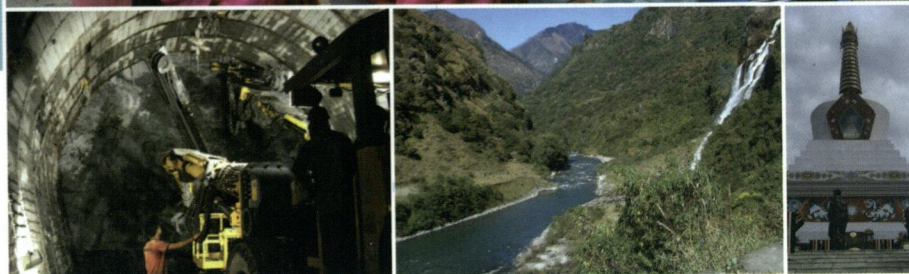


Arunachal Pradesh Development Report



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Executive Summary

The report is structured in 22 chapters. The initial chapter scheme was finalised by the Core Committee constituted by the Planning Commission. However, considering the special characteristics of the State some new chapters like, Transformation, Demographic Transition, Border Trade, Indigenous Industries and Infrastructure are added. The chapters have been organised in a sequential manner keeping in view an analytical framework of development study. The report has highlighted the broader findings of the study and policy options emerging there from.

Transformation

- Earlier known as NEFA, Arunachal Pradesh came into the picture in 1972 as a Union Territory. Full fledged statehood was granted in 1987.
- Over time social and economic transformation has taken place in the State. Individual ownership in cultivable land is gaining importance over community ownership. Land possession is now considered as a social status. With the introduction of money, economy has resulted in institutional transformation in land, labour and capital markets. Therefore, various contradictions have emerged in the economy of the State.
- The traditional consumption pattern of the people has changed, as new products have entered into their consumption basket, which has resulted in an increase in demand for cash. The traditional land ownership system and other economic institutions have become non-compatible with market system. Therefore, serious contradictions have arisen due to non-compatibility of traditional production system and institutions with those which are in conformity with market system.

- Due to monetisation, slow or no technological change in agriculture and semi-stagnant industrial sector, there is tremendous pressure on the government sector for employment and the government has expanded, which has resulted in a distorted growth of the tertiary sector.

Demographic Transition

- With an area of 83,743 sq km and a population of 10,97,968 (as per 2001 Census), the State has a very low density of population. It is only 13 persons per sq km, the lowest among all the states in the country.
- The inter-district distribution of population is highly skewed; density is relatively high in the districts with some plains and extremely low in the districts situated in the upper reaches of the State.
- The ST population constituted 64.22 per cent and non-ST 35.78 per cent of the total in 2001.
- The sex ratio of the ST population declined from 1013 in 1961 to 998 in 1991 but increased to 1003 in 2001.
- The growth of population in Arunachal Pradesh is much higher than that in the country. However, during the 1990s the population growth rate declined in the State due to the falling rate of immigration from the rest of the country and falling rate of fertility.
- The fertility rate in the State is falling but the rate of fall is still very low. The mortality rate is, however, on a decline. Because of this, the natural rate of growth of population in the State is still higher than the national average.

- The problem of youth and educated unemployment, which exists along with shortages of skilled manpower in specific sectors and occupations, needs urgent attention, particularly because of its potential role as a source of social destabilisation.

Policy Options

In the light of the employment situation in the State as discussed above, the following options may be taken care of:

- There is a tremendous scope for the expansion of the rural non-farm occupations in the State. Therefore, the State must come out with a rural non-farm sector policy such that many youths can take up the non-farm activities as their career option.
- Some activities like manufacturing and petty trading demand additional attention. Over the past decades, partly as a result of the growing demonstration effect of urban consumption patterns in the rural areas, there has been a phenomenal growth of these sectors in the rural areas.
- There is a clear case for special educational drives for marginalised groups such as villagers in inaccessible and border areas, traditionally marginalised ethnic groups, migrant casual labourers, tenants as well as those living in labour camps.

