan from the Bank likely to be limited to only Rs.1200 crores, the total length of road to be taken up in the whole of the NER under the investment project will possibly need to be restricted to 1500 about Km from a figure of 2500 Km as envisaged earlier. Thus the proposals from Arunachal Pradesh too will have to be pruned down realistically. The ADB, and NEC, acting on behalf of MDONER, have also made it clear that any road which is presently included under an active programme of a Central agency like NEC or MORT&H, will not be considered for ADB is given in Table 5.2 below. They are also shown in map 5.2.

Table 5.2. Prioritised list of roads from Arunachal Pradesh under consideration of ADB

Sl. No.	Name of road	Length in Km	Scope of work	Approximate cost in cr.
1	Papu-Potin road via Yupia	52.00	Upgradation of double lane NH standard	62.40
2	Hoj to Riloh road	175.00	Upgradation to MDR	157.50
3	Pasighat-Pangin Road	76.00	Upgradation to MDR	68.40
4	Changlang-Khonsa road	64.00	Upgradation to MDR	57.60
Total:		367.00		345.90

c. Rationale behind selection of projects. The roads which were included in the initial list and those covered in the final prioritized list for project preparatory feasibility studies under the NERSP-TA package under ADB have been identified on the basis of their relative importance in the existing road network specially those which are likely to play catalytic roles for other development efforts in the area. They cover roads that provide linkage to the state capital or inter district connectivity serving as conduits for materials and services. Roads involving new cutting over substantial lengths have not been considered to avoid high costs, long gestation periods and above all the problem associated with Forests and Environmental clearance.

The road identified also form parts of the proposed East-West Highways through the mid belt of the state.

5.5. Future Plans

On successful completion of the works under the first phase of investment project of ADB being envisaged, further programmes could be taken up under the same bank or other aid agencies like World Bank. The roads which may be covered under such future programmes with investment through external aids could include the segments, laterals and spurs of the proposed East-West Highway (Chapter III). The programmes may also cover the roads leading to sites of major hydro projects, tourist centers (chapter...) and cross border trade centers (chapter ...)

VI. SPECIAL ACCELERATED ROAD DEVELOPMENT PROGRAMME IN NORTH EASTERN REGION

6.1 Origin and concept of programme

The Special Accelerated Road Development Programme in North Eastern Region (SARDP-NE) is a major initiative of the Government of India aimed at rapid development of road infrastructure in the North Eastern region of the country comprising of the eight states Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim. The programme was conceived in the meeting taken by the Hon'ble Union Minister (Shipping, Road Transport & Highways) with Hon'ble Chief Ministers/State PWD Ministers and state government officials at Guwahati and Shillong on 3 August and 4 August, 2004 respectively.

In a follow up meeting in Transport Bhavan, New Delhi on 13 October, 2004, taken by Secretary (RT&H), Government of India, the concept of the proposed SARDP-NE, the composition of the programme and the modalities of its implementation were also outlined. The main objective of the programme is to link the state capitals and district headquarters of the states in NER with double lane NH or State Roads to the existing NH network. The programme will thus include improvement, upgradation or construction of National Highways and State Roads.

6.2 Proposals submitted by Arunachal Pradesh PWD

The original proposals submitted by PWD, Arunachal Pradesh to the Ministry of Road Transport and Highways under SARDP-NE consisted of 12 roads of standard with an aggregate length

of 1607 Km requiring upgradation or improvement of riding quality, with the objective of improving the connectivity to district headquarters which were yet to be linked directly by any NH. Three of these roads belonged to PWD while ten fell under BRO including one combined project a part of which is owned by PWD. The length under the two agencies worked out to 150 Km under state PWD and 1449 Km under BRO.

Subsequently, the original proposals submitted by PWD, AP under the programme were reviewed in a meeting in the office chamber of Chief Secretary on 8 November, 2004. In that meeting it was decided that where the traffic intensity was not high the width of the roads proposed may be limited to single lane or intermediate lane only. After this review the total length of roads proposed under the programme reduced to 1234 Km, (1066 Km of GS roads within Arunachal Pradesh under BRO and another 32 Km falling within Assam and 136 Km of State Roads under PWD, AP.

6.3 Road proposals submitted before Foreign Secretary

Proposals of eight roads in border areas of Arunachal Pradesh, including the Indo Myanmar Road, two Inter Basin roads, one road leading to Bhutan border and four other road proposals for outposts close to the border with China were placed before the Foreign Secretary during his visit to Arunachal Pradesh on 26 and 27 November, 2004. On the basis of the report of Foreign Secretary emphasizing the needs of these roads, there was a meeting in PMO followed by another meeting taken by Secretary (RT&H) in Transport Bhavan on 17 January 2005 where it was decided that these eight important roads in border

areas of the state would be integrated with SARDP-NE.

6.4 Meeting of GOS taken by Cabinet Secretary

In a meeting of the Group of Secretary, GOI, taken by the Union Cabinet Secretary on 15 July 2005 with the main objective of finalising the agencies to implement the projects under SARDP-NE Phase: A, with special emphasis on Assam, Arunachal Pradesh and Mizoram, the then Commissioner (PWD), Arunachal Pradesh, made a request that since there was no project from Arunachal Pradesh covered under the first Phase:A of the programme, one small project the state, viz. Road from Lumla to Tashigaon in Bhutan via Dudunghar (36 Km), could be considered for inclusion under this phase. The proposal was accepted.

6.5 Selected projects of Arunachal Pradesh

The Ministry of Road Transport and Highways had invited proposals under SARDP-NE from both the state PWD and the Border Road Organisation (BRO). The projects identified by the Ministry, therefore, have a mix of roads under the two organizations. The programme envisioned consists of three phases viz. A, B and C with total length of 3000 Km (36.00 Km under Phase: A, 1757 Km under Phase: B and 1207.00 Km under Phase: C).

