

COUNTRY BACKGROUND

CHAPTER 1

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I. Physical Characteristics

The Kingdom of Bhutan covers an approximate area of 46,500 square kilometres: roughly 150 km north to south and 300 km east to west. However, because of the mountainous terrain, the actual distance on the ground is more than twice as long. The Kingdom is bordered by the Tibetan region of China and the Indian States of Sikkim, West Bengal, Assam and Arunachal Pradesh (see Map 1.I Bhutan and neighbouring countries and Map 1.II on Physical Features).

The terrain is among the most rugged and mountainous in the world, as most of the country includes part of the Himalayan ranges. The land rises from an elevation of about 160 metres above sea level in the south to more than 7,550 metres above sea level in the north. The variations in climate are correspondingly extreme. Southern Bhutan is generally hot and humid, while the high Himalayan mountains in northern borders of Bhutan are under perpetual snow. Climate can vary considerably between valleys and within valleys depending on levels of altitude. Rainfall, in particular, can differ within relatively short distances due to rain shadow effects. Annual rainfall is concentrated in the monsoon season - mid June to September (see Map 1.II for Annual Rainfall in Bhutan). Rough estimates of rainfall are :

Southern border areas	3000 - 5000 mm p.a.
Southern foothills	1200 - 2000 mm p.a.
Inner central valleys	500 - 1000 mm p.a.
Above 4000 m elevation	less than 500 mm p.a.

II. Natural Resources

Flora

The flora of Bhutan is exceptionally diverse as a result of a great range of altitudinal zones and varied climatic conditions. An estimated 56% of the country is covered by forests of alpine scrub, fir, mixed coniferous species, temperate scrub, and broadleaf species. In addition to a wide range of species, there are many species unique to Bhutan: about 47 species have been listed (Grierson and Long, 1984), and it is thought

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that there are many more which have not been identified. Moreover, much of Bhutan's flora has remained undisturbed so that Bhutan probably has the richest flora in the Himalayan region. The floral wealth of Bhutan is highly appreciated by both Bhutanese and the outside world. Many tree species are of high timber quality, while others are tapped for resin. Over 300 species largely of alpine plants are used in Bhutanese traditional medicine. Horticulturalists all over the world also prize Bhutanese flora: Grierson and Long (1984) list 168 species introduced to Europe from Bhutan, including many wild relatives of cultivar species strawberries, cherry, and apple. These plants have significant value as a genetic resource for crop improvement.

Fauna

Because Bhutan's flora has remained undisturbed, a number of rare animals can still be found in Bhutan. The exact number of species is unknown, but over 160 species have been reported. Rare animals include the langur, takin and blue sheep and are distributed quite widely. Tigers, leopards, snow leopards, red panda, gaur, serow, Himalayan black bears, brown bears, wild pigs, musk deer and various kinds of deer are common in many parts of Bhutan. The Phobjikha valley in Western Bhutan is one of the three wintering grounds for the rare Black-necked crane. One quarter of the country has been declared as 12 protected reserves/sanctuaries/nature parks (see Map 4.I on Protected Areas in Bhutan). These areas form havens for a number of the world's rare and endangered species, which are not only of national but global importance.

Agriculture

While a large proportion of the country is covered by forest, the area suitable for agricultural production is limited by the topography and low soil fertility in some areas. The river valleys and the flatlands in the southern foothills account for most of the fertile cultivatable land whereas the northern alpine belt below the snowline is suitable only for pasture. The most recent estimates suggest that 16% of total land is used for agricultural production, including dryland and irrigated crop production and orchards. Most rural households also own livestock, which are grazed in the forest areas and pastures.

Water

Another important natural resource is water. The four major rivers are Ammochu, Wongchu, Sankosh and Manas, all of which flow in a north-south direction and discharge into the Brahmaputra River in the plains of India. These rivers provide significant hydropower potential, with an estimated theoretical potential of 20,000 MW.

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Minerals

The exact magnitude of Bhutan's mineral resources is unknown, as only 30% of the country has been mapped geologically. Mineral prospecting has been undertaken mainly in southern foothills and inner Himalayas as prospecting in the other areas is constrained by lack of transport infrastructure. Geological mapping has indicated the occurrence of coal, limestone, dolomite, talc, marble, gypsum, slate, zinc, lead, copper, tungsten and quartzite deposits (see Map 19.I on Minerals Deposits of Bhutan). Out of these, coal, limestone, dolomite, gypsum and quartzite are mined for domestic use and export.

III. People

History

Stone implements indicate the country was inhabited as early as 2000-1500 B.C (Aris, 1979). Although Bhutan's history since 7th century is becoming increasingly known, its more ancient history remains to be brought to light. The country consisted of small but independent principalities until Shabdrung Ngagwang Namgyel (1594-1652) unified the country into one nation in the early 17th century. He established a theocracy and gave Bhutan an administrative system, and a code of law. During the period of theocracy from 1652 to 1907, there were approximately fifty-five Desids (monk-rulers). The theocracy Shabdrung built ended in 1907 when Ugyen Wangchuck (1862-1926) was elected as the first King of Bhutan by popular consensus. Since the establishment of monarchy in 1907, there has been four hereditary kings whose reigns spanned the following years :

- .1 King Ugyen Wangchuck 1907-1926
- .2 King Jigme Wangchuck 1926-1952
- .3 King Jigme Dorji Wangchuck 1952-1972
- .4 King Jigme Singye Wangchuck 1972-

Throughout its history, Bhutan has remained independent, being one of the few countries in Asia never to become a colony. Bhutan was fairly isolated from the outside world until the 1960s when the third King Jigme Dorji Wangchuck (1928-1972) opened links with other countries and initiated the development of a modern economy. His Late Majesty also introduced many social, legal and constitutional reforms, which had far reaching effects.

Religion

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Buddhism was introduced in Bhutan in 7th century by Guru Padma Sambhawa. In the centuries that followed, Bhutan was home to many sages and saints including the great saints-scholars such as Longchen Jamjam, also known as Kuenkhen Longchen Ramjam, (1308-1363) and Pema Lingpa (1450-1521). Various schools of Buddhism in Bhutan assimilated other earlier practices and beliefs. The aspirations towards enlightenment and the belief in the innate goodness of human beings are widely shared among Buddhists and majority of the Bhutanese are Buddhists. Hinduism is another important religion, particularly in Southern Bhutan. The Hindu religion as practised by Southern Bhutanese has many common saints and divinities with Vajrayana, the school of Buddhism prevalent in Bhutan.

Buddhism has a significant influence on the values of the Bhutanese and has shaped the institutions, organizations, arts, drama, architecture, literature and social structure. Bhutan's culture, as in other societies, is continually transforming itself in the face of development.

The importance of religious institutions continue in present day Bhutan, as signified by the strength of the monk body who number over 4000 in *Dratshangs or Rabdeys* (monasteries) supported by the state. This figure takes count of monks who are part of the formal monastic structure supported by the state and excludes monks who are not part of the state sponsored Dratshangs. The Rabdeys are based mainly in *dzongs* (fort-monasteries). Each Rabdey is headed by a Lam Neten who is appointed by His Holiness the *Je Khenpo* (Head Abbot), the Head of the Central Monk Body, who is also elected. The present Je Khenpo is the 69th incumbent. His Holiness the *Je Khenpo* is the Chairman of 9 member *Dratshang Lhentshog*. Monks continue to play an important role in the daily lives of the population in performing religious ceremonies, and in promoting and preserving scholarship. They are also actively involved in the process of development while constantly renewing their relevance to society in times of change.

Population

The 1990 population has been estimated at 600,000. A census is being conducted and its exact results will be known in 1992/93. Depending on the fertility and mortality assumptions adopted, population is projected to rise to between 713,211 and 768,050 by 1997. As in most developing countries, the proportion of the population under 15 is high: at 40%. As these age groups enter the reproductive period, the growth rate of population is likely to rise above the current 2.5%, unless the population can be encouraged to practice family planning.

Settlements

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Bhutan is the least populated country in South Asia. However most of the population is concentrated in the valleys and large areas in the north of the country are virtually empty except for nomadic herders. The population is distributed in the following areas:

- a) The virtually empty northern region;
- b) The relatively well settled area in the inner Himalayan valleys;
- c) The more thinly populated area south of the Black Mountain Range and associated highlands;
- d) The densely populated southern area.

Most Bhutanese still live in villages in an extended family system or maintain strong links with their rural families. The average size of the household or family is estimated to be 8.5. The number of houses per village varies from 2 to 100 with an average of 43. Thimphu in Western Bhutan is the capital with an estimated population of 40,000-50,000 people. The other main urban settlements are Geylegphug, Phuntsholing and Samdrup Jongkhar. All of these three cities are at the border between India and Bhutan. Towns are developing in all the 18 dzongkhags (district) headquarters.

Employment and Incomes

Although significant economic progress has taken place since the 1960s, the majority of the population remain dependent on agriculture for incomes and employment. There is no landlessness in Bhutan, although the rapidly growing population could lead to the emergence of marginal farmers. As most rural settlements are far from markets there has been little potential for the sale of surplus production of crops and livestock, although this is beginning to change with the opening of the more inaccessible areas through the construction of roads. The types of crops produced varies considerably, depending on climate and access to markets. Staple crops include rice, maize, potatoes, buckwheat, barley and wheat. Livestock are an extremely important part of the farming system, and kept for draught purposes, milk products and meat. Production of horticultural crops is increasing as their export potential has been realised. Bhutan had achieved 66% self sufficiency in cereals and 20% in edible oils in 1988. Employment in the other sectors of the economy continues to be insignificant, as industrial development has been limited. The Government has been responsible for the establishment of several productive enterprises, however the private sector is being encouraged to take over these activities. Unlike many other developing countries, unemployment is not yet a concern.

Transport and Communications

Bhutan's total road network measures 2,674 km and the main motor routes consist of an east-west highway and three north-south highways. The road network connects all 18 dzongkhag (district)

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headquarters and 12 dungkhags. Major towns and villages are also connected by motor roads. However the majority of settlements can only be reached by mule tracks and foot trails, as well as cantilever and suspension bridges. Although horses are the main beast of burden, yaks and oxen are used for transportation in some parts of Bhutan. Only one airport, at Paro, is in regular use. The national airline, Druk Air provides services to Dhaka, Kathmandu, Delhi, Calcutta and Bangkok.

Telecommunication services consist of telephone, telegraph, telex and civil wireless. However only the civil wireless service connects all dzongkhag headquarters in the country. International telephone links are available by satellite from Thimphu.

V. Institutional and Legal Framework

An enlightened monarch rules Bhutan through Lhengyel Shungtshog (Cabinet), Tshogdu (National Assembly) and the civil service. His Majesty King Jigme Singye Wangchuck (born 11 November 1955), IVth in Wangchuck Dynasty, is the Head of the Government as well as the State.

The Tshogdu (National Assembly) has 150 members of which 105 are Chimis (representatives of the people) elected for a term of three years. The monk bodies elect 12 monastic representatives, while the remaining 33 members are representatives of the Government and are nominated by the King. The Tshogdu sits twice a year, in addition to emergency sessions. A Royal Advisory Council also exists to advise the King and the Ministers, consisting of 9 Councillors. Four Councillors are elected as representatives of the people, 2 Councillors are elected as representatives of Monk Bodies and one Councillor is nominated by the King.

The organizations of central government consist of seven Ministries, their related Departments, 4 Commissions, the Royal Bhutan Army, Royal Bhutan Police, Royal Body Guards and several autonomous bodies. The Ministries include Foreign Affairs, Communications, Trade and Industry, Finance, Social Services, Agriculture and Home Affairs (see Figure 1.I on Government Structure). The four commissions are the Planning Commission, the Royal Civil Service Commission, the Special Commission for Cultural Affairs and the Dzongkha Development Commission.

Bhutan has resident diplomatic representations in India, Bangladesh, Kuwait, New York and Geneva. The Bhutanese Ambassadors in these places are accredited to several other countries. Apart from representatives of international agencies, only India and Bangladesh have resident diplomatic representatives in Thimphu, the capital of Bhutan. (see Chapter 21)

The Royal Civil Service Commission is responsible for formulating and ensuring implementation of

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personnel policies in the civil service. The civil service strength was 11,228 as of late 1991 (see Chapter 12).

The country is divided into 18 Dzongkhags (see Map 1.V : Bhutan Administrative Map) During the 7th Plan, Tashigang dzongkhag may be split into two Dzongkhags namely Tashigang and Tashi Yangtshi. Larger Dzongkhags are sub-divided into Dungkhags (sub-districts). The Dzongkhags, and where they exist Dungkhags, are further sub-divided into 191 gewogs (blocks). Dzongkhags are governed by Dzongdags and Dungkhags by Dungpas. Gewogs are administered by Gups who are elected by the community. The Gups assist the Dzongdags and Dungpas in collection of taxes, mobilization of labour for community services and public construction, settlement of disputes and many other local activities including implementation of some development programmes.

Five dzongkhags in Eastern Bhutan, namely Tashigang, Samdrup Jongkhar, Mongar, Pema Gatshel and Lhuntsi are grouped under Zone IV which is headed by the Zonal Administrator, based in Yongphula. The Zonal Administration has sectoral officers who co-ordinate, plan, and monitor the activities in the zone. The Zonal Administration was established to enhance the process of decentralisation, begun in 1981.

Bhutan's legal system was previously based on codes laid down by spiritual rulers in the 17th century. The present laws as they exist in Thrimshung Chenmo (Supreme Laws) were legislated by the Tshogdu (National Assembly) in 1957 under the aegis of His Late Majesty Jigme Dorji Wangchuck (1928-1971), the Third King. Disputes are usually settled by Gups. Disputes which fail to be resolved out of the court by the Gups go to the District Courts. Each *Dzongkhag* has a court head by a Thrimpon. A *Dzongkhag* court has both original and appellate jurisdictions. The next level of jurisdiction is the High Court in Thimphu. (see Chapter 21)

VI. Constraints to Development

Since the 1960s, the Royal Government has recognised that Bhutan's economic future is linked to its neighbours and to the world economy. Having abandoned a strategy of self-isolation, Bhutan now looks to increasing economic interaction with other countries as an avenue for development. The development of Bhutanese economy is however constrained by several factors:

- a) Bhutan is geographically isolated from other countries in the region being a landlocked country, and is distant from the nearest sea port in Calcutta, India. This isolation makes the transport of goods into and from Bhutan costly.
- b) Because of the extremely mountainous terrain, the area of land which is suitable for agricultural production

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is relatively small. This limits the potential for increasing output from the agricultural sector and increases the risks of environmental degradation.

c) The population is distributed in remote scattered settlements, to take advantage of the limited land suitable for agricultural production.

d) The above factors have made the provision of roads and communication networks difficult, and the delivery of health and education services costly;

e) Unlike most other developing countries, Bhutan has a relatively small population and the supply of manpower is a major constraint. The fairly recent introduction of western education means that there is a shortage of manpower with the necessary skills for a developing economy;

f) As most of the population have been subsistence farmers until recently, the level of monetisation has remained low. This has restricted the Government's ability to raise domestic revenues, and Bhutan has relied on external assistance for the funding of development programmes.

While the Royal Government is unable to change the physical constraints indicated above, considerable progress has been made since the 1960s in addressing some of these constraints, particularly in terms of infrastructure. The Seventh Five Year Plan will seek to continue the efforts to overcome the limitations these constraints impose.

CHAPTER 2

ECONOMIC PERFORMANCE ECONOMIC PERFORMANCE

I. IntroductionI. Introduction

2.1 This Chapter describes the early development of the Bhutanese economy and provides a more detailed analysis of the economy during the 1980s. Government expenditures and revenues are summarised, as well as Bhutan's trade performance during the period. Economic developments during 1989-91 are also discussed to highlight the circumstances under which the Seventh Five Year Plan was prepared. In view of the Government's emphasis on improving not only economic growth and equitable incomes, but also the quality of life, the final section reviews the Human Development Indicators for Bhutan.

II. Economic Development before 1980II. Economic Development before 1980

The Traditional EconomyThe Traditional Economy

2.2 The shape of Bhutan's traditional economy was determined by the constraints identified in Chapter 1: its isolation from the external world and poor internal communications. There were well-established trading links across the Himalayas, but with their reliance on portage and pack animals, trade was mainly in low volume, high value articles. It was a practical requirement for valley communities to be self-sufficient in basic necessities, especially foodstuffs, and most production was for subsistence.

2.3 Over the centuries, the Bhutanese people developed farming systems which met their subsistence needs and used available resources in a sustainable way. Considerable capital investments were embodied in terracing, irrigation, housing and religious/administrative buildings. Because the economy was largely unmonetised, taxation — to support the administrative and religious establishment and to maintain community infrastructure — was in kind, in the form of labour contributions or grain taxes.

2.4 Within its constraints, the traditional economy was very successful. It afforded a comparatively high material standard of life (reflected in the absence of a large class of landless labourers and significantly higher wage rates than in India), but health standards were very poor, and the economy's potential was limited in the absence of greater specialisation and trade. Thus until fairly recently, the majority of the population were dependent on agricultural production as there was no industrial production of any significance.

Early DevelopmentEarly Development

2.5 Bhutan remained closed to the outside world until the 1960s when efforts to increase links with other countries were initiated by King Jigme Dorji Wangchuck. During this time the first Development Plan was prepared and implemented in the period 1961/66. The emphasis of the first Development Plans was on establishing basic infrastructure to reduce Bhutan's physical isolation and improve internal communications, while also building up the institutions of a modern economy and state, especially through education and training. Economic and social statistics for the period from 1960—80 are very sparse, but it is clear that the improvement in communications began a transformation of the economy which is still going on. Better communications made trade more feasible, and this in turn prompted increased monetisation and opened the way for more specialisation in production. A striking example of such specialisation has been the trend towards production of horticultural crops for export, complemented by imports of rice. Taking advantage both of better communications and the availability of low-cost Indian labour, most industrial development took place near the Indian border, and the pace of modern sector

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development was generally faster in Southern and Western Bhutan than in the East.

III. Economic Development during the 1980s

Availability of Data

2.6 The availability of economic data in Bhutan is variable. Consistent GDP series begin only in 1980, and the most recent year for which GDP estimates were available when the Plan was prepared, was 1989. This means that broad economic data were available only for the first half of 6FYP, although figures relating to public finance and foreign exchange were available for the whole period. Other areas where statistics are especially weak include employment and labour force data, trade, and production in the traditional sector (which accounts for almost half of all production).

Table 2.1 GDP Sector Shares and Growth Rates 1980-1989

SECTOR	GDP Share 1980	Average Growth 1980—89%	GDP Share 1989
Agriculture	55.7%	5.0%	45.1%
Mining & Quarrying	0.6%	13.8%	1.0%
Manufacturing	3.2%	15.2%	6.0%
Electricity	0.2%	65.4%	10.8%
Construction	7.8%	4.7%	6.3%
Trade etc.	10.9%	1.1%	6.3%
Transport & Communications	4.3%	12.9%	6.7%
Financial Services	6.3%	9.8%	7.7%
Community & Social Services	10.8%	6.8%	10.2%

Source: Central Statistical Office.

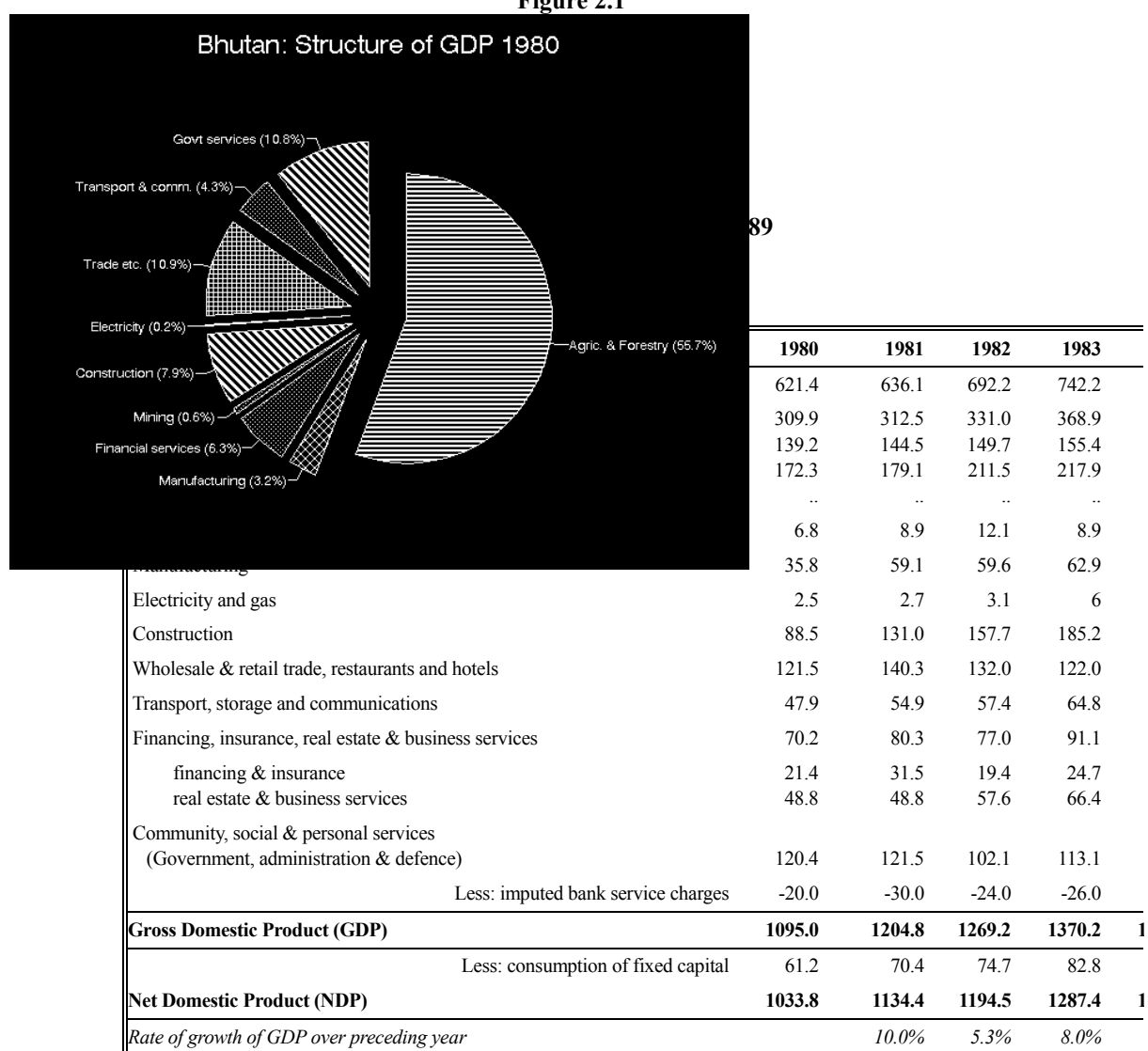
Structure of GDP in 1980

2.7 Although economic development had taken place since the 1960s, at the beginning of the 1980s, agriculture remained the most important sector in terms of GDP and employment: contributing 56% of GDP as shown in Table 2.1. Other significant sectors were trade and the activities of the Royal Government in the economy, each accounting for 11% in 1980. Development of the industrial sector was constrained by lack of investment due to the emphasis of Government expenditure on infrastructure and the lack of entrepreneurial skills and thus accounted for less than 4% of GDP, with about half the contribution from the construction industry. The lack of geological information and necessary technical expertise limited the development of the mineral sector, which accounted for only 0.6% of GDP in 1980. The power sector accounted for only 0.2% of GDP in 1980.

Growth of GDP in the 1980s

2.8 During the 1980s, GDP grew at an average of 7.5% — a very rapid rate of growth compared with most developing countries during the same period. (These growth rates are assuming constant prices, i.e. the effects of inflation have been eliminated.) By 1989, GDP was 90% above — almost double — its 1980 level. Assuming a population growth rate of 2.5%, per capita GDP growth was 5% per annum, with per capita GDP estimated at \$370 by 1991. Unlike previous Plan periods, the major impetus for GDP growth was not from increases in aid, but was largely based on the expansion of the electricity and mining/manufacturing sectors. Starting from a negligible base, electricity sector growth averaged 65% p.a (see page 4). This was largely due

Figure 2.1



Source: Central Statistical Office.

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the commissioning of the Chhukha Hydel Plan, with an output of 336 MW, increasing electricity production from 3.5 MW in 1981/82 to 341.6 MW in 1987/88. During the 1980s the manufacturing, mining, transport and communications all showed average growth rates of well over 10% p.a., due to the combined effects of starting from a very low base and increased investment. In the manufacturing sector, the establishment of large cement and calcium carbide plants accounted for a large proportion of the increase in output.

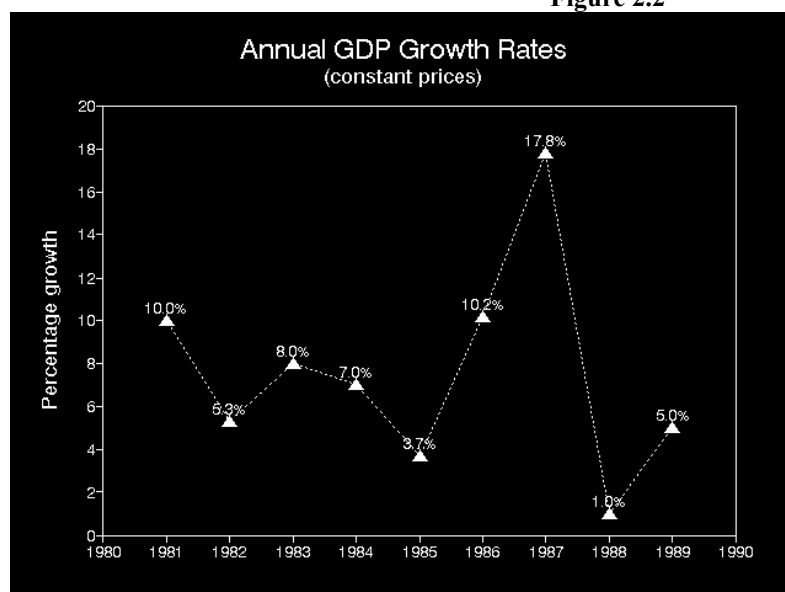
2.9 Agriculture at 5% p.a. was one of the slower growing sectors. Even a 5% growth rate is rapid by most standards, and would allow a considerable improvement in average agricultural incomes despite the growth of the rural population. While these estimates are based on limited data, it has been assumed that the growth in the agricultural sector was the result of both increases in area planted and in productivity. The relatively slow growth of the forestry sector, was the consequence of RGOB policy restricting the level of logging to prevent unsustainable utilisation of the forest resource. This policy resulted in a decline in commercial logging in the early 1980s, when responsibility for logging was handed over to the Bhutan Logging Corporation (a public sector enterprise). Output increased from this sector increased in the mid 1980s, but mainly because of the need to fell trees infested with bark beetle disease.

Structure of GDP in 1989***Structure of GDP in 1989***

2.10 The difference in the growth rates of the various sectors resulted in a change in the contribution of each sector to GDP over the decade, see Table 2.1. The share of agriculture and forestry shrank by about 10% to 45% of GDP, almost exactly offset by the growth in electricity from a negligible share to about 11%. The share of manufacturing, from a very small base, almost doubled, to 6%. The share of government services was steady at around 10%. While the power and manufacturing sectors expanded during the 1980s the majority of the population remained dependent on the agricultural sector for incomes and employment at the end of the 6FYP: seven out of eight adults were engaged in agriculture according to a 1984 survey. Despite the growth of the industrial sector, its overall contribution to GDP and employment remained small. Food processing, cement, wood products and alcoholic beverages accounted for most industrial production and due to limited domestic demand, much of the production was exported to India. One of the most important events in the industrial sector was the privatisation programme, initiated by the Royal Government in recognition of the fact that resources are likely to be used more efficiently when competitive markets operate than under the direction of bureaucrats. Thus a vigorous programme of privatisation was begun in the 6FYP, as explained in Chapter 6.

2.11 Rapid economic growth was based on high levels of capital formation, averaging between one third and two fifths of GDP throughout the decade. The construction peak in 1983-85 was influenced by the construction of the Chhukha Hydel Project. Largely because of the commissioning of this project, the growth of GDP increased dramatically in 1987/88 and while GDP continued to increase in 1988/89 the increase from the previous year was not as dramatic. (see 2). Without the impetus of high growth in the energy sector, overall economic growth in 1990 and 1991 probably did not exceed 3.5% p.a.