Poverty and Inequality

- Poverty declined faster in Arunachal Pradesh than in the rest of the country: between 1993-94 and 2004-05 the decline in poverty was 27.10 percentage points in the State and 8.34 percentage points at the national level.
- Poverty in the State is largely a rural phenomenon. Unlike in other tribal states, households living in rural areas are more vulnerable to poverty, which is mainly due to low productive *jhum* cultivation, absence of labour, product and credit market, and poor transport network.
- Arunachal Pradesh has higher normative calorie requirements than the states in the plains.
- Paradoxically, poverty measured by Head Count Ratio has declined but incidence of calorie deficiency has increased in the State.
- Between 1993-94 and 2004-05, proportion of calorie deficient households in the rural areas

remained stagnant around 64 per cent, whereas in urban areas it has gone up by 20.75 percentage points and stood at 47.50 per cent in 2004-05.

Policy Options

- Mismatch between Head Count Ratio of poverty measurement and proportion of calorie deficient households puts certain serious questions on the methodology followed in estimation of poverty particularly in the hilly states.
- Method of measurement of normative calorie requirements of the hilly states must be reviewed.
- In the absence of price index for the hill of North-east, Assam's price index is used to compute the poverty ratio which is not justifiable. Therefore, effort should be made to construct separate price indices for the smaller states such that poverty ratio can be computed correctly.

Human Development

- The level of human development is low in the State. Its rank in human development index (HDI) is 14th among the 16 states of India of which 15 are categorised as major states.
- East Siang with an HDI of 0.66 has the highest rank among the old 13 districts of the State. East Kameng has the lowest position in HDI. Dibang Valley (old) occupies the second rank and Papum Pare, the third in HDI.
- Health status, a dimension of human development, varies widely in the State.
- Papum Pare's expectancy of life at birth is marginally above 60 years which is comparable with the national average of 63.30 years but Kurung Kumey's life expectancy at 42.50 years is comparable with that prevailing in Sub-Saharan Africa, the region with the worst health status in the world.
- In literacy, the rate of progress in the State is one of the highest in the country. From almost a total illiteracy in 1947, the State reached a literacy rate of 54.34 per cent in 2001 which is higher than that in Bihar and Jharkhand.
- The spread of literacy is not even and there is high inter-district variation.

Policy Measures

- All-out steps should be taken to expand the health

services to the disadvantaged section of the population—those living below poverty line and those living in the far-flung areas of the State.

- Immunisation should be expanded to cover all the children in the State.
- The expansion of educational institutes should receive priority especially in the remote areas.
- Vocationalisation of education should receive priority.
- Gender-sensitive measures such as gender-budgeting and collection of development indicators along gender lines should receive the attention of the policymakers.

Potential Sectors for Development

Natural Resource Base

- **Coal:** Major workable coal resource is available in Namchik-Namphuk coalfield with estimated reserves of 84.23 million tonnes, spread over an area of 35.5 sq km. Lack of good communication and remoteness from the nearest railhead is the main constraint of development of this coal field.
- **Oil and natural gas:** Available in Kumchai, Diyun and Kharsang area in Changlang district. Here 13 exploratory wells have been completed and exploratory work has been started.
- **Limestone and dolomite:** Major reserves are found in Rupa (143 million tonnes), Tidding (140 million tonnes), Pangin (225 million tonnes). Rupa mining was started in the 1990s but was stopped owing to various reasons. Considering the growing demand of steel in the international market, the dolomite deposits would also be of importance in near future. Similarly, cement plant with a capacity of 30 tonnes/day at Tezu, which started its commercial production in 1985 using limestone from Tidding, was closed down within a decade.
- **Graphite:** Major reserves are found in Deed village on Joram-Palin road (50 m thick), Bopi on Tamen-Raga-Daporijo road (2.46 million tonnes), and Lalpani (71 million tonnes) on Tezu-Hayuliang road.
- **Other mineral resources:** Lead and zinc, ferro silicon minerals, clay, etc., are available. Building materials like sand, boulder, marble, quartzite, granite, etc., are also available in the State.

These are merely indicative of the availability of mineral resources as the entire State has not been surveyed thoroughly for the purpose. The existing data reveals that only around less than 10 per cent of the total geographical area is surveyed by the GSI.

