

# Arunachal Pradesh Development Report



यमेव जयते

ANNING COMMISSION  
GOVERNMENT OF INDIA  
DELHI

# Arunachal Pradesh Development Report



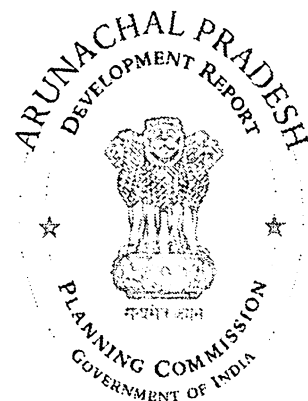
PLANNING COMMISSION  
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## The Core Committee

Constitution of the Core Committee for preparation of State Development Report, Arunachal Pradesh (2003)

- |   |                                                                                                  |                         |
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| 2 | <b>Shri B.K. Chaturvedi</b><br><i>Member, Planning Commission</i> | <b>Chairman (present)</b> |

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एम. एस. आहलुवालिया

**MONTEK SINGH AHLUWALIA**



उपाध्यक्ष

योजना आयोग

भारत

**DEPUTY CHAIRMAN**

PLANNING COMMISSION

INDIA

## Foreword

India's growth in the recent years has made it an important player in the global economy. In terms of the size of the economy, measured in PPP terms India ranks 4th in the world after the US, Japan and China. However, in the recent years there is evidence that the gap between rich and poor states is increasing and there is a substantial disparity in social indicators between these states.

One of the important initiatives of the Planning Commission in the Tenth Plan was to sponsor the preparation of State Development Reports with much of the work being done by reputed national level institutes. This exercise was undertaken in recognition of the fact that economic circumstances and performance in individual States varied considerably and it was necessary to examine development challenges for individual states in light of state specific constraints and circumstances. The basic idea was to produce quality reference documents on development profiles of individual States and the possible strategies for accelerating growth and reducing poverty and inequality.

The State Development Report for Arunachal Pradesh reviews its experience and highlights issues critical for the State's

development in the years ahead. I am sure its publication will stimulate debate on growth strategies appropriate for Arunachal Pradesh. I hope the road map indicated in the report will generate a broader awareness of the range of policies issues facing the State and will assist the State to move to a higher growth path and to achieve all round human and economic development.

A handwritten signature in black ink, appearing to read 'MSA', with a long horizontal flourish extending to the right.

(Montek Singh Ahluwalia)



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## MESSAGE

I am happy to learn that the State Development Report of Arunachal Pradesh is being published and feel that the publication of this Report is most opportune and timely.

Arunachal Pradesh, which is a frontier and tribal State, is at crossroads. It is endowed with plenty of natural resources, which, if properly developed can make Arunachal Pradesh a prosperous State. Prosperity alone cannot make people happy. We need to have sustainable development based on the principles of equity and justice and with due regards to environment.

Not too distant in the past, our horizon was our own belief. But in last few decades our horizon has expanded considerably. While transition of our tribal society has taken place at a fast pace, I for one, proudly observe that we have retained our culture and lifestyles and a bit sad that we have also not been spared by the bane of materialism introduced to us by modern world. We need to have a paradigm shift in our development schemes to address this challenge by incorporating the principles of development enunciated by Pandit Jawaharlal Nehru, our first Prime Minister, who identified himself so closely with us, the tribal people.

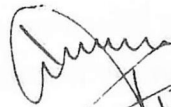
Of late, the Central Government has addressed the crying need of improving connectivity to close infrastructure gaps particularly relating to communication through Prime Minister's development package. A number of development schemes are in the pipeline. Undoubtedly, these schemes on completion will bring socio-economic development in remote villages. The State Development Report of Arunachal Pradesh being a comprehensive document that provides an objective assessment of present socio-economic development

scenario in Arunachal Pradesh will certainly help the State Government in calibrating its development schemes for their effective implementation. I am sure, it would also provide us with relevant information and data to focus on target areas and population for proper development as also to improve the quality of development works.

I am happy to note that the State Development Report of Arunachal Pradesh has been prepared by the Rajiv Gandhi University in collaboration with the Planning Commission of India. On behalf of the State Government and, of course, on my own behalf I would like to appreciate the efforts of the Research Team headed by Prof. Atul Sarma, Member, 13th Finance Commission and former Vice-Chancellor of Rajiv Gandhi University and thank them for bringing out this much needed Report. I would also like to express my gratitude to Shri B.K. Chaturvedi, Member, Planning Commission, Smt. Jayati Chandra, Principal Adviser, Planning Commission and Shri Brahma Choudhury, Adviser, Planning Commission, New Delhi for their insights and valuable guidance. My sincere appreciation also goes to Prof. K.C. Belliappa, Vice-Chancellor, Dr. S.K. Nayak, Co-ordinator of Rajiv Gandhi University and all those including the officials of the State Planning Department, especially Shri Prashant Lokhande, IAS, Secretary, who have been associated with the task of preparation of this excellent Report.

I have no doubt that this State Development Report will immensely help the State Government in formulating its policy and strategies taking into consideration the ground realities reflected in the Report to meet the challenges of development and will serve as a valuable reference book for the policy makers, planners and research scholars.

I am hopeful, this Report will have a significant role in realising the mission of my Government "People First".

  
13/4/09  
(Dorjee Khandu)





बी. के. चतुर्वेदी

**B.K. CHATURVEDI**

सदस्य

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## MESSAGE

The Planning Commission initiated the preparation of State Development Reports (SDR) in coordination with the States concerned. The objective of the SDR is to provide a quality reference document on the development profile, to identify critical development issues of the States concerned. The report prepared largely by the experts and specialised institutes with the cooperation of the State Government would be of immense value to the Centre and State Governments and would assist in the setting of the agenda for higher and more equitable growth of the State.

A Core Committee under the Chairpersonship of Dr. S.P. Gupta, former Member, Planning Commission, was constituted in October 2003. The Core Committee worked out the modalities for preparing the State Development Report for Arunachal Pradesh and decided to assign the job to Rajiv Gandhi University (former Arunachal University), Itanagar and The Energy and Research Institute (TERI), New Delhi.

The report has taken into account the social and economic transitions, structural changes in the State's economy, level of human development, fiscal management, critical gaps in the basic minimum services, poor connectivity, underdeveloped infrastructure, need for capacity building, potential areas of resource based development and the role of Government in the development process while suggesting policy options for the development of the

*Population Composition*  
*Literacy in Arunachal Pradesh*  
*Migration*  
*Population Growth*  
*Fertility and Mortality Rates*  
*The Empirical Estimation*  
*Population Projection*  
*Conclusion and Policy Implications*

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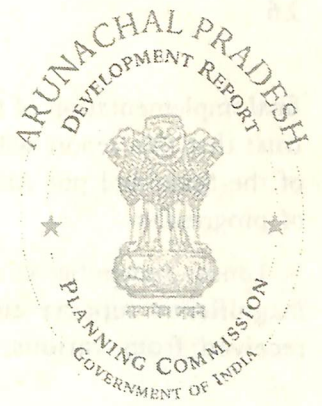
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Rajiv Gandhi University was entrusted with the responsibility of preparing the Arunachal Pradesh Development Report by the Planning Commission, Government of India in August 2005. This is for the first time that any University in the country undertook such a task. Incidentally, this is the second milestone achieved by the University. It also prepared the Human Development Report in 2005. Both these initiatives were the result of my predecessors, Professors Kamal Kant Dwivedi and Atul Sarma. My special thanks are due to Prof. Atul Sarma, Member, 13<sup>th</sup> Finance Commission, who was the main architect of this undertaking and who supervised and monitored the project from its inception to its completion. I take this opportunity to warmly congratulate Dr. S.K. Nayak, Coordinator, his colleagues in the Department of Economics and other departments of Rajiv Gandhi University, and all the other resource persons from all over the country who were involved in this Herculean task.

The Human Development Report of Arunachal Pradesh was not able to cover certain issues, given the nature of its terms and reference. However, the report has been able to deal with new areas like border trade, indigenous industries and demographic transition.