Figure 2.2



IV. Government Expenditure and Revenues during the 6FYPIV. Government Expenditure and Revenues during the 6FYP

Allocation of Expenditures

2.12 The sectoral allocation of expenditure reflected the priority accorded to the productive sectors, in comparison to the social service sector.

- (a) Agriculture received the largest share of the budget at 18%.
- (b) Power and Trade and Industries received the second and third largest shares at 13.1% and 13.3% respectively.
- (c) The Social Services sectors received considerably smaller shares, with education allocated 8.1% and health 4.2%. However the funds allocated to the Industrial and Power sectors include major investments in the completion of the Chhukha Hydel Project and a large cement plant.

2.13 Table 2.3 compares 6FYP planned allocation of expenditures with what actually happened during the Plan's first three years and was budgeted for 1990/91 and 1991/92. (The table combines capital and current expenditures.) In general, the sectoral allocation of expenditures corresponded quite well to what was envisaged in 6FYP. The shares of education and health were somewhat higher than anticipated (15.2% vs. 12.6%) and expenditure on other community services accounted for another 4% of the total. The higher share of social services was offset by smaller than anticipated shares for most economic services, especially the power and business/industrial sectors.

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Table 2.3 Planned and Actual 6FYP Expenditure

	Planned	Actual
GENERAL PUBLIC SERVICES	21.1%	21.6%
EDUCATION	8.3%	10.9%
HEALTH	4.3%	5.0%
OTHER COMMUNITY SERVICES	1.0%	6.5%
ECONOMIC SERVICES	65.2%	52.3%
Business, Commerce & Trade + Mining and Manufacturing	15.2%	6.6%
Agriculture & Non-Mineral Resources	17.5%	15.6%
Public Works	12.2%	8.9%
Power and Technology	13.4%	9.6%
Transport and Communications	6.9%	11.7%
OTHERS	0.0%	3.7%
TOTAL	100.0%	100.0%

Sources: 6FYP planned allocation from Table 2.2 of 6FYP. Actual expenditures from Annual Statements of Account, DNBA. Budgeted, not actual, expenditures are used for 1990/91 and 1991/92. Notes: 6FYP figures exclude 2.5% allocated for dzongkhags, as sectoral breakdown of this figure is not available.

The Balance Between Capital and Recurrent Expenditure The Balance Between Capital and Recurrent Expenditure

2.14 As well as rapid increases in the overall budget, the proportion of capital to recurrent expenditure had been rising in the Plan period, as shown in Table 2.4. This has been particularly the case in the Social Services sector, as shown below, where additional capital expenditure is likely to have the highest recurrent cost implications in future. The capital:recurrent ratio as a whole tended to remain within the range of 50:50.

<u>Year</u>	<u>Capital Expenditure as % of Total Expenditure</u>	
	<u>Year</u>	<u>Social Services</u>
	1987/88	13.2%
	1988/89	13.5%
	1989/90	13.7%
	1990/91	20.7%
	1991/92	25.6%

2.15 This has meant that there was insufficient recurrent provision for the additional capital investments and this, combined with severe reductions in recurrent costs on existing programmes in the 1990/91 and 1991/92 budgets, generated pressure on the Government to make substantial increases in the recurrent budget in the first year of the 7FYP.

Table 2.4 Government Expenditures 1987/88-1991/92

		1987/88	1988/89	1989/90	1990/91	1991/92
Category	Code no.	(12/15)			(budget)	(actual)
Discretionary Current Expenditure		594.890	805.764	854.499	794.751	660.000
Personal Emoluments	[01-03]	237.470	394.456	395.101	373.998	320.000
Operating Costs	[05-19]	302.542	327.850	381.855	352.705	250.000
Grants and Subventions	[21-24,04]	54.878	83.457	77.543	68.048	80.000
Capital Expenditure		677.300	902.631	595.804	865.909	550.000
Basic	[41-61]	627.031	567.463	589.358	865.909	510.000
Public Investment	[62,73]	50.269	335.168	6.446	0.000	40.000
Non-Discretionary Expenditure		83.154	63.183	155.509	103.018	140.000
Retirement benefits	[25]	24.205	6.341	9.435	5.510	0.000
Debt service	[31-33,75]	58.950	56.842	146.074	97.508	130.000
Lending	[71,72]	94.759	71.643	27.158	6.136	0.000
TOTAL		1450.104	1843.221	1632.971	1769.815	1370.000
CPI deflation factor (Dec. annual) - assumes 10% inflation to Dec. 1991.		1.000	0.912	0.841	0.768	0.700

Source: Department of National Budget and Accounts.

Note: 1987/88 was a 15 month fiscal year, which the table adjusts to 12 months' equivalent.

Financing of Expenditure

2.16 The main features of public sector finance during the 1980s were:

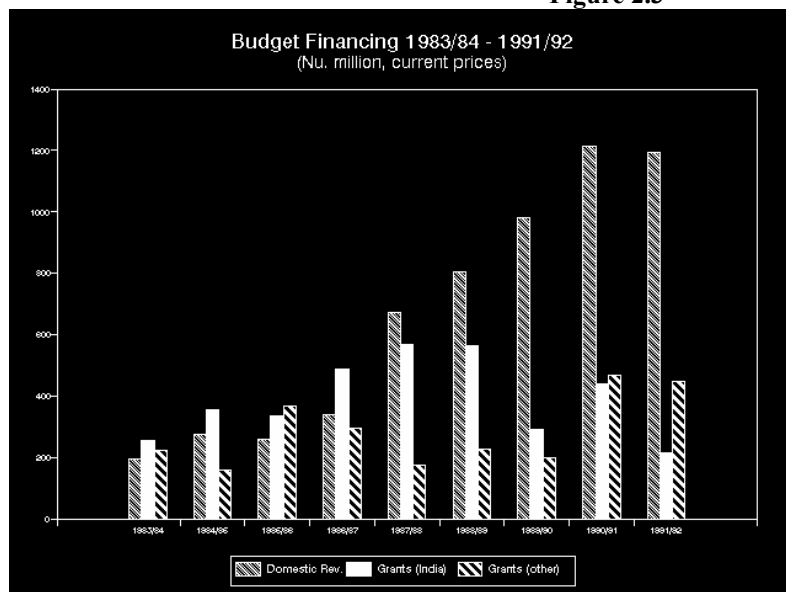
- With the emphasis on investment in the necessary infrastructure for the development of productive sectors, the ratio of public expenditure relative to GDP was high at 41%;
- Although the Government was able to increase domestic resource mobilisation from the Fifth Plan onwards this was largely the result of increases in public enterprise profits. Taxation contributed only 28% to domestic revenue in 1989/90. The majority of the population remained in the traditional subsistence economy, limiting the potential for collection of taxes in cash. Labour taxes and community labour contributions to construction of schools etc have meant that the rural population has made some contribution to the cost of infrastructure provision. Taxation is discussed further in Chapter 8 on Fiscal and Monetary Policy.
- A large gap continued between domestic revenues and RGOB expenditures, but as electricity exports from Chhukha began, domestic revenues grew faster than expenditures. It was therefore necessary to depend on external financing for a large proportion of the budget, as shown in Figure 2.3.

Aid Flows

2.17 While the First and Second Five Year Plans were financed almost entirely by the Government of India, from the Third Plan onwards other donors began to provide aid to Bhutan. Further details of aid flows and RGOB policy are described in Chapter 9. Until 1987/88 grants from India exceeded domestic revenues, but by 1989/90 domestic revenues amounted to more than the total of grants from all sources, as shown in Figure 2.3.

2.4. At the same time, Government expenditure continued to expand at such a rate as to result in large overall budget deficits which became increasingly difficult to finance without creating macroeconomic instability. The financing of expenditure is summarised in Table 2.5.

Figure 2.3



Domestic Revenues

2.18 The main features of domestic revenues in the 6FYP were:

- (a) A relatively small contribution from tax revenues; since 1986/87 the share of tax revenues in total domestic revenues has fallen from about 50% to just over 25%. only around half of total revenues prior to Chhukha). Direct tax revenues amount to only 5-6% of GDP, which is low by international standards.
- (b) Two thirds of tax revenues are from indirect taxes.
- (c) So-called "non-tax revenues", which mainly comprise surpluses/profits of public enterprises plus royalties and dividends, are very important. In 1989/90 non-tax revenues accounted for almost three quarters of the total, and revenues from the Chhukha Hydel Project alone accounted for one-third of revenues.

2.19 Domestic revenue has always fallen far short of total expenditure and only after Chhukha came on stream (1987/88) did domestic revenues first cover current expenditure. In 1987/88 there was a small overall budget surplus (comparing total expenditure against domestic revenues plus external grants), but in 1988/89 and

1989/90 there were large overall deficits, mainly financed by external borrowing in 1988/89 and by running down cash balances in 1989/90. In 1990/91 and 1991/92 the Government was forced to cut back sharply on expenditure in order to avoid an excessive overall budget deficit.

Table 2.5 Summary of RGOB Budgetary Operations

	1987/8 actual	1987/8	1988/9	1989/90	1990/1	1991/2
REVENUE						
Tax revenue	235.9	188.7	232.0	231.8	250.6	
Current non-tax revenue	491.6	393.3	480.0	586.9	640.7	1194.2
Other	114.2	91.4	93.0	161.4	319.7	
Total Domestic Revenue	841.7	673.4	805.0	980.1	1211.0	
EXPENDITURE						
Current	774.6	619.7	909.0	1068.5	1094.0	1027.6
Capital	965.1	772.1	1069.0	669.0	1135.5	932.7
Total Expenditure	1739.7	1391.8	1978.0	1737.5	2229.5	1960.3
Current exp. surplus/deficit (-)	67.1	53.7	-104.0	-88.4	117.0	166.6
Total exp. surplus/deficit (-)	-898.0	-718.4	-1173.0	-757.4	-1018.5	-766.1
Domestic revenue % of current exp.	108.7%	108.7%	88.6%	91.7%	110.7%	116.2%
Domestic revenue % of total exp.	48.4%	48.4%	40.7%	56.4%	54.3%	60.9%
GRANTS						
From India	708.9	567.1	564.0	290.2	440.6	213.8
Other	221.0	176.8	227.0	198.3	466.8	448.0
Total Grants	929.9	743.9	791.0	488.5	907.5	661.8
OVERALL BUDGET SURPLUS/DEFICIT (-)	31.9	25.5	-382.0	-268.9	-111.0	-104.3
Financed by:						
External Borrowings (net)	210.3	168.2	491.0	57.3	18.4	103.7
Internal Borrowings (net)	-242.2	-193.7	-109.0	211.6	92.6	0.6
Cash & bank balances						
Other						
TOTAL FINANCING	-31.9	-25.5	382.0	268.9	111.0	104.3

Source: RMA, Selected Economic Indicators, March 1991 (years to 1989/90); Ministry of Finance Budget Summary for 1990/91 and 1991/92.

For 1990/91 and 1991/92 it is assumed that the resource gap is covered by domestic borrowing.

2.20 It should be noted, however, that the tax burden on the economy is somewhat understated by the financial figures presented, because these figures do not include labour taxes. A typical household with a family size of 8.5 may be liable to a minimum about 40 person-days a year of various forms of labour tax, which represents a substantial in-kind contribution to public revenues. If the value of labour is assumed at Nu 40 per day and the number of households liable to pay labour tax is about 54,000, the value of labour tax would exceed Nu 86 m a year.

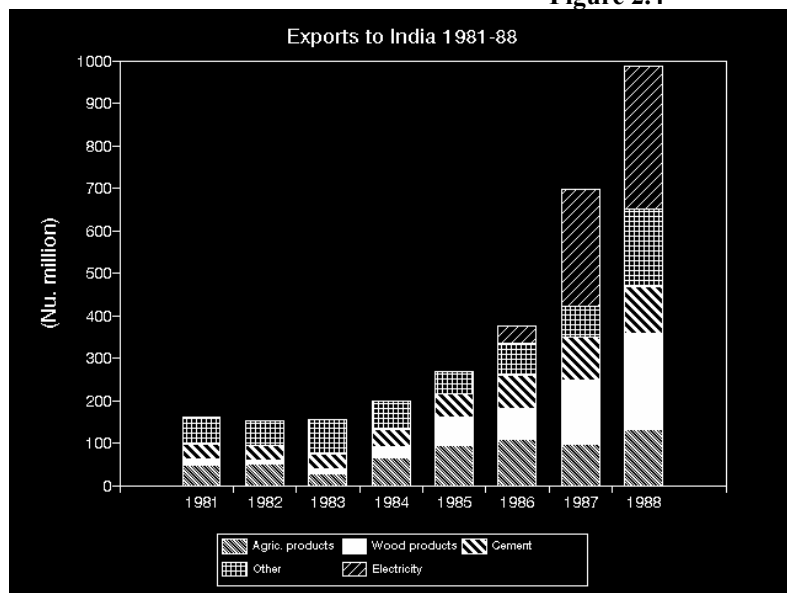
TradeTrade

2.21 Bhutan has a very open economy: in 1989 exports amounted to about 27% of GDP, while imports were 38% of GDP. Consistent with the high level of capital formation, Bhutan's imports have continually exceeded exports, although exports rose substantially from the mid-1980s. India is by far the dominant trading partner for Bhutan: it has been the destination for more than 90% of Bhutan's exports. New export markets were opened during the latter part of the 1980s, including Bangladesh. Bhutan's main exports are now electricity, wood products,

Economic Performance

agricultural products, including horticultural crops, and cement. Figure 2.4* indicates that the surge in exports was mainly due to the commencement of electricity sales from Chhukha, although there was also an increase in exports of wood and wood products during the same period. While the importance of India as a source of imports declined somewhat in the second half of the 1980s, 60—80% of Bhutan's imports continued to come from India by the end of the 6FYP.

Figure 2.4

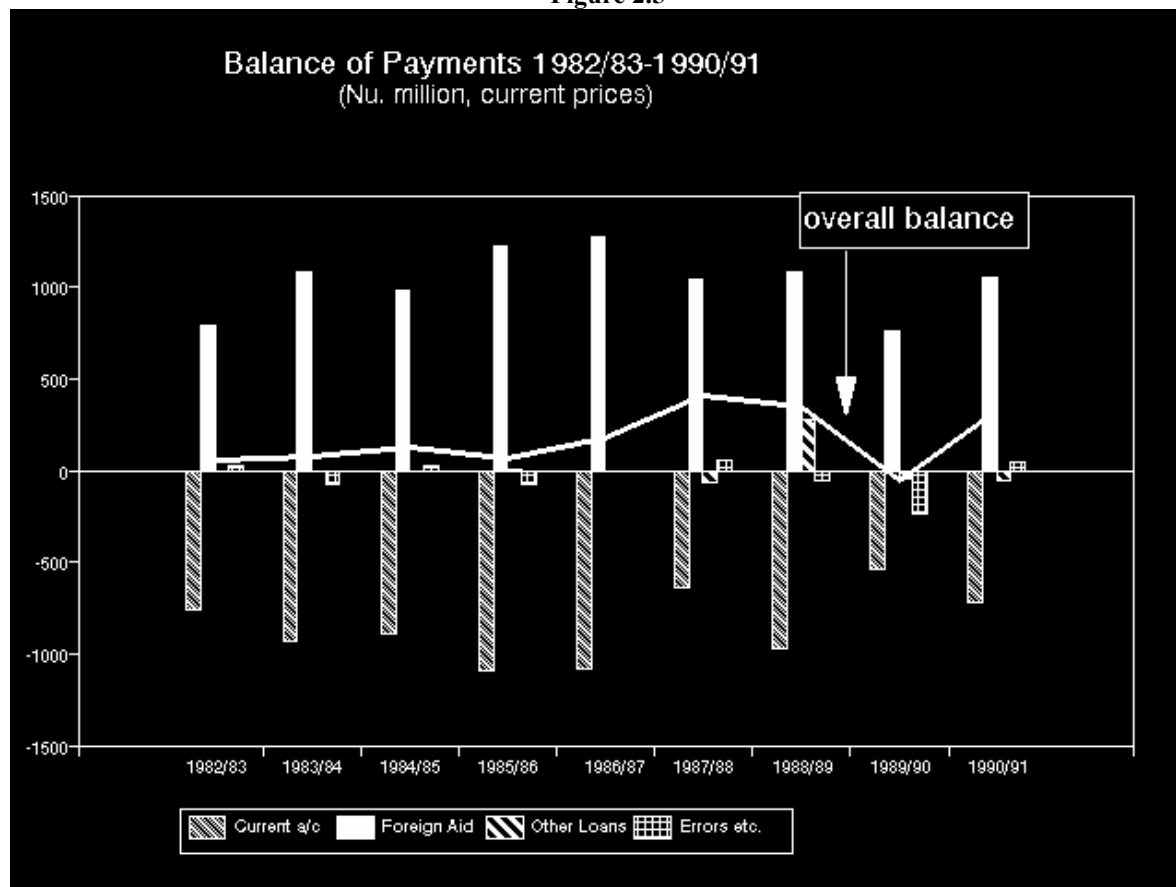


Balance of Payments

2.22 The trade balance continued to be in deficit throughout the period under review, ranging from Nu 769.6 m in 1985/84 to Nu 412.3 m in 1987/88 and an average of about Nu 625.7 m. Imports and exports grew at 12.5% and 36% per annum respectively. Export value showed a significant rise in 1987 due to the export of electricity. In general the values of exports for most commodities have increased over the years. The value of imports have shown substantial rise in recent years for petroleum products, rice and electrical equipments. In invisible trade (services and transfers), receipts were consistently lower than payments. The main items in receipts are: income from tourism and interest from Royal Monetary Authority deposits in India.

* Detailed statistics on trade with countries other than India have not been published.

Figure 2.5



2.23 Bhutan's trade deficit has been covered by inflows of foreign aid. Foreign aid ranged from Nu 989 m in 1984/84 to Nu 1086.3 m in 1988/89. Aid from India always exceeded the aid from other sources, underscoring the importance of India as the major donor. The overall balance remained in surplus throughout the period as shown in Figure 2.5, signifying an increase in the Ngultrum value of foreign exchange reserves. Only in 1988/89 did non-concessionary borrowing make a significant contribution to the financing of the current account.

2.24 Bhutan's foreign exchange position is strengthened not only by the volume of foreign aid received, but also by the fact that aid from donors other than India is denominated in convertible currencies, while much of the expenditure that it finances is denominated in rupees. As a result, Bhutan was able during the 1980s to build up substantial reserves of convertible currency. However, rupee reserves declined steeply in the later years of 6FYP.

2.25 The Ngultrum has remained pegged to the Indian rupee at par since its introduction. Consequently its value against convertible currencies has followed that of the rupee. Likewise, given the open border and common currency area between India and Bhutan, inflation in Bhutan closely mirrors India's, and has averaged around 10% p.a. during most of the 1980s. The value of rupee reserves tends to be exaggerated by the official exchange rate between the rupee and the US dollar; equally, the large decline in the dollar value of rupee reserves in 1991 reflected the devaluation of the rupee.

V. Economic Developments during 1989—91V. Economic Developments during 1989—91

2.26 Comprehensive economic statistics are not yet available for years later than 1989. This is unfortunate, since the second half of the 6FYP period saw a distinct deterioration in the economic and budgetary situation and significantly changed the outlook for the Seventh Five Year Plan.

2.27 Several factors contributed to the problems RGOB was facing as 7FYP was being prepared:

- (a) Economic growth tapered off after the spurt provided by the Chhukha project.
- (b) There was a decline in aid receipts from India, which tended to offset the boost to domestic revenues from

Economic Performance

electricity sales.

- (c) The momentum of Government expenditure growth continued, leading towards budget deficits.
- (d) The financing of the government deficit by borrowing from the RMA led to an increase in domestic demand, which quickly leaked into imports and started a rapid decline in Bhutan's reserves of rupees, as explained above.

2.28 Recognising the problem, and the need for macroeconomic stabilisation, the Government adopted a very restrictive budget for 1991/92. In planning for RGOB expenditures in the 7FYP, it has been necessary to take into account the factors described above. These are discussed in more detail in Chapter 7, Economic Outlook.

VI. Human Development Indicators

Table 2.6 Human Development Indicators

INDICATORS	MOST RECENT DATA IN 1991
Life Expectancy at Birth	48.9 years in 1990
Maternal Mortality	7.7 per 1,000 live births
Infant Mortality	142 per 1,000 live births
Under Five Mortality	195 per 1,000 live births
Child Malnutrition	50% of Children Under 5 severely or moderately underweight
Immunisation	84% of all Children in 1990
Access to Safe Water	40% of Households
Provision of Sanitation	60% of Households (large proportion unhygienic)
Access to Health Services	90% of Population
Gross Primary School Enrolment	66.9% of all children in 1990
Adult Literacy	30% Adult Males 10% Adult Females
Proportion of RGOB Budget	<u>6FYP</u>
Health	5.0%
Education	10.9%

2.29 While Bhutan was able to achieve impressive rates of GDP growth during the 1980s, with per capita GDP at about \$370 in 1991, the Government recognises that Gross Domestic Product is too narrow a measure of development. Improvements in the population's social welfare as measured by access to education, health and other social services are considered equally with increases in GDP. These key basic indicators of welfare ("Human Development Indicators" in UN terminology) are easily measured through comparison of health and education statistics, although the lack of data makes the interpretation of health and education data difficult. Other considerations also affect the quality of people's lives such as the preservation of social structures, including family life and religious institutions. However these considerations are less easy to quantify. The

fact that incomes are equitably distributed amongst the population, means that economic growth has achieved a wider spread of benefits.

2.30 Since the implementation of the First Five Year Development Plan, there have been substantial improvements in health and education services provided by the Royal Government. This has meant that 90% of the population had access to basic health facilities and the gross primary school enrolment rate reached nearly 70% by 1991. However, some of the HDI indicators remain particularly poor, as shown in Table 2.6 above.

2.31 These indicators show the low levels of safe water and sanitation facilities which account for the high levels

of Infant Mortality, while the constraints highlighted in Chapter 1: mountainous terrain, scattered settlements and lack of trained personnel, make the provision of social services to the whole population difficult.

2.32 Improving the quality of life for the whole population is one of the central objectives of the Royal Government's development approach as explained in Chapter 3. The Royal Government will set specific targets for some Human Development Indicators for the Seventh Five Year Plan period. Efforts will also be made to obtain reliable baseline data and establish monitoring systems in the relevant sectors. Sectoral chapters (especially those on Health, Education and Human Settlements) contain specific goals for improving Human Development Indicators, while the Chapter on Culture and Religion describes the strategy for preserving Bhutan's cultural and religious heritage.

CHAPTER 3

THE APPROACH TO DEVELOPMENT

I. Introduction

3.1 This Chapter outlines the role of the Royal Government in the development of the economy during the Seventh Five Year Plan and the overall aims and objectives to be pursued. The preparation of the 7FYP is also described, indicating the high degree of involvement of the population and all levels of Government in the planning process. The final section summarises the procedures for implementation and monitoring of the Plan.

II. Development Goals and Role of the Royal Government

3.2 Apart from the obvious objective of development: to increase GDP at the national level and incomes at the household level, development in Bhutan includes the achievement of less quantifiable objectives. These include ensuring the spiritual and emotional wellbeing of the population, the preservation of Bhutan's cultural heritage and its rich and varied natural resources. Although it is difficult to achieve progress for everybody at the same time, the Royal Government's development strategy is based on giving equal opportunities and equitable services to all members of society throughout the country.

3.3 Although the privatisation programme described in Chapter 2, will reduce the role of the Royal Government in productive activities during the 7FYP, the Royal Government will continue to play a substantial role in through the following activities:

- providing a framework of law and order which fosters economic activity;
- macroeconomic management, including regulation of the currency;
- management of Bhutan's international economic relations, including aid and trade;
- providing and maintaining basic economic infrastructure;
- providing and maintaining basic social infrastructure (education and health services), and developing the country's human resources;
- direct involvement in major enterprises (notably hydropower) where the Government is the custodian of the natural resources involved and/or the proposed development is on too large a scale to be accommodated by the indigenous private sector;
- generally, seeking a national consensus on development objectives and strategy and acting as the custodian of national interests.

3.4 The Government is able to take both a broader and a longer term view than individuals and firms normally can. The necessary measures and legislation will continue to be enforced to ensure that individuals' and firms' short term decisions do not have long term consequences that are nationally unacceptable (e.g. in environmental terms). At the same time, the Government will continue to invest in those activities necessary for the long term development of the economy which the private sector is unlikely to undertake. This may be due to the high risks involved, long pay-off period or because it is difficult to charge the beneficiaries: such activities include, for instance, agricultural and environmental research.

3.5 The Five Year Plan is largely focused on RGOB activities, not because these are ultimately more important than private sector activities but because these are the activities that come under the Government's direct control. The Plan also focuses on public sector revenues and expenditures — firstly, because public resources are limited and their allocation needs to be based on a consistent strategy, and, secondly, because the expenditures it undertakes and the revenues it raises are one of the chief links between the Government and the economy in general.

III. The Development Approach

3.6 As stated in paragraph 3.2, the overall aim of development is to raise the living standards of all the population, with due emphasis given to the quality of life as well as increasing incomes. While this is the usual objective of development as pursued by all developing countries, there are many means of achieving this goal. The Government, in consultation with the people and all levels of Government, has developed an overall approach based on six principles:

- self reliance

Approach to Development

- sustainability
- efficiency and development of the private sector
- people's participation and decentralisation
- human resource development
- regionally balanced development.

While being part of the overall development strategy, these principles are also reflected in the detailed policies and programmes of the sectoral chapters of this Plan. These are discussed in the paragraphs below.

Self-reliance

3.7 Although Bhutan's development has been greatly assisted by development cooperation with the Government of India and with other aid donors, the Royal Government is determined not to perpetuate dependence on external assistance. Efforts are thus being made and will continue during the 7FYP to increase Bhutan's own technical capacity, through human resource development and through effective technology transfer. In addition, the ability to finance RGOB activities continues to remain a priority, particularly self-sufficiency in the recurrent and the Royal Government recognises the need to increase domestic revenues. Chapter 8 indicates the taxation and cost-recovery measures that RGOB will pursue. Reducing dependence on aid will also require increased domestic savings and investment: Chapter 8 also outlines proposals for the further development of Bhutan's financial institutions. Where capital requirements exceed the resources available locally, Bhutan will welcome foreign investment, although collaboration with foreign investors will be decided on a case by case basis.

3.8 Self-reliance does not mean that Bhutan will aim to produce all its requirements but that the Government will encourage the production of those goods and services that can compete in export markets. The revenue earned will provide for the import of goods and services that cannot be efficiently produced in Bhutan. The same principle applies to *food security*: whereby every household should be able to produce its food requirements or obtain income from other sources to purchase sufficient food to ensure that every household member is always adequately nourished. Chapter 17 (RNR) spells out Bhutan's strategy for achieving national and household food security during 7FYP.

3.9 The concept of self-reliance also applies at the household and community level. The RGOB approach to development means that individuals and communities are involved in identifying their needs and priorities, with the role of central government being to assist in meeting these needs. This relates to the fourth principle: people's participation.

Sustainability

3.10 Increasing incomes in the long run is dependent on the ensuring the sustainability of production: i.e. that short run growth does not jeopardise the country's ability to expand production in the future. The sustainable utilisation of natural resources is of major importance in a country where the majority of the population remain dependent on agriculture for incomes and employment and where a wide range of valuable species remains largely intact. Environmental considerations affect every sector, and the policies related to environmental sustainability are spelt out in Chapter 4.

3.11 The sustainability of raising living standards is also dependent on the population growth rate, as increases in GDP can be offset by high rates of population growth thus reducing per capita GDP. Increasing population is also one of the main determinants of pressure on natural resources. The Royal Government therefore regards reducing the rate of growth of Bhutan's population as an important aspect of the strategy for sustainable development. The Royal Government through the National Assembly will consider adopting a family planning policy which will aim to curb the population growth below 2% by the year 2000.