Policy Options

- The existing data reveals that only around less than 10 per cent of the total geographical area is surveyed by the GSI. Therefore, efforts should be made to survey the entire State. Further, whatever the survey that has been done so far, should be made public.
- Since no economic feasibility study has been done for most of the mineral reserves of the region, specific studies need to be done.
- The abrupt stop of Rupa Dolomite mining was mainly due to denial by the military, for the truck movement at the night time. Therefore, coordination with the military is a must for exploitation of mineral resources in the region.
- Rangiya-Lakhimpur-Jonai railway line is the supply line to the State. Therefore, in order to reduce the transport cost, this railway line must be converted into broad gauge in order to transport the mineral resources of the State to the various industrial areas in the country. It may be pointed out that honourable Prime Minister of India announced its conversion into broad gauge on 31st January 2008.
- The State must come out with a clearly defined mineral policy.
- Since the State is located in the seismic prone zone, for sustainable development strict enforcement of building code, geotechnical studies of building code and hazards microzonation mapping should be followed.

Forest Resources

- Out of the total geographical area of 83,743 sq km, forest area of the state is 51,540 sq km.
- The expected annual yield of timber is 74152.55 cubic metres, the annual yield of cane, bamboo and resin are estimated to be 1,53,36,851 Rmt, 278,162 (no.) and 2,28,980 blazes.
- Different programmes like artificial plantation, aided natural vegetation, social forestry, joint forest

- Net sown area per ST household in the State is 1.87 hectare and Dibang Valley has the highest and Tawang the lowest net sown area per ST household.
- An overwhelming majority of the people in the remote areas depend on *jhum* cultivation and supplement their income through hunting and gathering activities. There is high potential of terrace cultivation as 29.49 per cent of the land comes under the low slope category (10-20 degree).
- Rural technology is at the extremely low level. In the remote part people even do not have even access to kerosene.
- Most of the rural development programmes in the State lack coordination.

Policy Options

- Connectivity needs to be improved.
- Expansion of schooling and health facilities is a *sine qua non* for promotion of inclusive growth.
- Mobile health services in the remote areas through public-private initiatives may be explored.
- Community involvement in delivering the basic services like health and education in Nagaland line may be implemented.
- In order to diversify the livelihood options of the people, marketing network needs to be expanded.
- Agricultural extension services need to be revamped to popularise slope specific new crops.
- In order to expand the credit facilities, self help groups need to be popularised and state specific collateral in the form of community/clan as the guarantor of loan may be explored.
- Traditional technical know-how is on the verge of extinction and technology mission should upgrade the exiting indigenous technology in a way that becomes economically viable.
- Small scale food processing industries along with cold storage facilities should be developed particularly in the remote areas. This requires electricity. In order to make electricity available in the remote areas, the construction of mini-hydel projects should be encouraged.
- Technology being the source of all dynamism and progress, all-out efforts should be made to improve rural technological configuration of production, distribution, etc.
- Agricultural land is yet to be cadastrally surveyed. In order to promote rural banking, it is essential that all cultivable land should be cadastrally surveyed and records of their ownership duly prepared, so that land can be used as collateral for loans from financial institutions.
- Expansion of the market including financial market in rural areas requires strengthening of the contract-enforcing mechanism.

Urban Development

- Arunachal Pradesh is a late starter in the urbanisation process (in 1971 only) but within two decades, it had overtaken Assam, which has a long history of urbanisation. The level of urbanisation in the State increased from 3.70 per cent in 1971 to 20.41 per cent in 2001. The growth rate of urban population during 1991-2001 is around 100 per cent.
- The process of urbanisation is not a result of economic development rather it is a State-induced one.
- One of the important features of the growth of urban settlements in Arunachal Pradesh is the dominant role of inter-state migration rather than intra-state rural-urban migration.
- As per 2001 census, 89.42 per cent of the urban households of the State were electrified which is marginally ahead of the country with 89.14 per cent. Papum Pare the most urbanised district, has the highest (97.07 per cent) and Lohit has the lowest (73.77 per cent) coverage of electricity.
- In telephone connectivity, the urban areas of the State are ahead of the country. For example, as high as 26.5 per cent of all urban households in the State have telephone connectivity as compared with 23 per cent in India. However, there are substantial inter-district variations.
- In urban banking Arunachal Pradesh is far ahead of the national average. As high as 67.0 per cent of the urban households in the State have bank accounts as compared with 49.5 per cent in urban India.
- In 2001, 89.42 per cent of the urban households had access to tap as the source of drinking water (which is of course not treated). In the same year 36.75 per cent of the urban household had no drainage facilities.