Phase A. The original list of roads identified for Phase: A include those road which were covered under Prime Minister's declaration. They included selected NHs and State Roads proposed for four laning through BOT by National Highway

Authority of India (NHAI). Initially no proposal from Arunachal Pradesh was included in this list. Subsequently, however, one road of small stretch viz. Lumla to Tashigaon road via Dudunghar (36.00 Km) has been included under this phase as per the decision taken in the meeting of the GOS on 15 July, 2005.

Phase B. The works selected under phase B consist of NHs, State Roads and General staff of GS roads identified for improvement or upgradation with the aim of improving the connectivity to district headquarters. The list includes roads belonging to both BRO and state PWD. The state roads identified are ODRs (Ordinary District Roads) with road width of 5.95 m, forming components of the network linking district headquarters and in need of upgradation or improvement the riding quality. The roads of BRO selected include NH 52 and GS roads linking district headquarters and with needs for upgradation to double lane standard or improvement of riding quality. The combined list of works selected from PWD and BRO under phases: A and B of SARDP-NE is shown in Table 6.1 below.

Table I: Provisions of SARDP-NE Phases A & B under Arunachal Pradesh

Phase: A

Sl.No.	NH. No. / State road	Section	Length (Km)	Remarks
Original				
1	Nil	Nil	Nil	In original list of MORT&H no scheme from AP was included under Phase:A.
Substituted				
1	State road	Lumla to Tashigao in Bhutan via Dudunghar	36.00	Included in the meeting of GOS taken by Cabinet Secretary on 15.07.08 by transferring from Phase:C.

Phase B: National Highways/State Roads to be upgraded/ improved

NH No/State Road/Standard		Section	Executing Agencies and Length (Km)		
			BRO	PWD	Total
1	NH-52	Jonai-Sitapani	335	-	335
2	GS (MDR)	Tawang-Balipara	283	-	283
3	GS (ODR)	Seppa-Nechipu	96	-	96
4	State Road (ODR)	Yupia-Pappu	-	10	10
5	GS (ODR)	Ziro-Pahumara	106	-	106
6	GS (ODR)	Koloriang-Joram	158	-	158
7	GS/State Road (ODR)	Yingkiong-Pasighat	91	76	167
8	GS (ODR)	Anini-Meka	235	-	235
9	State Road (ODR)	Hawai-Hawai Camp	118	8	126
10	GS (ODR)	Likabali (Akajan)-Daporijo	210	-	210
11	GS (ODR)	Along-Bame	31	-	31
		Total	1663	94	1757

Phase: C. The phase C of SARDP-NE is a special programme specific to Arunachal Pradesh. It consist of eight road projects in border areas of Arunachal Pradesh with aggregate length of 1243 Km. The proposals of these roads had originally been placed before the Foreign Secretary, GOI, during his visit to Itanagar on 26 and 27 August 2004. The eight roads covered include the Indo-Myanmar

Road, two Inter Basin roads, one border road towards Bhutan, and four other roads link border outposts on the border with China. Subsequently, the road proposal from Lumla to Tashigaon in Bhutan via Dudunghar (36Km) has been transferred from Phase: C and covered under Phase:A, a decision which was taken during the meeting of the Group of Secretaries, GOI, at Delhi on 15 July 2005. The details of project proposals under Phase: C are given in Table 6.2 below.

6.6 SARDP-NE under different Scenario

The table below shows the different scenarios with comparative summaries of the proposals initiated for SARDP-NE by state PWD, and finally selected by the Ministry of Shipping, Road Transport & Highways. **Scenario: I** covers the original proposals submitted by PWD to MoRT&H with total length of 1607 Km while **Scenario: II** shows the revised proposals of PWD as per meeting of 8.11.2004 where the length of reduced to 1234 Km due to non-inclusion of two roads already under upgradation to intermediate standard under NEC. **Scenario: III** carries the roads both BRO and PWD selected by MoSRT&H under SARDP-NE Phase: B. **Scenario: IV** contains the roads in border areas of Arunachal Pradesh earlier submitted before the Foreign Secretary during his visit to the state on 26 and 27 November 2004 which were later brought under phase: C. **Scenario: V** contains one project selected originally under Phase C and subsequently included under Phase A as per decision of the GOS, GOI, in the meeting of 15 July 2005. And finally **Scenario: IV** combines the phases: A, B and C of

SARDP-NE in respect of Arunachal Pradesh with aggregate length of 3000 Km.

Table 6.3: Comparative details of proposals for SARDP-NE under different Scenarios

Scenario Agencies	Details under different scenario					
	(I) Original proposals submitted by PWD to MORT&H	(II) Revised proposals of PWD as per meeting on 8.11.2004	(III) BRO and PWD roads selected by MoSRT&H under second phase Ph : B	(IV) Border roads placed before Foreign Secy: included as third phase Ph : C	(V) One road proposal accepted later under the first phase Ph : A	(VI) Combined list of proposals selected under the three phases Ph: A+B+C
Under BRO (In A.P)	1319 Km	1066 Km	1597 Km	Under BRO 50 Km New	Original -Nil	Ph:A - 37.80 Km (Substituted from Ph:C)
Under BRO (In Assam)	130 Km	32 Km	66 Km	Proposals 807 Km	Added -36.00 Km (Substituted from Ph:C)	Ph:B -1757 Km
Sub-Total	1449 Km	1098 Km	1663 Km	Under PWD 386 Km		Ph:C - 1207.00 Km (1243-36.00)
Under PWDAP	158 Km	136 Km	94 Km			
Total	1607 Km	1234 Km	1757 Km	1243 Km	36.00 Km	3000 Km

6.6 Agencies for implementation of SARDP-NE in AP

The Ministry of Shipping Road Transport and Highways, Government of India, had envisaged that implementation of SARDP-NE would be done only by the two Central agencies viz. National Highway Authority of India (Phase: A) and Border Roads Organisation (Phases: B and C). The Government of Arunachal Pradesh and other states of NE region, however, are of the view that parts of the programme covering at least the roads which were originally under the state PWDs, should be implemented by the state agency only.