Arunachal Pradesh started its developmental efforts just after Independence, with only three primary schools and virtually zero literacy. Within a span of 50 years, the State has registered an impressive growth in literacy rate, the highest in India. The per-capita income of the State was 56.14 per cent of the national average in 1970-71, which went up to 110 per cent in 1995-96. In the post-reform period, due to the slowing down of the growth rate, it decreased to 84.64 per cent in 1999-2000. However, due to some recovery in growth, it has become 95 per cent of the national average in 2004-2006. Despite all these, achievements in the human development front

are really commendable. However, the liberalisation process which started in the 1990s poses many challenges to the development efforts of the state which needs thorough scrutiny.

Nearly 61 per cent of the population is dependent on agriculture and the practices followed by the farmers are still primitive untouched by modern technology. Even at present, the state is dependent on migrant workers, the highest in the North-east, to meet its increasing demand for labour. It is a state with abundant land but only 5 per cent of the land is suitable for cultivation. As a result, shifting cultivation is largely practiced to meet the livelihood of the people.

Further, with the rise in literacy rate and growth of modern education, young people are in search for white collar jobs, which has resulted in pressure on the government to create more jobs. In a situation of low private investment, the government is compelled to curtail capital expenditure to create more jobs. And as a result the creation of capital goods in the state has suffered.

It is well known that all the North-eastern states are poor in infrastructure. For example, road density is low and there is a strong demand to improve the road connectivity. When new roads are constructed, there is always a threat to the environment. Cost of construction is also high. The state is dependent on the Centre for 90 per cent of its developmental efforts. When it is trying to enhance its resources from hydroelectric power potential, there is simultaneously a danger to its rich culture and bio-diversity. Hence, there is a greater need to balance the two without sacrificing one for the other.

Despite the paradoxes and intricacies of the issues involved, the Report has tried to prescribe certain sets of solutions. However, we are open to healthy criticism and constructive suggestions. These will go a long way in the

final implementation of the report by the state. I hope and trust that this report will serve the interests of the people of the State and put Arunachal Pradesh on the fast track of progress.

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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.

- In spite of a clear falling mortality, the health status of the population in the State is worse than that in the rest of the country. Especially, in the remote region of the State, the health conditions remain one of the worst not only in the country but also in the world.
- The cost of providing health service per head in this hilly state is more than two and a half times that for the states situated in the plains.

### *Policy Measures*

- Expansion of the health services in the remote areas of the State.
- Public distribution system should be strengthened to cover all people living below the poverty line.
- Family planning services should be more meaningfully integrated with the health services in the State.
- Precautionary/preventive measures against AIDS should be strengthened.

### **Economic Growth, Structural Changes and Work Force Participation**

- In 1970-71, per capita NSDP of the State was around 56.14 per cent of the national average. Due to better growth performance of the State in the 1970s and 1980s, the difference between Arunachal Pradesh and national per capita income declined till the period of 1990-91. From 1991-92 to 1995-96, per capita income of the State remained higher than that of the country. After 1995-96, the per capita income of the State fell below the national average and the State's per capita income relative to the national income had since been getting lower and lower and became 84.64 per cent of the national average in 1999-2000. However in recent times, it has recovered and stood at 95 per cent of the national average in 2004-2006.
- Arunachal's NSDP growth rate was higher than that of the national income in the 1970s and 1980s. In the 1990s the rate was reversed; Arunachal's growth rate was 4.84 per cent in contrast to the national average of 5.93 per cent per annum. In per capita terms, there was a negative growth during 1994-2003 in the State.
- There is also a change in the sectoral composition of NSDP over time. A sharp declining tendency is observed in the share of primary sector in NSDP (46.19 per cent in 1990-91 to 31.09 per cent in 2004-05). This decline is mainly due to decline in the share of agriculture (35.09 per cent in 1990-91 to 24.37 per cent in 2004-05), and forestry and logging (9.58 per cent in 1990-91 to 4.30 per cent in 2004-05) in NSDP.
- There has been a moderate rise in the share of secondary sector in NSDP. It went up from 21.56 per cent in 1990-91 to 25.42 per cent in 2004-05. Within the secondary sector, manufacturing sector's share has declined from 6.04 per cent to 2.27 per cent. Share of construction has gone up from 17.98 per cent to 22.51 per cent during the same time. Electricity, gas and water supply sectors' share has improved from -2.47 per cent to 0.64 per cent during the same period.
- The tertiary sector's share in NSDP went up from 32.25 per cent in 1990-91 to 43.50 per cent in 2004-05. The share of transport, storage and communication went up from 0.65 per cent in 1990-91 to 8.19 per cent in 2004-05. Trade, hotel and restaurants' share has gone down from 4.95 to 3.86 per cent, banking and insurances has gone up from 1.49 per cent to 2.61 per cent, share of real estate etc., has declined from 5.29 per cent to 2.09 per cent. However, there has been a sharp increase in the share of public administration from 8.17 per cent to 14.99 per cent during the same period.
- During 1990-91 to 2004-05 the primary sector contributed 8.90 per cent to NSDP growth in contrast to a contribution of 36.79 and 54.36 per cent in 1970s and 1980s. This decline is mainly due to decline in the contribution of agriculture (41.95 per cent in 1980s to 12.03 per cent in 1990s) and forestry and logging sector (5.45 per cent in 1980s to -6.85 per cent in 1990s). There is also a decline in the contribution by mining and quarrying (5.66 per cent in 1980s to 1.60 per cent in 1990s) to total growth of NSDP in the State.
- Secondary sector's contribution to growth has increased from 23.92 per cent in the 1970s and 18.44 per cent in 1980s to 26.41 per cent in the 1990s. The better performance of this sector is mainly due to better performance of construction. However, contribution of electricity has been satisfactory.
- Tertiary sector's contribution to growth has gone up from 27.2 per cent in the 1980s to 64.68 per cent in the 1990s. Contribution by the non-infrastructure

category of tertiary service (which includes public administration and other services) to growth has increased from 14.11 per cent in the 1980s to 40.48 per cent in the 1990s. In the infrastructure category the contribution by transport, storage and communication has increased from 0.79 per cent in 1980s to 24.42 per cent in the 1990s. In other sectors of the infrastructure category like trade, hotel and restaurant, banking and insurance, the contribution has declined from 8.73 per cent to 6.43 per cent in the 1990s.

- In the post-reform period, a sharp inter-district variation in net district domestic product (NDDP) is also observed. The districts like Tawang, Papum Pare, Lower Subansiri, Upper Subansiri, Upper Siang, Changlang and Tirap have higher rate of growth than the State average. In East Siang, a negative growth is observed. In per capita NDDP, six districts namely Tawang, West Kameng, Papum Pare, East Siang, Upper Siang, Dibang Valley have negative growth. The highest growth in per capita NDDP has taken place in Upper Subansiri.

The above growth pattern has percolated down and is reflected in the outcome variables like employment, poverty and human development as discussed below.