Policy Options

- Since Arunachal Pradesh is a hilly State with different environmental and geomorphic characteristics, it is suggested that instead of population conglomerating in one or two large towns, it is better to have more small and medium towns in different districts of the State.
- The State falls under Zone-V of the seismic prone areas with a high risk of earthquake and land slide. The pressure on urban land has led to unscientific method of building/designing which has got serious environmental consequences.
- The other environmental issues associated with urbanisation are poor urban waste management. It is estimated that the total urban solid waste accumulated is around 230 tonnes per day which is too high to be managed by the present set-up (Chapter 15). Although the amount may not be alarming but it needs special attention for its proper treatment and disposal.
- Since the current urban administration is not yet well-structured, setting up the urban municipalities is a must. It should be noted that Arunachal Pradesh is the only state in North-east India which does not have any municipality till date.
- Proper institutional safeguards must be given to the urban informal workers as they constitute a significant segment of the urban workers.
- It is necessary to constitute a District Planning Committee in the State for rural-urban integrated development.

Agriculture

- Agriculture contributes 27 per cent to the NSDP and employs around 63 per cent of the total workers in the State. However, a negative growth rate is observed in the recent years in agriculture sector.
- Positive points observed in the agriculture sector are: (i) net area sown is increasing, and (ii) area under permanent cultivation is increasing and under shifting cultivation declining.
- The weak points are: (i) low availability of permanently cultivable land, (ii) increasing marginalisation of land holding, (iii) yield growth rate is not satisfactory, (iv) percentage of area under HYV seeds has remained constant (around 26.76 per cent), (v) institutional credit access of the

farmers is very low (10 per cent), (vi) ill-defined property rights, and (vii) poor marketing network for the agricultural products.

On the basis of the above trends the following policy measures are suggested:

- Early completion of cadastral survey and evolving of an institutional mechanism to monitor and control land alienation through land reform laws.
- Development of a transparent, equitable and well-defined system of property rights over land.
- Development of location specific farming technologies.
- Creation of marketing network.
- Land lease policy in agriculture should be brought out by the government.
- Composite package which includes supply of high yielding varieties of seeds and seedling, supply of credit, and insurance to cover risk. Buy-back arrangement in the short-run and setting of processing units in the long-run should be the priorities of the government.
- Since economic surplus of the farmers in the State is very small, farmers cooperative should be encouraged such that they can be linked with bulk purchasers to reap the benefit of scale.
- Establishment of an effective data collection, processing and dissemination agency.

Indigenous Industries

- The State has high potentials in indigenous industrial activities as they are intrinsically linked to the culture of different tribal groups. Therefore, there is a need of identification and promotion of these activities.
- Promotion of agro processing industries.
- This sector suffers from different constraints like lack of raw materials, credit and marketing.
- There is no formal institutional set-up to address their problems.
- In the line of village and *khadi* industries, a State-level Indigenous Industries Commission may be set up to address their problems.

Resource-based Industries

- The important characteristics of the resource-based industries are that backward linkage is low and

forward linkage is located outside the State. The share of manufacturing in the State income is very low.

- In the early 1990s and 1980s, whatever industries that were there in the State were mainly forest-based. Due to Supreme Court's restriction on commercial timbering in the mid 1990s many existing forest-based industries were closed.
- At present most of the industrial activities are concentrated in the district of Papum Pare where the State capital is located. These industries are of small scale type.

Policy Options

- Development of large industries with strong mutual inter-linkage should be planned. Simultaneous development of industries with mutual inter-linkage will take care of the marketing constraint to a good extent. There will be gains in terms of cost reduction which in turn will improve viability of industrial projects.
- The plan for expansion of road network should take into account the industrial development plan along with the proposed locations of industrial units. Resulting improvement of connectivity will further brighten the viability of industrialisation programme.
- In view of ambiguity of land ownership, government will have to play a pro-active role in making land available for setting up of industries. Long term leasing of land should be arranged if outright purchase is not possible.
- Local entrepreneur should be supported to participate in developing ancillary and downstream industries. This will prepare a class of local entrepreneurs to carry forward the industrialisation process.
- Industrial workers including managerial and technical personnel may have to be brought from outside at least in the initial years. They should be given proper work permits which should clearly state the extent of their rights. To attract the best of talent they should enjoy all civil rights. But to avoid apprehension of indigenous communities of being outnumbered and overwhelmed, the right to acquire landed property should not be extended to the permit holders.
- Above all, the industrialisation process of the State should be environment-friendly.