It may be realized that BRO which is heavily committed for construction and maintenance of strategically important roads in the border areas and other agency works like NH in Arunachal Pradesh would be extremely hard pressed with extra workloads of SARDP-NE, if all the entire roads to be taken up under the programme are entrusted to the agency, as originally envisaged by the Ministry of Road Transport and Highways, GOI.

In the light of above background it may be decided to entrust to BRO the improvement and up-gradation works of the GS roads and NH, already with the agency, under SARDP-NE Phase: B, and construction of new border area roads under Phase: C. The PWD, on the other hand, may be allowed to execute improvement, up-gradation and construction of the remaining roads presently with the agency, under the phases A, B and C of SARDP-NE. The question of entrusting a road to either the two agencies for implementation under SARDP-NE could be decided on a principle of as-is-where-is basis.

6.7 Maps

The maps showing the identified roads in Arunachal Pradesh to be taken up under various phases of SARDP-NE are shown in maps as given below.

Appendix VI.a: Roads of Arunachal Pradesh selected for improvement under SARDP-NE Phase: B

Appendix VI.b: Eight roads in border areas of Arunachal Pradesh, originally placed before Foreign Secretary during his visit to Arunachal Pradesh, included under SARDP-NE Phase: C and Phase A.

VII TOWNSHIP ROADS

7.1 Origin of urban centres and trends of growth

Urbanization process in Arunachal Pradesh started late as a post Independence phenomenon, linked mainly to growth of administrative centres like the district, the ADC, the sub-divisional and the circle headquarters. In the beginning most of these centres came up at isolated places without road linkage. Even today out of 157 administrative centres in the state (2005), 34 circle headquarters still remain unconnected by road. Once the government offices were established along with other facilities like hospitals, schools and markets, people from villages in the catchment of the administrative set up began to gravitate towards these settlements, leading to rapid increase in their populations. This process which was slow in the beginning picked up speed in the seventies and accelerated fast in the eighties and ninties. The trend is likely to maintain its momentum for decades more.

7.2 Census towns and potential growth centres

At Independence there was no recognized town in the whole of the then NEFA (North East Frontier Agency), now Arunachal Pradesh. In Census 1961 whole area of NEFA was treated as rural. In Census 1971, four district and sub-divisional headquarters, viz. Bomdila, Along, Tezu and Pasighat, came to be categoried as towns. In the next census of 1981, Itanagar and Naharlagun were added to the earlier list of four. By 1991 the list of urban centres went up to ten with addition of Ziro, Roing, Namsai and Khonsa. Finally in 2001 the tally went up to 17 with entry of new

towns like Basar, Changlang, Daporijo, Deomali, Jairampur, Seppa and Tawang.

The list of these 17 recognised urban centres in the state does not include four district headquarters viz. Koloriang (Layeng Yangte) of Kurung Kumey district, Yingkiong of Upper Siang, Anini of Dibang Valley and Hawaii of Anjaw district. These four left out district headquarters, however, are included in separate list of 35 potential growth centers having scope for further growth and becoming recognised urban centres in future. Some of the towns in this list already have populations above 2000, one of the required criteria for being recognized as class VI towns. The populations and the lengths of roads in these 17 recognised urban centers are given in Table 7.1. The profiles of the 35 other potential growth centres including the uncovered district headquarters are given in Table 7.2.

7.3 High growth rate of urban population

Though the average decadal growth rate of population in Arunachal Pradesh has decreased from 35.15% during 1971-81 to 26.21% during 1991-2001, the growth of urban population has been recording a high rate of 158% during 1981-91 (national figure 36.09%) and 101.29% during 1991-2001. This high growth rate probably reflects a phenomenon of in-migration of people from rural areas to urban pockets in search of better facilities and opportunities like health, education, commercial or economic activities. It also could indicate an influx of population from outside the state, especially to the towns like Itanagar and Naharlagun, which have

registered high decadal growth rates of 111.36% and 87.31% respectively during 1981-1991 and 1991-2001.

7.4 Functional roles of urban centers

As mentioned above the growth of urban centres in Arunachal Pradesh was linked with spread of administrative system and growth of administrative centers. Most of the urban centres in the state thus are functioning administrative centres like the capital township or the district, the ADC, the sub-divisional or circle headquarters. The main functional roles of these towns, therefore, are administrative, which also include delivery of social sector services like health, education, marketing etc. In a limited way some of these towns also serve other functional needs that include tourism, commercial and industrial activities etc.

7.5 Needs and problems of urban centres

Because of the rapidly increasing urban populations and the roles that these centres play as hubs for delivery of services like health, education, marketing etc. to the people living in these settlements and in the outlying rural areas, it becomes essential to provide necessary urban infrastructure support such as water supply, sanitation, health, education, road network in these centres.