## Employment

- The remarkable feature of the total workers in the State is that 79.7 per cent are self-employed. In the rural areas 90 per cent of the ST male and 95 per cent of the ST female workers are self-employed.
- Dependency in agriculture sector in the state is high but it is declining. The share of agriculture in 2004-2005, among all workers, was 76 per cent (NSS 61<sup>st</sup> Round), implying the dominance of agriculture in the State's economy. The declining share of agriculture sector in the income is the most important disturbing trend in the economy of the State. The second important employment generating sector is public administration, education and community services.
- Manufacturing has a low share of 0.6 per cent, while construction has a share of nearly 4 per cent in 2004-05.
- Between 1993-94 and 2004-05, there has been a marginal decline in the share of workers employed in agriculture and increase is noticed in the share of those employed in public administration and construction.
- Overall employment growth was negative for all workers and more significantly for the female workers during 1993-94 to 1999-2000. However, between 1999-2000 and 2004-05 employment growth was positive for all categories of workers.
- The share of unemployed persons both in population as well as in workforce had declined between 1993-94 and 1999-2000, but increased between 1999-2000 and 2004-05. Less than one per cent of the labour force was unemployed in the State. The low unemployment status might be a reflection of the low level of commercialisation and development of the economy.
- Unemployment rates are higher in the urban than in the rural areas.
- Negative employment growth was observed during 1993-94 to 1999-2000 in sectors like agriculture, electricity, gas and water supply, transport, finance and business services, public administration, education and community services.
- Between 1999-2000 and 2004-05, employment hardly grew in manufacturing but it grew substantially in electricity, gas and water supply, trade, hotel, restaurant, transport and business service and public administration.
- The Work Force Participation Rate (WFPR) in the State declined between 1993-94 and 1999-2000 as per the usual status employment for rural males. Between 1999-2000 and 2004-05 it increased consistently in rural and urban areas. However, rural-urban difference still persists.
- Data from the employment exchange shows that the number of unemployed people in the live registration has crossed 26 thousand. NSS data shows that between 1999-2000 and 2004-05, level of unemployment among relatively better educated declined.
- Till now the major chunk of employment generated, outside agriculture sector, has been either in public administration or sectors like construction, which has strong linkages with government spending. Expansion of employment opportunities in the manufacturing sector has to be addressed with a proper policy framework.



- 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 14<sup>th</sup> 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 31<sup>st</sup> 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

management, apanaban, fuel wood plantation under minimum need programme, minor forest production are in operation in the State.

- Though the high power committee has cleared 115 forest-based industries in the State only 14 are in operation.

### *Forestry Potential*

- **Bamboo:** Total area under bamboo in the State is 1218.75 sq km and there is an additional potential of raising 8000 sq km area. Therefore, bamboo-based industries like paper mills is a potential area of development.
- **Cane:** The area under cane has not yet been estimated. Studies suggest that 18 different species are available in the State. Keeping in view the demand of cane in other parts of the country, specific programmes need to be launched to develop this sector.
- **Medicinal plants:** In the State around 500 species of medicinal plants have been identified by different agencies. For commercial exploitation the need of an apex body like State Medicinal Plant Board is urgently felt.
- **Gums, resins, oils, and orchid:** Chir pine resin, dhuna, citronella, agar, orchids and other different varieties of oil-yielding plants are abundantly available in the State. Out of 600 species of orchids 150 species are commercially important. All these forest products have not yet been fully exploited due to limited infrastructure availability in the State.
- **Wildlife reserves:** There are four elephant and two tiger reserves in the State. These reserves can be developed to attract tourists.
- **Carbon financing:** As per Kyoto Protocol, the State has enormous potential to develop the forest sector by participating in carbon financing scheme to generate forests. The State has around 1404.13 sq km of fallow land, cultivable waste land and area not available for cultivation. Thus, the schemes related to carbon financing can be taken up to regenerate forest.

### **Constraints to Development of Forest Sector**

- Poor infrastructure, inadequate resource and manpower,
- Constraints related to different forest laws, and

- Poor awareness among the people related to forestry.

### *Policy Options*

- Increase in the investment in forestry sector.
- Scientific management of NTFPs like bamboo, cane, medicinal plants, orchids, etc., and establishing strategic market linkages with private sector.
- Strengthening protection mechanism and legal framework.
- Conservation and development of wildlife and biodiversity.
- Involving indigenous communities especially women for conservation, protection and sustainable development through JFM/local systems for utilising the traditional wisdom and ethos of conservation.
- Ensuring ways and means for sustainable utilisation of forestry resources for poverty alleviation, environmental stability and ecological security.
- Promoting eco-tourism.
- Initiation for carbon trading in the line of State's interest.

### *Land Use Potentials*

- Arunachal Pradesh is a mountainous state covering 83,743 sq km. Part of Himalayas, the State has more than two-third of its area above 1000 m and about one-third area above 2000 m altitude.
- It has a very low proportion of plain area. Below 5° slope, land including riverbed covers only 12,434 sq km and about half of the geographic area is either very steep or overhanging. Its typical geographic set-up is responsible for the rain deficiency in the western part and perhumid conditions in the east-central part. Soils of the State are mostly shallow and recently formed, and have low fertility.
- Land capability in the State is mostly of Class IV type which puts severe limitations on the choice of plants and requires special conservation practices. Nature has posed a great deal of hardship to the people of the State for pursuing any viable economic activity.

These constraints may be overcome by this least densely populated State through a careful understanding of the geophysical parameters of altitude, slope, rainfall, soil, vegetation cover through Normalised Difference

Vegetation Index (NDVI), and agro climatic suitability of different crops. Demand as well as production of cereals is low in the State and there is also little scope for its expansion owing to physical and agro climatic limitations. Besides this, cultivation of cereal crops will accelerate soil erosion as it needs tillage of soil and weeding on regular basis. Economically, cereal cropping is not profitable as yield is low on recently formed, argillaceous and less fertile soils of Arunachal Pradesh.

### Policy Options

- The strength of the State is its varied agro climatic condition that is capable of producing a variety of horticultural and plantation crops such as apple, pear, orange, pineapple, kiwi, tuber crops like ginger, turmeric and vegetables. Cash crops like jute may be grown in perhumid areas of East Siang, Lower Dibang Valley and Lohit.
- Commercial cropping particularly horticulture and herbal medicine is still in infancy in the State. Hence, the government needs to facilitate the farmers with technical know-how and material inputs so that they can grow high-valued crops according to agro climatic suitability. Above all, a network of market should be promoted through non-governmental agencies with proper regulatory system or directly by the government. Further, it is possible only through developing the grower's cooperative and linking them with bulk purchasers such that economy of scale is realised.

## Sectoral Profile of Development

### Rural Development

Provision of social and physical infrastructures is the key to improving the quality of life of the people. In this context the chapter has articulated the status of rural development and suggested various policy options.

- In 1991 only 16.96 per cent of the villages in the State had bus stop facility. Among the districts, Upper Subansiri was the least and East Kameng the most accessible.
- In 1997, 38.53 per cent of the villages in the State were connected by roads. East Kameng had the highest and Kurung Kumey the lowest connectivity. In the rural areas of the State 46.51 per cent of the population had access to *pucca*, 26.71 per cent to *kuccha* road, and 26.56 per cent had no connectivity. Kurung Kumey was the least accessible district

where 1.35 and 21.89 per cent of the population had access to *pucca* and *kuccha* road, respectively.

- In 2001, 44.53 per cent of the rural households were electrified. Papum Pare had the highest (77.19 per cent) and Lohit the lowest (22.85 per cent) coverage of electricity.
- In 2001, 63.34 per cent of the rural households had access to tap as the source of drinking water. In the same year 73.93 per cent of the rural households had no drainage facilities. However, it should be mentioned that treated water is not supplied. Even people in Itanagar city got treated water only three years before. Therefore, the quality of water that people consume is poor as 6.65 per cent of total deaths in Arunachal Pradesh is due to water borne diseases like dysentery, diarrhoea and gastro-enteritis as compared to all India average of 2.41 per cent.
- Only 68.09 per cent of the children in the State had access to immunisation in 2001-02. Kurung Kumey has the highest IMR of 113. In the State, 48.38 per cent of the habitations do not have primary schooling facility within a radius of one kilometre. Only 14.29 per cent of the allopathic medical institutions are located in rural areas.
- In the State, 36.2 per cent of the rural households own radio as compared to 31.5 per cent in rural India. In telephone connectivity the State is at par with national average as 9.2 per cent of Arunachal's households own telephone as compared to 9.1 per cent in the country. Rural telephone connectivity is lowest in East Kameng (0.96 per cent) in the State.
- Only 4.4 per cent of the rural households in the State own motor cycles as compared to the national average of 6.7 per cent. Lowest rate of television used was observed in East Kameng (3.63 per cent) and highest in rural Papum Pare.
- Among the North-eastern states, Arunachal Pradesh occupies the first position in access to banking facilities; 28.6 per cent of the rural people in the State have bank accounts as compared to the national average of 30.1 per cent.
- Deposit-GSDP, Credit-GSDP in the State are 49.7 and 19.6 per cent respectively, which are very low. Thus, credit-deposit comes to 39.44 per cent in the State. The low credit disbursement in the State is mainly because of non-availability of collateral.