Environment

The State is endowed with abundant forest, mineral and water resources. The main concerns on environment are: (i) intensification of agricultural practices, (ii) low level of sanitation facilities, (iii) unplanned urbanisation, vehicular growth and urban waste generation. Indoor environment in rural areas poses threat to people's health as they continue to use traditional fuels for cooking.

- Inadequate sewerage network and improper sanitation facilities lead to environmental degradation.
- Though the vehicular density is low (37 as compared to 53 at the national average), vehicular air pollution is expected to become a big concern.
- Urban solid waste generation is quite significant (12 tonnes per day in Itanagar only). Health care waste contributes around 5.58 per cent to the urban waste.
- *Jhuming* is the main cause of soil erosion. The erosion rate is 91 tonnes per hectare per year in the State.
- Central Pollution Control Board has not found a single polluting industry in the State since the industrial base of the State is weak.
- Data on water quality of most of the rivers in the State is not available. However the Brahmaputra that traverses through the State has been reported to exceed the accepted bacteriological level. This is an indication of the quality of river water of the State.
- The dominance of fuel wood as cooking fuel (87 per cent in 2001) has implications for indoor environment and health condition of women and children.

Policy Options

- Enforcement of different environmental laws is constrained by scarcity of skilled manpower. Therefore, financial, technical and skilled manpower requirements of the enforcement agencies need to be taken care of.
- Proper policies need to be formulated to phase out old polluting vehicles, and inspection and maintenance of vehicles on road.
- Policies are needed to ensure management of urban, industrial and health care wastes. Here the involvement of private entrepreneurs and NGOs should be encouraged.

Border Trade

- The State has borders with three countries mainly Bhutan, China and Myanmar with a total international boundary of 1628 km.
- From time immemorial informal trade has been taking place through different passes.
- The products that are identified where the State has the export potential are coffee, floriculture products, fresh fruits and vegetables, spices, tea and handicraft products.
- Different fruits like apple, orange, pineapple, banana, kiwi etc., are produced in the State.
- The State has identified more than 500 herbal medicinal plants and other aromatic plants like citronella, lemon-grass, vanilla, patchouli, agar, etc., having high international demand.
- Identified 50,000 MW hydroelectric potential can be a boon for the State. Considering the differential in peak time demand of India and South East Asia, there lies huge potential in power export to these regions.

Policy Options

- The State can also play a major role in reducing the transport cost for the goods exported from other parts of India to China through sea route. This is possible only after development of proper internal transport communication network in: (a) Tezpur-Bomdila-Bumla, (b) Lakhimpur-Daporijo-Naso, (c) Jonai-Sadhiya-Mekha-Malvinil-Tajobum, and (d) Sadhiya-Tezu-Chirangal-Kahoo sectors.
- Finally the Rangiya-Jonai train route should be upgraded to broad gauge so that goods produced from mainland India can be exported to China through these trade routes.

Tourism

- There are eleven identified tourist spots in the State, out of which Tawang, Bhimaskanagar and Itanagar are historical tourist spots. Malinithan and Parasuram Kund are pilgrimage tourist centres and Bomdila, Dirang, Tipi, Along and Pasighat are mountain resort tourist spots. Namdapha National Park is an attractive destination for wildlife lovers. Arunachal Pradesh with rich cultural tradition is a wonderful destination for cultural tourists. So there is enough scope for developing nature-based,

heritage, pilgrimage as well as cultural tourism in the State.

- The constraints to attract tourists to these centres are basically due to: (a) inadequate infrastructural facilities, (b) institutional constraints, (c) limited information, etc.
- A survey was undertaken to study the nature and structure of tourist demand in relation to socio-economic and demographic characteristics of tourists survey. The survey results show the existence of a market particularly for eco-tourism in the State. The study emphasises the need to organise more and more challenging adventures for relatively youthful tourist population. This means greater investment is needed for developing adventure tourism.