Except a few settlements in the lower belt of the state along the foothills, adjacent to plains of neighbouring Assam, most of the urban centres in Arunachal Pradesh lie in terraces of hills, some of them even in snowfall regions in upper reaches. Most urban infrastructure in these towns, especially the road network, would, therefore, have to face the vagaries and

constraints imposed due to the harsh topography weak geomorphology and high precipitation. Then again, non of the towns in Arunachal Pradesh, including the capital towns of Itanagar and Naharlagun, have Building Byelaws, nor any laid down regulations to govern construction activities (2005). Further, there is no Town and Country Planning Act in the state. No identified authority exists with vested powers to control and regulate development and construction activities in urban areas. Hence all the urban centres in the state including the capital towns and the district headquarters suffer from haphazard growth with growing menace of encroachments and unauthorized constructions. In view of above background, construction and maintenance of roads in urban centres of the state remain beset with multifarious problems and constraints. Unless required legal framework is established through statutes the problems will multiply and all efforts towards development of urban infrastructure will be negated.

7.6 Need for separate fund and designated agency.

Role of PWD. Presently there is no separate funds nor any designated agency assigned exclusively for development and upkeepment of road infrastructure in urban areas of the state. Earlier, in the absence of separate designated agency, the construction of roads in township areas of the state was being taken care by the State PWD as a part of general road development programme of the department under State Plan. The resource required for these activities was drawn from the common kitty under head of account 5054 and 3054 Roads & Bridges.

Upkeepment of these assets was being done through corresponding maintenance head under Non-Plan till 1996-97. Grants under Non-Plan for maintenance and upkeepment of roads was stopped since 1997-98. Consequently, urban roads under PWD are also being looked after with meagre resources apportioned from Plan outlay under the sector as is being done for other assets of the department.

Urban Development Department. In the beginning the urban infrastructure development schemes under the head of account 4217 Urban Development, covering mainly minor works like storm water drains in colonies; concrete foot path; land protection jobs such as retaining wall etc., were taken up PWD. In 1993 a separate department viz. Urban Development Department, with Town Planning and Housing attached to it, was created. The new department which started functioning in 1996 began to take up the schemes under the above fund.

Subsequently registered societies viz. the SUDA (the State Urban Development Agency), based in the state capital, and the DUDAs (the District Urban Development Agencies), located in district headquarters, were created as legal entities registered under the Societies Registration Act 1869 under the aegis of the Urban Development Department. Funds received from the Central Urban Development Ministry are parked in the accounts of these societies and utilized against approved projects under various programme of the Ministry. The projects implemented by DUDAs so far however, appear to be of amorphous nature with no visibility on ground. On the other hand, the State Urban Development Department has recently initiated a number of major urban infrastructure projects that

cover urban roads, water supply scheme etc. with funding through Central UD Ministry and possibly under NLCPR. As the activities of UD Department grows dualism or multi agency involvement in various urban infrastructure development projects cannot be ruled out. For example in construction and upkeepment of urban roads the department has to work in tandem with PWD. Similarly, for implementation of urban water supply and sanitation schemes the PHED may have to involved. The SUDA of which the Secretaries and Chief Engineers of some works department like PWD are members does not as yet have a mechanism for coordination with the line departments. The lack of coordination is often reflected in the activities of DUDAs. The Agency sometime take up schemes like retaining/breast walls and pucca drains on urban roads belonging to PWD without the knowledge of the owner agency. Such lack of information sharing could even lead to duplication of schemes and wasteful expenditures. It could also adversely affect effective use of the assets in hand.

Investment need for urban roads. In the Annual Plan document of Road and Bridge sector under PWD, the roads in urban areas are shown as Township Roads. Total length of roads in 17 census urban centres works out to Km (Table 7.1). On the other hand, there exist anotherKm of roads in the 35 other potential growth centres which include the four district headquarters of Yinkiong, Anini, Koloriang and Hawaii, not yet recognized as census urban centers (Table 7.2). The resource required to complete the ongoing urban road schemes or Township Roads works out to

about Rs..... crores (See Tables 7.1 and 7.2). On the other hand, funds required for maintenance and up-keepment of existing road taken as black topped standard works out to Rs..... crores. Considering the high growth rate of urban populations in recent decades and the likelihood of this trend continuing in coming decades, there would be a need for substantial increase in the urban infrastructure. Pegging the requirement of urban roads by 2020 to be twice of the present length, it will call for quality improvement of the present roads and capacity enhancement to the extent of 747.500 Km. Improvement in quality of the existing road assets upto the horizon year 2020 will require any investment of Rs.....crores. On the other hand, construction of new roads will require an additional investment of about Rs..... crore. So considering above scenario it will need on the average at least Rs..... crore per year for sustaining the activities of construction and maintenance of urban roads in the state.

Need of designated fund and statutory bodies. Though in the annual plans of Road & Bridge sector over the last several years the PWD has been making additional dispensation of 5% of the free grant available (after taking care of the committed expenditure and earmarked allocations) to the urban centers like the state capital and another 5% to the district headquarters, the actual allocations against road sector in urban areas have been far from adequate.

It is observed that resource mobilization efforts for development and upkeepment of urban roads, as a part of normal road development programme of PWD, suffers from a general disinterest among the individuals or organizations to champion its cause. With a backdrop of

general resource constraint, every elected representative makes his efforts to draw the maximum resource outlays to his constituency only. In this competitive environment everyone's capital becomes nobody's capital and everyone's district headquarter has few to champion its cause.

While the PWD could be expected to continue its activities towards development of urban infrastructure in the state, supplementing the roles of the designated agencies like Urban Development Department, SUDA, DUDA etc, there is need for a designated fund for development and upkeepment of urban roads in the state. Corollary to this is the need for setting up of grass root urban democratic institutions like Municipal bodies especially in larger townships, with statutory support for raising funds through taxation and other means for making their development efforts them self sustaining.

IX. PRADHAN MANTRI GRAM SADAK YOJANA

9.1 Programme objective and guiding principles

Pradhan Mantri Gram Sadak Yojana (PMGSY), has been a major initiative of the Central Government for linking unconnected rural habitations, fulfilling qualifying criteria, by good quality all weather roads (AWR). The programme is supported mainly with funds generated from cess on diesel (50%). The programme population norms in general envisaged to link the villages with population 1000 and above by 2003, and 500 and above by 2007. For hilly and desert states having smaller habitations the population norms were correspondingly relaxed to 500 and 250 respectively.