- 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-Chirang-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*

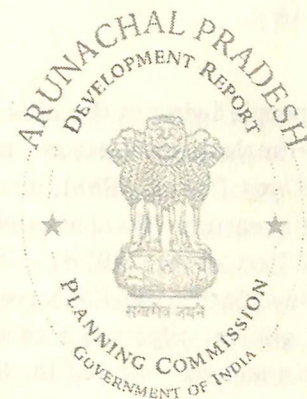
- Capital expenditure in the sectors like agriculture, industry and minerals, transport and general economic service needs to be increased.
- Rising interest payment and pension are the main reasons of the increase in non-developmental expenditure. Therefore, low interest loan options may be explored 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.



## Chapter 1

# Transformation

Over the period of time, Arunachal Pradesh has undergone many types of changes. These transformations can be conceptualised in three perspectives, namely historical, social and economic. Thus, the objective of the introductory chapter is to analyse all the changes in these perspectives.

### HISTORICAL TRANSFORMATION

#### Introduction

Arunachal Pradesh, the largest state in North-east India, is home to 26 major tribes with a large number of smaller sub-tribes or ethnic groups totalling around 100 who, by and large belong to the Indo-Mongoloid stock.

Arunachal Pradesh is sparsely settled with a population of 10,97,968 and a density of 13 persons per sq km (Census of India 2001). Earlier known as the North Eastern Frontier Tracts and North East Frontier Agency (NEFA), Arunachal Pradesh, was a *terra incognita* for the historians till recent times. The paucity of written documents, lack of script among most of the tribes of the State, except of course among the Monpas (the Bodic script), the Khamtis (Mon-Tai script), the Membas (Hikor script) and the Khambas (Hingna script), and limited exploration and excavation are the major bottlenecks to understand the history and cultural transformation of the ancient and medieval periods of the State. However, we are fortunate to have British archival records, which are of singular importance for the study of the history of the State during the colonial period.

#### Prehistoric Scenario

The history of the State can be traced to the prehistoric period (Dani, 1960). Scholars like Lubbock (1867), E.H. Still (1870), John Anderson (1871), R.D. Banerjee (1924),

J.P. Mills and J.H. Grace (1933-1935), Dani (1960), B.P. Bopardikar (1972), T.C. Sharma (1980), A.A. Asraf (1990) and others have thrown light on some aspects of prehistoric culture of the State. A study of remains reveal pre-Neolithic and Neolithic tools and their typology indicates Arunachal Pradesh's past link with Yunnan and Szechwan in Neolithic phase (Chiang, 1942). E.C. Worman (1947) and M. Wheeler (1959) have argued that North-east India (including Arunachal Pradesh) served as a corridor through which Neolithic tradition from Eastern Asia entered India. The Neolithic assemblage of the area may be compared with the late Bacsonian of Southeast Asia, which reveals significant influence from Sichuan and Yunnan (Sharma, 1990). In this connection, the history of migration of Mongoloid population from the headwater of Hwang-Ho and Yangtse-Kiang into Arunachal Pradesh and other parts of North-east India could be attested by archaeological evidence (Chatterjee, 1974). No direct evidence of settlement and economy of the Neolithic people are known. From the circumstantial evidence, it can be inferred that shifting cultivation must have been practised during the period. No structural remains are found in any prehistoric site, which reveals that the people lived in open field. This phase however witnessed the production of handmade pottery. The Neolithic phase of the State is approximately dated to 1500 B.C. (Sharma, 1991).

#### Early Historical Period and Cultural Interaction

Contrary to the general perception that the region was isolated from the mainstream of Indian history, the people of the area had trade and cultural interaction with the people of Assam, Tibet, Myanmar (Burma) and other parts of India, which can be verified from a number of actual trade routes of medieval period (Ray, 2005). The early Brahmanical literature mentions the Indo-Mongoloid



people living in the hills and valleys of Himalaya and Sub-Himalaya north-eastern hills of India under a blanket term *Kirata* (Barua, 1968), who are identified as the dwellers in the eastern Himalaya and many of the north Assam tribes (Chatterjee, 1974). The medieval texts of Assam, specifically the *Kalikapurana* and the *Yogini Tantra* throw light on pilgrimage centres like, Nadi Tirtha, Parsuram Kunda, etc., located in the north-eastern part of the State.

The post-10<sup>th</sup> century witnessed the prevalence of Brahmaputra culture in the foothills of the State, attested by a number of Brahmanical remains. In this aspect, the temple ruins at Malinithan, Tamresvari (Sadiya) and the chain of forts at Bhishmaknagar, Rukmininagar, Tezu, Itanagar, Bhalukpong with occasional discovery of Brahmanical sculptural art, reveals the fact that during this period, cultural interaction did take place between the people of Brahmaputra valley and the people living in the hills of Arunachal Pradesh. A medieval Assamese *Vaisnava* text refers to some Mishmi Brahmanas, who were probably tribal priests, influenced by the teachings of *Neo-Vaishnavism* (Dutta Choudhury, 1978). It is not surprising, as we have evidence to show that a few frontier tribes like the Noctes and Tangsas, were influenced by the teachings of *Neo-Vaishnavism* (Dutta, 1978).

The period also witnessed the establishment of a number of Buddhist monuments including that of Tawang monastery (17<sup>th</sup> century) in western and northern frontier, revealing the cultural interaction with Tibet (Sarkar, 1980). Simultaneously, though of later period, one can notice a number of *Theravada* Buddhist monuments of 18<sup>th</sup> and 19<sup>th</sup> centuries, in Eastern Frontier of the State, throwing light on Arunachal Pradesh's contact with Myanmar (Kondinya, 1985).

The foundation of Ahom kingdoms in early 13<sup>th</sup> century and their subsequent territorial expansion made them closer with tribes of the North-East Frontier Tracts (Gait, 1926). The *Buranjis*, both in Ahom and Assamese language, provides valuable information on Ahom policy towards Arunachal tribes. The Ahoms followed a policy of conciliation backed by the display of force towards the hill tribes. The Ahom king Pratap Singha (1603 AD) in this context introduced the *posa* system, with regard to various frontier tribes *viz.*, a section of Bhutia, Aka, Nyishi, etc. (Devi, 1968). The word *posa* means a collection or subscription for a common purpose and when this term was used to explain the payments made to the hill tribes, it represents the subscription which was collected by the villagers in order to meet the customary demands of the hill people (Chakravorty, 1977). Mackenzie mentions that each tribe knew the villages of the plains to which they

had to look for *posa* and they claimed to collect from their allotted *paiks* (Mackenzie, 1884). A survey of the *posa* refers to such things as garments of various description, a few animals, iron products and salt. It is also argued that the system created a class of *paiks* called *Bahatiyas*, who were made to work for their hill masters and thus, a form of slavery started in the hills (Barua, 1985). Those tribes not offered *posa*, were either granted some cultivated lands and fishing water along with *paiks* in the plains or offered trading facilities with the plains on condition of good behaviour and payment of annual tributes.

In pre-colonial period, social relations and economic interdependence between the frontier hills and the Brahmaputra valley existed. There were numerous passes known as *duars* along the Himalayan foothills, through which people of the State interacted with the plains people. There were as many as 19 *duars* or passes existed in the district of Durrang and Lakhimpur, which were divided into three divisions—*Charduar*, *Noduar* and *Chaiduar* (Mumtaza and Taher, 1997). These *duars* were visited by Monpas, Sherdukpens, Nyishis, Akas and other tribes. Reference to *duars* like Dijoo *duar*, Dulungmukh, Likhabali and Murkongselek to the east of *chaiduar* were used by tribes like Nyishis, Apatanis and Adis. The territory visited by the Bhutias, Monpas and Sherdukpens developed market centres, as they used to bring merchandise from Tawang, West Kameng and even from Tibet and Bhutan. References to market at Udalguri, Mazbat and Doimara are important in this respect.