Policy Options

- Tourism development will be more productive if it is a part of North-east scenario. More specifically, the circuits of North-eastern region may be divided into different categories like pilgrimage, historical, cultural, recreation, wildlife etc., and the identified tourist spots of Arunachal Pradesh may be linked to those circuits accordingly.
- Public-private partnership should be treated as an essential ingredient of the policy for the development of tourism in the State. At the same time, the State government should also provide road, land, water and electricity to private entrepreneurs for constructing private hotels in different tourist spots of the State.
- Air connectivity is a cost-intensive option but it needs to be developed for promoting tourism. The State government should also build other infrastructural facilities for tourism like proper road, tourist lodges and huts, properly managed website, etc.
- The participation of local people should be encouraged. The tourist destination has to be developed in consonance with the local communities. It may be possible to provide a unique experience to tourists by building low cost infrastructure in the villages (with proper hygiene, sanitation facilities and electricity) in adjoining district headquarters, by using local materials and local design inputs.

- The simplifying of the entry formalities can lead to more tourist arrivals throughout the year. Therefore, steps may be taken to simplify the procedure to obtain inner line permit at the entry points.

Power Sector

- The chapter explores into policy options for utilising the State's power resources for stimulating socio-economic transformation in the longer run.
- A review of the State's power sector performance in past couple of years has indicated a slower progress, at least up to 2005. This is reflected in a smaller and stagnant installed generation capacity, huge untapped hydro-power potentials, low level of power consumption, a sub-optimal equilibrium with no visible energy deficit, high and growing dependence on the central sector generating stations, grossly underdeveloped transmission and distribution (T&D) networks, and alarmingly high aggregate technical and commercial losses (AT&C). Severe resource constraints, difficult topographical characteristics and high levels of inefficiencies are among the main reasons behind such a scenario.
- Even the progress made towards rural electrification could not produce the desired fruits due to lack of necessary distribution infrastructure. Some initiatives towards it are, however, planned under the RGGVY.
- The sector witnessed significant developments, especially for exploiting its immense hydro-potential, in recent past in the background of new policies like Small Hydro Power Policy 2007.
- Many private entrepreneurs have shown interest in the State's power sector. They, along with the Central power utilities, have concluded MoAs to develop as much as 25,722 MW accounting for 42.2 per cent of the total identified potential of the State. Still, more than half of the potential would remain unexploited.
- Even the Centre has been highly generous in supporting the State's efforts, as reflected in the recent 'Prime Minister's Economic Package', as also in the rising activities of Central power utilities in the State.
- All these could enable the State to emerge as a power house of the country in near future and, in the process, earn large resources through selling of power to other states of the country.

Suggested Policy Options

- In the process of developing power resources, a suitable model balancing local aspirations/concerns and revenue considerations need to be evolved. Without this, people's support for the sectoral initiatives may not be forthcoming and, hence, the desired socio-economic transformation may not be achieved. Therefore, mega project should be done in such a way that it does not require much resettlement of people and the environment is least affected.
- Towards this, while the mega projects may be developed taking mainly revenue consideration into account, various decentralised generation options based on alternative technologies, inclusive of solar and biomass, could be used for meeting local demand. Further, the mega hydro projects could have a built-in arrangement for supplying power locally to the nearby areas at a minimum T&D cost.
- A high priority should be accorded to development of T&D networks including the intra-state grid. Without this, the power could neither be evacuated to the load centres outside the State for earning revenue nor could it be supplied to the local population meeting their needs. But, this is a highly challenging task given the difficult local terrain and hence, the Centre has to play a pivotal role in it.
- Since T&D is costly in the state, micro project should be given top priority.
- The financial requirement for the sectoral development being quite high, the State should tap all possible sources inclusive of central agencies, financial institutions, private developers as well as its own resources.
- The Department of Power should aim at generating internal resources through reducing inefficiencies. Towards this, metering at all levels must be prioritised.
- The State government should introduce power sector reforms, as committed under the MoA with the Ministry of Power in July 2002, at the earliest. This could begin with setting up of a State Electricity Regulatory Commission.