The population will be reckoned based on Census 2001. The Guideline of PMGSY also provides for inclusion of schemes to link headquarters of Village Panchayats or places of tourist interest. In such cases the population criteria may be relaxed. Provision also exist in the guideline for covering cluster of smaller habitations, within path distances of 1.50 Km from an all weather road, having combined population of 250 or above.

Specification criteria of road. An all weather road is a road which has adequate cross drainage and pavement provision to remain operational in all types of weather. It however necessarily does not imply that the road should be paved or black topped.

The coverage of PMGSY programme is limited to rural areas only. Urban roads are excluded from the purview of the programme. Even in rural areas PMGSY will cover only the rural roads i.e., the roads falling under Ordinary District Road (ODR) and Village Road (VR) category. Major District Road, State Highway, National Highway, Expressway will not be covered under PMGSY even if such roads are located in rural areas.

Each road work taken up under PMGSY must form a part of the Core Network. A Core-Network, on the other hand, is the minimal network

of roads that is essential to provide basic access to essential social and economic services to all eligible habitations through at least a single all weather road.

The primary focus of PMGSY is to provide new connectivity with all weather road to an unconnected habitation. New connectivity implies construction of road from earthwork stage to desired specification. Upgradation of road with deficient specifications to the prescribed standard can be permitted under PMGSY provided all the qualifying unconnected habitations have been provided with all weather road. PMGSY however does not allow repairs of black topped or cement roads.

9.2 Nodal Ministry/Department

The nodal ministry in Government of India is the Ministry of Rural Development. The Central Ministry have set up the National Rural Road Development Agency (NRRDA), a legal entity registered under the Societies Registration Act 1869 to provide operational and management support to the programme. The State Governments and UT Administrations will furnish reports, data and information to NRRDA.

Initially in Arunachal Pradesh the Rural Development Department had been made the state nodal department Subsequently this was changed to PWD Arunachal Pradesh. Finally however the Government of Arunachal Pradesh in December 2003 entrusted the entire PMGSY programme to the Rural Works Department and designated it as the nodal department and executing agency. Subsequently under RWD, the state autonomous agency viz. Arunachal Pradesh Rural Road Development Agency, an independent legal entity in line with NRRDA of the Central Government, has been constituted under the Societies Registration Act 1869.

Subsequently designated Programme Implementation Units have also been constituted under RWD in each district of the state.

9.3 Connectivity status of habitation

Of the 3880 habitations in the state (Census 2001) only 1391 have been connected by road (2005). Out of the remaining 2489 unconnected villages 33 are of 1000 plus population, 83 of 500 – 999, 216 of 250-499 and 2157 of less than 250 population. Details of unconnected habitation and the roads required to connect them are given below:

Table 9.1: Connectivity status of villages in Arunachal Pradesh (April 2005)

S No	Population	No of habitations connected	Left out habitation	Total habitation
1	2	3	4	5
1	1000 +	139	33	172
2	500-999	183	82	266
3	250-499	264	216	480
4	<250	805	2157	2962
	Total	1381	2489	3880

Source: PMGSY cell, RWD

9.4 Schemes taken up

Phase I. Under Phase I of PMGSY (2000-01), 202 schemes of PWD and RWD, spilled over from erstwhile BMS programme were, taken up against an aggregate allocation of Rs.41.00 crores. Details of the schemes are indicated in Table 9.2

The allocation initially conveyed as a part of Plan Outlay under Road and Bridge sector was Rs.35.00 crores. This was further sub-allocated to RD Department, PWD and RWD with corresponding break upto Rs.1.00 crore, 34.00 crore respectively..... Against this 122 schemes were identified (74 under PWD and 128 under RWD). Subsequently a special allocation of Rs.6.00 crore was made

additionally under RWD. Against this 80 additional schemes were taken up. But they were operationalised during the next final year ie 2001-2002, only.

Table 9.3 Details of road project taken up under PMGSY Phase II (2001-03)

Phase II. Under Phase II (2001-03) 137 roads were taken up under PWD and RWD at a cost of Rs.86.43 crores. Details are given in Table 9.3.

More than 76% of the villages have population less than 250, the threshold level for qualifying under PMGSY.

9.5 Works ahead

Over 11,000 km of road would be needed to connect the remaining unconnected villages. Of this about 3000 km would be linking for the villages with population of 250 and above. The investment needed would be to the tune of Rs.2700 crores.

X. DEVELOPMENT OF BORDER TRADE ROUTES

10.1 Traditional trade routes

In the past there were many traditional trade routes from Arunachal Pradesh to the neighbouring countries like Tibet (China), Myanmar (Burma) and Bhutan. Trading was carried out mainly through barter. Over the years some of these routes especially those leading to China and Myanmar fell into disuse mainly due to souring of relationship between the countries. Now, with changes taking place in global scenario, there is an emerging need to reopen these traditional trade routes.

10.2 Identified route for cross border trade

Besides reopening the traditional trade routes, there is a new cross border trade centres will also have to be identified and developed based on demand and potential.

Table 10.1 below shows the names of the traditional trade routes and potential new routes in Arunachal Pradesh leading to internal borders with countries like China, Myanmar and Bhutan. It is proposed to develop these roads leading to cross border trade centres in phased manner under different programmes like SARDP-NE, NH, G Road, State Plan etc.