The locational pattern of trading centres, population composition of catchment areas of these nodal centres and physiography of the region indicate to the large distance trade, which took place between hill tribes frontier region or route zones. In this aspect, transfrontier trade with Moguaung and Khamptilong region of Myanmar was carried through the Khamtis and Singphos in eastern frontier (Phukan, 2002). Similarly in the western frontier, the Tibetan trade was carried through the land of Sherdukpens and Monpa, who had socio-cultural link with Tibet. A number of mountain passes are referred to in medieval text and literature of British period (Barua, 1993; M'Cosh, 1937; and Dutta Choudhury, 1978).

The interactions of tribals of North-East Frontier with the Ahom rulers, however, did not affect any resource constraint for the tribes. The resources taken as tributes/revenue under the *posa* system, were largely compensated through administered trade resorted to by hill tribes, practising various economic activities based on reciprocity and redistribution. As human resource was of utmost significance in the economies of hills as well as the plains,



domestic help and other servile institution continued. In the ethnic frontier region, the institution of chieftainship seems to have emerged clearly during this period.

The British came to Assam during the Anglo-Burmese war of 1824-1826 and occupied it. The economic, commercial as well as strategic and political interests of the British in the hilly region shaped the trends and pattern of colonial intervention. Beginning with the measures for abolition of slavery, colonising the trade of the region, the British established their political paramountcy and colonial legitimacy in the region. The British authorities adopted the *posa* of Ahoms but modified and extended the *posa* system to suit colonial priorities. Monetisation of *posa* was introduced, which facilitated market trade (Ganguly, 1986). Through colonial innovation in the *posa* system, the old ties between the *posa* holders and their allotted *paiks* broke down, which resulted in a cleavage in old-politico-economic ties. Ganguly has rightly pointed out, "Annual system of payments of sums of money in lieu of *posa* also injected money into the tribal economy." (Ganguly, *ibid*).

They established market trade at important nodal centres of the plains which ultimately gave fillip to indirect colonisation through trade. Attention in this direction was paid to the route zones lying between the Brahmaputra valley on the one hand and the highlands of Tibet and Burma on the other. Old fairs of Ahom time at Udalguri and Doimara were revived. A trade fair at Sadiya was also started in 1867. Once these market centres grew up under encouragement and patronage of the government, the extractable surplus from the foothills and the hills in the forms of forest products began to pour into those markets. On the other hand, the finished goods began to find their outlets into the frontier areas, causing damage to the age-old cottage industries in the area. The economic factors were primarily responsible for tribal unrest in the North-East Frontier since abolition of slavery, changes in the *posa* system, colonisation of trade and coercive measures in the form of economic blockades, which adversely affected the resource bases of different tribes. Ultimately, the hillmen were tied to apron-strings of the *Raj* and became subservient to its commercial and imperial interests (Jha, 2002).

By the end of the 19<sup>th</sup> century Assam became a promising centre for trade and industry. Tea, petroleum, coal and rubber became flourishing industries. Elephant catching and ivory attracted much attention. But the entire prospective economy depended upon the capacity of the colonial administration to maintain law and order in the province which resulted in the Inner Line Regulation

being enacted by a Regulation in 1873 called "Regulation for the peace and good government of certain districts of the Eastern Frontier" (Bose, 1997). According to this act, which was applicable to the districts of Kamrup, Darrang, Nowgong, Sibsagar, Lakhimpur, Garo Hills, Khasi and Jayantia Hills, Naga Hills, Cachar and Chittagong Hills, a restriction line was laid down to regulate the interaction between the tribes and the British subject in the plains bordering the Hills. As a result, the inner line was notified for the Lakhimpur district in 1875 and for Darrang in 1876. This act provided the basis of administration of justice in the frontier of Lakhimpur and Darrang, inhibited by tribal communities. However, the constitutional and administrative growth of Arunachal Pradesh had its genesis in the Act No. XIV of 1874, also known as the Scheduled District Act of 1874 (Luthra, 1971). The next stage of administrative growth can be noticed in the Assam Frontier Tract Regulation of 1880 by which the first Frontier Tract called Dibrugarh Frontier Tract came into being in November 1882 and J.F. Needham was appointed as the first Political Officer. After the Anglo-Adi war of 1911-12, General Bower sent a recommendation to the Government of India that the Assam Frontier Tract should be divided into three sections e.g., 1. Central Section 2. Eastern Section 3. Western Section for effective administration, which was subsequently accepted by the Government of India by a notification of 1914. This notification promulgated that the Assam Frontier Tract regulation would extend to the hills inhabited or frequented by the Adis, Miris, Mishmis, Singphos, Nagas, Khamtis, Bhutias, Akas and Nyishis, and these hill areas were separated from the then Darrang and Lakhimpur districts of Assam. Thus, the North-East Frontier Tract came into existence consisting of three administrative units such as, 1. The Central and Eastern section 2. The Lakhimpur Frontier Tract 3. The Western section in 1914. A contextual analysis of events from 1880 onwards shows that the British policies and measures adopted in this frontier were guided by their imperial and commercial interests beyond the frontiers, Myanmar, Bhutan and Tibet and China—which culminated in the Simla Conference of 1914.

With the passing of the Government of India Act of 1919, some changes in the nomenclature of the sections of North East Frontier Tract were undertaken. Now onwards, the Central and Eastern section were to be known as the Sadiya Frontier Tract and the Western as Balipara Frontier Tract. There was no change in the name of Lakhimpur Frontier Tract. Under the provisions of the Government of India Act 1935, the frontier tracts were declared as 'excluded areas' and the government of Assam



was vested with wide discretion and authority in the matters of administration of these areas. In 1937, J.P. Mills was appointed as the secretary of tribal affairs to the government of Assam. In 1943, a new Administrative Tract called 'The Tirap Frontier Tract' was created by taking certain portions of Lakhimpur Frontier Tract and Sadiya Frontier Tract. In the same year N.K. Rustomji was appointed as an advisor to the Governor of Assam to look after the administration of North East Frontier Tract. In 1946, the administrative divisions of Balipara Frontier Tract was bifurcated into Sela-Sub-Agency and Subansiri area. Subsequently Sadiya Frontier Tract was divided into Abor Hill District and Mishmi Hill District.

The British relation of the frontier tracts was guided by the policy what may be called in the word of Col. Henry Hopkinson, the then Commissioner of Assam, 'gold and steel'. This means that they were to be conciliated by granting 'gold' or cash payment in lieu of customary *posa* of the Ahom regime, but when they declined to accept the new terms of the new rulers, 'steel' that is to say, armed force was to be employed to compel them to accept the offer and conditions of the colonial ruler. As it is seen, till 1910, the British government followed a policy of 'let alone the tribes to themselves'. After 1910, beginning with loose political control, direct control and administration were imposed on the tribes, and their territories were tagged to the province of Assam. Up to the Second World War nothing substantial was done for the development of the area which was clearly outlined by the government of Assam in a letter to Government of India in 1931.