Transport and Infrastructural Development

- Arunachal Pradesh has the lowest road development index in the country.
- The road density in the State is 18 km per 100 sq

km of area as against the national average of 75 km and North-eastern regional average of 52 km.

- The rural connectivity is low: out of 3,599 villages in the State only 1407 (40 per cent of the total) has road connectivity.
- The length of national highways in Arunachal Pradesh is only 392 km which is second lowest among all North-eastern states.
- The rate of growth of national highway and other roads is very low, as compared with that of some other states in the North-east.
- The State faces severe problems in road development: hilly terrains susceptible to erosion, seismologically active zone, dense forest cover, heavy rainfall, etc.
- In order to speed up the development of roads the Government of India has initiated the Special Accelerated Road Development Programme in North-East India (SARDP-NE). Arunachal Pradesh received more than Rs. 500 crore for improvement of roads.
- Connecting the villages is a priority of the Government of India which has launched the Pradhan Mantri Gram Sadak Yojana (PMGSY) in order to expedite the process. The State has completed 356.84 km of roads under this programme. A 'Four Year Business Plan for Rural Connectivity' under Bharat Nirman (2005-2009) aims to bring connectivity of 2119 km for 298 habitations in the State.
- The number of vehicles registered during 1999-2000 was 3586, which rose by 55 per cent to 5703 (excluding Dibang Valley) during 2003-04. By the end of 2002-03, the number of vehicles including two wheelers was 21,144 in the State.
- The rate of increase of vehicles being much higher than the road development, there has been a sharp rise in the fatal vehicular accidents in the State.
- In order to ensure road safety, the State has set up State Road Safety Council and District Road Safety Councils.
- The services extended by the State transport department being not adequate, the private sector has assumed increasing importance in recent years. Apart from bus services, the private operators run vans, tata sumos, auto rickshaws, etc.

- Tele-density in the State is high as compared with the national average. In recent years the internet services have grown rapidly in the State. In terms of internet growth, Arunachal Pradesh occupies in the North-east the third position after Nagaland and Meghalaya.

Policy Options

- In case of high cost of road construction especially in the steep hills, ropeways may be a viable alternative. In the riverine plains waterways may be the cheapest mode of transport.
- Air connectivity demands priority in view of the high tourism potentiality in the State. Apart from this the remote rural areas where road connectivity is a problem, air connectivity may be explored as an alternative. The recent announcement by the honourable Prime Minister to build airstrips at different places will be a boost to the State.
- Though postal services have improved in the State in recent years, its rural coverage remains as low as before. Still telegraphic facilities are not provided by the post offices.
- Postal services should be strengthened in the rural areas where, in the absence of banks, the post offices can encourage the savings of the rural people with little means.
- Postal services can be improved, only by augmenting transport and telecommunication services.

Science and Technology

Arunachal Pradesh is lagging in science and technology (S&T) which is the vital input for a steady improvement of the quality of life of the people especially of those who are suffering from various deprivations. This chapter identifies the main areas where a big thrust is necessary for a rapid development of S&T in the State. The priority areas include information technology, biotechnology, telemedicine, tele-education, bamboo technology, medicinal plants, etc.

Arunachal Pradesh has established 55 CICs which are engaged in disseminating information on agricultural markets, government schemes, job opportunities, etc., but this is not enough; more CICs should be established. Information technology should be popularised by education and training so that the people can take advantage of e-banking, e-education, etc. In order to make

its patent compatible, traditional knowledge especially on medicinal plants should be digitalised in the State by establishing a 'Traditional Knowledge Digital Library' which is already operating in other parts of the country. Apart from this, BPO or call centres and a centre for bioinformatics should be established in order to generate employment.

Policy Options

The sustainable use of rich bio-resources in the State requires properly-planned biotechnological interventions especially in the forms of collection and selection of elite germplasm, application of plant tissue culture for mass propagation of quality planting materials. Biotechnology should be applied to develop high yielding varieties of crops and bio-fertilisers, and it can be used to control pests and diseases biologically. Biotechnology should also be applied to the improvement of indigenous fruits, vegetables and plantation crops. Much of the farming in the State is organic, planned promotion of this method and its certification can enable the farmers to produce organic products which have an increasing international market. For biodiesel production, potential of different tree-borne oilseeds should be explored and jatropha plantation may be taken up in wastelands in collaboration with experienced parties.