Table 10.1:

S No	Name of road	Length (km)	Destination country	Approximate cost (crore)	Present category	Scope of work	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1	Tawang to	35.00	Bhutan	32.00	ODR	Improvement	
2	Mechuka to Lolla pass road	40.00	China	48.00	ODR	New constn.	
3	Tuting to Gelling road	37.00	China	45.00	ODR	-do-	
4	Wallong to Kibithoo road	25.00	China	23.00	ODR	Improvement	
5	Jairampur to Pangsu pass road	32.50	Myanmar	30.00	NH	Upgradation	
6	Panchao to Konsa road	28.00	Myanmar	25.00	ODR	Improvement	
7	Lumla to Tashigaon via Dudunghar	40.00	Bhutan	45.00	ODR	Improvement/New constr	
	Total	237.50		251.00			

10.3 Map: Enclosed as Appendix 10.1 map No..... Title:

XI. NEEDS OF ROADS IN UNCOVERED AREAS

11.1 Bias in road development

Although road development has made good stride in Arunachal Pradesh (from near to nothing at Independence), the impact of this development remains confined mostly to higher population areas in or around the capital towns, district headquarters or other administrative centers. Then again, though the Border Roads Organisation has taken up a large number of General Staff (GS) and China Study Group (CSG) roads towards the border areas, their development is concentrated only in areas where perception of threat from across the border is high the last half century.

11.2 Special problem of uncovered areas

Thus in view of above background where in a particular sector there may be maze crises of crossing road network of BRO, vast tracts in other areas, where little or no threat is perceived have been left uncovered. The road construction programme under state plan, starving of funds, cannot make a dent to this vast need. On the other hand the externally funded programme like NEC also fails to provide the needed coverage due to the poor funding and its preponderance on inter-state nature of projects.

11.3 Perspective requirements of roads in uncovered area

Table 11.1 below shows the tentative list of roads required for establishing connectivity to uncovered areas of the state. Most of these roads would lead to unconnected stations in border areas. Some of them will function as alternative access to existing GS roads. Others will serve as interbasin linkage and will thus be of strategic importance. All roads identified under existing programmes like NEC or SARDP-NE have been excluded from this list.

Table 11.1

Long term requirements of roads in uncovered areas of Arunachal Pradesh

Name of Work	Approx. length in Km	Scope	Approx. Cost (Rs. In crores)	Funding Programme
1 Raga-Yorkum-Tali-Pipsorang-Limeking Road	225.00	New construction	270.00	GS/CSG
2 Longsom-Ozakho-Chanu-Chopsa-Nokfan-Bogapani Road	72.00	Upgradation-16 KM	14.40	State Plan/RIDF
		New constn.-56 KM	67.20	
3 Sangram-Nyapin-Chayangtajo Road (Inter Basin)	75.00	Upgradation-44 Km	39.60	GS/NEC
		New Construction-31 Km	37.20	
4 Pakarijo-Durpai Road	150.00	Upgradation-50 Km	45.00	GS/NEC
		New Construction-100 Km	120.00	
5 Konsa-Khanu Road	40.00	New construction	48.00	GS/SARDP-NE
6 31 Km of Jang-Mukto-Khet Road to Bletting via Gyamdong, Khet, Bomja, Kharung, Bongleng, Dongshingmang	70.00	New construction	84.00	GS/NEC
7 Sippi-Siga-Chetam-Tali Road (Inter Basin)	60.00	Upgradation to MDR length -20 KM	18.00	GS/State Plan
		New constn.40 KM	48.00	
8 Nangram-Parsi Parlo-Tali Road	100.00	Upgradation-5 KM	4.50	GS/NEC
		New constn.-95 KM	114.00	
9 Bui-Nidak-Gusar-Ramsing-Pakba-Byasing-Keojaring Road	110.00	Upgradation -13 KM	11.70	GS/State Plan
		New constn.-97 KM	116.40	
10 Taloriang-Chambang-Gengte-Yorkom Road (Inter Basin)	100.00	New construction	120.10	GS/RIDF
11 Changlang-Khimiyang-Sankhuhav-Lazu Road	152.00	Upgradation-127 KM	114.30	GS/SARDP-NE
		New constn.-25 KM	30.00	
12 Nampong-Rima-Putok-Gandhigram Road	143.00	Upgradation-47 KM	42.30	GS/State Plan
		New constn.-95 KM		
13 Changlang-Ranglum Road	50.00	Upgradation-10 KM	9.00	GS/State Plan
		New constn.-40 KM	48.00	
14 Sagalee-Sakiang Road (Inter Basin)	100.00	Upgradation-30 New Construction-70	225.00	NLCPR/State Plan
15 Lazu-Wakka Road	75.00	New construction	90.00	GS/SARDP-NE
16 Kamlang-Loiliang Road (Alternative Access)	120.00	New construction	144.00	GS
17 Nafra-Lada-Leyak-Bameng Road	100.00	Upgradation-40 KM	36.00	GS/NLCPR/State Plan
		New constn.-60 KM	72.00	
18 Mopung-Molom-Bingung-Bogne-	100.00	Upgradation-18 KM	16.20	GS/State Plan

Long term requirements of roads in uncovered areas of Arunachal Pradesh

Name of Work	Approx. length in Km	Scope	Approx. Cost (Rs. In crores)	Funding Programme
Paksing-Gacheng-Payum Road		New constn.-82 KM	98.40	
19 Tuting-Singa-Chepe-Anelieh-Arzo (Inter Basin Road)	225.00	New construction	270.00	GS/SARDP-NE
20 Hunli-Desali-Lohitpur (Alternative Access)	130.00	Upgradation-15 KM	13.50	GS
		New constn.-115 KM	138.00	
21 Katan-Pongging-Sissen-Pangi-Komsing-Jorsing Road	70.00	New construction	84.00	State Plan/RIDF/NLCPR
22 Namsang-Khela Road	46.00	Upgradation-29 KM	26.10	State Plan/RIDF/CRF
		New constn.-17 KM	20.40	
23 Namtok - Thamiyang Road	40.00	New construction	48.00	State Plan/RIDF
24 Foothill Road from Ruskin to Balem	500.00	New construction	600.00	State Plan/NEC
25 Miao-Vijaynagar				
26 Bam-Nyorak-Nikte Road				
27 Koyu-Rina-Piri-Beye-Ngomdir-Tadin-Kombo-Along Road				
Total	2885.00		3436.90	