Efficiency and Development of the Private Sector

3.12 Limited financial and human resources are the major constraint to raising living standards. One of the ways of addressing this constraint is to make more effective utilisation of existing resources through improving the efficiency of both the private and Government sectors. The Government will therefore encourage increased efficiency in the utilisation of resources through the implementation of the following measures in the economy as a whole:

- the continuing privatisation programme and minimising RGOB intervention in private sector decision making;
- when intervention is necessary, avoiding arbitrary administrative controls, making clear the rules that will be applied, and relying more on tax and price incentives than on quantitative restrictions;

- promotion of appropriate technological innovations (in the country's internal and external telecommunications, for example); and
 - human resources development programmes which take account of private as well as public sector skill requirements.
- 3.13 For Government itself, measures to maintain and increase efficiency will include:
- concentration on well-defined priorities, and adopting standards (of services and facilities) that correspond to what Bhutan can presently afford in the short and medium term;
 - limiting the size of the public service, while ensuring high standards of productivity;
 - improving the coordination within Departments and between Ministries, to ensure that related activities are implemented in an integrated manner and avoid duplication of effort and resources;
 - setting and monitoring performance targets;
 - establishing appropriate management structures for enterprises which remain in the public sector, so that they can operate on quasi-commercial lines; and,
 - appropriate assignment of responsibilities and resources between the different levels of government (see next paragraphs).

People's Participation and Decentralisation

3.14 As noted above, the Royal Government is determined that all regions and groups in the country should benefit from development. Popular participation in the planning and implementation of development is a way of ensuring that plans take account of popular concerns, draw on local knowledge and mobilise local resources for development. The consultative process in preparing the 7FYP is outlined in Section IV.

3.15 The RGOB has also made considerable efforts to decentralise administration and planning since the beginning of 5th Five Year Plan in 1981. Dzongkhag Yargay Tshogchung were created in all the 18 dzongkhags which consist of elected members of the dzongkhags including gups, chimis and community leaders as well as dzongkhag authorities. In the 6th Plan, the process of decentralisation was taken further with the operation of Zone IV in Eastern Bhutan and the establishment of 119 Gewog Tshogpas at the command of His Majesty the King. The Gewog Tshogpas will widen the base of decision making to the grassroots level.

Development of Human Resources

3.16 People are Bhutan's most important resource. Human resource development is both an end in itself — since better health and education enable people to live more fulfilling lives — and a means of increasing Bhutan's development potential. The strategy for the Seventh Five Year Plan is (a) to ensure the widest possible access to basic health and education, while (b) selectively investing in the much more expensive development of higher skills and secondary level health facilities (see Chapter 11,13 and 12 on Education, Health and Human Resource Development respectively).

3.17 Although women are accorded equal status in Bhutanese society, their circumstances often place them at a disadvantage — they are much less likely than men to complete their schooling for example. Children's welfare strongly depends on the health and education of their mothers. Realising Bhutan's full human potential as well as ensuring that the whole population benefit from development, requires special efforts to involve women in development, (see Chapter 5).

Regionally Balanced Development

3.18 As one of the objectives of the 7FYP is to provide equal benefits to the whole population, efforts will be made to ensure a uniform spread of development in all parts of the country. As it was mentioned in Section II, progress cannot be achieved for all the people at the same pace. The economic potential of each area has an important role in determining its economic development. However, the Royal Government also recognises that private investments often follow to a place where government has made initial investments in terms of communication and other infrastructural investments. The Royal Government will therefore promote a reasonable degree of balanced development through various fiscal and other instruments, including incentives to encourage the establishment of industries in less developed areas. This objective will also be pursued quite clearly in the provision of basic health and primary education services.

IV. The Planning Process

Approach to Development

3.19 The formulation of the overall approach to development and strategies for achieving the objectives, and their transformation into sectoral and macro plans began almost two and half years before the plan began i.e. in January 1990. A time table on planning process was agreed by the Planning Commission Secretariat, Ministries and Departments, Zones and other agencies. By January 1990, the Planning Commission Secretariat had circulated policy guidelines and provisional budgets to the Ministries, Departments, and other agencies of the government. The guidelines incorporated the recommendations of Mid-term Review of the 6th Plan undertaken in October 1989 and were further expanded by the sector Ministries before they were finally circulated to the zonal authorities who coordinated the dzongkhag planning process.

3.20 To formulate the dzongkhag plans, a broad process of consultation took place with Dzongkhag Yargay Tshogchung. People's views on the needs, opportunities and economic potential of their dzongkhag were obtained. The dialogue during the planning process was important for responding to the people's priorities but also to obtain their commitment to the success of projects and programmes through their contribution of resources such as labour for construction and maintenance of infrastructure.

3.21 Based on the priorities identified, Dzongkhag plans were prepared and submitted to all Departments and Ministries. The proposals were integrated into sectoral plans and revised in the light of constraints such as manpower, equipment, etc. The finalised plans were then submitted to the Planning Commission Secretariat for prioritisation and integration into a national Plan, with close liaison with Ministries and Departments. The Ministerial budget requests were aggregated by the Planning Commission and reduced to match resource projections. The Technical Committee of Planning Commission and Policy and Planning Divisions of the Ministries reviewed the draft document to arrive at broad level of consistency. Once the sectoral budgets were agreed, the dzongkhag plans were revised accordingly and reviewed by His Majesty the King with the people in each dzongkhag.

V. Implementation and Monitoring of the Plan

3.22 Even for the functions performed directly by the Government, the Plan cannot aim to act as a rigid five-year blueprint, but rather a means of securing consensus on objectives and priorities, and of developing consistent strategies to achieve these objectives. The Plan provides a framework for the policies to be followed and for the allocation of resources during the Plan period. However it is not possible to provide for all changing circumstances in the Plan, and adjustment will have to be made where necessary during the course of the Plan. This will be achieved largely through the annual budgets, with close liaison between the Planning Commission and the Ministry of Finance to ensure that the budget reflects Plan priorities. The 7FYP has been prepared in a consultative manner, and similar procedures will be involved in the monitoring and updating of the Plan during its implementation.

3.23 In addition to the annual budget exercise, other improvements are being made to the planning capabilities of the Royal Government. For example, the Planning Commission was reorganised towards the end of the 7FYP, and Policy and Planning Divisions (PPDs) were established in all Ministries. In addition the data collection and monitoring capacity of the Royal Government and in particular, the Central Statistical Organisation (CSO), will be strengthened during the 7FYP, through absorption of Statistical Units from other Ministries and Departments, to improve the coordination of data collection and analysis. The Computer Support Centre will be similarly strengthened through training and equipment, and will be responsible for providing technical support to user Departments and establishing computer Local Area Networks to enhance coordination and exchange of information between and within Departments. The National Environment Secretariat will be responsible for ensuring that all Ministries pay sufficient attention to environmental issues in their programmes. (see Chapter 21)

3.24 The outlook for the economy in the 7FYP is discussed in Chapter 7, including forecasts of growth and identification of those sectors with greatest potential. Based on these forecasts, RGOB expenditure and revenue targets are also presented. The allocation of Government funds based on the objectives outlined in this Chapter will also be summarised. The following three Chapters provide more details of RGOB strategies on the environment, the involvement of women in development and privatisation.

CHAPTER 4

ENVIRONMENT AND SUSTAINABLE DEVELOPMENT ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

I. Status of the EnvironmentI. Status of the Environment

4.1 Bhutan is in a rare, possibly unique position amongst developing countries, in its preservation of a wide base of natural resources. Bhutan is also one of the countries with the greatest biological diversity, not only in terms of a large number of species, but also several species unique to Bhutan's environment. However, knowledge of the status of these species is limited as there have been few studies on Bhutanese flora and fauna.

4.2 The preservation of natural resources has been possible because of Bhutan's recent entry into the economic development process, the cause of environmental degradation in many developing countries. The maintenance of a traditional subsistence economy enabled preservation of the environment until the 1960s and despite economic growth rates of 7.5% in the last decade, the natural resource base has remained largely intact. This has been the result of the RGOB's cautious approach to development and awareness of possible negative impacts on the environment. In addition, the fact that hydroelectric power has been the major source of economic growth has meant that development has had little impact on the environment to date.

4.3 The Buddhist faith, which plays an important role in all aspects of Bhutanese life, also stresses respect for all forms of life and thus the preservation of natural resources. Traditional subsistence farmers have developed environmentally sustainable practices over the centuries, which have only recently come under pressure from changes resulting from economic growth and population increase.

4.4 Because of Bhutan's fortunate position, it is still possible for the RGOB to plan for the sustainable development of the economy, with great caution and learning from the experiences of other countries. Both developed and developing countries have become increasingly concerned about the degradation of the environment and have sought ways of achieving growth without placing further pressure on their natural resources and the global environment. In an effort to develop long term strategies on the environment, the World Commission on Environment and Development was constituted in 1987. One of the major contributions of the Commission has been the popularisation of the concept of sustainable development:

"to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept does imply limits- not absolute limits but limitations imposed by the present state of technology and social organisation on environmental resources and by the ability of the biosphere to absorb the effects of human activity. But technology and social organisation can both be managed and improved to make way for a new era of economic growth."

II. Environmental ConcernsII. Environmental Concerns

4.5 While Bhutan has been successful in maintaining its stock of natural resources, the Royal Government is concerned that development may lead to certain trends which are likely to have negative impacts on the environment:

- The rate of population growth will be accelerated by better health programmes resulting in lower child mortality and longer life expectancy.
- It has been estimated that virtually all land suitable for arable production is being utilized. As the population increases, there will be greater pressure to open new, more marginal areas for production. This may lead to

Environment and Sustainable Development

degradation of less productive land, particularly as this land is likely to be on steeper slopes and more susceptible to erosion. The need to increase food production may also result in over-utilisation of existing areas and introduction of environmentally damaging practices such as excessive use of chemical fertilisers.

- As population and incomes increase, the demand for livestock products will rise. Although livestock numbers have not increased significantly in the past decade, further expansion of the national herd, may lead to deterioration of grazing resources and reduction in the regenerative capacity of the pastures.
- Although most of the country's original forest cover is still intact, increasing population will place additional demands on the resource for grazing, fodder and firewood, for non-wood forest products and building materials. The per capita consumption of fuelwood is among the highest in the world (2.4 cu.m/pa). Until the late 1970s the commercial logging of wood by sawmills had been indiscriminate and was leading to over-exploitation in some areas. To address this problem the RGOB nationalised logging activities and substantially reduced the annual cut. However the scale of the problem is insignificant as shown by recent studies of the temperate and subtropical zones which revealed that the annual loss of forest cover is between 0.30% and 0.33% over a 10 year period (1978-88).
- The construction of the road network may have caused severe erosion in some areas. In such a geologically unstable environment, further road construction is likely to cause additional erosion problems. The provision of additional road infrastructure will also open new areas for development, where environmental problems may occur if not properly planned.
- The planned development of industrial and mining sectors may result in environmental damage and pollution. The scale of the problem is small at present, largely because these sectors are undeveloped.
- The rapid expansion of urban areas and human settlements has not been based on sufficient planning and development of sanitation, drainage and waste disposal infrastructure, and this is resulting in public health problems in some areas.

4.6 While there is concern that these problems may arise, the RGOB recognises that there has been little research into these issues or even baseline data from which to determine the nature and extent of environmental problems in Bhutan. It is important to recognise that these trends may not occur as feared, or that different forms of environmental degradation may be taking place, and therefore avoid inappropriate responses to presumed environmental concerns, which may in themselves be damaging to the environment or hamper economic growth. This may be the result of, in the absence of detailed data, assuming that the environmental degradation occurring in neighbouring countries will be repeated in Bhutan, without examining the situation more closely. There is also insufficient understanding of the impact of the development process on the environment.

III. Sustainable Development in Bhutan

4.7 Bhutan's approach to sustainable development was articulated in the Paro Declaration of 1990:

"The key is to find a development path that will allow the country to meet the pressing needs of the people, particularly in terms of food, health care and education, without undermining the resource base of the economy. New industries, new agricultural markets, and new forestry products need to be carefully developed, with respect to their broader environmental ramifications...Sustainable development, we believe, is a concept that is in harmony with the cultural and religious traditions of Bhutan. Our nation already has a strong conservation ethic, and indeed, respect for the natural world is a central tenet of Buddhism. It is therefore essential that the traditional culture be kept strong so that its values can guide our sustainable development path."

4.8 The RGOB recognises that it is not necessary to restrict economic growth to ensure preservation of the resource base, but that utilisation of resources in a carefully managed manner, will provide sufficient incentives to ensure that natural resources are not depleted. To achieve the sustainability of resource utilisation, it is necessary to monitor the impact of development on the environment and to provide the necessary controls, regulations and incentives to the private sector.

IV. Environmental Policies and Programmes

4.9 Because of the lack of baseline information and detailed research data, it is not possible to draw up detailed programmes to address environmental problems. It will thus be necessary to make these types of studies a priority.

4.10 While detailed programmes will be based on the above information, the RGOB is the process of developing the following broad measures:

General Policies

- Formation of a National Environment Secretariat with responsibility for the formulation of a National Environment Strategy, coordination of all environmental activities and monitoring of the environmental impact of development.
- Establishment of an Environmental Trust Fund: an endowment fund from which the benefits will be used for environment related activities. Several donors have pledged funds and the Fund will become operational once the total funds pledged reach \$10 million.
- Increasing community and non government involvement in the planning and implementation of environmental activities. The process of decentralisation will enable greater participation of the population in developing appropriate responses to environmental problems.
- Improving existing and introducing new legislation and policies to ensure sustainable utilisation. Forestry legislation has been continually updated since the first Bhutan Forest Act was introduced in 1969. The proposed 1991 Forest Act will build on the reorientation of forest policy towards conservation and will include new provisions to encourage community forestry. The Act will be implemented on the completion of the cadastral survey of the country. A draft National Pasture Policy has been prepared and is under consideration by the RGOB. A draft of the Mining Regulations will be finalised during the 7FYP and will include regulations to prevent negative environmental impacts.
- Preparation of Master Plans for many sectors of the economy: e.g. Forestry, Power, Roads. These plans will ensure the development of the sectors in a carefully planned manner which will minimise environmental impact and ensure utilisation of natural resources on a sustainable basis.
- Use of economic incentives to encourage sustainable utilisation, for example the introduction of a progressive cattle tax to reduce incentives to hold cattle.

Policies in the Natural Resource Sector

- Developing an integrated land-use planning capability to provide the necessary information for planning of sustainable development in the agricultural sector. The activities of the Departments of Agriculture, Forestry and Animal Husbandry will be integrated in recognition of the interdependence of these sub sectors at the farm level. This will be achieved through the Renewable Natural Resource Development approach, which will be the main strategy for land based development. The benefits and constraints of traditional practices will also be examined and developed for further productivity increases, in close cooperation with farmers. Thus it will be possible to make use of the accumulated wisdom in agricultural production, rather than depending on the introduction of new farming systems.
- Building on existing resource management practices, rather than adoption of new control mechanisms. There are well established institutions for the management of common property in Bhutan, including forestry, irrigation water, and grazing resources. These should be relied upon and adapted to changing circumstances to ensure the development of responses which are socially acceptable and ecologically viable. The introduction of new resource management practices and controls have often been the cause of environmental degradation in themselves.

Environment and Sustainable Development

- Encouraging farmers to improve livestock productivity through breed improvement and thus reduce the numbers of livestock required to produce the same benefits. This will relieve grazing pressure in addition to efforts to provide other sources of feed through fodder production and improved grazing systems.
- Implementing a conservation-oriented forest policy where the highest priority for forestry is conservation of soil, water regime and climate. The aim of this policy will be to maintain 60% of forest cover. The sustainable utilisation of forest resources will also be permitted once the necessary inventories and management plans have been drawn up. Bhutan was among the first countries to formulate a National Policy on Community Forestry and is in the process of developing suitable models to encourage communities to take part in the protection and management of forest resources. The Forestry Department has also been responsible for afforestation of degraded areas and had replanted over 18,000 hectares by the end of the 6FYP. This programme will continue into the 7FYP and will focus more on community participation and public awareness.
- Preserving Bhutan's rich endowment of biodiversity through an extensive network of 12 protected areas; 20% of the country is under formal protection, although management of these areas is constrained by lack of staff and hunting of wildlife has been banned (see Map 4.I Protected Areas). The viability of managing these areas will be examined, to determine the benefits of re-delineating some areas to establish a network of protected areas, covering 25% of Bhutan and representing a more comprehensive spectrum of species and habitats. Management Plans for protected areas will be developed, and will incorporate utilisation of the natural resources by local residents where appropriate.

New Technology

- Ensuring that economic development is based on the growth of those sectors and productive activities with the least negative impact on the environment. Much of the recent economic development has been based on hydroelectric power generation, which is less likely to have negative impact on the environment than development of heavy industry. The priority accorded to this sector will continue during the 7FYP, while ensuring that further developments do not have a negative impact on the environment. Environmental Impact Assessments will therefore be mandatory prior to the implementation of any new hydroelectric projects, as well as all projects in other sectors of the economy.
- Adoption of new technologies which minimise any negative impact on the environment. As industrial development is at an early stage and has thus had limited or no negative impact on the environment, Bhutan can take advantage of new technologies being developed that are less environmentally damaging than those developed and adopted by many other developing countries in previous years.

Social Services

- Preparing a comprehensive family planning policy,
- Improved urban and town planning which will ensure provision of necessary infrastructure to improve public health and the urban environment.
- Developing a new formal education system which will enhance the understanding of the importance of sustainable development for Bhutan. The New Approach to Primary Education (NAPE) was developed for Bhutanese children of primary age and is oriented towards using practical observations of the environment as a teaching tool in all subjects. This approach will therefore greatly increase environmental awareness at an early age. Other public awareness activities will be developed by the NES.

CHAPTER 5

WOMEN'S INVOLVEMENT IN DEVELOPMENT WOMEN'S INVOLVEMENT IN DEVELOPMENT

I. The Status of Women in BhutanI. The Status of Women in Bhutan

5.1 Women in Bhutan constitute 48% of the population. Bhutanese women enjoy considerable freedom and are treated equal to men under the law. There is no overt discrimination on the basis of gender. Some women play a vital role as men in the rural and urban economy. A few women hold managerial positions in the public and private sectors. Married women who are not employed in the formal sector can often generate as much income as their husbands, in addition to being housewives.

Access to ServicesAccess to Services

EducationEducation

5.2 There is important gender difference in enrolment of boys and girls: approximately 60% boys compared to 40% girls. This disparity is being reduced with the establishment of community schools which are located closer to communities and thus involve less time for children to reach school. The parental concerns regarding girls' safety as mentioned above can thus be addressed. Some parents also consider formal education to be irrelevant to the needs of women's lives, and education can be considered as a luxury. The dropout rate from school is also higher for girls. While the adult literacy rate is 20%, the female literacy rate is estimated at below 10%. The existence of the low literacy rate for women hinders the process of communicating important issues of health, sanitation, hygiene and involving women in income generating programmes.

Health Health

5.3 Women face greater health risks than men, particularly as childbirth places greater stress on many women who are undernourished, anaemic and suffering from iodine and vitamin A deficiencies. Despite impressive improvements in the provision of primary health care, the maternal mortality rate remain one of the highest in the world at 7.7 per 1,000. The majority of women still give birth at home and are not attended by a trained health worker, thus increasing the risks further.

5.4 There are positive signs that the promotion of disease prevention, improved sanitation and hygiene are proving effective. Attendance of Mother and Child Clinics is on the increase. However, the low ratio of female health workers: 69 women to 729 men in 1989, does restrict the use of these services by women.

Gender Division of LabourGender Division of Labour

5.5 There is a strict division of labour at the household level with women being responsible for all household chores. Both sexes are responsible for child care.

AgricultureAgriculture

5.6 The majority of women in Bhutan are involved in agricultural production. There are few comparative studies of division of labour between the sexes. However, it would appear that the participation of women in the different agricultural activities varies between different regions. Women are usually not responsible for ploughing but both men and women prepare and cultivate the land, weed, harvest, thresh, winnow, broadcast the seeds and transplant the seedlings.

5.7 The low levels of literacy amongst women also hinders their access to credit for agricultural production. The Ministry of Agriculture provides extension services to both men and women, and have placed special emphasis on reaching women. However, as in the case of health services, the majority of extension workers are men, which

Women's Involvement in Development

restricts women's access to these services, for social reasons.

Formal Employment

5.8 In addition to the agricultural sector, 0.25% of women are employed in the service sector, 0.27% in business and 0.18% in other areas of work. Information on women's participation in the industrial sector is not available.

5.9 Women form 14% of the Civil Service, where there is no discrimination in pay, compensation or benefits between the sexes. Although the provision of maternity benefits is not enforced by law, the rules of the Royal Civil Service Commission provide 3 months of maternity leave for the first 2 children. There is a slight difference in pay for unskilled workers where women get paid less than men.

Self Employment

5.10 In urban areas women are active in retailing and real estate speculation. In rural areas, one of the few options for income generation outside agriculture is weaving. Weaving is the main activity for women in the central and eastern parts of the country during the winter months, when there is less agricultural work. There are several difficulties in income generation from weaving particularly related to marketing. Many women produce woven fabrics in remote areas where the local market is limited and the transport costs to larger towns are high. The national demand for the fabric is also relatively small and the potential for export has not been assessed. The lack of raw materials such as yarn and related facilities of dyeing and market outlets for other products such as wood, bamboo and cane crafts serve as major constraints.

II. Institutions

National Women's Association of Bhutan

5.11 The National Women's Association of Bhutan (NWAB) came into being on 9th April, 1981 by the resolution passed by the 53rd session of the National Assembly. NWAB was first established as an NGO, functioned as a non-ministerial Department from 1985 to 1991, when the organisation reverted to the status of NGO. The National Women's Association of Bhutan undertakes the promotion of improvements in the socio-economic conditions of women throughout Bhutan through identifying the constraints that women face and appropriate solutions. Many of the activities of the NWAB are carried out by voluntary Women's Association Members both in the capital and in the Dzongkhags, while the headquarters staff act as a link between the RGOB Ministries and the Dzongkhag Women's Associations of Bhutan. There are a total of 407 voluntary members.

5.12 The NWAB has established several income generating programmes in selected areas. Training has been provided to improve technical skills, in weaving, knitting and tailoring. Short term credit has been given and market outlets provided through the Handicraft Emporium in Thimphu. Raw materials supply has been improved through the establishment of yarn depots and sub depots. These activities have provided women with an additional source of income, although the marketing constraints referred to above persist.

Royal Government Programmes

5.13 The NWAB has worked closely with RGOB Departments to ensure that women are included in relevant programmes and projects. In addition, the Government has developed programmes directed specifically at women. For example, leadership training programmes have been initiated to promote health and hygiene, through the production of "Facts for Life" booklets and to raise women's awareness of their potential role in development. The women trained in turn train other rural women. This programme was found to be effective in beginning to bring the women into the main stream of national development. A smokeless stove project was launched and a total of 13,564 stoves were installed in the rural areas. Since 1989, this project has been transferred to the Department of Works and Housing.

III. Policies to Ensure the Participation of Women III. Policies to Ensure the Participation of Women

5.14 During the 7FYP, the RGOB and the NWAB will continue to promote the participation of women in the development process, and ensure that they obtain equal benefits from progress, in line with the overall objectives as described in Chapter 3.

RGOB Policies and Strategies

5.15 While the NWAB will play a major role in promoting the interests of women, all RGOB Ministries and Departments will include the participation of women as one of their objectives. In this way, the participation of women in all sectors of the economy will be ensured. The following strategies will be implemented by Government Ministries and Departments:

- (a) Women and girls will one of the priority target groups for the provision of health and education services, in recognition of the lower school enrolment rates of girls and the fact that women's health is more at risk. Adult education will also be targeted at women as higher literacy rates facilitate improvements in health and hygiene practices.
- (b) Efforts will made to include women in the mainstream of development, rather than relying on traditional "women's" activities to improve their social welfare. New income generating activities suitable for women will be identified and developed as the potential for significant income generation from weaving may be limited. The Department of Trade and Industry will encourage the involvement of women in the development of agro industries, particularly food processing and essential oil distillation which appear to hold significant potential.
- (c) The employment of women agricultural extension agents and Village Health Workers will be increased, to encourage women to make greater use of Government services.

National Women's Association of Bhutan

5.16 Although the NWAB has become independent of Government, the Association will continue to work closely with the relevant Departments and implement programmes with the following objectives:

- (a) To strengthen the organization at the headquarters and the Dzongkhag levels. Institution building and manpower training will be given high priority.
- (b) Collection and analysis of data on women through detailed surveys on their socio-economic conditions for future planning and policy making.
- (c) Vocational training, basic skills and literacy, nutritional and health training to encourage self-reliance and to promote women's role in the mainstream of national development.
- (d) Encourage women to make use of rural credit facilities for income generating activities.
- (e) To promote weaving and other traditional handicrafts and to provide an additional source of income through the creation of market outlets. Surveys will be undertaken to assess the market potential for woven products and handicrafts.

PRIVATISATION AND PUBLIC ENTERPRISE MANAGEMENT PRIVATISATION AND PUBLIC ENTERPRISE MANAGEMENT

I. BackgroundI. Background

6.1 The Royal Government has played a leading role in the modern sector of Bhutan's economy. This has extended beyond the traditional governmental roles (law and order, physical infrastructure and social services) and has included direct involvement in many commercial enterprises. Government had to take the initiative, given the shortage of indigenous entrepreneurs and capital in the kingdom.

6.2 Table 6.I gives an idea of the range of RGOB involvement in various enterprises. They vary widely in size, in strategic significance, and in their formal status (some are incorporated bodies in which RGOB holds shares, while others are run less formally within government departments). One indicator of the significance of such enterprises is that they account for more than half of RGOB's domestic revenues. Even before revenues from electricity sales became significant, various receipts from Government enterprises accounted for almost 40% of domestic revenues.

Privatisation

Table 6.1 Profile of Public and Joint Sector Enterprises

Name of Enterprise	Year Estab.	Share Cap. Govt%	Number of Employee	Turnover Nu.mil	Current Managmt
Bhutan Tourism Corp.	1974	100	-	48.21	Govt.
Handicrafts Dev.Corp.	1974	100	-	5.50	NWAB
Shumar Gypsum Mines		100	22	11.96	Govt. (PCA)
Sha Slate Mines		100	37	0.55	Govt. (DGM)
State Trading Corp. of Bhutan		100	-	133.49	Govt.
Army welfare Project	1979	100	232	91.32	Govt.
Penden Cement Authority	1981	75	583	140.90	Govt.
Gedu Wood Manufacturing Corp.	1987	40	347	19.33	Private
Bhutan Polythene Company	1987	Govt.75 BDFC.25	37	18.54	Govt.
Penden Drukpa Coal Company	1988	PCA 80	20	-	Private
Bhutan Carbide & Chemicals Ltd.	1989	36	522	178.18 U	Private
Bhutan Board Products Ltd.	1990	62	114	60.19 U	Private
Bhutan Ferro-Alloys Ltd	Constr phase	25	324	259.50	Private

Note:

- 1 Turnover and net profit figures relate to 1990, unless otherwise indicated.
- 2 U indicates that the figure is based on unaudited accounts.
- 3 B and E indicate before tax and estimated figures respectively.
- 4 April 1990 employment figures have been included. The employment figures for BBPL, Shumar Gypsum Mines and Penden Duuckpa Coal Company do not include casual labourers.
- 5 In the joint sector or projects with major government share holdings, the term "private" only indicates management by the private sector.
- 6 Year of establishment indicates the first year of commercial production.

6.3 However, the Royal Government recognises that businesses are usually better run by businessmen than by governments. It is committed to the development of a flourishing private sector in Bhutan, and intends, over time, to limit RGOB's direct involvement in enterprises as the capacity of the indigenous private sector increases. Accordingly, it has begun a programme of privatisation, which will continue during the Seventh Five Year Plan. This Chapter explains the objectives of the privatisation programme.

6.4 Although most of the enterprises currently in the public sector will eventually be privatised, there are some which, for strategic or practical reasons, will remain under Government control, at least for a considerable period. These enterprises will be provided with a management structure and operating framework that encourages efficiency whilst ensuring that they operate in the national interest. There will also be efforts to encourage private sector initiatives in the provision of social services (private schools and health facilities), and government will contract out to the private sector many functions where this seems likely to be the most efficient and effective mode of provision. Government assets, such as employee housing, will be sold off whenever appropriate. However, the Government will take steps ensure that privatisation does not lead to the concentration of ownership and

unacceptably high inequalities of income distribution.

6.5 The Ministries chiefly involved in managing the privatisation programme are the Ministry of Finance and the Ministry of Trade and Industry, which oversees many of the commercial enterprises which are priorities for privatisation. However, as Table 6.I indicates, a number of other Ministries and departments also have responsibilities for public enterprises within their sectors.