With an incomparable reserve of orchids, aromatic and medicinal plants, timber and non-timber tree species and bamboos, the State should take up different projects aimed at tissue culture and propagation of selected orchids, medicinal plants and bamboo species which have high market demand. A network of telemedicine should be established in order to cover the people deprived of the modern health services. There is a vast scope of expansion of tele-education in the State. Tele-education should include programme on health, nutrition, agriculture, cottage industry, hazard mitigation, etc. Expansion of tele-medicine and tele-education requires development of infrastructural facilities, such as, health care centres, electricity, computers, etc.

This chapter suggests the establishment of an institute of science, technology and environment in the State to carry out research and development for utilisation of the immense natural resources, generate scientific manpower, and provide scientific and technical inputs for industries.

Fiscal Issues

- Over time, non-developmental expenditure like interest payment and pension has increased on an average from 41.37 per cent to 50.32 per cent of

GSDP, during 1995-2000 to 2000-2004. There is also a declining trend in developmental capital expenditure particularly in the areas of agriculture, industry and minerals, rural development, transport and general economic services. Thus, capital formation is declining in the State. The process has resulted in falling revenue surplus and decreasing developmental capital expenditure in the budget of the government and the State is dependent on borrowed fund to meet its increasing non-developmental expenditure. The process has gone to such an extent that the State is neither sustainable nor solvent in public debt front. Thus, the State is on a path of creating more jobs by withdrawing itself from productive capital investment. In a situation of low level of private investment in the State, there is shrinkage in productive capacity of the economy.

In the light of the above mentioned process, the SDR has identified the potential sectors and the associated constraints and suggested various policies options both in the potential sectors and the process variables, so that a sustained economic growth is achieved in future.

Fiscal Management

Over time developmental capital expenditure has gone down and non-developmental revenue expenditure has gone up in the State. Government expenditure is around 70 per cent of the GSDP and contribution of service sector is more than 100 per cent to the growth of GSDP. There is also a distortion, in the sense that non-infrastructure categories service sector contributes around 70 per cent and infrastructure categories around 30 per cent to the growth of service sector. This is the reason why a proper balance is required in expenditure priorities of the State.

Policy Options

- Capital expenditure in the sectors like agriculture, industry and minerals, transport and general economic service needs to be increased.
- Rising interest payment and pension are the main reasons of the increase in non-developmental expenditure. Therefore, low interest loan options may be explored and alternatives like institutional based pension reform may be introduced.
- Identification and redeployment of excess employees is a must.
- All the steps must be taken to use borrowed fund for developmental capital expenditure.

- In order to increase the revenue receipts, steps may be taken to revise land tax rate, revamping of land revenue administration, revising of motor vehicle tax, imposition of professional and urban property tax.
- Finally in the long run, with the increase in power production of the State the power royalty would be sufficient to meet the budgetary need of the State.

Strategy for Development

- The State has witnessed broad changes in the strategies twice. First the strategy of gradualism in development gave way to the strategy of rapid development and integrationism after the Chinese aggression in 1962.
- Government sponsored industrialisation was the preferred strategy followed till the beginning of 1990s.
- Losses of the government-owned enterprise changed the strategy: public-private partnership and private initiatives are the backbone of the new strategy.
- The new strategy must take into consideration the fact of high transaction cost which keeps the productivity of industrial capital low in the State.
- In Arunachal Pradesh's economy 100 units of input cannot produce 100 units of output. This means the economy consumes more than what it can produce.
- The new strategy should aim at enhancing the reduction of transaction costs which would enlarge the productivity of the economy.
- Strengthening the contract-enforcing mechanism, addressing the problems of inequality and unemployment are the ways of reducing the transaction costs.
- It is observed that the states that have properly identified their potential and developed the institutional back up have grown at a faster rate. The example is Himachal Pradesh. In this context the potential areas for Arunachal Pradesh are: (i) power, (ii) biodiversity, (iii) tourism, and (iv) horticulture. Therefore, developing proper institutional set up like supply of inputs linking with product marketing, and market friendly infrastructure would yield benefits to the people.
- Speeding up the development of the hydro-electric project, expansion of horticulture and plantation, tourism and establishment of agro-industries in the backward districts should be the priorities.