XII. BUS AND TRUCK TERMINALS AND WAYSIDE AMENITIES

12.1 Need of transit and terminal facilities

Arunachal Pradesh is almost solely dependent on the roads for surface transport. Wayside amenities and terminal facilities are essential to enhance the efficiency of the road communication for movement of men, materials and services.

12.2 Present status

Presently the state lacks in proper wayside or terminal facilities. The entry gates located on the foothills adjacent to Assam and halting places along the roads have no proper facilities for waiting and refreshment, or even wash rooms. The toilets, if provided at all, are dirty and un-attended. Eating places are mostly unhygienic. Not all can go to IBs or Circuit Houses which are generally located away from the road.

Inter State Bus Terminus (ISBT) and Inter State Truck Terminus (ISTT).

Though NEC had kept a provision of over Rs. 3.00 crores for Inter State Bus Terminus (ISBT) at Naharlagun during 10th Plan, the project could not take off for want of land.

12.3 Provision required

It is proposed to establish a Inter State Bus Terminus (ISBT) at Naharlagun. Bus terminus are also be established at other regional focal stations like Pasighat and Bhalukpong. Inter State Truck Terminus is also proposed to be established at Naharlagun.

It is also proposed set up resting space, eateries, toilets etc. at all important entry gates.

The following facilities are now sought to be provided –

		Rs in crore
1	Inter State Bus Terminus at Naharlagun	10.00
2	ISBT at Pasighat and Bhalukpong	14.00
3	Inter State Truck Terminus at Naharlagun	7.00
4	Wayside amenities at entry gates (Bhalukpong, Balem, Hallongi, Banderdewa, Kimin, Likabali, Ruksin, Santipur, Namchik gate, Sunpura, Dirok gate, Namdang, Hukanjuri, Rangluah)	14.00
	Total	45.00

XIII. ROAD HIERARCHY & CLASSIFICATION

Classification of roads

Hierarchy of Roads as per Indian Road Congress. In India the roads in general are categorized into one of the following classes based mainly on their functional requirements and standards as per hierarchy established by Indian Road Congress.

- (i) Express Ways
- (ii) National Highways (NH)
- (iii) State Highways (SH)
- (iv) Major District Road (MDR)
- (v) Ordinary District Road (ODR)
- (vi) Village Road (VR)

Classification of roads as per established hierarchy also helps to assign priority for investment decisions.

Position in Arunachal Pradesh. In Arunachal Pradesh, hierarchy of road network is yet to be established. The category of roads except NH still remain un-classified. However, in course of time the roads in the state will have to be classified as per their priority status and functional role.

While declaration of Express Way and National Highways, and their construction and maintenance, will rest with the Central Government, declaration of other roads into different classes as per established hierarchy shall be done by the State Government through notification in the official gazette. The state may enact acts and rules as may be required in this regard. The classification may be based on the following criteria.

State Highways (SH). Important roads providing interstate connectivity or linking series of districts within the state including the General Staff or GS roads under Border Road Organisation (BRO).

Major District Road (MDR). Roads providing inter-district connectivity or linking series of urban centres like the ADC or SDO headquarters to the district headquarter.

Ordinary District Road (ODR). Roads providing inter linkages between administrative centres or connecting series of major villages with population exceeding 250.

Village Road (VR). Roads of limited lengths linking individual villages or hamlets specially with population less than 250.

Appropriate Specification. The roads under State Highway and Major District Road categories will have standards as recommended by IRC.

However, roads leading to one or two villages and with very low traffic intensity, which is not likely to change appreciably in foreseeable future may have toned down specifications appropriate to their utility level.

Considering the possibility of upgradation demand in future, the road formation and the cross drainage (CD) must have the minimum width of 5.95 m. The pavement, however, could be restricted to a single layer of WBM I with 3.75 m width. Attention must, however, be given to proper sub grade preparation and compaction as per prescribed practice. Such roads with grass surface over well laid single layer WBM have been found to function satisfactorily for light traffic. The cost of construction will also come down by about 40% compared to bitumenised surfaced roads, which are also environmentally more harmful due to the use of carbonaceous bitumen and use of road for heating.

Communication of road construction and maintenance activities:-

Many an existing road like Along-Likabali road and Khonsa-Hukanjuri road were constructed by the communities through self help basis with nominal involvement of the administration which was limited providing equipment, ration, medical support. The spirit of community participation sco... in tradition, now threatened due to politicization of life needs to be revised and used for development of infrastructure especially in remote areas.

Road construction activities could be dovetailed with various programs of the Rural Development, Panchayati Raj and DRDAs for employment generation and creation of durable rural assets.

Then again many of the road maintenance activities like jungle cutting, clearance of drains and culverts and removal of slips and seasonal activities for which the villagers could be engaged on part time basis. This will help to economize on road maintenance cost as the need for employing large maintenance gangs could be done away with.

XIV. AIR TRANSPORT

14.1 Need of air services

In a vast and remote hinterland state like Arunachal Pradesh where development of road is difficult, and its cost of construction and maintenance prohibitively high, it would not be feasible to provide road linkage to all destination, especially those in the far flung border areas. Then again travelling long distances through hill roads is time taking, tedious, uncomfortable and could be dangerous too. These factors could inhibit and defer travel within the state and deter prospective tourists and other visitors.