Developments during FYP6

6.6 In order to promote a suitable institutional and legal environment for privatisation, Government passed "The Companies Act of Kingdom of Bhutan, 1989". Many enterprises, including public enterprises have been already incorporated under the Companies Act. For instance, Druk-Air Corporation and Bhutan Polythene and Pipe Company have been registered under the Companies Act so that the management decisions such as recruitment and salary fixation need not follow the Royal Civil Service Rules, thus giving the management freedom to act in the interest of enterprise's efficiency. All companies which have more than one owner have to be registered under the Companies Act.

6.7 The privatisation of Gedu Wood Manufacturing Corporation was the most significant activity during the 6FYP. Privatisation of this corporation took place in February 1990 and its management handed over to a private entrepreneur who owns 41% of the shares in the Corporation. The Government, other private companies and employees of the Corporation own the remaining shares. The Bhutan Tourism Corporation and Bhutan Polythene Pipe Company had also been privatised by the end of the 6FYP. In addition, the Government was in the process of selling most of its shares held in many industries including Bhutan Calcium Carbide Limited, Penden Cement Authority.

Policy Objectives

6.8 The objectives of the Royal Government's strategy of privatisation include:

- (a) ensuring the efficient management and operation of enterprises, and thereby promoting economic growth;
- (b) limiting the role of Government, so that it can concentrate on activities where there is not an adequate private sector alternative;
- (c) fostering indigenous entrepreneurial and management expertise; and
- (d) providing increased opportunities for saving and investing within the Bhutanese economy.

6.9 The Government is fully committed to the privatisation strategy. As indicated in the previous section, a substantial number of privatisations have already taken place. In future, RGOB will look for private sector involvement from the start of new ventures and encourage foreign investment though these will be welcomed on the basis of case by case consideration. Measures to encourage investments and to support indigenous entrepreneurs are described in Chapter 18 on Manufacturing and Trade.

6.10 During FYP7 the privatisation programme will be continued mostly by divesting shares held by the government in joint corporations. However, there are limits to the speed with which full privatisation can be achieved. Factors that have to be taken into account include:

- (a) The need for each privatisation to be properly prepared and launched. This involves ensuring that the concern has an appropriate legal structure, that its assets are properly valued and so forth. In several cases, there may need to be considerable restructuring of a company before it can be floated.
- (b) The capacity of the local capital market to absorb the new shares on offer. The primary purpose of privatisation is not to raise money for the Government, but there is a danger of realising much less than the true value of public assets if too many offers are made simultaneously. (This is one of the reasons why RGOB has, for the time being, retained some of the shares in a number of the companies already

Privatisation

privatised.)

- (c) Policy issues surrounding certain enterprises: for example, privatisation of logging activities will depend on first establishing adequate regulation and monitoring capacity to ensure that logging complies with environmental safeguards.

6.11 Sale of existing public enterprises is not the only possible form of privatisation. For example, many of the functions formerly reserved to the Food Corporation of Bhutan have been opened up to the private sector, and FCB retains only a more limited role concerned with food security and the marketing of controlled foodstuffs. The role of the State Trading Corporation has been similarly curtailed, and the functions of the Bhutan Government Transport Service have been almost entirely superseded by private sector services. (Both the State Trading Corporation of Bhutan and Food Corporation are now directly involved only at the wholesale level; retail outlets are managed by agents.) In road maintenance and construction, RGOB is fostering the development of private firms to which work previously undertaken by the Department of Roads may be contracted out. Government transport facilities have also been contracted out, so that Government officers have to now hire vehicles when required.

6.12 In addition to the industrial activities identified above, there are other areas where the Royal Government will consider as potential operations for privatisation. These include the Post Office, some of the operations of the Telecommunications and Power Departments, and some of the activities of the Ministry of Agriculture. There are however, a number of public enterprises which are unlikely to be privatised during the period of FYP7, because of factors already mentioned or because of special institutional circumstances. The most significant examples are:

- (a) The Chhukha Corporation which is simply too large in scale to be absorbed by the domestic capital market for the foreseeable future although the distribution of power in urban areas may be privatised.
- (b) The Bank of Bhutan, which is a joint operation between RGOB and the State Bank of India.
- (c) Druk Air, which is unlikely to be attractive to private shareholders until its financial returns considerably improve.

6.13 Privatisation is part of a broader strategy to generate an efficient, dynamic, commercial and industrial sector in Bhutan. To achieve its full potential, privatisation needs to be complemented by measures to create an enabling, competitive environment in the private sector. Such measures are described in Chapter 18 on Manufacturing and Trade.

6.14 During FYP7, RGOB will also take measures to put onto a sounder footing those enterprises which for the time being remain in the public sector. For each such enterprise:

- (a) An appropriate corporate structure and legal identity will be established, if not already in place. Such enterprises will be expected to run along commercial lines in accordance with the Companies Act of Kingdom of Bhutan, 1989.
- (b) Relevant interests and skills will be represented on the Board of Directors.
- (c) General objectives and strategy for the corporation will be agreed between RGOB and the Board, but RGOB will not attempt to interfere in the day-to-day running of public enterprises.
- (d) The Board will be responsible for appointing senior management as laid down in the Companies Act of Kingdom of Bhutan, 1989.
- (e) Government's return from the enterprise will take two forms: dividends on Government equity, and general taxation, in which publicly owned and private companies will be treated on the same footing.
- (f) Enterprises will be expected to make a competitive return on their capital; any subsidies will be explicitly justified.

CHAPTER 7

ECONOMIC OUTLOOK

I. Introduction

7.1 This Chapter examines Bhutan's long term economic opportunities and, based on anticipated major investments, provides a forecast of economic growth in the 7FYP. Government expenditure and revenue projections are also outlined, with the resulting deficit and financing requirements detailed for the Plan period.

II. Long Term Opportunities

7.2 Economic development in Bhutan is constrained by those factors described in Chapter 1: mountainous terrain; small and scattered population; limited domestic demand and lack of skilled manpower. Considerable progress has been made in overcoming these constraints since the 1960s, as described in Chapter 2, but these factors continue to limit the potential for economic growth. Opportunities are further shaped by Bhutan's proximity to, and special relationship with, the massive Indian economy. This gives access to large potential markets, but also largely determines the terms of Bhutan's economic relationships with third countries. Towards the end of 6FYP, India began to adopt a more open economic strategy, and this is likely to make Bhutan's economic relationships with third countries more straightforward without sacrificing the advantages of open access to Indian markets.

7.3 Based on the constraints discussed above and the existence of abundant natural resources, Bhutan's long term economic opportunities seem to lie in the development of activities which are based on the sustainable exploitation of the country's natural resources. The area with the most obvious potential is the further development of hydroelectric power for export. Although power generation will produce additional Government revenues, the development of other sectors will be required to provide incomes for the majority of the population. The agricultural sector will continue to provide incomes for the majority of Bhutanese and efforts will be made to encourage increases in productivity of arable, livestock and forestry output, with emphasis on the sustainability of these increases as described in Chapter 4.

7.4 However, it is unlikely that the agricultural sector would be able to generate significant increases in output to maintain the high levels of growth achieved in the 6FYP, thus other sectors will need to be developed to provide for economic growth. The industrial sector appears to hold potential, particularly in agro industries, such as wood and food processing, essential oil production. Mineral based industries provided the main impetus for industrial growth in the 6FYP and these will be further developed during the 7FYP, as outlined in Chapter 18 and 19. As the industrial sector is at an early stage of development, Bhutan would find it difficult to compete with the established industries in the region, particularly those industries based on low labour costs. As labour is scarce in most of Bhutan, labour costs tend to be higher. The combination of high labour and transport costs, indicates that Bhutan would have a comparative advantage in the production of high value quality goods for export.

III. Economic Forecasts for the 7FYP

7.5 Economic forecasting for the medium term is constrained by lack of data. Even if the relationships between different parts of the economy were better known, they are likely to change rapidly in a small developing economy like Bhutan's, so that it is not safe simply to extrapolate past trends. Because the economy is so small, a few large projects can make a big difference to the outlook: not only the existence but the timing of such major investments can be crucial. The economy may be greatly influenced by external factors; not least, by the levels of foreign aid on which much of the financing of investment depends.

7.6 As noted in Chapter 2, economic growth during the 1980s comfortably exceeded the population growth rate. However, a large part of the growth during the 1980s was due to the Chhukha Hydel Project. During the 7FYP period, there will be preliminary work on more large power plants, but these will not come on stream until the late 1990s. Consequently, while the energy sector will be the major source of growth in the long term, its contribution

Economic Outlook

to increases in GDP will not be significant during the 7FYP. Exploitation of another of Bhutan's major natural resources, its forests, will proceed cautiously, to ensure that development is not environmentally damaging. While production is expected to increase in this sector, it is unlikely that the share of forestry in total GDP will expand significantly. There is also scope for continued growth of the agriculture and livestock sectors, mainly through improved productivity (see Chapter 17).

7.7 Because of the limitations described above, the sector which seems to have the greatest potential for rapid growth during 7FYP is manufacturing. Starting from a small base, manufacturing grew at over 15% p.a. during the 1980s. Because the base is still quite small, few large-scale projects could ensure continued rapid growth of the sector. As will be described in Chapter 18, the ferro-silicon plant and another proposed cement factory (Dungsum) are the largest investments foreseen in the sector. Growth of the smaller establishments within manufacturing will also be encouraged to increase income and employment opportunities for all the population throughout the country. Tourism is another significant potential foreign exchange earner. The Royal Government has opted for selective tourism to minimise the possible adverse impact on its culture and environment. The number of tourists has been limited to below a ceiling of 4,000 tourists a year. Recognising the potential of this sector, the Government has privatised the Bhutan Tourism Corporation and will encourage the tour companies to increase their marketing activities abroad to attract a higher number of tourists.

Table 7.1 GDP Projections 1989-1997

SECTOR	1980-89 Growth	1989 GDP	Average Growth p.a.	1997 GDP (1989 prices)	SHARE OF GDP	
					1989	1997
Agriculture & Livestock	5.0%	1371.7	4.5%	1946.4	33.0%	30.9%
Forestry		429.1	4.8%	626.3	10.3%	9.9%
Mining	13.8%	35.7	7.4%	63.3	0.9%	1.0%
Manufacturing	15.2%	302.5	13.4%	829.0	7.2%	13.2%
Electricity	65.4%	391.0	2.7%	482.5	9.4%	7.7%
Construction	4.7%	358.2	4.5%	509.4	8.6%	8.1%
Trade, hotels, etc.	1.1%	268.8	2.4%	325.0	6.5%	5.2%
Transport & Communication	12.9%	235.6	6.7%	396.8	5.7%	6.3%
Financial Services	9.8%	306.9	5.4%	468.1	7.4%	7.4%
Community services (Govt. admin & defence)	6.8%	525.1	4.9%	771.9	12.6%	12.2%
(less imputed bank charges)		-67	7.2%	-117	-1.6%	-1.9%
GROSS DOMESTIC PRODUCT	7.5%	4157.6	5.3%	6301.7	100.0%	100.0%

Source: Planning Commission.

7.8 1 shows the results of an exploratory GDP projection, in which an overall growth rate of just over 5% p.a. is achieved through continued rapid growth of the manufacturing sector, despite the decline in electricity sector growth. In this scenario, the share of manufacturing in GDP would almost double, to 13.2% by 1997, while the share of electricity would fall to 7.7% from 9.4%. There would be a continued slow decline in the relative importance of the natural resources sectors: the combined share of agriculture and forestry would fall from about 43% to 41% of the total.

IV. Government Expenditure IV. Government Expenditure

7.9 This section explains RGOB expenditure patterns in the 6FYP and their implications for the 7FYP budget. The capital and recurrent budget projections for the 7FYP are also summarised, including sectoral allocations, and compared with revenue forecasts to indicate the likely Government deficits.

Government Expenditure During 6FYP

7.10 As indicated in Chapter 2, RGOB has been heavily reliant on external assistance, from India and from other donors, to bridge the gap between its expenditure and domestic revenues. During 6FYP, however, the degree of this dependence was substantially reduced, notably because of the additional domestic revenues from the Chhukha power plant. Other domestic revenues were less buoyant. The allocation of expenditures between sectors broadly followed the priorities set out in 6FYP.

7.11 However by the end of the 6FYP, several factors compelled the Government to implement severe budget restraint: increases in economic growth tapered off after the commissioning of the Chhukha Hydel project; there was a decline in aid receipts from India; Government expenditure was increasing rapidly leading to significant budget deficits; and a decline in Bhutan's rupee reserves resulted from domestic borrowing to finance Government deficits.

Recurrent and Capital Budget Projections for the 7FYP

7.12 While the Government will be playing a less important role in productive activities, RGOB will continue to influence the development of the private sector economy as a whole, through the impact of public sector expenditures, taxation and borrowing, and through provision of services and substantial investments in infrastructure. Much of the Five Year Plan therefore focuses on the Government's own expenditure proposals. For the 7FYP, the Royal Government has adopted expenditure and revenue targets which it considers are consistent with a 5% p.a. rate of economic growth, in the sense both that they allow sufficient public investment to support such a rate of growth, and that the domestic revenue requirements of the programme could be supported by such a growing economy.

7.13 The aggregate expenditure projections have been based on the following considerations:

- (a) Provision of sufficient recurrent funds for the existing activities of Ministries and Departments.
- (b) The capital and recurrent budget requirements for new projects as submitted by all Ministries shown in the Project Profiles, in Volume II. These requirements were analyzed by the Planning Commission and compared with forecasts of economic growth, domestic revenues and donor funds to estimate the most appropriate levels for the aggregate capital and recurrent budgets.
- (c) Once the overall budget was agreed, Ministerial and Departmental budgets were fixed based on: sectoral priorities; implementation capacity, including the availability of skilled manpower, and the capacity of the construction sector; and the appropriate ratio of capital to recurrent costs, to avoid the build up of recurrent costs.
- (d) In keeping with the Royal Government's objective of achieving recurrent budget self-sufficiency, recurrent expenditures will be kept to the minimum required to provide for existing activities and the growth of priority sectors.
- (e) In order to ensure that increases in the recurrent budget are not driven by expansion of capital expenditure, it has been necessary to restrict capital expenditure growth.

7.14 Projections of annual recurrent and capital expenditures have been made for all Departments, to provide information on the funds required to implement all projects and programmes during the 7FYP. However, fiscal discipline will be maintained: if revenues fall short of requirements, expenditures will be curtailed in order to avoid unacceptable budget deficits. The situation will be reviewed and the expenditure projections revised, as part of the annual budget exercise described in Chapter 3.

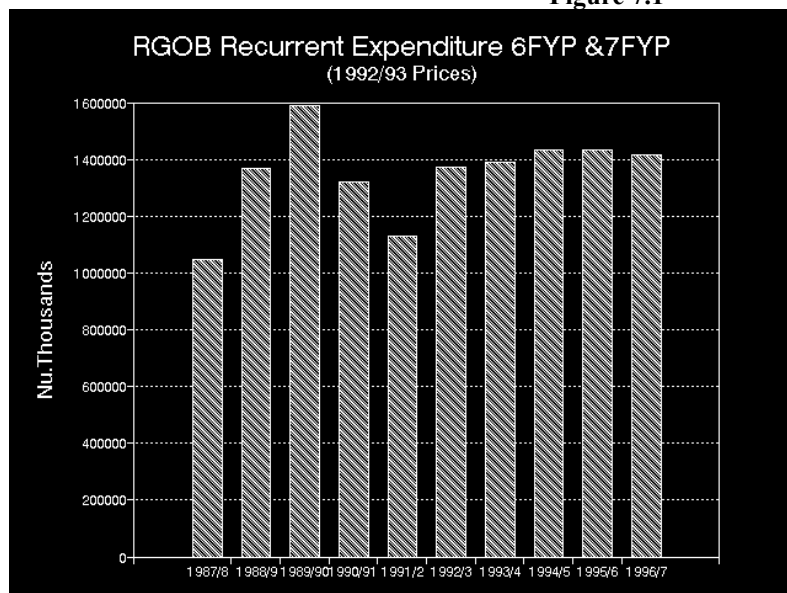
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Overall Financing FrameOverall Financing Frame

Table 7.2 Seventh Plan Outlay and Sectoral Allocations

ORGANISATION	OUTLAY			% OF TOTAL PLAN OUTLAY
	CAPITAL	CURRENT	TOTAL	
His Majesty's Secretariat	0.00	27.33	27.33	0.2%
National Assembly of Bhutan	10.00	10.85	20.85	0.1%
Royal Advisory Council	0.00	14.51	14.51	0.1%
Judiciary	0.00	76.83	76.83	0.5%
Royal Audit Authority	1.00	35.28	36.28	0.2%
Royal Bhutan Police	0.00	376.54	376.54	2.4%
Central Monastic Affairs	0.00	183.64	183.64	1.2%
Special Commission for Cultural Affairs	38.99	85.29	124.28	0.8%
Planning Commission Secretariat	0.00	52.66	52.66	0.3%
Central Statistical Organization	27.56	2.04	29.60	0.2%
National Environment Secretariat	3.14	20.38	23.52	0.2%
Dzongkha Development Commission	0.00	9.20	19.20	0.1%
Royal Institute of Management	63.00	32.71	95.71	0.6%
National Women's Association of Bhutan	21.30	25.78	47.08	0.3%
Royal Civil Service Commission.	1300.0	23.27	1323.27	8.5%
a) RCSC Secretariat	0.00	23.27	23.27	0.1%
b) HRD Programme	1300.00	0.00	1300.00	8.4%
Ministry of Finance	0.00	1978.55	1978.55	12.7%
a) Secretariat & Department	0.00	756.64	756.64	4.9%
b) Debt Servicing	0.00	1221.91	1221.91	7.9%
Ministry of Foreign Affairs	0.00	400.53	390.53	2.6%
Ministry of Home Affairs	119.78	190.93	310.70	2.0%
a) Secretariat	27.00	77.43	104.43	0.7%
b) Survey of Bhutan	92.78	113.50	206.27	1.3%
Ministry of Social Services	1658.9	1867.33	3526.21	22.7%
a) Secretariat	0.00	43.29	43.29	0.3%
b) Dept. of Education	683.00	1055.00	1738.00	11.2%
c) Dept. of Health services	475.88	559.63	1035.51	6.7%
d) Dept. of Works & Housing	500.00	209.41	709.41	4.6%
Ministry of Agriculture	1275.6	1158.08	2433.64	15.7%
a) HRH Office}	599.18	318.53	917.71	6.0%
b) Dept. of Agriculture	333.32	375.69	709.01	4.6%
c) Dept. of Animal Husbandry	97.57	230.32	327.89	2.0%
d) Dept. of Forests	245.48	233.54	479.02	3.1%
Ministry of Trade & Industry	680.0	722.36	1402.36	9.0%
a) Secretariat	0.00	19.60	19.60	0.1%
b) Dept. of Trade & Industry	580.00	258.92	838.92	5.4%
c) Dept. of Geology & Mines	100.00	53.84	153.84	1.0%
d) Dept. of Power	0.00	390.00	390.00	2.5%
Ministry of Communication	1675.7	1008.63	2684.31	17.3%
a) Secretariat	0.00	26.70	26.70	0.2%
b) Dept. of Post, Telegraph and Wireless	20.18	143.59	163.77	1.1%
c) Dept. of Telecommunications	857.58	231.29	1088.87	7.0%
d) Dept. of Information & Broadcasting	31.03	64.99	96.02	0.6%
e) Dept. of Civil Aviation & Transport	76.00	19.27	95.27	0.6%
f) Department of Roads	690.89	522.79	1213.68	7.8%
District Administration	50.00	305.39	355.39	2.3%
a) Total for Zones & Dzongkhags	50.00	305.39	355.39	2.3%
Total for Central:	6930.4	8304.93	15235.5	97.7%
TOTAL PLAN EXPENDITURE	6980.4	8610.32	15590.7	100%

Figure 7.1



Recurrent Expenditure Projections

7.15 The capital and recurrent budgets for the 7FYP are shown by Department in Table 7.2, with the phasing over the Plan period shown in each of the sectoral Chapters. The recurrent expenditures of the Government are targeted to grow by an average of almost 10.8% p.a. during the 7FYP. Figure 7.1 shows that recurrent expenditures increase substantially in real terms compared with the 1991/92 budget, to ensure that Departments are able to continue the implementation of existing activities and programmes, however real total recurrent spending will not exceed the level reached in 1989/90. Of the total recurrent budget, 21% is provided for new activities. The average rate of growth in real terms is at the same level as the anticipated rate of growth of GDP: as described in Chapter 3, the Approach to Development, the intention is to improve the quality and efficiency of Government services and programmes, by providing for human resource development and maintenance of basic infrastructure. The emphasis of the expenditure targets is thus on consolidation rather than a large expansion of Government services or investment in new infrastructure. Figure 7.1 indicates how the overall recurrent budget will be phased, while Figure 7.2 shows the distribution between the social, community, economic and Government Administration sectors.

Figure 7.2

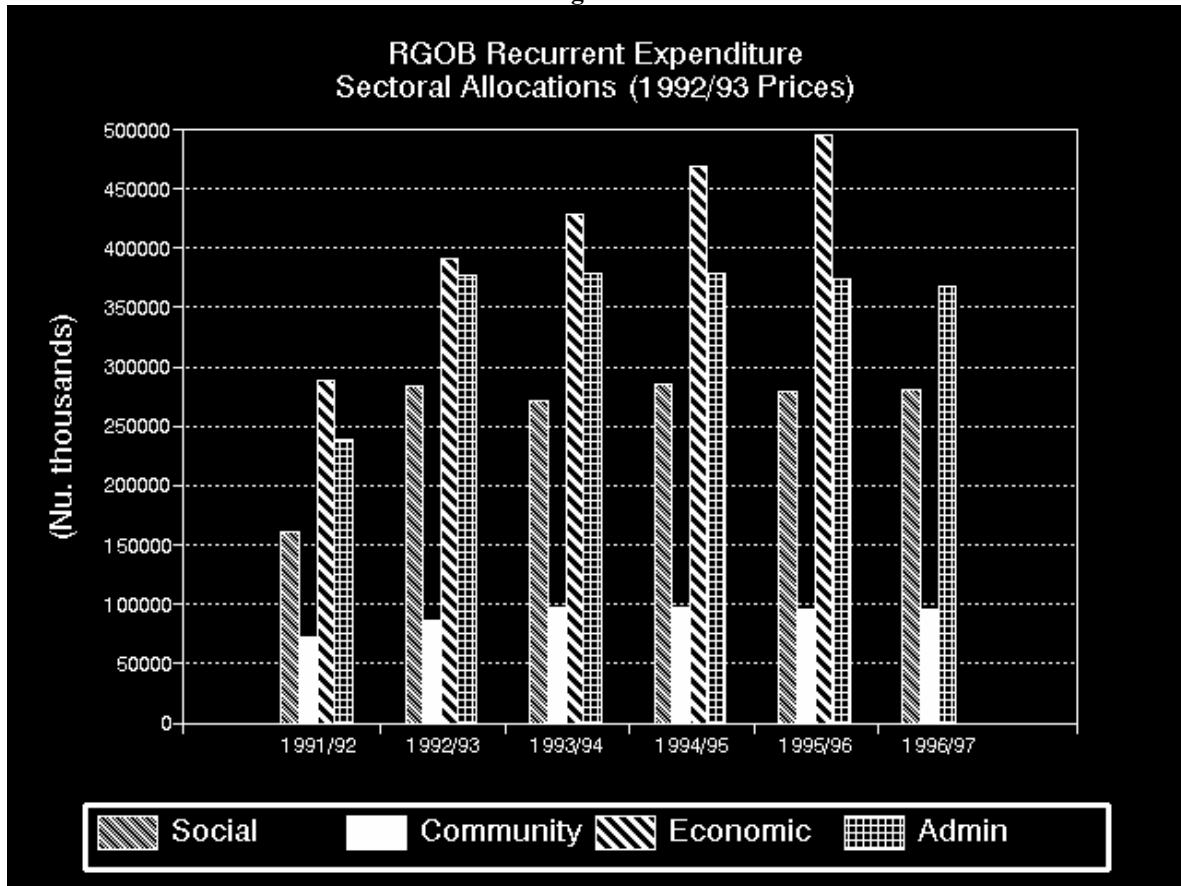
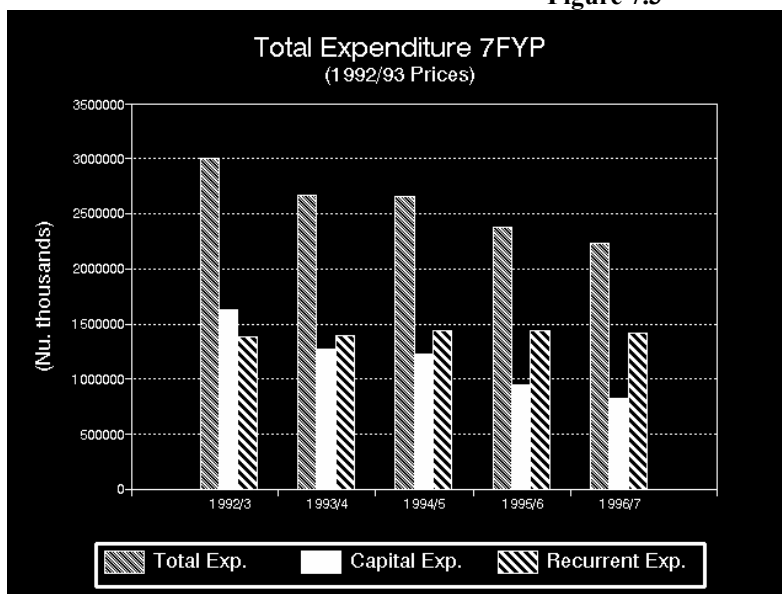


Figure 7.3



Capital Expenditure Projections

7.16 Capital expenditure is considered in two distinct categories:

- (a) the majority of capital projects which generate subsequent recurrent costs to RGOB;

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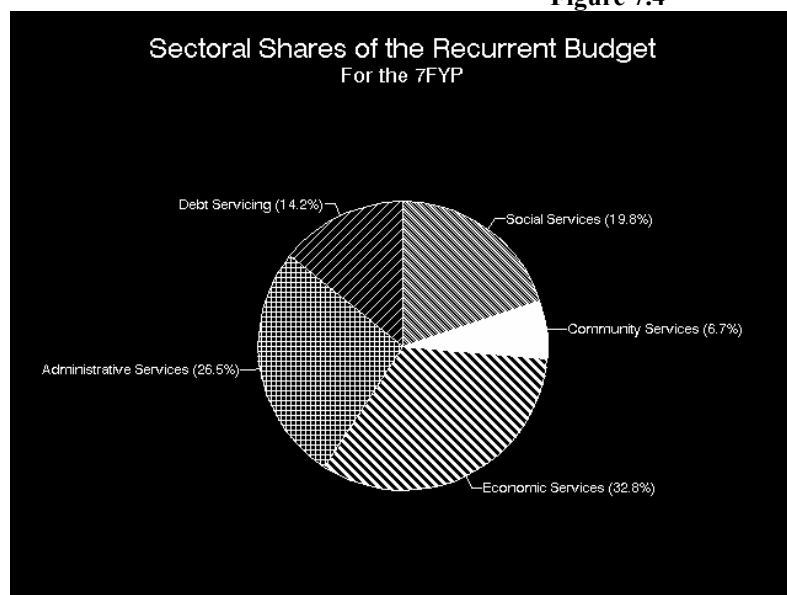
(b) major investments which are themselves net revenue generators to the government (notably hydel schemes and the proposed Dungsum Cement Project during 7FYP).

7.17 The second category have traditionally been considered as "non-plan" projects, to proceed if funding can be secured. This approach makes sense for several reasons:

- the projects are so large that their inclusion within a single capital expenditure target would distort the entire programme;
- as long as they are genuinely self-liquidating (i.e. they can earn a commercial rate of return on investment), the recurrent budget constraint which limits the capital expenditure which RGOB should undertake does not apply to them;
- because of their commercial potential, such projects should be able to tap funding sources which are not accessible to mainstream capital projects: competition for funding between Plan and non-Plan projects is therefore limited.