In 1951, the plain portions of the Balipara Frontier Tract, Tirap Frontier Tract, the Abor Hill District and the Mishmi Hill District were transferred to the administrative jurisdiction of Assam. The aforesaid area minus the transferred plain portion of the frontier tract together with Naga tribal area were thereafter renamed collectively as the North-East Frontier Agency (NEFA) in 1954. It was kept under Ministry of External Affairs. In 1954, NEFA consisted of six divisions such as Kameng Division (instead of Sela Sub Agency), Siang Division (Abor Hill District), Subansiri Division (Balipara Frontier Tract), Lohit Division (Mishmi Hill District), and Tirap Division (Tirap Frontier Tract) and Tuensang Division (out of the Naga Tribal Area). However in the year 1957, the Tuensang Frontier division was excluded from NEFA and merged with Naga Hills. The Government of India followed a policy and programme of tribal development which was given an ideological framework in the book *A Philosophy for NEFA*. After 1962 Chinese aggression of India, the Government of India tried to integrate the

administrative structure of the NEFA with the state of Assam. The guidance and control of NEFA was transferred from External Affairs Ministry to Home Ministry on August 1, 1965. The Government of India set up a committee for administrative reforms in NEFA under the Chairmanship of Daying Ering and as per the recommendation, the Panchayat Raj Regulation of 1967 was drawn up and promulgated on 2<sup>nd</sup> October 1969. NEFA was constituted into a Union Territory in the name of Arunachal Pradesh on 20<sup>th</sup> January 1972. The earlier Agency Council was converted into a Pradesh Council to serve as Provincial Legislature. Adult franchise was introduced in Arunachal Pradesh in 1972. The first election to the Parliament and Arunachal Pradesh Legislature took place in 1977. And in 1987, Arunachal Pradesh was granted full fledged statehood. Thus the political evolution of Arunachal Pradesh was completed.

The Government of India with the cooperation of the people of the State has attempted an uphill task of planned and systematic development in spite of the inaccessible terrain and age-old tradition of its people. Development is now visible in political, economic, education, social and cultural life of the people. The static period of aloofness and isolation has yielded to a modern period of dynamism which amounts to 'shaking off the dust and rust of ages' for a brighter future of the people of this kaleidoscopic land of the country. However extra attention of all concerned is the need of the time for this tribal State, affected by historical negligence for ages, to bring it up at par with other states of the country.

## SOCIAL TRANSFORMATION

### Introduction

In the tribal social structures of Arunachal Pradesh, the institution that stands out among all others is the household. There are large measures of similarities in certain aspects of social structure but there are also tribe-specific distinctive elements. This distinctiveness has come about as consequences of living in geographically isolated habitats and pursuing different religions as well as different economic activities. The search for viable habitat ensuring a secure livelihood through hunting, fishing, food gathering and cultivation made them move from one place to another. The needs of shifting also made them resilient enough to adapt their respective lifestyles and institutions to the demand of nature. It is the close interaction with nature, and the ability to adapt and adjust that enabled different tribes to convert distinct geographical spaces to social spaces. In these social spaces



arose in time distinctive social structures with characteristic family, kinship, marriage institutions, economic life, political organisation, and so on (Bhagabati, 1998). The traditional social structures underwent changes in the post-Independence period with the new politico-administrative configuration.

### Agents of Change

In bringing about social changes multiple forces have been working together, though their intensities vary from one tribe to another. The overall social outcome in a tribe is, however, determined by its relative access to developmental programmes, exposure to forces of modernisation, relative population size, geographical location and finally its access to the power structure as well as administration.

### Democratic Institutions

- Numerically dominant tribes are playing a prime role in the political sphere.
- Perhaps the most significant impact of changes is traceable in the sphere of education. There were only three schools and 50 students in 1947 but with the initiatives of the government, the State has witnessed a revolution in this field. Literacy increased from 7.23 per cent (1961) to 54.73 per cent (2001). This has far reaching implications in terms of occupational mobility, traditional polity and emerging social structure of the tribes.
- Emergence of a large number of non-government organisations including literary and cultural societies, association of the priests etc. All these have important ramifications which reveal people's response to new possibilities and their growing awareness about newer platforms to redress various emerging issues.
- Emergence of modern secondary and tertiary sectors has led to economic inequalities and along with this, a new social stratification has taken shape.

### Changing Traditional Village Economy

There is a significant change in terms of land tenure system, which is steadily leading to individual ownership by making collective ownership (clan, village, community ownership) a marginal phenomenon. In urban or semi-urban areas, land became a commodity for earning cash and 'brewing social conflicts'. In most of the places of Arunachal Pradesh, adjacent to Assam, sharecropping has made a deep root leading to a new agrarian relationship

(Eshi, 1998; Bejbarua, 2003; Das, 1995; Taidong, 2005). Moreover, Government of Arunachal Pradesh has also introduced a new agricultural policy.

- Some of the tribes/sub-tribes opted for a drastic shift towards settled cultivation. Wherever possible people went for massive terracing of earlier shifting fields for a better productivity, looking for surplus production. And even productions of shifting fields are reaching steadily to local markets which is a clear shift from the traditional notion of *jhum* (Ganguly, 2004; Danda, 1994; Lollen, 2005) and consumption norms of subsistence economy.
- Occupational mobility is very much evident with the rapid spread of education, urbanisation and expansion of induced developmental activities. All these have collectively led to the development of neo-rich class within the tribal societies making roads for economic inequality in a much pervasive way. This is more symptomatic among the dominant tribes of this State.
- In recent times, some initiatives were taken by both the Central and state governments to explore and promote the potentialities of indigenous arts and crafts looking at its prospects for income generating employments. Some refinements in technological inputs are clearly visible and even some valuable innovative experiments are going on which can have greater marketability even beyond the regional frame.
- Existence of trade routes is a testimony to the historical importance of trade among the tribes of this Frontier State. In the present context a few tribes are showing their traditional business acumen and gearing up to avail new economic avenues.

### Changing Socio-political Realities

The whole process of modernisation, greater administrative penetration, developmental initiatives in various forms, introduction of new political systems, contesting religious ideologies along with changes in economic sphere have a great impact on the traditional social structure, social relationships, cultural traits and value systems of the so-called segmental tribal societies of this Frontier State.

- The politico-administrative conditions before 1947 were such that each tribal society, large or small, maintained a sort of autonomous status in its dealings with the world outside its defined social boundary. For a tribal segment, with its essentially



kinship-based social structure, there was very little scope or need to expand the network of social relations involving other tribal segments in the surrounding habitat, except for certain well-defined trade and barter transactions.

- In recent times at broader levels some distinct trends are visible where some larger tribes are trying to subsume smaller tribes within their own fold, whereas some tribes are trying to come out of larger identity in search of their own identity. Considerable fluidity which remains at the core of the formation of expansive identity is also unique to underscore.
- All these processes are part of the politics of numerical strength, which is gradually accentuated within people's psyche. On the other hand, there is a gradual erosion of sense of collectivism at the village as well as family level, which is considered as one of the basic features of the social structure. This is more in case of urban and semi-urban centres and their fringe villages where neo-local nuclear families are growing rapidly.
- Endogamy still represents their ideal form of marriage but large numbers of inter-tribal marriages are traceable. The government also encourages inter-tribal marriage to promote larger tribal solidarity though it has not yet gained wider social sanction even among the educated and progressive tribal families.

In the field of polity significant changes are noticeable. Talukdar (2000) mentioned that for all practical purposes the traditional self-governing institutions governed the various tribal societies in the State till the 60s of the last century when they got an opportunity to interact with a central authority, external to the village or the tribe at the political level. The introduction of the Panchayati Raj in 1969 and the creation of Arunachal Pradesh as a Union Territory in 1972 provided this opportunity and they together set into motion a process of change and development in the society and governance in the State. Talukdar (*ibid*) added, "The impact of the Panchayati Raj was perceptible in the governance of the village and their impact on the traditional institution, by bringing them closure to a wider administration, bringing them face to face with the larger society and opening up new opportunities to the people and the tribal villages. The creation of an integrated Arunachal society is giving rise to new elements in governance in the form of modern democratic institution, a representative state government and electoral politics."

It is true that emergence of State craft has brought an end to frequent inter-and even intra-tribal blood feuds but the new contesting political ideologies are gradually disrupting the finer bonds of traditional polity by loosening its secular structure nurtured and grown within a patrilineal and patriarchal framework. With the introduction of *Gaon Bura* system as well as Panchayati Raj systems, the chieftainships of Wanchos, Noctes, etc., are losing their ground though *Kebang* and such other traditional polity did not lose their importance completely. But politics of 'vote bank' reinstated significance of clan/tribe/stratification or even religion in some parts of Arunachal Pradesh.