14.2 Services available earlier

Paradoxical as it may sound, Arunachal Pradesh had better and more assured air services in the past than ever afterward. A number of air strips or advance landing grounds (ALGs), were constructed during fifties, by the army personnel or by the local people on self help basis with nominal support from the administration. Fixed winged propeller aircrafts like Fokker Friendship, Dakota, Caribow, Otter etc. carried out sorties to these ALG located at places like Ziro, Daporijo, Along, Mechuka, Tuting, Pasighat, Anini (Alinye), Tezu and Vijaynagar. These aeroplanes, however, were gradually phased out. Later Vayudoot provided limited services to some of these ALGs through 18 seater Dornier aircrafts Services of the Dornier aircrafts were also ultimately discontinued.

14.3. Present status

After phasing out of the fixed wing propeller aircrafts and withdrawal of Vayudoot services, the landing grounds at various locations in Arunachal Pradesh became defunct and remained unused, except limited services by IAF and Pawan Hans helicopters. To a limited extent selected ALGs like Mechuka, Tuting, Vijaynagar continue to cater to AN 32 planes of IAF which ferry defense sorties to these places.

All attempts to have proper airports in Arunachal Pradesh have not been fruitful. As the answer to a long felt need, efforts have been made to set up an airport near Itanagar with runway length of 8500 ft. capable of receiving Airbus 320 and Boeing 737. However, all the sites identified, including Gumto-Emchi, Jotte, Nirjuli and Banderdewa, have been rejected on various technical grounds by the Airport Authority of India (AAI).

Thus Arunachal Pradesh is one of the few states in the country without air linkage due to the absence of proper airport. Though the State has also contributed its share of NEC funds towards

procurement of 50 seater ATR planes, now under operation under Alliance Airline, the people of the state cannot avail of any direct benefit from this service due to the absence of any airport within its territory.

Then again, though the NEC funded airport at Lilabari near North Lakhimpur in Assam has been operationalized, the service of ATR by Alliance Airlines is erratic, and is unable to assure linkage to further connecting flights from the hub of operation at Guwahati. Moreover due to frequent bandhs and disturbances in Assam the service is disrupted quite frequently.

14.4 Future requirements

Airport at Itanagar. An airport of Itanagar still remains an unfulfilled need. Since no site in immediate vicinity of the capital townships of Itanagar, Naharlagun, Nirjuli and Banderdewa have been accepted by AAI, we may have look for possible sites beyond at reasonable distances.

Possible site for airport at Yachuli.

From visual observation, there appears to be a possible site for an airport at Yachuli lying in North-South orientation on the eastern side of Yazali-Ziro BRTF road. The required runway of 8500 ft length and other required infrastructure could be created by cutting, the minor hillocks and filling depressions in between aircrafts. Table 13.1 shows the list of identified aircrafts landing grounds to be developed in Arunachal Pradesh.

An airport at this location will not only serve the capital area of Itanagar but also a large catchment covering Lower Subansiri, Kurung Kumey, Upper Subansiri and even Papum Pare.

Airports for ATR.

Airports will also be required at Pasighat, Tezu, Yingkiong and Roing for 50 seater ATR aircrafts with runway length of 4500 ft. each catering to large catchments covering number of districts. Where feasible, the length and areas acquired or developed in these locations should be such as to enable expansion of facilities to Airbus or Boeing standard in future. The two projects for construction of airports for 50 seater ATR aircrafts at Pasighat and Tezu under Ninth Plan of NEC have been languishing for want of EFC clearance and sanctions.

Airports for STOL airports.

The old landing grounds at Ziro, Daporijo, Along, Mechuka, Tuting, Alinye, Vijaynagar could also be improved with runway length increased to 2500 to 3000 ft. wherever feasible for operation of 15 to 20 seater short take off and landing (STOL).

Table 13.1: The needs of airports and LGs in Arunachal Pradesh

Rs. in crores						
S No	Location	Capacity	Runway length	Cost in crores	Remarks	Source of fund
1	2	3	4	5	6	7
1	Yachuli	Airbus 320/ Boeing 737	8200 ft.	200.00	New	NLCPR/NEC/AAI
2	Pasighat	50 seater ATR	4500 ft	25.00	Upgradation	"
3	Tezu	50 seater ATR	4500 ft	20.00	Improvement	"
4	Roing	"	"	30.00	New	"
5	Yingkiong	"	"	35.00	New	"
6	Ziro	15-20 Seater	3000 ft.	5.00	Improvement	"
7	Daporijo	15-20 "	"	5.00	"	"
8	Along	15-20 "	"	5.00	"	"
9	Mechuka	15-20 "	"	5.00	"	"
10	Tuting	15-20 "	"	10.00	"	"
11	Alinye	15-20 "	"	10.00	"	"
12	Vijaynagar	15-20 "	"	10.00	"	"
			Total	265.00		

VISION : 2020**1. Resource estimate**

An estimate of the resources likely to be available upto horizon year 2020 under various budget sources has been made. They will include sources as PWD (State Plan including CRF & RIDF), MDONER (NLCPR), BRO (GS, CSG), MOSRT&H (NH, SARDP-NE), ADB (Loan), RWD (PMGSY). The total estimate works out to Rs. 12262.00 crores.

2. Vision goal

By end of the horizon year 2020 it is proposed to achieve a road density of 24 km/100 Sq.km. The total road length envisioned is 20000 km. Thus a capacity addition of 4800 km is targeted at a cost of Rs. 4800.00 crores. On the other hand, existing road length of 15200 km will require improvement and upgradation, which will require an investment of Rs. 7600.00 crores.