7.18 Accordingly, the expenditure projections for 7FYP focus mainly on the target for recurrent plus Plan-project expenditure. Anticipated expenditures on non-Plan projects (and the funding that they require) are identified separately. However, this does not imply that these projects are less important. The overall target for (Plan Project) capital expenditure is Nu. 6980m for the 7FYP, (in nominal prices) with a ratio of capital to recurrent expenditure being 45:55 compared with 50:50 in the 6FYP. The distribution between capital and recurrent funds is shown in Figure 7.3. Non-Plan projects amount to Nu.9,632m and include power projects and the Dungsum Cement Plant. As already noted, this figure is separate from the main Plan targets, in the sense that an increase/decrease in estimates for non-Plan projects need not affect the targets for Plan projects or for recurrent expenditure, although it does affect the total external financing requirement.

Figure 7.4



Sectoral Allocations

7.19 Figure 7.4 shows the allocation of the recurrent budget between the major sectors, while the distribution of both capital and recurrent funds between the Departments is shown in more detail in Table 7.2. The social sector includes health and education and as indicated in Figure 7.4, social services have been allocated 19.8% of the recurrent budget. The recurrent budget for the social services sector will be increased substantially in the first year of the Plan as shown in Figure 7. 2. The economic services sector has a higher share, however this includes Departments such as Power and Roads, which are vital for economic development but also enable greater access to social services and improve the quality of life. Other activities in the economic sector will be revenue generating, including Power and Telecommunications, and will therefore be largely self financing.

7.20 In terms of total funds, the social services sector will receive 22.7%, increasing from 15% of the total budget in the 6FYP. The economic services sector will receive 42%: the Ministry of Agriculture 17.3%; Ministry of Trade and Industry 15.7% and the Ministry of Communications 9%. As noted already, the activities funded in the

economic sector will also enhance the provision of social services. In addition, the emphasis of many programmes will be on improving the quality of service rather than on expansion of programmes. This is particularly the case for the health sector. Some expansion will take place in education, however the Government will encourage communities to establish their own schools, with financial support and provision of materials and teaching staff by the RGOB. It is envisaged that this will reduce the need for Government financing. There are also administrative functions with important development implications that will require increased resources over the Plan period: these include financial management, revenue collection and statistics. The recurrent budget for administration also includes Nu. 1,222m required for debt servicing, including principal and interest payments.

V. Domestic Revenue Potential

Table 7.3 Recurrent Expenditures and Revenue Projections for the 7FYP
(Figures in Brackets in 1992/93 Prices)

(Nu. million)	1992/3	1993/4	1994/5	1995/6	1996/7	7FYP Total
Recurrent Expenditure	1374 (1374)	1529 (1389)	1733 (1433)	1907 (1432)	2068 (1412)	8611 (7040)
Low Revenue Scenario	898 (898)	930 (845)	1096 (906)	1162 (873)	1220 (833)	5306 (4355)
High Revenue Scenario	1060 (1060)	1166 (1060)	1323 (1094)	1495 (1123)	1686 (1152)	6730 (5489)
Deflator	1.000	0.909	0.827	0.751	0.683	
Recurrent Funding Gap						
Low Revenue Scenario	-476 (-476)	-599 (-544)	-637 (-527)	-745 (-559)	-848 (-579)	-3305 (2685)
High Revenue Scenario	-314 (-314)	-363 (-329)	-410 (-339)	-412 (-309)	-382 (-260)	-1881 (1551)
Revenue as Percentage of Recurrent Expenditure						
Low Revenue Scenario	65%	61%	63%	61%	60%	62%
High Revenue Scenario	77%	76%	76%	78%	82%	78%
Growth Rates						
Recurrent Expenditure	32%	11.3%	13.3%	10%	8.4%	Aver. 10.8%
Low Revenue Scenario		3.6%	17.8%	6%	5%	Aver. 8.1%
High Revenue Scenario		1.1%	13.5%	13%	12.8%	Aver. 12.3%

Source: Planning Commission Secretariat

7.21 The Royal Government's objective of recurrent budget self-sufficiency requires vigorous efforts to increase domestic revenue during 7FYP. Some of the constraints in raising additional revenues and possible revenue measures are explained in Chapter 6, Fiscal and Monetary Policy. The following paragraphs consider two revenue scenarios which are then compared with recurrent expenditure projections to identify likely financing requirements, as shown in Table 7.3.

Low revenue scenario

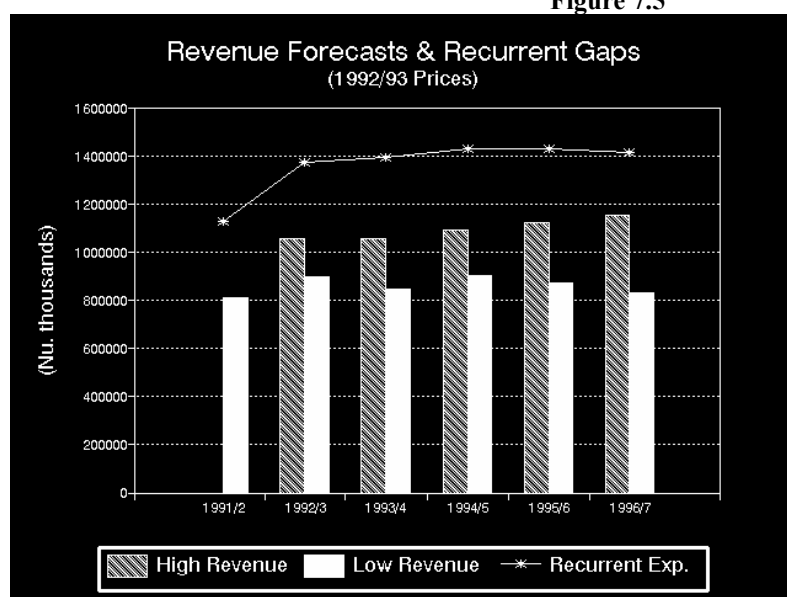
7.22 The 'low revenue scenario' is based on the revenue forecast made by the Department of Revenue and Customs in late 1989. The forecast has been updated to include additional revenue anticipated from several

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projects. The Ferro-Silicon Project is expected to begin production in 1993/94 and a revenue of approximately Nu. 20m per year has been included in the forecast. A new power tariff was negotiated with the Government of India at the end of the 6FYP, which took effect in 1991, increasing from Nu.0.16 to Nu.0.27 per unit. The tariff will be negotiated again in 1994/5 and thus it is likely that power revenues will increase further. Revenues have been estimated to increase from Nu. 384m in the first 2 years of 7FYP to Nu 513m from 1994/95 onwards as a result of increase in tariff rate from Nu. 0.27 to Nu 0.37 per unit. The tariff rate is assumed to remain at that level until the end of 7FYP. In addition, the forecast made by the Department of Revenue and Customs was revised to include the planned commissioning of 2 minor power generating projects:

the Chhukha Tail Race and Bunakha Reservoir Scheme. The Chhukha Tail Race is expected to be commissioned in 1994/95 bringing in additional revenue of Nu 24m per year and the Bunakha Reservoir Scheme is expected to be commissioned in 1995/96 generating an additional revenue of Nu. 50m per year. The Dungsum Cement Project is assumed to start production in 1996/97 contributing Nu 40m in that year. By taking account of these additional revenues, total domestic revenue is projected at Nu. 5306m for the 7FYP in nominal prices.

Figure 7.5



High Revenue scenario

7.23 There are two main differences between the scenarios. Firstly, the high revenue scenario assumes that the revenue in 1992/93 will be higher by Nu. 162m compared to the amount for that year shown in low revenue scenario. The increase is expected to come about through greater effort in tax collection, revision of rates, introduction of new taxes, increases in user charges as well as revenue from new industrial projects. Secondly, the 1992/93 revenue of Nu 1,060 is projected to keep pace with inflation, at 10% per annum. The additional revenue arising from revision of the Chhukha power tariff and revenue generated by the Ferro-Silicon Project, Chhukha Tail Race, Bunakha Reservoir Scheme and Dungsum Cement Project are also included in this projection. The 7FYP total revenue according to this more optimistic forecast is Nu. 6730m in nominal terms, (Nu.5489m in real terms). The two revenue scenarios are shown in Figure 7.5, which also include a revenue forecast for 1991/92, as the actual receipt figures were not available. The revenue forecast was made in 1989 and is the basis for the low scenario for the 7FYP. Figure 7.5 shows that in the first scenario domestic revenues will remain at approximately the same level during the 7FYP, and will decline in real terms in the last year of the Plan. Under the second scenario, domestic revenues will increase over the period in real terms.

VI. Projected Government Deficits

7.24 As indicated in Table 7.3, recurrent expenditure is estimated at Nu. 8611m, thus the low revenue forecast would mean a recurrent funding gap of Nu. 3305m and Nu. 1881m in the 'high revenue scenario', in nominal prices. In the low revenue scenario, the average growth rate of revenue in nominal prices is 8.1% whereas recurrent expenditure, also in nominal prices grows at annual average of 10.8%. In this scenario, revenue will cover 62% of

recurrent expenditure during the 7FYP period. The high revenue scenario would mean an average growth of 12.3%, and would increase the proportion of recurrent expenditures to be covered by domestic revenues to 78%.

7.25 Besides these new sources of revenue, the Royal Government will explore all options for expanding the domestic revenue base, as explained in more detail in the Fiscal and Monetary Chapter. The Government is therefore hopeful that the higher projected revenue can be attained, however in both 'low revenue scenario' and 'high revenue scenario' cases, strong assumptions are made about the timely implementation of the hydro and industrial projects. Difficulties encountered in implementing the projects during the 7FYP, would lead to a stagnation of revenue in both the scenarios. Investment in other industrial and hydro-power schemes are, expected to generate additional revenues only in the 8FYP, as explained in Section II. Thus, 7FYP domestic revenues are less certain and are likely to be at a considerably lower level than those anticipated for the 8FYP, when the power and other industrial projects being initiated will come on stream.

Financing Requirements Financing Requirements

Table 7.4 Domestic Revenues and Aid Requirements for the 7FYP
(1992/93 Prices)

(Nu.m)	1992/3	1993/4	1994/5	1995/6	1996/7	Total
Capital	1627	1273	1228	950	819	5897
Recurrent	1374	1389	1433	1432	1412	7040
Total	3001	2662	2661	2382	2231	12937
Domestic Revenues						
Low Revenue	898	845	906	873	833	4355
High Revenue	1060	1060	1094	1123	1152	5489
Aid Requirements						
Low Revenue	2103	1817	1755	1509	1398	8582
High Revenue	1941	1602	1567	1259	1079	7448
Aid as % of Total Budget						
Low Revenue	70%	68%	65%	63%	62%	66%
High Revenue	64%	60%	58%	52%	48%	57%

7.26 Based on the above projections, the financing requirements for the 7FYP are shown in Table 7.4. As indicated, the low revenue forecast would result in a financing requirement of Nu.8,582m in 1992/93 prices, or 66% of the total budget. The high revenue forecast would reduce the requirement to Nu. 7,448m or 57% of the total budget. This figure does not include the non Plan projects for which Nu. 9,632m will be required. However the percentage of aid required to finance the budget will fall during the period from 70% to 62% under the low revenue scenario, and from 64% to 48% under the high revenue scenario. This compares with approximately 50% of the budget met by external assistance in the early part of the 6FYP. Towards the end of the 6FYP, the proportion fell as Chhukha revenues came on stream. At the same time aid receipts fell, as described in Chapter 2.

Recurrent Cost Financing Recurrent Cost Financing

7.27 Table 7.3 indicates the likely recurrent financing gap during the 7FYP, Nu.3305m in the low revenue scenario or Nu. 1881m in the high revenue scenario, in nominal prices. Of the total recurrent budget, Nu.1,893m is required for recurrent costs arising from new projects, as shown in Table 7.5, while Nu.6,716m, will be required to meet the costs of existing activities. Thus under the low revenue scenario of Nu. 5,306 (in nominal prices), external funds will be required to meet some of the recurrent costs of existing activities, in addition to the new project recurrent costs. However, if the higher revenue scenario is realised (Nu. 6,730m), the RGOB will be able to meet all of the existing recurrent costs. Financing of additional recurrent costs would therefore be required.

7.28 Based on the above expenditure and revenue projections, it is clear that the Royal Government will need to persuade aid agencies to avoid the natural bias towards capital projects, as there will be a requirement for recurrent cost financing. As explained in Section IV, on projections of RGOB expenditure, the emphasis of the expenditure

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programme for the 7FYP will be to meet existing recurrent costs and to limit capital investments so as to prevent unsustainable increases in the recurrent budget. Even with such a restricted capital investment programme, the Royal Government will require assistance with the recurrent budget as outlined above. The kinds of recurrent cost financing required for the 7FYP include:

- (a) Aid funding is will be required for certain recurrent expenditures that have high foreign exchange content (examples include medical drugs and replacement of vehicles and equipment).
- (b) Aid funding will be required for recurrent costs that relate to particularly important human development objectives (examples include essential drugs and school text books).
- (c) In a number of cases, aid finance will be required for the initial running costs associated with capital projects. The RNR sector is one area where this is particularly necessary.
- (d) Technical Assistance (whether financing expatriate personnel or funding the training of Bhutanese) has a recurrent cost element, and will continue to be a very important form of aid.

7.29 The constraints on the Royal Government's ability to finance essential recurrent expenditures apply equally to the financing of the local costs of capital projects. (Local costs include various expenditures that do not involve procurement abroad or the use of foreign exchange, such as the costs of Bhutanese staff.) Here too, the effectiveness of donor aid will depend on aid agencies being willing to meet the bulk of local as well as foreign exchange costs.

7.30 The Environmental Trust Fund described in Chapter 4 represents one innovative way of ensuring long term recurrent funding for the activities to which it relates.

7.31 In all cases where aid is sought for recurrent costs, RGOB intends to keep track of the element of implied recurrent cost subsidy; long term budgetary planning will anticipate the need for the Government in due course to take on full responsibility for recurrent cost funding. The details of Government aid policy are discussed in Chapter 9.

Financing GapFinancing Gap**Table 7.5** Aid Requirements and Financing Gaps by Sector
(Nominal Prices)

Sector	Capital Required	Capital Gap	Recurrent Arising	Financing Gap
Social Services				
Health	474.87	439.71	148.00	587.71
Education	746.00	220.22	573.33	793.55
Community Services				
Works and Housing	500.00	434.29	79.68	513.97
Others	91.32	91.27	54.86	146.13
Economic Services				
RNR	1,275.54	871.77	432.16	1303.93
Trade and Industry	580.00	535.95	91.75	627.70
Geology and Mines	100.00	100.00	23.54	123.54
Posts and Telecomm	877.76	292.81	137.08	429.89
Transport	766.89	701.89	290.68	992.57
Administration				
HRD	1,300.00	1,300.00	0	1,300.00
Survey of Bhutan	92.77	88.02	37.95	125.97
Others	174.19	167.15	24.62	191.77
Total	6,979.34	5,243.08	1,893.65	7,136.73

7.32 The financing requirements are shown for each sector in Table 7.5, and the remaining funds required taking into account the funds already secured at the time of Plan preparation. This does not include funding requirements for the Non Plan projects, some of which have donor funding committed and others have been included in the funding programme put forward to the Government of India. The financing gap however, is overstated as at the time of preparing the Plan, the Royal Government was finalising aid programmes with 3 of the major donors in Bhutan. The commitments made as part of these agreements have not been included in the funds secured, as the final agreements had not been signed. The sectors to be financed by these donors include Human Resource Development, Health, Education, Energy. Based on these discussions and tentative commitments from other donors, aid funds of approximately \$279 million had been identified by the time of Plan preparation, excluding aid from the Government of India. It is difficult to make a direct comparison of the funds expected and the funds required, as many cost estimates were prepared prior to the devaluation of the Ngultrum. This may also lead to the underestimation of some project costs. In addition, the Government is aware that funds in the pipeline do not always materialise and that efforts to mobilise aid resources will need to continue, during the 7FYP. These efforts will need to be directed at obtaining recurrent cost financing as explained above.

7.33 In the past, it has been argued that Bhutan has not put forward sufficient projects for funding, and this has been a major constraint in aid mobilisation. This is no longer the case as a sufficient number of projects have been prepared to utilise funds already in the pipeline, and additional funds may yet be required. Thus the major objective will be to ensure that aid funding is received in time to implement the projects put forward and that the flow of funds is sufficiently smooth so as to ensure the most effective implementation of the development objectives and programmes set out in this document.

CHAPTER 8

FISCAL AND MONETARY POLICY

I. Introduction

8.1 This chapter explains the Royal Government's fiscal and monetary policies for the Seventh Five Year Plan. Broadly speaking, fiscal policy is concerned with the level of government expenditure and how it is financed. Monetary policy concerns the currency, interest rates, inflation, regulation of the financial sector, and domestic and foreign borrowing. Fiscal and monetary policies are closely related, notably because of the monetary effects of any government budget deficit.

8.2 The institutions chiefly responsible for monetary and fiscal affairs are:

- (a) The Ministry of Finance, which is responsible for long term planning of monetary and fiscal policy, the preparation of annual budgets and the control of expenditure; only the Ministry of Finance is empowered to borrow money or issue loan guarantees on the Government's behalf.
- (b) The Royal Monetary Authority, which performs the usual functions of a central bank, including issue of the currency, regulation and supervision of financial institutions, and control of foreign exchange.
- (c) The Planning Commission, which is responsible for setting national priorities and drawing up public investment programmes, to bring about economic development consistent with fiscal and monetary policies. The Planning Commission also liaises with the Ministry of Finance to ensure that annual budgets reflect the strategy and priorities of the Five Year Plan.

8.3 This chapter has the following sections:

- (a) revenue and taxation policy and targets for 7FYP;
- (b) monetary policy and strategy for the financial sector.

Fiscal and Monetary Policy

Table 8.1 Tax Revenues 1985/86-1990/91

	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91 budget
TAX REVENUE						
Direct tax	44.1	62.9	77.1	80.2	75.5	80.6
Indirect tax	91.8	109.3	158.8	152.4	156.2	201.7
TOTAL TAX REVENUE	135.9	173.8	232.3	232.6	231.7	282.3
TOTAL NON-TAX REVENUE of which Chhukha	97.3	139.3	491.6 296.9	479.8 254.5	540.3 276.9	594.3 406.1
TOTAL CAPITAL REVENUE	12.9	15.5	12.1	11.7	53.6	24.4
TOTAL RECEIPTS DEPT. ENTERPRISES	6.6	6.7	7.5	6.9	7.5	8.0
TOTAL OTHER NON-REVENUE RECEIPTS	5.1	4.8	6.0	2.3	3.9	4.6
ALL REVENUE RECEIPTS	257.5	340.1	753.1	733.3	837.1	913.6

Source: CSO Statistical Yearbook and DNBA.

II. Revenue and Taxation Policy and Targets for 7FYPII. Revenue and Taxation Policy and Targets for 7FYP

Principles of Revenue and Taxation Policy

8.4 During 7FYP the Government's main concerns will be:

- (a) to ensure that the volume of revenue it draws from the economy is sufficient to finance an appropriate level of public expenditure without stifling or destabilising the rest of the economy;
- (b) to raise revenues (and to distribute expenditures) in ways that are equitable in their incidence (taking income, sex, and geographical differences into account);
- (c) to ensure that the taxation system as a whole provides an appropriate set of incentives to individuals and to enterprises.

8.5 The last of these concerns is especially relevant. The private sector oriented, growth promoting strategy of this Plan will involve less direct intervention by the Government in the economy: instead, Government will try to ensure that the prices of inputs and outputs in the economy reflect their true costs to the nation, so that the independent decisions of private sector producers make the best use of the resources available. It is therefore important to ensure that tax measures aimed primarily at raising revenue do not at the same time distort the incentives that producers and consumers face.

8.6 The scope for raising additional domestic revenues will continue to be limited by:

- (a) low average incomes, combined with the limited monetisation of much of the economy; and,
- (b) Bhutan's special trading arrangements and monetary links with India, which limit RGOB's freedom of action over some revenue sources, especially trade taxes.

8.7 The main RGOB revenue agency is the Department of Revenue and Customs. The Department will be strengthened by increases in personnel, training and computerisation of activities.

Revenue measures for 7FY

8.8 The Government will take steps to increase not only the level of tax revenues but also the share of tax revenue in total domestic revenues. Three main factors will contribute to the increased share of tax revenues:

- (a) increased tax collections;
- (b) privatisation will reduce RGOB's direct revenues from public enterprises; while,
- (c) revenues from power sales are expected to level off.

8.9 Increasing tax revenues will depend more upon extending the tax base than upon higher tax rates. In many cases (e.g. corporate taxes), Bhutan's tax rates are already at levels similar to those in competing countries.

8.10 Direct taxation consists of personal and corporate taxes. Corporate taxes presently yield three times as much as taxes on individuals and trading units. Although RGOB will ensure that the levels of corporate taxation are not so high as to deter domestic and foreign investment, it is expected that corporate tax revenues will increase as manufacturing and other concerns in the public sector expand and the privatisation programme proceeds. Although the number of personal income tax payers is small, the Department of Revenue and Ministry of Finance are studying the possibilities of introducing a more comprehensive personal income tax, which if introduced, would increase tax revenues.

8.11 Labour taxes are another form of personal taxation; at present they affect most individuals much more than monetised personal taxes do. Labour tax is particularly important in unmonetised communities, and through their labour village people make an important contribution to their own development. However, labour taxes can be inefficient, since there is a loss of other production which is different for different people and which may exceed the value of the labour contributed. As the economy develops, labour tax will become relatively less important. Already for some labour taxes there is an alternative of cash payment; in future it is likely that more and more people will take this option.

8.12 Indirect Taxation accounts for two thirds of domestic tax revenues. However, the yield from indirect taxes is limited by the large number of exemptions to the existing tariffs and duties. Such exemptions have two undesirable effects: as well as reducing total revenues to Government, they create distortions in the economy, since their effect is to give discriminatory privileges to some participants. During 7FY the number of exemptions from indirect taxes will be reviewed.

8.13 Quantitative restrictions, such as those embodied in import and foreign exchange licences, have a similar effect to tariffs in raising costs in the economy, but without the benefit of additional government revenue. For this reason, and because quantitative restrictions are more arbitrary and less transparent than the alternative, there will be a concerted move to replace quantitative restrictions with tariffs as the main means of regulating imports.

8.14 Cost-recovery is another means of reducing Government expenditures and relates to both commercial and Government service sectors:

- (a) RGOB operates many commercial or quasi-commercial services (the Post Office for example, and several manufacturing and other enterprises). The privatisation programme (described in Chapter 6) will help to reduce the likelihood of public subsidy to services that ought to be self-financing, while enterprises that remain in the public sector will, as far as possible, be run along commercial lines. Fees and charges will be regularly reviewed and there will be attention to accounting and bill collection functions.
- (b) There are also various non-commercial services, including health and education programmes, where limited cost recovery may be possible. The present policy is that basic services should be free, but the relevant Departments will examine the possibility of private sector involvement and cost recovery for some services.

8.15 Where miscellaneous charges are already made for Government services, these will be regularly reviewed in the light of inflation and the actual costs of providing the service.

III. Monetary Policy and Strategy for the Financial Sector

Fiscal and Monetary Policy

Strategy for the Financial Sector

8.16 Apart from Bhutan's central bank — the Royal Monetary Authority, the country's main financial sector institutions are:

- (a) The Bank of Bhutan, which is the only commercial bank in the country. Apart from its main office in Phuntsholing, it has 23 branch banks in dzongkhags throughout the country. About 22,000 accounts are maintained by BOB. In the past it has also managed Government's accounts, but this has been transferred to the RMA. The majority of BOB's shares are held by the Royal Government, with the remainder (25%) held by the State Bank of India, with which BOB has an institutional relationship.
- (b) The Royal Insurance Corporation of Bhutan (RICB), established in 1975, provides both life and general insurance. It is an important institutional investor within Bhutan. RGOB holds a majority of its shares, but there are also private sector shareholders.
- (c) The Government Employees Provident Fund (GEPF) is managed on RGOB's behalf by the RICB, and represents a growing portfolio of investments based on matching contributions by civil servants and the Government.
- (d) The Unit Trust of Bhutan (UTB) was set up by the GEPF and the RICB in 1980 to encourage investment by Bhutanese within the domestic economy.
- (e) The Bhutan Development Finance Corporation (BDFC) was established in 1988 to act as the development finance institution for small and medium scale industrial and agricultural producers. The Corporation manages the donor funded agricultural credit programmes. As well as credit, the organisation provides technical support to entrepreneurs. Its shareholders include the Royal Government, the RMA, RICB and the Bank of Bhutan.

Development of the Financial Sector during 6FYP

8.17 Currency and Money Supply. As the economy has close links with the Indian economy, the Ngultrum has been held at par with the Indian rupee since its introduction in 1974. Although the rupee is freely exchangeable within Bhutan it is now used mainly for financing imports from India. During the 6FYP, from December 1986 to December 1990, the money supply grew at an average rate of 21% p.a. The expansion of the domestic money supply is determined by the rate of growth of domestic GDP, the rate of inflation in India,* the rate of substitution of the Ngultrum for rupees, change in net foreign assets and the increased monetisation of the economy.

8.18 Savings, Investment and Interest Rates. The policy of the RMA has been to maintain deposit rates comparable with those in India, but to set lending rates marginally lower than those in India, in order to encourage investment. Real interest rates on deposits (i.e. the returns on savings when the effects of inflation are taken into account) have generally been negative. There has been significant excess liquidity in the banking system, indicating a that a shortage of viable investment projects has been more of a constraint than the cost of borrowing. Table 8.2 summarises the operations of bank and non-bank financial institutions during the second half of the 1980s.

Borrowing and Debt service

8.19 A brief description of each financial institute's investments are given in what follows. The size of the loans in million US dollars are cited in parentheses.

8.20 IFAD was the first international development financing institution that the country joined. IFAD has funded three area development projects : (1) Small Farmers Development and Irrigation Development Project (US\$ 7.19 m) in four Western Districts, (1) Tashigang Mongar Area Development Project (US\$ 5.87 m) and (3) Punakha Wangdi Valley Development Project (US\$ 2.64 m). During the 7FYP IFAD's investment will be in Zone IV covering five districts. It will include several sectors though its main focus will be Renewable Natural Resources sector.

8.21 The World Bank has financed the Bhutan Calcium Carbide Projects (US\$ 12.41 m), Forestry Project -

* As long as the two currencies are at par and India remains Bhutan's major source of imports, inflation in Bhutan will tend to parallel that in India.

Fiscal and Monetary Policy

Phase I (US\$ 7.13m) and Phase II (US\$ 1.06 m), Construction of Primary Schools (US\$ 4.09 m) and Technical Assistance (US\$ 3.70 m). The Asian Development Bank has provided loans for the following projects : Multi-project Phase 1 (US\$ 5.28 m) and Phase 2 (US\$ 9.81 m), Chirang Hill Irrigation Project (US\$ 4.42 m), Road Mechanisation (US\$ 4.91 m), Urban Centres Sewerage (US\$ 3.48 m), Highland Livestock Development Project (US\$ 5.82 m), Industrial Estates (US\$ 1.16m), Bhutan Development Finance Corporation (US\$ 2.44 m).

8.22 The Kuwait Fund has provided loans for the Gedu Wood Manufacturing Corporation (US\$ 9.56 m), Bhutan Board Products (US\$ 11.15 m) and Bhutan Calcium Carbide (US\$ 7.08 m).

8.23 Commercial loans were secured for the purchase of the BAe-146 aircraft (US\$ 22.66 m) and Earth Satellite Station (US\$ 1.43 m). The total debt servicing in hard currency during the 7FYP is estimated to be US\$ 33.53 m. Annual average for debt servicing is about US\$ 6.7 m.