Regarding the emerging leadership pattern in the village, Talukdar (*ibid*) rightly mentioned, "It is undergoing rapid transformation and the ascriptive factors are no longer treated as the sole resources for village leadership. The social base of the present leadership is different from that of the traditional one and gradually becoming broad-based. The *Panchayat* leaders unlike their traditional counterpart are generally younger in age and have formal education."

Recently, the State Women Commission has been formed by the government of Arunachal Pradesh, which is the product of a long struggle of women across the tribes largely under the banner of All Arunachal Pradesh Women Welfare Society (APWWS). This has given some hope for the women who in spite of their extensive contribution to domestic and economic fronts (agriculture, food gathering, cottage industries, etc.) are yet to have any inheritance right over landed property which dilutes the question of meaningful involvement of women in development process (Chaudhuri, 2004). Participation of women in decision-making processes or in state polity is still very insignificant though they are performing well in the field of higher education (44.24 per cent literacy rate in 2001). However, there is growing gender sensitivity even in remote areas of the State against child marriage, polygamy, etc., where women remained the ultimate victims to a large extent.

### Contesting Religious Ideologies

Another significant social transformation is traceable in the field of religion. Christianity is spreading very fast in all tribal belts leaving Buddhists (both *Therabeda* and *Mahayana*) and some other tribes who are least affected. Introduction of such an alien belief system to some extent led to disintegration of some of the very important institutions like dormitories of the Wanchos and many of the oral traditions which have sacred dimensions. In order



to counter conversion some NGOs became active under different names. Under their patronage some reformist movements have been taking place in the State.

- Such contesting religious ideologies created a new space within the traditional social relationships. And this is more significant in case of Christian, non-Christian members of a family, clan or other forms of segmental social formation. However, community cohesiveness is still preserved to a large extent though the finer threads of understanding at the family, clan and village level are under strain to some extent.
- Another significant development or extension of 'sacred-secular' continuum is the transformation of village or family level ceremonies into community level festivals. This has consolidated community participation of otherwise scattered villagers who are coming together and taking part in festivities.

## Conclusions

Today tribal situation in Arunachal Pradesh has changed to a considerable extent; whether it is economy, polity, education, material or other elements of culture, religious beliefs and practices. Changes are everywhere which collectively made an impact on the traditional social structures by reshaping social relationships and negotiating with emerging wider socio-political realities. Developmental initiatives in post-1962 phase have made tremendous impact on the tribal societies in general who are managing the State and trying to develop their own human resources to uplift the overall economic condition in order to bridge the gap of emerging economic inequality of the heterogeneous tribes.

Naturally, the old social structures do not exist any more in their pristine state. New elements have seeped into the old patterns very rapidly; 'slavery' have given way to more egalitarian types of social relations, polygyny as an ideal is giving way to monogamy, and the position of women is changing in most tribes. The essentially kin-based societies with rigid lines of demarcations between tribes is fast transforming to a regional society where new lines of inter-tribal communication are emerging cutting through former tribal boundaries.

## ECONOMIC TRANSFORMATION

### Introduction

Douglas North (1994) defined institutions as 'rules of the game'—both formal and informal (norms,

conventions, code of conduct), and organisation and their entrepreneurs as 'players'. The informal institutions are basically conventions and code of conduct defined by the society. The changes in the economy have an impact on the traditional institutions also. The changes in the production and consumption structure and in the distribution of income are normally accompanied with changes in the institutional set-up. Thus, the outcome variable is the change in the institutional structure and the process variable is the change in the nature of production and consumption structure which the society had practised since long. Thus, the forces behind the institutional transformation come from the economy itself.

The framework of this section is based on the above understanding—that the institutional transformation takes place because of change in the taste and preference of the society. The change in the production structure can be analysed in terms of the growth dynamics of the NSDP (explained in Chapter 3) which affects the consumption pattern (as a proxy variable to explain the taste and preference). Thus, outcome variable is the change in the nature of the institutional set-up and the process variable is the change in production and consumption pattern.

### Changing Consumption Structure

One special characteristic of the North-east hill economy is that, per capita consumption expenditure is higher than the national average (Table 1.1). In all the states the increase in per capita consumption expenditure during 1993-94 and 1999-2000 is higher than the national average. However, the exception is urban Arunachal Pradesh. When the division is made between the food and non-food consumption, the percentage share of food item is less, and non-food item is more than the national average in Arunachal Pradesh (Table 1.2).

TABLE 1.1  
Per Capita Consumption Expenditure  
(Inflation and Inequality Adjusted)

(in Rupees)

|                   | 1993-94 |        |          | 1999-2000 |        |          |
|-------------------|---------|--------|----------|-----------|--------|----------|
|                   | Rural   | Urban  | Combined | Rural     | Urban  | Combined |
| Arunachal Pradesh | 94.02   | 164.47 | 104.71   | 123.42    | 153.35 | 129.38   |
| Manipur           | 108.02  | 124.19 | 112.89   | 116.97    | 157.27 | 130.88   |
| Meghalaya         | 110.28  | 185.27 | 124.55   | 128.99    | 219.10 | 145.65   |
| Mizoram           | 137.88  | 208.36 | 174.47   | 157.64    | 228.69 | 202.99   |
| Nagaland          | 158.43  | 188.51 | 164.15   | 213.98    | 279.52 | 228.04   |
| All India         | 87.90   | 124.27 | 97.53    | 98.49     | 143.49 | 111.28   |

Source: National HDR 2001.



TABLE 1.2

## Composition of Per Capita Consumption Expenditure

|                   | 1993-94<br>(Rural) |          | 1999-2000<br>(Rural) |          | 1993-94<br>(Urban) |          | 1999-2000<br>(Urban) |          |
|-------------------|--------------------|----------|----------------------|----------|--------------------|----------|----------------------|----------|
|                   | Food               | Non-food | Food                 | Non-food | Food               | Non-food | Food                 | Non-food |
| Arunachal Pradesh | 61.63              | 38.37    | 55.06                | 44.04    | 60.82              | 39.18    | 57.65                | 42.35    |
| Manipur           | 67.48              | 32.58    | 63.12                | 36.88    | 63.82              | 36.18    | 56.04                | 43.06    |
| Meghalaya         | 60.83              | 39.18    | 60.44                | 39.56    | 56.38              | 43.62    | 47.02                | 52.98    |
| Mizoram           | 61.24              | 38.76    | 59.36                | 40.64    | 54.14              | 45.86    | 52.04                | 47.96    |
| Nagaland          | 64.99              | 35.01    | 58.93                | 41.07    | 58.85              | 41.15    | 57.64                | 52.36    |
| All India         | 63.18              | 36.82    | 59.41                | 40.59    | 54.65              | 45.35    | 48.06                | 51.94    |

Source: National HDR 2001.

In the rural areas, the share of non-food expenditure recorded an increment of six percentage points whereas in urban areas the increase was only three percentage points. This suggests that non-food expenditure is gaining importance in the consumption basket of the rural population in Arunachal Pradesh. It is also more than their urban counterpart. Thus, the rural consumption pattern is changing fast as compared to the national average.

### Changing Employment Structure

The changing consumption structure is also accompanied by changing employment structure. The process is observed in all states of North-east. Table 1.3 gives the detail. A declining share of employment in agriculture in the rural areas and an increasing share of agriculture in urban areas is observed. This particular trend reveals that dependency on agriculture is fast reducing and importance of non-agriculture is fast increasing in rural areas. This phenomenon bears the testimony of the changing institutional set-up, which revolves around agriculture sector in many parts of North-east India. Arunachal Pradesh is not the exception.

Thus, the importance of non-food items has increased and share of non-agricultural employment in rural areas has increased. The process has led to an increase in demand for money. The logic is that only 16.6 per cent of the population have access to cash income as they are employed in non-agriculture activities. Since agriculture is at a subsistence level and the marketable surplus is very limited, a strong demand for money income has resulted in high rural-urban migration. (Even if there is marketable surplus, people cannot sell the surplus because of poor marketing network.) Thus in the hilly rural economy, due to low technological change and limited existence of market in the agricultural sector, people are compelled to

search for high productive jobs, from where they receive money income. Therefore, high demand for money income has led to many changes in their traditional economic institutions as follows.