Table 8.2 Convertible Debt Indicators for the 1981/82-1990/91

Item	86/87	87/88	88/89	89/90
Debt outstanding (cumulative)	25.04	41.55	72.62	73.62
Debt service payments	0.36	0.87	4.07	6.76
Debt service ratios (Interest + principal payments as % of convertible currency exports of goods and services)	9.30	11.10	39.80	65.10
WORLD BANK Debt outstanding as % of GDP	28.39	13.90	16.01	28.30
ADB	37.32		17.78	0.35
KUWAIT FUND	27.79		23.42	4.94
COMMERCIAL LOAN	24.09		24.09	10.08
TOTAL	133.29		88.42	16.31

Source : Selected Economic Indicators, RMA, Vol. 5. No.2. June 1991

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Table 8.4 Debt Servicing Projections for the 7FYP

	91/92	92/93	93/94	94/95	95/96	96/97	Total 7FYP
Foreign Currency (in US \$)							
(i) interest							
1. Soft Loans	1293	1041	1037	1018	976	932	5004
2. Commercial*	1257	1067	891	721	553	382	3614
subtotal	2550	2108	1928	1739	1529	1314	8618
(ii) principal							
1. Soft Loans	3436	1878	2250	2799	3158	3278	13363
2. Commercial *	2758	2510	2261	2261	2261	2261	11554
subtotal	6194	4388	4511	5060	5419	5539	24917
Total i+ii	8744	6496	6439	6799	6948	6853	33535
B. In Ngultrum							
(i) interest							
1. Soft Loans	33618	27066	26962	26468	25376	24232	130104
2. Commercial*	32682	27742	23166	18746	14378	9932	93964
3. Chhukha#	0	20000	20000	20000	20000	20000	100000
subtotal	66300	74808	70128	65214	59754	54164	324068
(ii) principal							
1. Soft Loans	89336	48828	58500	72774	82108	85228	347438
2. Commercial*	71708	65260	58786	58786	58786	58786	300404
3. Chhukha#	0	50000	50000	50000	50000	50000	250000
sub total	161044	164088	167286	181560	190894	194014	897842
total i+ii	227344	238896	237414	246774	250648	248178	12219108

Note : data from Department of National Accounts and Budget, November 1991. * Druk-Air and Satellite Earth Station. # assuming rescheduling. Exchange rate : \$ 1 = Nu 26

Rupee Debt

In addition to the debts servicing described above, there is Rupee debt payable to the Government of India. The debt servicing is mainly for the Chhukha Hydel Project (now known as Chhukha Hydel Corporation). Similar financing of grants and soft loans have been agreed for the Dungsom Cement Project proposed for implementation during the 7FYP. Repayment against the Rupee loans is expected to start in fiscal year 1992/93. Repayment will amount to Rs 70 m a year or Rs 350 m in total during the 7FYP.

Fiscal and Monetary Policy

TABLE 8.5: BHUTAN - OPERATIONS OF BANK AND NON-BANK FINANCIAL INSTITUTIONS

	1985	%	1986	%	1987	%	1988	%	1989	%	1990	%
	Nu.m		Nu.m		Nu.m		Nu.m		Nu.m		Nu.m	
DISTRIBUTION OF INVESTMENTS												
Agriculture	15.2	6.1	18.5	6.0	21.4	5.7	21.3	3.6	26.3	3.3	29.1	3.3
Mining & Manufacturing	67.2	26.8	72.3	23.3	58.2	15.5	119.5	20.1	147.9	18.5	176.9	20.3
Housing & construction	89.4	35.6	135.1	43.6	200.7	53.6	240.1	40.5	272.3	34.1	278.8	32.0
Trade and commerce	18.0	7.2	19.8	6.4	32.8	8.8	78.0	13.1	127.8	16.0	140.4	16.1
Transport	30.9	12.3	26.4	8.5	28.7	7.7	41.3	7.0	56.0	7.0	69.4	8.0
Personal and Others	30.2	12.0	37.9	12.2	32.5	8.7	93.0	15.7	167.2	21.0	176.4	20.3
Total	250.9	100.0	310.0	100.0	374.3	100.0	593.2	100.0	797.5	100.0	871.0	100.0
DISTRIBUTION OF DEPOSITS BY HOLDER												
Bank of Bhutan	293.0	58.6	331.3	56.2	354.7	51.3	452.3	50.6	589.3	51.0	537.7	48.6
RICB and UTB	206.8	41.4	257.9	43.8	336.1	48.7	442.0	49.4	566.6	49.0	569.6	51.4
of which:												
GEPF	149.2	29.9	171.3	29.1	210.8	30.5	254.2	28.4	312.1	27.1	319.9	28.9
Unit trust	57.6	11.5	86.6	14.7	125.3	18.1	187.8	21.0	253.8	22.0	249.7	22.6
Total	499.8	100.0	589.2	100.0	690.8	100.0	894.3	100.0	1155.9	100.0	1107.3	100.0

NOTE: Figures are for December, except for 1990

Monetary Aims and Policies for 7FY

8.24 The RGOB recognises the vital role that the financial system must play in bringing about the development of the economy. The most important requirement is that people should have confidence in the currency and the financial system. To ensure this, the Royal Government and the Royal Monetary Authority will:

- (a) maintain the parity of the Ngultrum with the Indian rupee;
- (b) take a cautious approach towards the expansion of the money supply, recognising that too rapid an expansion could create inflationary pressures and reduce people's willingness to hold Ngultrum;
- (c) ensure that overseas borrowing is carefully monitored and does not exceed the comfortable debt service capacity of the economy;
- (d) ensure that the domestically-financed budget deficit is kept within reasonable bounds (partly so as not to crowd out private sector investment), and financed in a non-inflationary manner;
- (e) apply foreign-exchange restrictions in a transparent and liberal manner.

8.25 In order to make the financial system more dynamic and improve efficiency, the RGOB and the RMA will:

- (a) restructure and reform the existing institutions and establish new institutions to bring about greater competition and thus enhance efficiency in the financial sector;
- (b) establish a greater supervisory role for the RMA in order to enable it to monitor the operations of financial institutions and their soundness. In this regard, the RMA has already established a Supervision Division which will be responsible for monitoring the operations of financial institutions on a continuous basis;
- (c) enact a Financial Institutions Act to establish a legal framework for the licensing, operations and regulations to be observed by financial institutions and enable the RMA to reform these institutions where necessary. The draft of the legislation had been prepared by the end of the 6FYP with Technical Assistance from the IMF and the legislation will be enacted early in the 7FYP;
- (d) develop a capital market to provide low cost, long term financing to the private sector. As a first step, the Government has approved the establishment of an "Over the Counter" (OTC) share trading facility. Technical Assistance for this project has been requested from the Asian Development Bank;
- (e) develop a money market to deal primarily in central bank securities and treasury bills. As a means of obtaining long term, non-inflationary resources, the Government will introduce treasury bills early in the 7FYP. These together with RMA securities, also to be introduced, will provide the RMA with effective monetary policy instruments.
- (f) the RMA will establish a small coin mint.

CHAPTER 9

AID POLICY

I. Introduction

9.1 Aid has underpinned Bhutan's development efforts, both by financing successive Development Plans and by improving the skills of Bhutanese through training and technical assistance. Aid will continue to be important during the Seventh Plan as explained in Chapter 7, although the Royal Government intends to reduce its dependence on aid in the future. This Chapter:

- (a) reviews the contribution of aid to the implementation of the 6FYP, and;
- (b) explains the Royal Government's aid policy and measures to ensure the maximum benefit from aid.

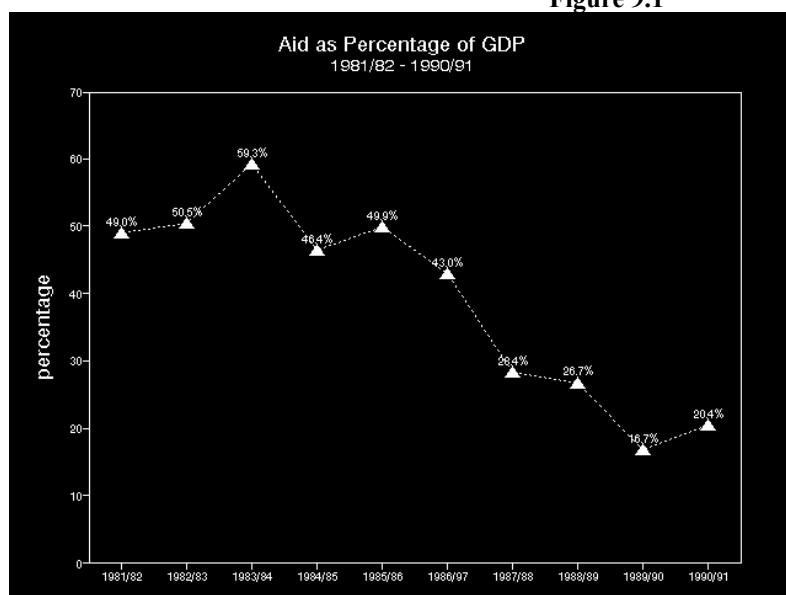
9.2 The Royal Government discusses its aid requirements and policies at Round Table Meetings with its aid partners, which are held every few years. The 1992 meeting was deliberately timed to coincide with the preparation of the 7FYP. The Royal Government's submission to the 1992 RTM contains a comprehensive statement of national aid strategy and spells out the aid requirements derived from this Plan. Many of the points touched on in the present chapter are discussed more fully in the RTM document.

II. Aid During the 6FYP

Volume and Importance of Aid

9.3 Aid has been extremely important in financing Bhutan's development as measured by the ratio of aid to GDP and the proportion of public expenditure financed by aid. In the early 1980s, aid amounted to around 50% of GDP, but rapid economic growth combined with a fairly constant level of aid has reduced the aid/GDP ratio to about 20% (see Figure 9.1). This is still a high figure compared with many other developing countries, but the ratio is declining.

Figure 9.1



9.4 As explained in more detail in Chapter 2, Economic Performance, Bhutan also became less dependent on aid for financing of RGOB expenditures. Domestic finance accounted for an increasing proportion of revenues during the 6FYP, while there was also a shift in the balance between aid from the Government of India and other donors.

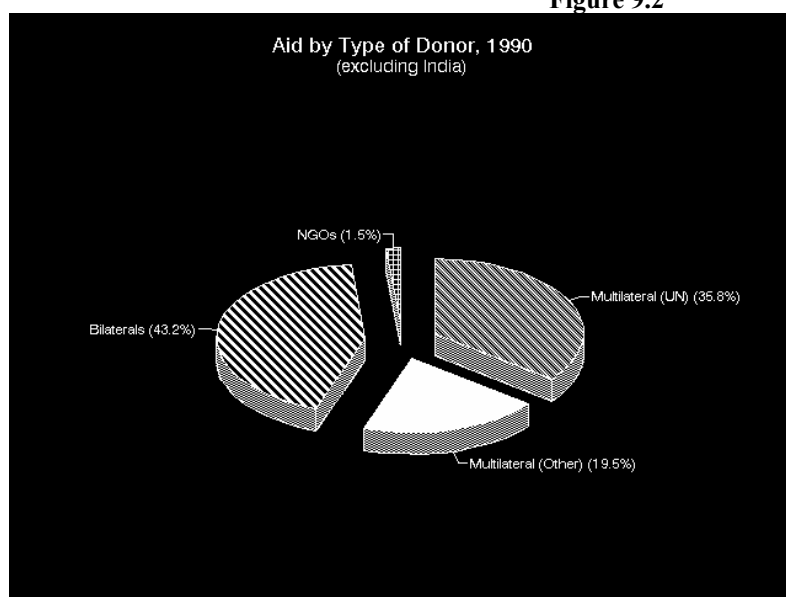
Aid Policy

Sources of Aid

9.5 Historically, India has been Bhutan's main aid partner, but aid from third countries has become increasingly important, with the proportion of aid from third countries rising from about 17% in 1981/82 to over 30% by 1990/91.

9.6 Non-Indian aid is provided by a variety of aid agencies. Whereas the UN system tended to dominate aid provision in the early years of external assistance, aid from bilateral agencies and from other multilaterals, such as the World Bank, IFAD and the Asian Development Bank, has become equally important, as indicated in Figure 9.2.

Figure 9.2

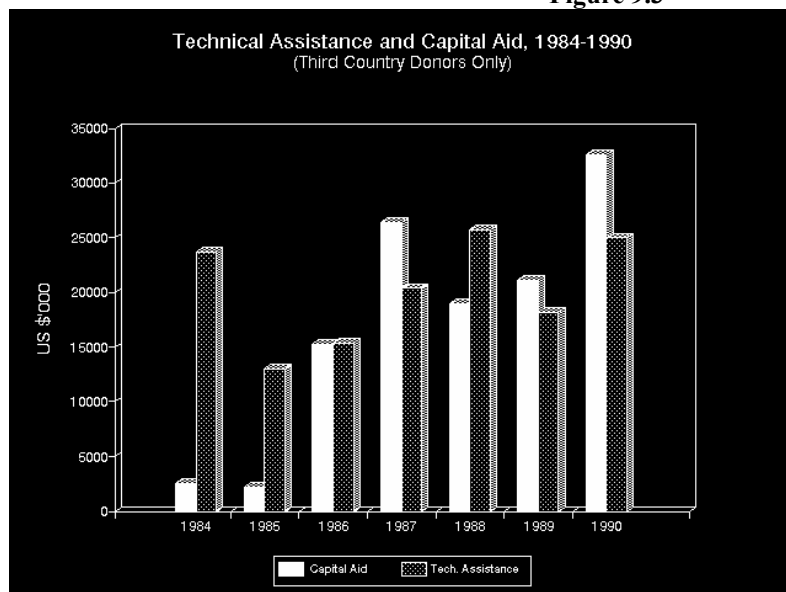


Allocation of Aid

9.7 Aid from India An important proportion of Indian aid is in the form of budgetary support, which is not earmarked for any particular project or programme. In addition, India has funded a number of projects, often implementing them in a turnkey fashion. The Chhukha Hydel Plant (for which most expenditures took place in the Fifth Development Plan) was funded by a combination of grants and soft loans from the Government of India, and was treated as additional to the basic FYP aid. India has also provided significant technical assistance, both in training of Bhutanese nationals and in providing the services of Indian experts.

9.8 Technical Assistance and Capital Aid The composition of third country aid has changed significantly, with an increasing proportion supporting capital projects rather than technical assistance (see Figure 9.3). The Royal Government welcomes this trend, and hopes for a further shift towards capital assistance during the 7FYP.

Figure 9.3



9.9 Sectoral Allocation of Third Country Aid Aid allocations have reflected national development priorities. The largest shares of technical assistance have tended to be provided to the following areas, in descending order: Human Resource Development, Agriculture and Forestry, Health and Population, and Development Administration. Industry and Transport and Communications, which take only a small share of technical assistance, have received a greater proportion of capital assistance, of which Agriculture and Forestry have received the largest share.

III. Aid Policy for the 7FYPIII. Aid Policy for the 7FYP

Basic PrinciplesBasic Principles

9.10 The Royal Government welcomes aid from the international community. National development objectives will not be readily achieved without external funding and technical expertise. In Bhutan's case, the low level of monetisation of the economy and the limited tax base have made it more difficult to mobilise internal resources. As explained in the Chapter on Approach to Development, one of the main strategies is to increase self reliance, which will mean increasing internal resource mobilisation and reducing dependence on aid. However, to raise adequate revenues to become completely self sufficient will not be possible within the 7FYP period and thus Bhutan will continue to seek assistance from her international partners.

9.11 Continuing aid to Bhutan is justified by Bhutan's status as a Least Developed Country. In addition the low levels of health and education indicators combined with the physical constraints, described in Chapter 2, provide further reason for Bhutan to seek aid. However the Royal Government recognises that there are dangers as well as benefits associated with aid. Aid must complement Bhutan's own efforts and must not be a substitute for them; and the responsibility for deciding national priorities and development strategy must remain with the Royal Government.

9.12 An important aspect of the strategy set out in Chapter 3 is to reduce reliance on external sources of funding and thus the Government will take the necessary steps to increase domestic resource mobilisation, including ensuring that communities continue to contribute to the costs of development activities, through provision of labour etc. The economic growth envisaged during the 7FYP, will also enable the RGOB to finance an increasing proportion of expenditures from domestic revenues. At the same time, the RGOB is determined to be prudent in its development expenditures and to keep its borrowing comfortably within its capacity to service debt.

Aid Policy

9.13 Technical Assistance is a very important component of the aid that Bhutan has received, and further Technical Assistance will be sought during the 7FYP. Here too, the Royal Government is determined that the use of TA should be carefully judged and will take steps to ensure that the overall level of assistance will be related to the country's absorptive capacity, that the assistance is provided to priority sectors, and that such assistance is provided in such a way as to improve the skills of Bhutanese as rapidly as possible.

Responsibilities for Aid Management

9.14 Most of the projects and programmes described in this Plan will draw upon external finance or technical assistance from one or more of the aid agencies active in Bhutan. The coordination and management of aid is therefore an important aspect of the implementation of the Plan. Aid management responsibilities are assigned amongst several agencies: the Planning Commission, the Ministry of Finance, the Royal Civil Service Commission, the Ministry of Foreign Affairs, and the various sector Ministries, Departments and specialised agencies of the Royal Government. In order to improve the overall management of aid and donor activities, the Royal Government will ensure that the roles and responsibilities of all those involved are more clearly defined. These responsibilities will also be made clear to all aid agencies.

9.15 The Planning Commission has the ultimate responsibility within the Royal Government for managing and coordinating aid to Bhutan; strategic and policy decisions are made by the Planning Commission itself, while day-to-day aid management is handled by the Planning Commission Secretariat. The Planning Commission's responsibility for aid management is one aspect of its overall responsibility for long term economic planning, and the Commission is thus well placed to ensure that aid complements local resources. The Planning Commission Secretariat is the main contact point for aid agencies within Bhutan.

9.16 The Ministry of Finance's responsibilities concerning aid include:

- (a) *Loans*: MF is the only agency of the Royal Government that has the power to negotiate loans on the Government's behalf, or to provide Government guarantees for loans to third parties. In practice, there is consultation between the Planning Commission and the Ministry of Finance before any aid agreement is concluded, since even aid on grant terms has implications for the future commitments of domestic resources.
- (b) *Annual Budget*: MF has overall responsibility for preparation of the annual budgets; it liaises with the Planning Commission to ensure that each annual budget properly reflects the Five Year Plan, and also reflects anticipated external aid.
- (c) *Recording Aid Flows*: it is important that aid flows are recorded, whether or not the funds involved pass through the RGOB accounting system; MF tries to ensure that the Royal Government's financial records include all aid flows, both in cash and in kind.

9.17 The Royal Civil Service Commission has primary responsibility for the Royal Government's manpower planning, and hence for related aspects of Technical Assistance. Direct recruitment of expatriates on long-term contracts is an RCSC responsibility, although the task may be delegated to the sector ministry most concerned (as with the Department of Education in recruiting teachers). RCSC is also the main contact point for the various volunteer agencies. Project-related consultancies, however, are approved by the Planning Commission.

9.18 The Ministry of Foreign Affairs is the formal contact point for missions that are diplomatically accredited to Bhutan, is responsible for matters of diplomatic protocol, and plays an important part in making Bhutan's case for assistance internationally. It is also required to approve technical assistance proposals.

9.19 Early in the Seventh Five Year Plan, the arrangements for coordination amongst the Planning Commission, RCSC, the Ministry of Finance and the Ministry of Foreign Affairs will be reviewed and strengthened, with particular attention to the coordination of technical assistance.

9.20 Sector Ministries, Departments and specialised agencies of the Royal Government are not allowed independently to solicit aid: only the Planning Commission, which operates in close coordination with the Ministry of Finance, may do so, and, as noted earlier, the Planning Commission is the authorised contact point for aid agencies in their official dealings with the Royal Government. However, it is recognised that, in the course of preparing aid projects which have already been included in the RGOB development programme, and in their subsequent implementation and monitoring, the external financing agency needs to have good contacts at technical level with the implementing Ministry, department or agency. Such contacts are encouraged, but the Planning Commission, the Ministry of Finance and the Royal Civil Service Commission should be kept fully informed of all such contacts, and should be appropriately represented on aid agency/RGOB coordinating committees. Within sector ministries, it is expected that the Policy and Planning Divisions (PPDs) which are now being strengthened will be the main contact point for aid agencies. The PPDs in turn, will have strong working links with the Planning Commission which will continue to exercise overall responsibility for aid coordination.

Aid Management Issues

Absorptive Capacity

9.21 During the 6FYP, some donors were concerned that Bhutan's capacity to absorb aid was limited by bottlenecks in project preparation and implementation. During the 7FYP, the problem of absorptive capacity will be addressed by:

- adopting realistic expenditure targets (see Chapter 7);
- strengthening planning and project preparation capacity, both in the Planning Commission and in sector Ministries through the Policy and Planning Divisions;
- addressing constraints in the construction sector, by expanding the national Labour Force and relaxing restrictions on the employment of non-nationals;
- emphasis on human resource development, so as to make Bhutan less dependent on external skills for preparation and implementation of development programmes;
- increasing the role for the private sector in productive activities to leave RGOB to concentrate on proper governmental concerns.

9.22 In the past much aid has been provided through turnkey projects. This can sidestep implementation capacity constraints, but can fail to transfer skills that will make Bhutan less dependent in the long run. There may continue to be a limited role for turnkey assistance, but the Royal Government will seek to ensure that there is always a provision for the training of Bhutanese to undertake the operation and management of new facilities.

Aid Coordination

9.23 The allocation of responsibilities within the Royal Government for aid management and coordination was summarised in the previous section. RGOB recognises that there is a significant coordination problem, stemming from the numbers of different agencies involved in assistance to Bhutan, and exacerbated by the fact that so few of Bhutan's aid partners are permanently represented in the country. There is no absolute "cure" for problems of coordination, but there are a number of measures that can be taken to minimise the problem.

- strengthening RGOB's own planning and monitoring procedures;
- continuing consultation between the RGOB and its aid partners through the periodic Round Table meetings, and through sectoral meetings with donors to be held in Bhutan from time to time;
- encouraging donors to concentrate their aid on particular sectors and/or geographic regions;
- as far as possible, avoiding the involvement of several donors in a single project, since this can make the management of the project much more complicated and time consuming.

Technical Assistance

9.24 The Royal Government's aims in relation to Technical Assistance are (a) to limit dependence on TA, but (b) to maximise its effectiveness. Effectiveness has to be considered both in terms of job performance by TA personnel and in terms of the passing on of skills to Bhutanese. As these may be conflicting considerations, job descriptions or Terms of Reference will include a clear description of the counterpart training to be provided. The requirements will vary from case to case: in some cases the basic training requirement may be met by formal training of Bhutanese, while in others, the passing on of skills to Bhutanese colleagues will be a major element of the TA role. Where this is the case, both RGOB and the sponsoring aid agency will take account of the training requirement in the selection of personnel.

Aid Policy

9.25 The Government believes that the balance of aid should shift further towards capital aid, and, where technical assistance is concerned, that there should be more emphasis on short term inputs and less reliance on long term resident advisors. The danger with the latter is that they are under pressure to do things directly themselves rather than training Bhutanese counterparts. Short term inputs, provided they fit within a coherent strategy for the sector and institution involved, are more likely to complement and encourage local skills instead of simply substituting for them. RGOB will also encourage donors to employ local consultants whenever possible, both in their own right and jointly on teams with expatriate consultants.

The Terms of Aid

9.26 Most of the aid that Bhutan currently receives is on grant terms, with the balance in soft loans that have a high grant element. The Royal Government expects that most aid for the 7FYP will continue to take the form of grants or soft loans. However, the Royal Government fully recognises that aid is not a free resource. Allocation of aid (or domestic resources) to any project has costs in terms of other worthwhile projects which remain unfunded, in terms of the project's demands on scarce Bhutanese manpower and managerial capacity, and in terms of complementary inputs of domestic funds that it requires. The projects and programmes for which aid is requested during 7FYP have been carefully selected as priorities in implementing the national economic and social development strategy.

9.27 Although seeking to maximise the grant component of aid, RGOB recognises that there is a place for international borrowing in support of the development programme, subject to the following guidelines:

- (a) The Planning Commission, the Ministry of Finance and the Royal Monetary Authority will carefully evaluate any proposed loan, taking account of the grant element implied by sub-commercial interest rates and favourable repayment schedules, but also having regard to any foreign-exchange risk and the costs implied by procurement tying.
- (b) Appraisal of projects to be funded by loans will be particularly rigorous, and should establish that the economic rate of return on the project significantly exceeds the cost of the loan.
- (c) Loan finance is most likely to be appropriate for commercial projects (such as development of industries or of hydroelectric power); as well as requiring an appropriate rate of return at appraisal, management structures will be established for such projects that ensure that loan servicing is met from the ventures' own revenues.
- (d) The Ministry of Finance and the Royal Monetary Authority will monitor Bhutan's aggregate debt, so as to ensure that the total debt burden at no point exceeds the reasonable capacity of the economy to service it.

9.28 The quality of aid is determined by its non-financial as well as its financial aspects. Aid that is inflexible and accompanied by heavy administrative requirements is less valuable to the recipient. Grant aid that is conditional on procurement from the donor country is also likely to be worth less than its face value. The Royal Government recognises that aid agencies are constrained by their own rules and regulations, and cannot usually make exceptions in Bhutan's favour. It naturally welcomes international moves to liberalise aid terms, but also recognises that there is scope for optimising the value of aid despite the remaining restrictions that attach to it. Thus:

- (a) The Planning Commission (in consultation with the Ministry of Finance) will try to match programmes to donors in ways that reflect each donor's comparative advantages.
- (b) Every effort will be made to use tied aid for procurement only in areas where the donor is in any case internationally competitive (taking technology, price and other factors into account). RGOB will guard against the proliferation of incompatible types of equipment.
- (c) A key factor in making the best use of aid is to adopt a sufficiently long planning horizon. This can be assisted by the adoption of a programme approach by donors, so that the donor and RGOB can jointly plan the best use of aid funds well in advance.
- (d) RGOB will endeavour to ensure that its own administrative and accounting procedures are of a standard that makes it unnecessary for donors to set up parallel systems.

Aid and the Private Sector

9.29 It is important to consider how the Seventh Plan's emphasis on private sector development should affect aid. RGOB will continue to have a vital role in creating an enabling environment, in providing and maintaining basic infrastructure and so forth. Aid will continue to be mostly government to government, but there are requirements for:

- (a) support to development finance institutions, and for projects which directly assist the development of private entrepreneurship; and,
- (b) private sector access to training and skilled manpower (20% of the HRD programme budget will be earmarked for private sector training).

9.30 The details of aid requirements for the 7FYP are provided in Chapter 7, Economic Outlook.

CHAPTER 10

CULTURE AND RELIGION
CULTURE AND RELIGION

I. Importance of Culture and Religion

10.1 The culture of any society reflects the values and institutions of its people. High culture in Bhutan has been largely influenced and determined by religion and this is reflected in Bhutanese art, architecture and society. Religion and its related traditions play a central role in the lives of the population and thus cannot be ignored in the development process, as explained in Chapter 1. Simply imposing development models from outside which do not take religion and tradition into account will not only serve to diminish existing culture, but will also meet with limited success. This process can lead to the creation of dualism, whereby the majority of the population continue to make use of traditional services and practices, while a minority, usually the more educated population, will benefit from government funded development programmes.

10.2 The preservation of cultural traditions and religious institutions is one of the major objectives of the Royal Government and the need to give full recognition to these factors has been realised, particularly in health and education. This does not mean that new technologies will not have a place in the development of Bhutan, or that the Government intends Bhutan to remain static, but that the relevance and impact on society of new technologies will need to be carefully assessed. In addition, it is the intention of the Royal Government to increase opportunities for Bhutanese and the outside world to gain greater knowledge and understanding of Bhutanese culture, through improvements of existing institutions and the creation of new ones. The Government would like to not only encourage the transmission of knowledge from other parts of the world to the Bhutanese, but also encourage the older generation of Bhutanese to pass on their knowledge to the new generation.

II. Institutions

10.3 Both culture and religion are represented by objects, for example artistic objects and by institutions; monasteries and places of exhibition. These objects and institutions are under state ownership and also under private control. While culture is based on ancient traditions in Bhutan, new cultural institutions and activities are being developed to provide continuity in a changing world and develop appropriate roles for existing institutions.

Dratshangs or Rabdeys, Shaydras (Buddhist Colleges) and Drubdras (meditation centres)

10.4 The Sangha, the Holy Brotherhood, is organised in the form of Central Monk Body, the Dratshangs or Rabdeys (formal monasteries), the Shaydras (Buddhist Colleges) and Drubdras (meditation centres). In view of the fact that the status and powers of the Sangha has undergone severe erosion over the years, His Majesty initiated the formation of a 9 member Dratshang Lhentshog (Council of Ecclesiastical Affairs), under the chairmanship of His Holiness the Je Khenpo, in 1984.. The aims of the Dratshang Lhentshog are to promote the welfare of the

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Dratshangs and Rabdeys and to restore their traditional relevance in a period of social change.