TABLE 1.3

## Employment (Principal and Subsidiary Status) (per 1000)

|                 |           | Arunachal<br>Agriculture | Arunachal<br>Industry | Arunachal<br>Service | Assam<br>Agriculture | Assam<br>Industry | Assam<br>Service |
|-----------------|-----------|--------------------------|-----------------------|----------------------|----------------------|-------------------|------------------|
| Rural           | 1993-94   | 864                      | 17                    | 116                  | 792                  | 40                | 168              |
| Rural           | 1999-2000 | 834                      | 31                    | 134                  | 677                  | 44                | 280              |
| Change<br>Rural |           | -30                      | 14                    | 18                   | -115                 | 4                 | 112              |
| Urban           | 1993-94   | 79                       | 169                   | 750                  | 30                   | 171               | 799              |
| Urban           | 1999-2000 | 87                       | 22                    | 891                  | 60                   | 83                | 857              |
| Change<br>Urban |           | 8                        | -147                  | 141                  | 30                   | -88               | 58               |

|                 |           | Manipur<br>Agriculture | Manipur<br>Industry | Manipur<br>Service | Meghalaya<br>Agriculture | Meghalaya<br>Industry | Meghalaya<br>Service |
|-----------------|-----------|------------------------|---------------------|--------------------|--------------------------|-----------------------|----------------------|
| Rural           | 1993-94   | 638                    | 127                 | 234                | 860                      | 18                    | 123                  |
| Rural           | 1999-2000 | 753                    | 80                  | 167                | 865                      | 14                    | 121                  |
| Change<br>Rural |           | 115                    | -47                 | -67                | 5                        | -4                    | -2                   |
| Urban           | 1993-94   | 293                    | 155                 | 549                | 30                       | 28                    | 936                  |
| Urban           | 1999-2000 | 283                    | 114                 | 601                | 13                       | 41                    | 947                  |
| Change<br>Urban |           | -10                    | -41                 | 52                 | -17                      | 13                    | 11                   |

|                 |           | Mizoram<br>Agriculture | Mizoram<br>Industry | Mizoram<br>Service | Nagaland<br>Agriculture | Nagaland<br>Industry | Nagaland<br>Service |
|-----------------|-----------|------------------------|---------------------|--------------------|-------------------------|----------------------|---------------------|
| Rural           | 1993-94   | 889                    | 6                   | 104                | 749                     | 12                   | 240                 |
| Rural           | 1999-2000 | 855                    | 13                  | 133                | 797                     | 14                   | 189                 |
| Change<br>Rural |           | -34                    | 7                   | 29                 | 48                      | 2                    | -51                 |
| Urban           | 1993-94   | 410                    | 49                  | 541                | 62                      | 50                   | 887                 |
| Urban           | 1999-2000 | 303                    | 53                  | 644                | 84                      | 69                   | 847                 |
| Change<br>Urban |           | -107                   | 4                   | 103                | 22                      | 19                   | -40                 |

|                 |           | Tripura<br>Agriculture | Tripura<br>Industry | Tripura<br>Service | India<br>Agriculture | India<br>Industry | India<br>Service |
|-----------------|-----------|------------------------|---------------------|--------------------|----------------------|-------------------|------------------|
| Rural           | 1993-94   | 476                    | 56                  | 464                | 784                  | 78                | 138              |
| Rural           | 1999-2000 | 457                    | 40                  | 503                | 763                  | 81                | 157              |
| Change<br>Rural |           | -19                    | -16                 | 39                 | -21                  | 3                 | 19               |
| Urban           | 1993-94   | 60                     | 97                  | 838                | 123                  | 258               | 618              |
| Urban           | 1999-2000 | 27                     | 39                  | 934                | 88                   | 242               | 672              |
| Change<br>Urban |           | -33                    | -58                 | 96                 | -35                  | -16               | 54               |

Source: National Sample Survey, 50th and 55th Round.

### Land and Forest

In the early period, the community jointly owned the land. The members of the community shared the output produced and hardly anything was left for the market.



Timber was the only product, where a market existed before the Supreme Court restriction on tree felling. When the resource system was jointly owned, the forest product (timber) could not be sold. The cash need of the population, has forced the emergence of individual ownership of the resources—both land and forest. Thus, in many parts of Arunachal Pradesh, individual ownership has gained momentum at the cost of community-based ownership.

The form of individual ownership has certain features as follows (Roy 2005, p.29).

- a. Land is not alienable to the non-tribals.
- b. Land can usually be sold to the people belonging to same tribe; there is a limitation in the transfer of land from people belonging to one tribe to people belonging to the other tribes. Inter-tribal transfer of land is found, of course, in the urban areas and rarely in the semi-urban areas. In the rural areas it is not normally found.
- c. The cadastral survey having not been conducted, there is no title deed to the land owned by an individual. In the absence of documentary evidence land cannot be used as collateral for bank loans. This has limited the provision of the bank loans to the farmers. In recent years the government of Arunachal Pradesh has started issuing land possession certificates. But the problem of disbursing bank loans based on land as collateral still remains. The non-alienability of land drastically reduces its collateral value to the banks.
- d. Land as property is still highly encumbered. It cannot be freely willed away. The inheritance of land is more or less guided by traditional practices which prefer a particular order of sons, too often, the eldest one, to others. Daughters normally do not inherit the paternal landed property.

### Rental Market

The individual ownership of land has also resulted in rental market (Roy, *ibid*). Land is leased out to others for cultivation. The rental market is also prevalent in business. The trading license holder charges a fixed rent and lends it out to migrants. The arrangement is such that

the local people own the fixed capital and the migrants own the variable capital. This type of ownership operation has tended to reduce the time span of business planning and the end result is a tendency to reap short-term benefits from the business (Roy, *ibid*).

### Labour

The process of modernisation has also generated the demand of labour. Perhaps this is the reason why immigration rate to the state is 15.54 per cent in 2001 (Sarma and Nayak, 2006). Before the transition, labour was also community based. No money wage was paid and all payments were in kind. Thus, labour market was absent. Still today, in the remote parts of Arunachal Pradesh, daily wage labourers from tribal areas of Orissa and Jharkhand are engaged in road construction.<sup>1</sup> One contrast is also observed: the local people are also engaged by the PWD department as daily wage labourers.<sup>2</sup> Thus demand for cash need has brought the labour market to operate and the transformation of labour institution from being community-based to market-based is quite rampant, both in urban and remote rural areas of Arunachal Pradesh. Thus, the labourers brought from other parts of the country have led to the evolution of modern labour market in the State (Roy, 2005).

### Credit Market

The process of transition and the need for money has also resulted in emergence of the credit market in the State. In the traditional society, the informal credit in kind (food item), was used to be given at the time of crop failure to the people by the village chief in some parts of the State. The repayment system was in the form of labour. In some cases *Mithun* and cow were given in credit and no interest was charged at the time of repayment.<sup>3</sup> With the increase in cash need of the people (particularly for medical and contract works), informal credit market has emerged in many areas including interior region of the State. Thus, credit need has increased and modern credit market has failed to enter owing to collateral problem, which has resulted in market failure in the formal credit market. Thus, increased cash need of the people on the one hand and failure of the formal institutions on the other has led to the growth of informal credit market in the State.

1. This observation was made during the field work for the preparation of Human Development Report of Arunachal Pradesh.

2. *Ibid*.

3. Personal discussion with Dr. Pura Tado, Reader in the department of Political Science, Rajiv Gandhi University, Itanagar.

## Conclusion

In a nutshell it may be argued that subsistence nature of farming coupled with modern consumption structure is the driving force behind the changing economic institutions in Arunachal Pradesh. The rural-urban migration, due to pull factors in the State, has led to a

substantial increase in employment in service sector. Further due to decline in the industrial urban employment they are forced to enter in urban agriculture sector where land market has emerged. Thus, the process of modernisation has led to the transformation of the traditional economic institutions in the State.