10.5 The number of monks supported by the state is estimated to be about 4,000. This figure excludes monks who are in private monastic organizations. The monks are normally admitted into the monasteries voluntarily at the age of 7 or 8 and remain part of the monk body through out their lives, progressing through the monastic hierarchy and education system. The Dratshangs or Rabdeys, Shaydras, Drubdras and other private institutions of similar nature are important centres of learning. Subjects taught in these institutions may include indigenous medicine, philosophy, literature, rituals, metaphysics, grammar, meditation techniques, poetry, drama, painting, embroidery etc. It has been estimated that there are at least 2,000 monasteries in the country.

Special Commission for Cultural Affairs

10.6 The Special Commission for Cultural Affairs was established in May 23, 1986, with 29 members. The Secretariat for the Special Commission for Cultural Affairs has 34 staff, who are responsible for technical and administrative support to: the Royal Academy of Performing Arts (Dance troupe) with 77 members; the School of Traditional Arts which consists of 18 teaching staff and 60 students; the Drama Division of Royal Academy of Performing Arts which consists of 5 people; the National Library with a staff strength of 46 people; the Bronze Casting Unit which consists of 23 people; the National Museum with a Director, a curator and 14 other staff and the Division for Cultural Properties which employs about 16 people. Because of limited staff, the Division for Cultural Properties works in conjunction with Dzongkhag Administrations, the Royal Bhutan Police and Royal Bhutan Customs in issuing transit permits for the movements of art objects and in controlling the traffic of antiques.

Arts and Antiquities

10.7 The most important objects among antiques and art objects are Chortens (stupas), wall paintings, statues (made of gold, silver, ivory, silver brass, bronze, bone, terracotta, rhino-horns, stucco, wood etc), thangkhas (scroll paintings), xylographic blocks, manuscripts, rare books, carvings, artifacts used during rituals and textiles. Such objects can be found in community temples, private collections and government monasteries. The Royal Government is concerned that the movement of art objects, which are part of Bhutan's heritage, needs to be controlled. Priceless art objects could be lost to Bhutan, and there are therefore strict restrictions on the sale of antique objects to foreigners. At the same time, copies of these objects are taken to exhibitions in other countries to provide an insight into Bhutanese artefacts to the outside world.

National Museum

10.8 The National Museum at Paro was established in 1968 to display a selection of Bhutan's art objects. For the last 24 years, the Museum has acquired over several thousand objects of arts of both organic and inorganic materials. Out of its collection - about 60 percent - is on display in the seven floors of the Museum. Among the objects on display are bronze and copper utensils, arms and ammunition of Bhutan, bamboo and cane products, carpentry tools, pottery, jewellery, thangkhas, ritual objects, images, icons, philatelic etc.

Written Materials

10.9 Important religious texts have been collected in the National Library, Thimphu, for reference purposes and to ensure the preservation of these valuable documents. Apart from some administrative archives and chronicles, there are few documents on wholly secular themes. However, such subjects as architecture, astrology, medicine etc. are found as part of religious texts. Although the National Library has been able to build up a wide collection, most of the valuable religious texts and other documents are found in private collections, dzongs and monasteries. The extent of original written heritage that exists in the country is thus unknown. Such texts are considered sacred in themselves and private collectors may not reveal their possession of sacred manuscripts and scriptures. Other documents such as poems, verses, land-records, writs (Kasho), permits etc which do not lend themselves to safe-keeping, are at risk of being lost permanently.

Dance and Drama

10.10 Dance and drama have always played an important role in explaining difficult religious and social concepts to the population, mainly through the annual Tsechhus performed throughout the country. These dances are

performed by gelongs (monks), gomchens (lay priests), and lay people, and most of the dances have been recorded and are performed by the Royal Academy of Performing Arts (dance troupe division).

Music and Folksongs

10.11 In most parts of Bhutan, making music is a communal activity, sometimes related to work and as a means of recording and relating local history. Travelling performers: manips and reciters of loze (lengthy narrative poems) are also involved in performing and preserving traditional music and poetry. Efforts to preserve the loze have been taken through publication in Dzongkha, while traditional songs are being recorded by the Department of Information and Broadcasting (see Chapter 16).

Film Making and Radio

10.12 There are one or two independent film makers in Bhutan, who are under-capitalised and struggle to make their excellent films pay. The Development Support Communication Division within the Department of Information has been recording history in the making videos and other Bhutanese documentaries.

III. Constraints to Preserving Cultural Heritage

10.13 Both the National Museum and National Library were unable to expand their collections during the 6th Plan due to financial constraints. The lack of funds has also precluded improvements in other areas of arts and culture. The National Museum was also unable to set up the fumigation chamber. The School of Traditional Arts has been particularly affected where the physical facilities are almost non-existent and the building will soon be unfit for use.

10.14 Most art objects in the private and state dzongs, temples and monasteries as well as the National Library and National Museum are exposed to chemical and physical deterioration. These institutions lack the financial resources to ensure the preservation of their religious objects. One of the important functions of Division for Cultural Properties of Special Commission is recording and inspection of art objects. However, regular inspection and verification of antiques is hampered by the remote and secluded locations of the monasteries and temples where the objects are held. By their very purpose of retreat, most temples and monasteries are scattered and situated in inaccessible places. With the present staff strength of the Division for Cultural Properties, it is seldom possible for the Division to inspect the temples more than once every four to five years.

V. Review of 6FYP Programmes

A. Objectives in the 6FYPA.

10.15 The objectives in the 6th Plan were to:

- acquire and conserve the objects relating to history, religion, handicrafts and culture (this objective was relevant specifically to the National Museum).
- renew the relevance of Driglam Namzha (Etiquette and Manners) in public life
- promote and preserve traditional folklore, dance, drama, music, arts and crafts
- encourage scholarship by consolidating existing institutions such as Dratshangs (Monastic bodies), Dubdras (Meditation centres), Shaydras, National Library.

B. Achievement of Objectives

10.16 As mentioned above, budgetary constraints prevented the National Museum and the National Library from acquiring new objects during the 6FYP period. However, the National Museum will have established a simple conservation laboratory. The Museum has also arranged several exhibitions abroad which received positive reviews.

10.17 With regard to renovation of temples and monasteries, 64 temples and monasteries have been renovated and work on 9 temples and monasteries are in progress. Subsidies amounting to approximately Nu.0.67 m were provided for roofing and painting of private as well as public monasteries. In addition, the restoration of wall paintings in Paro Kitchu Lhakhang and Dodedrak Lhakhang in Thimphu was completed. Antiques were recorded

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and documented in almost 400 temples and photographic records of antiques were made in about 200 temples during the Plan period.

10.18 Three shaydras were established during the 6th plan. One **Shaydra** was opened in Drametse in Tashigang with 100 lay priests. Nunneries were opened in Bjakchukama in Punakha and Kila Gonpa in Paro with enrolments of 25 nuns in each nunnery.

10.19 Orientation in Driglam Namzha (Etiquette and manners) and Bhutanese culture were given in Junior schools, High schools, Sherubtse College, Kanglung as well as other institutions. However, due to shortage of instructors in Driglam Namzha, not all institutions received such instruction.

10.20 A 13 member Dzongkha Advisory Board was instituted to take effective measures to develop Dzongkha as the national language and a Dzongkha Development Commission established to implement these activities. The immediate need in the 6FYP was to develop Dzongkha text books. The Dzongkhag Development Commission revised the dzongkha language school textbooks from Class II to VI and reference books from Class II to VIII. Other books prepared include a book for the Khaling Muenselling School, a Moral Science, Dzongkha grammar book, a draft Dzongkha-dzongkha dictionary, and a Dzongkhag-English dictionary. The Dzongkhag Development Commission also carried out a linguistic survey, organized Dzongkha classes for about 5,000 non-dzongkha speaking people and provided training in using dzongkha typewriters and computer software.

V. Objectives for the 7FYPV. Objectives for the 7FYP

10.21 The objectives of the 7th Plan are to:

- provide continuity in the development process through the preservation and adaptation of culture during a period of change.
- respond to the religious needs of the population whose values may be challenged.
- encourage greater awareness and appreciation of Bhutan's cultural heritage both by the population and the outside world.
- increase the popularity of dzongkha as a medium of mass communication and official correspondence.

10.22 The main strategies for achieving the objectives are:

- to sustain and strengthen the institutions of the Dratshangs or Rabdeys and to encourage scholarship in order to expand the wealth of knowledge in Bhutan. This will be furthered by the establishment of the Domkhar Buddhist Institute in Bumthang.
- provide opportunities for the integration of monks into the development process
- expand the collections in the National Museum and National Library and to undertake conservation work for private and government collections in the dzongs, monasteries, temples and houses. The National Museum will set up a fumigation chamber to conserve its acquisitions. The National Museum will continue to organise international mobile exhibitions to make the collection more accessible to those who can not visit Bhutan and thus reach a wider audience.
- recording and documentation of cultural heritage. Documentation and recording will be made of rituals and ceremonies; antiques and art objects; written materials on both secular and religious subjects and oral traditions.
- production of media materials and orientation courses for the education of all sections of society in Bhutanese tradition and culture.

VI. Programmes for the 7FYPVI. Programmes for the 7FYP

Establishment of Domkhar Buddhist Institute

10.23 One of the main activities in the 7th Plan will be the opening of Domkhar Buddhist Institute. The Tashichholing dzong premises in Bumthang will be turned into an Institute with an initial enrolment of 15 students and a total capacity of 50 students mostly carrying out research. It is hoped that the Institute will be founded by Royal Charter which will establish its independence, so that the Institute will attract not only monks, lay scholars (both men and women) but also international students. The long term plan is to build this Institute into an international centre for, first of all Buddhist studies, and then studies of the Himalayan region.

Improvements to the School of Traditional Arts

10.24 The curriculum for School of Traditional Arts includes painting, sculpture, xylography, carving, casting, gold plating, embroidery and appliques. Skills that have been actually taught are painting, carving and sculpture. Although the School of Traditional Arts in Thimphu was established long ago, its facilities for both the students and teachers have deteriorated due to lack of funds. This has led to low morale among the students and a very poor recruitment record. The School building will be rebuilt and re-equipped and the teaching capabilities of the staff will be enhanced. A Fine Arts Diploma will be offered by the School following the improvements.

National Museum Paro

10.25 In order to have the capability to advise and undertake conservation work and restoration of art objects, the National Museum will expand its conservation Laboratory and train staff in conservation and restoration techniques. Museum staff will also be able to improve their skills in display and exhibition of the collection.

Construction of a Theatre/Town Hall, Thimphu

10.26 Although Thimphu city has more than 40,000-50,000 people, it has neither a drama hall nor a community meeting hall. It is not possible to stage drama productions or concerts. A Theatre and Town Hall will be constructed in the 7th FYP.

Literary Survey

10.27 A nationwide survey on literary sources will be carried with the aim of locating important documents. It will be an important step in ensuring the survival of such documents. The task will be coordinated by National Library. A local survey team will locate and evaluate the documents covering about 3-5 dzongkhags a year. The documents will be assessed and important ones will be computerised as far as possible. The National Library will also establish a fumigation chamber.

Documentation and Recording

10.28 The Division for Cultural Properties will continue to undertake the recording of antiques in about 400 temples and monasteries. The Division will be equipped to make photographic records of antiques in 200 temples for the purpose of identification and recovery of the antiques should they be lost or stolen.

Restoration and Renovation of Monasteries

10.29 The restoration of wall paintings in Tongsa dzong will be completed in the 7th Plan. Subsidies will be provided on a case by case basis for the renovation of monasteries, chortens, dzongs, temples etc of architectural and historical importance.

Dzongkhag Development Commission Programmes

10.30 The Dzongkhag Development Commission will continue to produce dzongkha textbooks from pre-primary to degree level, including manuals. The Commission will also produce a Dzongkhag-English Dictionary, Dzongkha-English-Nepali Dictionary and braille textbooks from pre-primary to Class X level for the blind students. A Dzongkha Linguistic Society will be established to promote Dzongkha as well as the important dialects. Research and training related to Dzongkha will be continued.

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V. Financial and Manpower Requirements V. Financial and Manpower Requirements

TOTALS FOR Culture						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP_TOTAL
CAPITAL COSTS	18.692	6.800	4.695	4.500	4.305	38.992
RECURRENT COSTS						
a) Existing	38.118	41.928	46.122	50.734	55.807	232.709
b) Project Related	5.143	6.134	6.834	8.410	9.703	36.224
Total Recurrent	43.261	48.062	52.956	59.144	65.510	268.933
TOTAL COSTS	61.953	54.862	57.651	63.644	69.815	307.925
MANPOWER	27	20	4	3	0	54
TA PERSONNEL(mm)	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS FOR Special Commission for Cultural Affairs						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	18.692	6.800	4.695	4.500	4.305	38.992
RECURRENT COSTS						
a) Existing	8.038	8.841	9.726	10.698	11.768	49.071
b) Project Related	5.143	6.134	6.834	8.410	9.703	36.224
Total Recurrent	13.181	14.975	16.560	19.108	21.471	85.295
TOTAL COSTS	31.873	21.775	21.255	23.608	25.776	124.287
MANPOWER	27	20	4	3	0	54
TA PERSONNEL(mm)	0.0	0.0	0.0	0.0	0.0	0.0
EXISTING RECURRENT COSTS FOR: Central Monastic Affairs						
	30.080	33.087	36.396	40.036	44.039	183.638

CHAPTER 11

EDUCATIONEDUCATION

I. Basic SituationI. Basic Situation

A. Structure of the SectorA. Structure of the Sector

11.1 Education has been an important part of religious life in Bhutan for centuries and continues to be so today with approximately 4,000 monks, nuns and lay priests receiving education in religious institutions, supported by the state, throughout the country. This figure does not include those studying in private monasteries. Monastic education involves the study of religious rituals as well as other skills, including literacy, numeracy, philosophy, astrology, literature, arts and in some cases traditional medicine.

11.2 Formal western education was started only in the 1950s. Bhutan has achieved considerable success in expanding the provision of formal education: school enrolment grew from 1,500 pupils in 59 schools in 1959 to an enrolment of over 70,000 in 195 institutions in 1990. The gross primary enrolment ratio was estimated at 66.9% in 1990, based on an estimated population of 104,000 children between the ages 6 and 12. Despite these impressive results the Royal Government is committed to further improvements in the provision of education and following the Jomtein Conference, Bhutan has pronounced its determination to achieve access to primary education by the year 2000. While formal education of children has been expanding, the illiteracy rate amongst the adult population remains high. The Royal Government is thus also committed to increasing the basic education of the adult population, to enable the increased participation of the whole population in the development process.

11.3 The formal education system consists of one year pre-primary, six years primary, four years secondary, two years senior secondary and three years degree programme.

Education

Table 11.1 Educational Institutions, Pupil Enrolment and Teachers 1990

School/Institutes	No. of Schools	Enrolment			No. of Teachers		
		Boys	Girls	Total	Nat.	Non-Nat.	Total
Community Schools	46	2460	1518	3978	80	5	85
Schools							
Primary Schools	156	29582	18469	48051	972	700	1672
Junior Schools	21	6874	4693	11517	208	215	423
High Schools	10	2887	1580	4467	103	136	239
Sub-total	187	39343	24742	64035	1283	1051	2334
Institutions							
Sherubtse College	1	300	45	345	9	23	32
National Institute of Education	1	105	69	174	16	9	25
Teacher's Training Centre	1	40	19	59	11	5	16
Royal Bhutan Polytechnic	1	139	8	147	19	13	32
National Teachers' Training Inst.	1	63	0	63	13	3	16
Simtokha Rigney School	1	595	81	676	24	2	26
Zangley Muenselling School	1	20	7	27	8	0	8
Sanskrit Pathsalas	5	267	191	458	16	0	16
Sub-total	13	1782	459	2241	137	69	206
Total	200	43585	26719	70254	1500	1125	2625

B. Educational InstitutionsB. Educational Institutions

Department of EducationDepartment of Education

11.4 The Department of Education is responsible for the provision of education services, including construction of schools and other educational institutions, training and employment of teachers and development of curricula.

The Department is headed by the Director General and consists of 7 Divisions: Planning and International Coordination Division; Curriculum and Textbook Development Division; Board of Examinations; Inspectorate of Schools; Technical and Vocational Education Division; Teachers's Education Division and School Planning and Building Cell which is responsible for the design and supervision of school construction. The supervision and administration of educational services at the Dzongkhag level are the responsibility of the District Education Officers of which there are 18, who are in turn supervised by 4 Regional Education Officers.

11.5 The numbers of schools and other educational institutions are indicated in Table 11.1 (see Map 11.I Education Facilities in Bhutan). The numbers of pupils enrolled and teachers employed are also shown. These figures highlight the high proportion of boys enrolled in comparison to girls and the dependence on non-national teachers. As of 1990, 43% of the teaching staff were expatriates, mostly from India and a few through the voluntary service organizations of U.K., Canada, Japan, Australia, New Zealand, Netherlands and the UNV programmes.

Community SchoolsCommunity Schools

11.6 There were 46 community schools in 1990 with an enrolment of 3,978 pupils. Community schools were formerly known as Extended Classrooms (ECRs) and following an evaluation of the ECRs, the Department has reformulated the ECR concept into that of community schools. A community school is one that is built and maintained by the community where a minimum of 30 students is found to be within a walking distance of 1 hour. Such community schools are provided with one or two teachers by the Department of Education. The establishment of community schools within easier reach of communities has contributed to an increase in the numbers of children attending school, particularly girls.

Primary EducationPrimary Education

11.7 There were 156 primary schools in 1990 with an enrolment of 48,051. Out of the total enrolment 29,582 were boys and 18,469 were girls (see Table 11.1). Altogether, one year of pre-primary and 6 years of primary schooling are required for a student to complete primary education. At the end of primary education in Class VI, the pupils sit for a Common Examination. This examination is taken by all Class VI pupils throughout Bhutan at the same time, with evaluation of papers being the responsibility of the Bhutan Board of Examination. Depending on the results of the candidates, those with higher results are assigned to Junior or High Schools as boarders in other parts of the country. Part of the reason for such dispersal of students around the country is to improve national integration.

11.8 The Common Examination in Class VI will be discontinued in 1995, when students will sit for the first Common Examination in Class VIII. The Class VIII level of education will be considered as the required level for basic literacy and numeracy. The policy of the Royal Government is to achieve universal access to primary education by the year 2000.

11.9 Until the 6FYP, the curriculum for the primary education was largely based on the Indian system. The curricula in primary education (pre-primary to Class VI), particularly at the lower levels, have been revised to incorporate the history, values and environment of the Bhutanese people under the New Approach to Primary Education Programme. The curriculum in the higher secondary and university education levels in Bhutan is still based on the Indian system.

Secondary EducationSecondary Education

11.10 There were 21 junior schools and 10 high schools with enrolments of 11,517 and 4,467 students respectively in 1990. Students throughout Bhutan sit for a Common Examination in Class VIII, set by the Bhutan Board of Examination. After the Common Examination in Class VIII, students in Bhutan sit for the Indian Certificate School Examination in Class X and then for the Indian School Certificate Examination in Class XII. Only high schools have classes up to Class X. Subsequently, the students have to either go to Sherubtse College or to Yangchenphug High School in Thimphu for Classes XI-XII courses. Classes XI-XII were introduced in Yangchenphug High School in the academic year 1989. Classes XI-XII courses are also offered in Simtokha Rigney School, the Institute for traditional secular studies. Simtokha Rigney School had 676 students in 1990. Most of these students become Dzongkha language teachers after their studies.

Education

Higher Education

11.11 Higher educational institutes consist of Sherubtse College which offers general degree courses in Bachelors of Arts, Science and Commerce and the National Institute of Education in Samchi for Post Graduate Certificate in Education, B. Ed and primary teacher training courses. The enrolment in Sherubtse College and National Institute of Education in 1990 were 345 and 174 respectively in 1990.

Teachers Training Institutes

11.12 In addition to the National Institute of Education, there is another teacher's training institute : the Teacher's Training Centre in Paro which had an enrolment of 59 in 1990.

Technical and Vocational Education

11.13 There are three formal technical institutes in the country: the Royal Technical Institute in Phuntsholing, the Royal Bhutan Polytechnic in Deothang and the National Trade Training Institute in Phuntsholing. The Royal Bhutan Polytechnic provides diploma courses in electrical, civil and mechanical engineering. In 1990, the Royal Bhutan Polytechnic had an enrolment of 147, the National Trade Training Institute had an enrolment of 63 and the Royal Technical Institute had an enrolment of 292. The Royal Technical Institute in Kharbandi, Phuntsholing was established in May 1965 and it is one of the oldest technical institutes in the country and had produced 298 certificate holders by 1990. The Royal Technical Institute offers certificate courses in three main trades i.e., Electrical, General Mechanics and Motor Mechanic with four allied trades : fitting, carpentry, welding and sheet metal trade. The National Trade Training Institute offers courses in masonry and plumbing.

Royal Institute of Management (RIM)

11.14 The Royal Institute of Management provides in-service training for civil servants and the private sector particularly at mid and junior management levels. Its pre-service and in-service courses include personnel management; decentralised rural development; financial management and audit; communication and report writing; development policy orientation and computer training. The RIM also undertakes research connected to management, public administration and training techniques. RIM has a Library Learning and Documentation Division which caters to general readers especially civil servants. While external training is necessary in most cases as an interim measure, the Government recognises that it is the in-country training that can provide a greater training coverage at a relatively low cost and also meet the specific training requirement of the civil service and private sector. It is in recognition of this fact that the Royal Government established the Royal Institute of Management at Thimphu in the beginning of 1986, with its own Board of Directors. The RIM had a staffing strength of 47 in 1991.

Other Institutions

11.15 There are 5 Hindu religious and linguistic education institutions -Sanskrit Pathshalas- in Southern Bhutan with a total enrolment of 458 students and a school for the blind - Zangley Muenselling School in Khaling - with an enrolment of 27 students. Other educational institutes include the Forestry Institute in Taba, the National Agriculture Training Institute in Paro, the Natural Resources Training Institute in Lobesa, the Royal Health School in Thimphu, the National Institute of Family Health in Geylegphug, etc. They are discussed under the relevant chapters.

C. Constraints

Lack of School Facilities and Remoteness of Schools

11.16 The lack of adequate school facilities, as a result of financial resource constraints, is the major reason for the modest enrolment figure. The remoteness of many communities and thus the long distances children have to walk to school, ranging from 30 minutes to 4 hours, is another factor contributing to poor enrolment in primary level education.

11.17 The enrolment of girls is much lower than boys. As shown in Table 11.1 there were only 18,469 girls out of 48,051 primary schools pupils in 1990. The distance between the schools and homes is thought to be an important factor for the lower enrolment of girls in primary schools, besides social and economic reasons.

11.18 The remoteness of many schools hinders effective supervision and monitoring of teaching methods by the Schools Inspectorate Division.

Shortage of Teachers

11.19 In addition to the lack of school facilities, the education sector is constrained by an inadequate number of trained national primary teachers. The shortfall is made up by expatriate teachers mostly from India. In 1990, 43% of the overall teaching staff consisted of expatriate teachers. At a more disaggregated level, 40% of teachers in primary schools, 51% of teachers in high schools and 34% of teachers in other institutes were expatriates in 1990. The demand for national teachers will increase further during the 7FYP to meet existing requirements for national teachers and the additional requirements for the new schools to be constructed.

High Dropout and Repeater Rates

11.20 The number of children dropping out of primary schools is considered to be high: averaging 13% in 1990. At the end of primary level, Class VI, about 32 % children do not return to continue their education at the secondary level. Thus, there is a large number of children out of school. Once children leave school, they are unable to continue their education by other means as there is little adult or non-formal education. It has been observed that those pupils who leave school, particularly those from the higher primary classes, are less prepared to return to rural life nor are they adequately qualified to continue training or to find formal employment. This situation is of great concern to the Royal Government.

Table 11.2 Repeater and Dropout Rates for Academic Year 1988-1989

Class	PP	I	II	III	IV	V	VI	VII	VIII	IX	X
Repeaters	33	28	24	20	21	18	27	8	17	2	1
Dropouts	3	9	7	7	13	15	29	10	28	5	

11.21 On average, over 27% of primary school students repeat their classes each year. This is thought to be due to the dependence on examinations to assess pupils' performance and a lack of appropriate curriculum until NAPE was introduced. A large proportion of children in rural schools are also over age.

11.22 Until the New Approach to Primary Education was introduced in 6FYP, the use of curricula which were inappropriate to the needs of the population reduced the incentive for parents to send their children to school. The scarcity of labour in rural areas is another reason for parents being less willing to send their children to school.

II. Review of Past Performance

A. Objectives of the 6FYPA. Objectives of the 6FYP

11.23 The objectives in the 6FYP were to:

- increase enrolment at the rate of 6% per year and increase retention of children in primary schools
- develop a curriculum relevant to an agrarian economy
- strengthen the teacher education system both before and during service
- increase adult literacy rate, especially for out of school girls and women
- promote the development of teaching and learning materials
- increase community participation in primary educational expansion

B. Achievement of Objectives

Primary Education

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11.24 In 1986, the enrolment level between pre-primary and Class VI was 49,485. By 1990, the enrolment in the primary education was 63,643. The primary school enrolment is higher than that shown in Table 11.1 as some of the junior schools also have primary sections. The growth rate of enrolment thus exceeded planned increases. The increase in enrolment in the 1987-88 and 1988-89 academic years were 8% and 11% respectively. The growth rates of enrolment were highest among the educationally underserved Dzongkhags and regions which made some impact on reducing the disparity in access to education. However, the difference is still quite marked (see Table 11.3).

11.25 In terms of physical development works, 49 community schools were planned, while a total of 84 community schools were established. A total of 12 primary schools were planned, and the 5 primary schools to be constructed under the Royal Government's funding were completed. The 7 donor funded primary schools were still to be constructed at the end of the 6FYP.

Secondary Education

11.26 Nanglam Junior High School was opened in 1990 and Mongar Junior High School was upgraded into a High School. Many high schools had primary sections which are beginning to be transferred to Primary Schools. Class XI-XII courses were introduced in Yangchenphug High School.

Higher Education

11.27 The enrolment in the degree course in Sherubtse College increased from 166 in 1986 to 200 in 1991 and Honours courses were introduced in the 1991 academic year. The enrolment at the National Institution of Education increased from 41 in 1986 to 74 in 1991. Class XI-XII courses have also been introduced in Simtokha Rigney School to prepare for its elevation to a degree level institution.

Curriculum Development

11.28 In the 6FYP, the New Approach to Primary Education was introduced. It is a children centred approach using nationally developed and relevant curricula. For example, the teaching of science is based on learning from the immediate environment, through tending to the school kitchen gardens, through introduction of health, hygiene and population education. The subject was renamed "Environmental Science".

11.29 To nationalize the curriculum to Bhutan's needs and ethos, the Curriculum and Textbook Development Division of the Department of Education has been strengthened with recruitment of selected curriculum writers from the teaching force. The Division has re-written the English text and work books, simplified Dzongkha text books, prepared teachers' guides, science and environmental science (EVS), Bhutanese history and geography textbooks and produced teaching materials for NAPE. District Resource Teachers have been posted in each Dzongkhag to provide support to teachers in the introduction of NAPE.

Teacher Training

11.30 The output of primary school teachers from the 2 Teacher Training Institutions has increased from 46 in 1987 to 130 in 1991. The output of secondary teachers from National Institute of Education increased from 20 in 1987 to 27 in 1991. Nevertheless, there is a marked shortage of national teachers and many teachers have not had any training in the New Approach to Primary Education.

Royal Institute of Management

11.31 Since the establishment of RIM, several programmes were launched to fulfil its functional goals. A Training Plan was prepared for 1986-95 . The Plan incorporates training programmes for all the five categories of civil servants: top, senior, middle level executives, supervisory and office support personnel. Of the 9 faculty members, 7 have completed long courses abroad. A Library Learning and Documentation Division has been established and links forged with institutions in the region and Europe for the exchange of information.

Non Formal Education Non Formal Education

11.32 There has not been any significant programme introduced for non-formal and adult education. However, educational programmes are becoming a regular feature of Bhutan Broadcasting Services.

III. Objectives and Strategies for the 7FYPIII. Objectives and Strategies for the 7FYP

A. Objectives for the 7FYPA. Objectives for the 7FYP

11.33 The broad objectives for the Education sector are in line with national objectives of improving the quality of life, developing human resources, facilitating the meaningful participation of the population in the country's development activities, and preserving and strengthening the country's culture.

11.34 The specific objectives for the 7FYP are to:

- increase the coverage of education to bring about equitable access and meet the target of universalization of primary education by the year 2000
- enhance the relevance and quality of education particularly at the primary level within the overall framework provided by the New Approach to Primary Education.
- expand educational opportunities for the disabled and the disadvantaged for their basic learning needs.
- enhance the literacy rate through alternative forms of education such as non-formal and adult literacy programmes.
- strengthen technical and vocational education in view of the envisaged development of the industrial sector.

B. Strategies for Achieving ObjectivesB. Strategies for Achieving Objectives

11.35 The Strategies for achieving these objectives are as follows:

- increase the numbers of schools, particularly community schools, to ensure the equitable distribution of education facilities.
- increase the number of national teachers as well as their expertise in order to ensure improvements in the learning and teaching processes.
- continue improvements in the national curriculum to increase its relevance to the needs of the population and the economy, to encourage greater enrolment levels, and to prevent the high dropout and failure rates.
- improve the efficiency in the delivery system with a view to make the education system more cost effective.
- encourage greater involvement of communities in the construction and maintenance of community schools.
- improve liaison with the industrial sector to increase the relevance of technical education.

Increase Access to Education Increase Access to Education

11.36 To achieve universal access to primary education by the year 2000, a target of 88% coverage would need to be met by 1997. The number of students in 1997 in primary education system should be 100,280, which will entail an annual growth rate of 6.85%. Special emphasis will be given to educationally backward areas and girls to reduce the existing disparity.

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Table 11.3 Enrolment Targets for the 7FYP by Dzongkhag

Dzongkhag	1990 enrolment	% of Enrolment	Annual increase required to achieve UPE by 2000
Haa	1341	96.12	2.68
Paro	2967	91.37	3.20
Samchi	7365	64.99	6.78
Thimphu	7368	139.8	4.44
Chirang	5961	99.88	2.29
Dagana	3240	67.25	6.42
Punakha	1282	45.55	10.65
W. Phodrang	1708	43.89	11.06
Bumthang	1163	60.40	7.57
Geylegphug	8751	95.09	2.79
Shemgang	2017	57.10	8.17
Tongsa	983	42.13	11.51
Lhuntshi	922	30.63	15.13
Mongar	2118	36.41	13.15
P. Gatshel	1408	49.17	9.80
S. Jongkhar	4955	42.51	11.41
Total	63643	66.91	6.89

11.37 As the numbers of pupils attending schools increase, the physical resources in the existing schools will have to be consolidated and expanded and new schools will have to be constructed. Emphasis will be placed on encouraging communities to establish new schools to reduce the capital costs to the Department. As an incentive to communities and to ensure quality education in these schools, the Department has decided to post the best teachers to community schools. The Department is also encouraging communities to become involved in the selection of school sites, construction of the buildings and management of the schools through formation of School Management Boards. This will increase their sense of responsibility for the education of their children.

11.38 As with enrolment in primary schools, the education system will endeavour to provide fair and equitable enrolment in higher secondary education between different dzongkhags and between boys and girls. To improve the enrolment of girls in higher secondary levels, girls boarding facilities with girls warden, will be opened. Some of the schools and institutions located adjacent to the international boundary will be relocated in more convenient places.

Improving the Quality of Education

11.39 The curricula will be developed further, particularly at the primary level within the overall framework provided by the New Approach to Primary Education. All primary level education will be brought under the curricula of NAPE by 1997. Improvement of the text books of all subjects and teaching materials for NAPE will be continued. In particular, text books on dzongkha, elementary agricultural economics, population education, environmental conservation and sustainable resource use, and health education will be given strong emphases.

11.40 The curricula for the higher secondary education has not been revised. The production of relevant text books for post primary education will be the main task during the 7FYP. Texts books will be written for the following subjects: English, History, Geography, Physics, Chemistry, Biology, Economics, Dzongkha.

11.41 Bhutanese students currently sit for the Indian Certificate for School Examination (Class X) and Indian School Certificate (Class XII). Hence, there is limited freedom for launching an independent curriculum for secondary education and the Department of Education intends to introduce a Bhutanese secondary examination by

1995. This will necessitate the strengthening of the Bhutan Board of Examination to undertake the task. A Board of Education consisting of senior educationists will also be formed to advise the Bhutan Board of Examination (BBE) and to develop linkages with educational institutes in the region to ensure that BBE's certificates are valid and honoured by other institutes.

11.42 Curricula will also be developed for higher secondary level education between Class VII-X. The curriculum development will not only include re-writing textbooks but also diversifying the subjects. Arts, crafts, computer science and basic skills in agriculture, carpentry, electrical and mechanical objects and typing will be introduced. The introduction of trade skills will widen the range of opportunities for those who seek employment directly from secondary education.

11.43 In the 1988-89 academic year, an average of 10 per cent of students were dropouts and an average of 25 percent of students were repeaters. The implementation of NAPE, which is activity centred and more interesting to the child than the one it replaced, is expected to reduce the repeater and dropout rates. The introduction of continuous classroom assessment of pupils is also envisaged to identify reasons for high dropout and failure rates. In addition, a study into the causes of high repeater and dropout rates will be undertaken. Its results will form the basis of corrective measures.

11.44 There are at present 5 Sanskrit Pathsalsas with a total enrolment of 458 and 16 teachers. They are located in the south to cater to special needs of communities of the south.

11.45 The Department of Education plans to develop a physical education curriculum, including improvement of traditional and modern sports and games; and organization of regional and national sports competitions.

Improving the Efficiency in Delivery of Educational Services

11.46 The Royal Government has accorded the education sector high priority in terms of RGOB expenditure, however budgetary constraints will necessitate restraint in the expansion of expenditure. The Department of Education will thus identify the most cost effective means of providing education to the population. In this context, community participation in the construction of community schools and maintenance, bussing services, private schools, and in some cases relocation of schools will be promoted to improve enrolment rather than building new schools and boarding facilities to encourage increased enrolment in remote areas.

11.47 Most of the additional pupils to be enrolled at the post primary level will be accommodated in existing schools, which will need to be improved and/or expanded.

11.48 Private entrepreneurs will be encouraged to set up primary schools in towns. The Department of Education will develop appropriate incentives to make this venture attractive.

11.49 The administrative and supervisory capacities of the Department and the District Education Officers as well as the collection of data to strengthen monitoring and evaluation capabilities of the Planning Division will be improved.

Increasing the Numbers and Skills of National Teachers

11.50 One of the main constraints to the rapid development of primary education is the lack of trained national teachers. The overall desired teacher-pupil ratio in primary schools is 1:36 as opposed to the 1990 ratio of 1:30. But the average ratio disguises the problem of high numbers of pupils per class in the lower classes and low numbers in higher classes of primary schools. This results in low utilisation of classroom space and teacher time in the higher classes of primary schools. To improve the utilization of teacher-time, multigrade teaching system will be introduced gradually. To improve classroom space utilization, the minimum permissible number in a classroom shall be 25.

11.51 As the number of pupils increase, there will need for a parallel increase in the number of teachers,

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particularly of the national teaching force. Moreover, the educational goals and value system implicit in NAPE require national teaching staff. It is intended to reduce the percentage of expatriate teachers from 40% of the teachers in primary schools, 51% of teachers in high schools and 34% of teachers in other institutes in 1990, to 34% in primary schools, 30% for junior schools and high schools and 30% for other institutions by the end of the 7FYP.

11.52 In order to meet the increased demand for national teaching force, the existing capacity of all teacher training courses will be increased. The output of teachers from various courses after taking account of the wastage are given in Table 11.4.

Table 11.4 Output of Teachers in the 7FYP

Institute/Course	1990		1997	
	Enrolment	Output	Enrolment	Output
TTC, Paro	60	29	300	135
NIE, Samchi				
PTTC	123	44	160	72
B.Ed	71	20	90	25
P.G.C.E	15	10	25	23

11.53 Improving the quality of education will be improved further through intensive in-service training for untrained national teachers. Workshops and short courses at national, zonal and Dzongkhag levels on specific subject areas and pedagogy will be organised. Multi-grade teaching, school administration, pastoral care and career counselling will be part of these training programmes. Additionally, distance education will be introduced for teachers. This will enable teachers to be informed of education development without having to travel long distances to attend training courses at educational institutes.

University Level Education

11.54 Sherubtse College has been affiliated to the University of Delhi, with students taking degrees conferred by the University of Delhi. The Department of Education intends to continue the cautious steps towards improving Sherubtse College, the Simtokha Rigney Institute and the Royal Bhutan Polytechnic with the aim of establishing the Ugyen Wangchuck University. In the course of 7FYP, the basic infrastructure and academic competence of Sherubtse College will be improved to enable the upgrading of the college to an autonomous body. Physical facilities, including laboratories, equipment and buildings will be established. The infrastructure will be improved not only to enable higher enrolment in university education, but also to accommodate the courses in B.Ed and P.G.C.E which will be transferred from NIE Samchi to Sherubtse College in Kanglung in the course of 7FYP. At the same time, the Class XI and Class XII courses will be transferred to 4 other high schools namely Jigme Sherubling High School, Drugyel Paro High School, Shemgang High School and Punakha High School.

Table 11.5 Enrolment at Sherubtse College 1990

Stream	Male	Female	Total
Arts, Class XI & XII	95	17	48
Science, Class XI & XII	114	14	128
Commerce, Class XI & XII	39	15	54
Sub-total, Class XI & XII	248	46	294
Arts, Degree Course	85	14	99
Science, Degree Course	41	4	45
Commerce, Degree Course	55	4	59
Sub-total, Degree Course	181	22	203
Total	429	68	497

11.55 Simtokha Rigney School offers courses up to Class XII and it is the main source of Dzongkha language teachers. In the 7FYP, both infrastructural and curriculum development will take place to enable the School to provide degree level studies in Dzongkha. But the present site in Simtokha is unsuitable for further expansion and the Higher Institute for Rigney and Dzongkha studies will be established elsewhere. The opening of such an Institute will reduce the need for students to attend courses outside Bhutan. But where specialization is needed, scholarships for further studies will continue to be awarded.

Technical and Vocational Education

11.56 The existing courses will be reviewed and updated to reflect the developments in these fields and to reflect the manpower demands in these areas. In particular, importance shall be given to the participation of the user agencies in the curriculum development. A closer relationship between the Institute and the Department of Trade and Industry will make the Royal Bhutan Polytechnic course more relevant to the needs of industry.

11.57 The workshop in the Royal Bhutan Polytechnic will also be re-equipped with appropriate tools. Students' residences will be constructed with priority for girls hostels in order to increase the enrolment of girls at the Polytechnic. The infrastructure and curriculum of the Royal Technical Institute will be improved. A girl's hostel will be built to increase the enrolment of girls at the RTI. The National Trade Training Institute, in Kharbandi will increase its enrolment capacity from 60 at present to 100 by the end of the 7FYP. To enable this expansion, the number of instructors as well as the physical facilities will be increased. Due to the envisaged expansion of the industrial sector and demand for technically skilled manpower, the possibility of establishing 2 more trade schools will be studied. It is likely that one of them will be established in Eastern Bhutan.

Royal Institute of Management

11.58 A new facility for the RIM will be constructed for the RIM in the 7FYP, as the existing Institute is housed on several sites. This will improve the functioning of the Institute, in addition to training of the RIM staff. The RIM will also improve the content of their courses through the establishment of linkages with client organizations for assessment of their training needs and evaluation of RIM training. This will enable the RIM to meet the in-country training requirements of the top, senior, middle level executive and supervisory and office support personnel. The Library Learning Resources and Documentation Division will be expanded with a view to strengthen training and research facilities. RIM will also establish linkages with reputed institutions abroad with similar objectives to obtain assistance inter-alia in the development of the RIM faculty, training materials and documentation and also to share training experiences.

Adult and Non Formal Education

11.59 During the 7FYP, an adult literacy programme will be developed with the aim of reaching approximately 3,000 people. The programme will meet basic educational needs of the population in terms of basic skills reading,

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writing and numeracy and will start on a pilot basis in 1992. The Department of Education will carry out the programme in conjunction with National Women's Association of Bhutan, the Ministry of Agriculture and the Ministry of Communication. Non-formal education programmes will be developed for those pupils who dropped out of school. It is envisaged that the community schools will be used for adult literacy and other non-formal education programmes and thus be made use of by all members of the communities.

Educational Opportunities for the Disabled and Disadvantaged

11.60 The Zangley Muenselling Blind School is the only school which gives education to the blind. There are no other schools which cater to the education of the disabled. The Department of Education will conduct a survey to assess the size and characteristics of the disabled population. Based on this survey, special programmes or facilities shall be developed to integrate the disabled into regular schools, wherever possible. A community rehabilitation programme for the disabled people will also be implemented by the Department of Health Services.

Financial and Manpower Requirements for the 7FYP

TOTALS FOR Education						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP_TOTAL
CAPITAL COSTS	150.828	177.951	198.795	137.680	80.746	746.000
RECURRENT COSTS						
a) Existing	84.253	92.679	101.947	112.141	123.355	514.375
b) Project Related	112.231	110.383	113.582	117.562	119.552	573.310
Total Recurrent	196.484	203.062	215.529	229.703	242.907	1087.685
TOTAL COSTS	347.312	381.013	414.324	367.383	323.653	1833.685
MANPOWER	230	188	179	280	232	1109
TA PERSONNEL(mm)	24.0	10.0	8.0	5.0	3.0	50.0
TOTALS FOR Department of Education						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	134.828	155.951	177.795	135.180	79.246	683.000
RECURRENT COSTS						
a) Existing	79.896	87.886	96.675	106.342	116.976	487.775
b) Project Related	110.231	108.883	112.082	117.052	118.952	567.200
Total Recurrent	190.127	196.769	208.757	223.394	235.928	1054.975
TOTAL COSTS	324.955	352.720	386.552	358.574	315.174	1737.975
MANPOWER	214	182	177	280	232	1085
TA PERSONNEL(mm)	21.0	10.0	8.0	5.0	3.0	47.0
TOTALS FOR Royal Institute of Management						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	16.000	22.000	21.000	2.500	1.500	63.000
RECURRENT COSTS						
a) Existing	4.357	4.793	5.272	5.799	6.379	26.600
b) Project Related	2.000	1.500	1.500	0.510	0.600	6.110
Total Recurrent	6.357	6.293	6.772	6.309	6.979	32.710
TOTAL COSTS	22.357	28.293	27.772	8.809	8.479	95.710
MANPOWER	16	6	2	0	0	24
TA PERSONNEL(mm)	3.0	0.0	0.0	0.0	0.0	3.0

CHAPTER 12

HUMAN RESOURCE DEVELOPMENT HUMAN RESOURCE DEVELOPMENT

I. Basic Situation

12.1 Unlike many developing countries, Bhutan suffers from a shortage of labour as well as skilled manpower, and thus human resource planning needs to focus on developing the skills of a small human resource base rather than on providing employment opportunities. Manpower shortages, both skilled and casual labour, have presented a major constraint in the development of most sectors of the economy. This has affected both the Government and private sector. In the case of unskilled labour shortages in the agricultural sector, the problem is compounded by the limited scope for mechanisation due to the mountainous terrain.

The Royal Civil Service

12.2 The civil service of the Royal Government employs the largest number of people with formal education in Bhutan. The manpower needs of the civil service have been expanding rapidly with the increasing social and economic development activities of the Royal Government. Between 1977 and 1987, the size of the civil service doubled. However a major retrenchment exercise was carried out between 1987 and 1988 in accordance with the Royal Government's new policy directives of maintaining a small, compact and efficient civil service. In 1991, there were 11,228 people employed in the civil service (see Table 12.1).

12.3 While it was necessary to streamline the civil service, many Departments are constrained by a lack of qualified national staff. These constraints are being alleviated with the selective absorption of qualified national manpower and a cautious approach to recruitment of expatriate staff.

12.4 In some sectors the proportion of non-nationals are relatively high reflecting the shortage of qualified nationals to fill these positions. The sectors with the highest proportion of expatriate staff are education and in the scientific and technical fields. Conversely the proportion of expatriates is lowest in the administrative cadre of the civil service. The number of expatriates required will continue to decline as an increasing number of Bhutanese with requisite qualifications are employed both in the private and the Government sector. However, self-sufficiency in the number of Bhutanese with adequate qualifications, particularly in the scientific and technical fields, will require continuous investment in human resource development. The shortage of national manpower with specific professional qualifications will persist in many sectors while the human resource base is being built.

Numbers of Graduates, Postgraduates and Diploma Holders in 1991

12.5 There were only 671 graduates and postgraduates and 506 diploma holders, in the civil service in 1991. Over the last 5 years an average of 90 national graduates and post graduates students graduated per year. In addition, there are approximately one thousand people graduating from the various training institutes in Bhutan: Royal Commercial Institute; Royal Institute of Management; Royal Institute of Health Science; Royal Technical Institute; Royal Polytechnic etc.

Human Resource Development

Table 12.1 Employment Trends in the Civil Service 1985-1991

Agency	1985	1987	1989	1991	% Change 85-91	Agency	1985	1987	1989	1991	%Change 85-91
His Majesty's Secretariat	80	88	62	60	-25.00	Ministry of Social Services	27	32	32	37	37.04
Royal Advisory Council	29	32	19	10	-65.52	Department of Education	1446	2411	2110	2328	61.00
National Assembly Secretariat	10	12	11	12	20.00	Department of Roads	811	872	866	581	-28.36
Dzongkha Development Commission	0	0	7	10		Ministry of Agriculture	19	53	16	52	173.68
Special Commission for Cultural Affairs	0	25	123	136		Department of Animal Husbandry	505	576	588	587	16.24
Division for Cultural Properties	13	80	11	10	-23.08	Department of Forest	918	897	845	601	-34.53
National Library	21	40	38	43	104.76	Food Corporation of Bhutan	260	266	203	262	0.77
National Museum	11	11	11	14	27.27	Ministry of Trade and Industry	27	33	33	40	48.15
Dratshang Lhentshog	9	22	38	40	344.44	Department of Trade and Industry	74	56	67	66	-10.81
Bhutan Olympic Committee	0	0	14	18		Dept. of Geology and Mines	79	82	64	94	18.99
Judiciary	177	190	188	200	12.99	State Trading Corporation of Bhutan	91	157	99	123	35.16
Ministry of Finance	103	195	97	90	-12.62	Department of Power	461	449	439	507	9.98
National Accounts Service	16	52	73	89	456.25	Gedu Wood Manufacturing Corp. & Penden Cement Authority +		1047	433	0	
Department of Revenue and Customs	240	333	339	285	18.75	Ministry of Communication	187	271	114	39	-79.14
Bhutan Development Finance Corporation +	0	0	42	0		Dept. of Post, Telegraph and Civil Wireless	564	515	533	531	-5.85
Bank of Bhutan +	173	173	0	0	-100.00	Dept. of Telecommunications	389	381	318	171	-56.04
Royal Monetary Authority	33	60	50	67	103.03	Dept. of Information and Broadcasting	129	138	154	137	6.20
Royal Insurance Corporation	162	165	126	0	-100.00	Bhutan Tourism	304	363	222	0	-100.00

Human Resource Development

of Bhutan +						Corporation					
Planning Commission	77	75	31	69	-10.39	Druk Air/ Civil	46	71	104	28	-39.13
Secretariat, CSO and CSD**						Aviation ++					
Royal Civil Service	28	32	40	42	50.00	Dept. of Works and	103	105	161	751	629.13
Commission						Housing					
Ministry of Foreign Affairs	164	162	79	124	-24.39	Royal Audit Authority	64	121	79	70	9.38
Ministry of Home Affairs	54		49	252	366.67	National Women's	6	14	11	17	183.33
						Association of Bhutan					
Survey and Land Record	180	237	211	233	29.44	Royal Institute of	0	0	23	47	
						Management					
Zone and Dzongkhag	3270	722	451	471	-85.60	Total	12755	13769	11502	11228	-11.97
Administration											

Note 1.: + These agencies were privatised and their employees delinked from the civil service

** CSO stands for Central Statistical Office and CSD stands for Computer Support Division.

++ 1991 total staff strength for Druk Air/Civil Aviation does not include Druk Air employees since Druk Air is considered to be a corporation.

Note 2.: 1991 civil service does not include joint and public sector employees

Note 3.: The staffing strength cited in the sectoral Chapters will vary from these numbers as enumerated in different months and some sectors include general supporting cadre (GSC), who are employed on short term basis.

Human Resource Development

Table 12.2 Diploma Holders, Graduates, and Post Graduates in the Civil Service 1991

Sl. No	Qualification	National	Non National
1.	B. Com.	78	65
2.	B.A.	282	245
3.	B. Sc.	53	137
4.	B. Ed.	26	55
5.	M.A.	19	55
6.	M.Ed.	6	19
7.	M. Com.	3	4
8.	B. A. (dzongkha)	50	0
9.	B.V.Sc.	14	0
10.	B.E.	33	0
11.	B.A. (sanskrit)	5	0
12.	M. Sc.	31	26
13.	MBBS	49	18
	Total Graduates	671	639
14.	Diploma holders	506	101
	Total	1177	740

Table 12.3 Annual and Cumulated Output of Graduates 1970-1990

Year	Annual output	Cumulated output	Year	Annual output	Cumulated output
1970	1	1	1981	55	219
1971	6	7	1982	45	264
1972	9	16	1983	69	333
1973	3	19	1984	40	373
1974	15	34	1985	67	440
1975	9	43	1986	63	503
1976	20	63	1987	87	590
1977	25	88	1988	90	680
1978	30	118	1989	90	770
1979	26	144	1990	64	834
1980	20	164			

Joint and Public Sector Industries

12.6 The Royal Government has increased the pace of privatization of many industries and service sector activities during the 6FYP. As the undertakings are privatised they are incorporated under the Companies Act of Kingdom of Bhutan, 1989. Employees of such corporations are no longer considered part of the civil service. At the beginning of 1991, the total employment size in the public and joint ventures incorporated under the Companies Act of the Kingdom of Bhutan stood at 2,576, out of which 715 were non-national. This figure does not include the manpower that are employed on a daily wage system (casual labour)

12.7 Table 12.4 indicates employment figures in 16 public and joint undertakings in the country. It can be seen that the percentage of non-nationals is 8 percent higher in public and joint undertakings than in the civil service.

Table 12.4 Employment in Public and Joint Undertakings 1991

Category	National	Non national (N-N)	Total	N-N as a % of total
Scientific & Technical	25	23	48	47.9
Scientific & Technical Support	951	290	1241	23.4
Administrative	104	37	141	26.2
Administrative Support	668	360	1028	35.0
Technical & Operators	113	5	118	4.2
Total	1861	715	2576	27.8

Private Sector Employment

12.8 There is very little reliable information on employment in private sector industries. The Ministry of Trade and Industry carried out a survey in the 18 Dzongkhags in 1990. The survey covered 157 industrial units, which were found to employ only 2,900 persons. An analysis of the data covering those 157 units surveyed showed the following results: 61 units (or 39 per cent) employed 10 or more persons; 29 units (or 18 per cent) employed 20 or more persons; 12 units employed 200 or more persons - one unit in Phuntsholing employed 241 persons and the other in Samdrup Jongkhar employed 337 persons. The majority of the units (61 percent of the units) employed less than 10 persons and about a third employed less than 5 per cent.

12.9 Compared to the percentage of expatriates in the civil service and public and joint sector undertakings, the percentage of expatriates in the private industrial sector is the highest at 47%. Among skilled workers, in technical and clerical jobs, the proportion of expatriates is higher than nationals.

Trading Establishments

12.10 There is little information available on the manpower situation in the trading (retailing and hotel) sector. According to the Ministry of Trade and Industry, about 8,000 trading licenses have been issued (see Chapter 18). There would be many licences which might not have been used and many trading establishments are small employing very few skilled or educated persons and are run as family enterprises. Together these small trading establishments add to a thriving retailing and hotel service sector. However, trading establishments do not represent a significant sector for employment creation.

Construction Sector

12.11 Approximately 450 licences have been issued in the construction sector. Many of these construction agents may not be in operation. Licenses are classified into grade A, B, C and petty contractors depending on the

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investment in construction equipment, existence of a permanent office, past experience and the other assets of the contractor. The majority of the construction agents are petty contractors and do not either have construction equipment of their own or a permanent labour force. However they are responsible for most of the construction work, which means that the construction sector is highly labour intensive. Both skilled and unskilled manpower in construction sector are scarce and this has been an important factor in causing delays in the implementation of RGOB programmes.

B. ConstraintsB. Constraints

12.12 One of the major constraints in indigenization of manpower in both the private and Government sectors is the unavailability of qualified manpower. The pool of potential trainees with the relevant qualifications is limited because of the small numbers of graduates from colleges outside Bhutan and in-country training institutes. There is also an imbalance between the output of manpower at the higher education level in certain disciplines and the manpower demand in the country. Increasingly, the need for manpower with technical and scientific qualifications is much higher than for those with Arts qualifications.

12.13 The institutional capability for manpower planning in many organizations is weak. The Royal Civil Service Commission lacked such capabilities and thus institutional strengthening of RCSC was a priority in the 6FYP. The problem of institutional weakness in many organizations is compounded by the lack of appropriate data collection systems. There is no national database for manpower planning which covers all sectors of the economy.

12.14 The financial resources for human resource development, mainly for training abroad, have been contributed by various donors. However the donor funds provided have been insufficient to meet the increasing HRD needs as development activities which require qualified people are on the rise and new technologies are introduced.

C. InstitutionsC. Institutions

12.15 The Royal Civil Service Commission is responsible for co-ordinating the personnel management of the Civil Service, human resource development and manpower training of both the private and government sectors. The Royal Civil Service Commission also negotiates with multilateral and bilateral donors for funding of the Human Resource Development Programme in close co-operation with the Planning Commission, Ministry of Foreign Affairs and user agencies. The Royal Civil Service Commission consist of 8 members who alternate as chairman for a period of six months. The Royal Civil Service Commission Secretariat had a staffing strength of 47 in 1991.

II. Review of Past PerformanceII. Review of Past Performance

A. Objectives and Achievements in the 6FYPA. Objectives and Achievements in the 6FYP

12.16 The Royal Government has introduced an integrated approach to planning, programming and implementation of manpower development or human resource development activities. In practical terms this means that the Royal Civil Service Commission is responsible for implementing all manpower training. This new approach has enabled more effective programming and re-programming of resources from UNDP and other sources for manpower development during the 6FYP and will be continued in the 7FYP.

12.17 Institutional strengthening of the Royal Civil Service Commission was a major goal in the 6FYP. The activities included the following human resource management aspects :

- enactment of Bhutan Civil Service Rules and Regulations
- establishment of a comprehensive information system in the Royal Civil Service Secretariat covering various aspects of personnel management and human resource development
- establishment of methodologies for proper evaluation and choice of appropriate training facilities
- preparation of a proposal for the establishment of national planning capabilities.

12.18 From 1954 to 1991, a total of 4,545 training courses have been funded. This includes training both in and outside Bhutan. Training courses are of various duration ranging from one month to long term professional courses lasting 5 years. The courses indicated in Table 12.5 do not show the number of people trained, as many people have been sent for re-training to upgrade their skills.

Table 12.5 Sectoral Training Funded from 1954-1991

Sl. No	Broad area of training	Training Courses Completed
1.	Public Administration	254
2.	General Development Administration	171
3.	Judiciary and Legal Affairs	24
4.	Finance	352
5.	Industry and Trade	266
6.	Natural Resources	265
7.	Energy	70
8.	Arable Agriculture	519
9.	Animal Husbandry	323
10.	Forestry	221
11.	Transport and Communications	253
12.	Mass Communication	176
13.	Public Works	206
14.	Data processing & Statistics	167
15.	Education and Culture	870
16.	Health	408
	Total	4545

III. Objectives and Strategy for the 7FYPIII. Objectives and Strategy for the 7FYP

A. National Human Resource Development ObjectivesA. National Human Resource Development Objectives

12.19 During the 7FYP, the broad human resource development objectives are:

- To complement national economic development plans by providing the required trained manpower to all priority sectors of the economy.
- To strengthen the overall RGOB institutional capability for human resource management and development.
- To give a particular emphasis on developing human resources in private sector and NGOs in the social services sector.

12.20 In so doing, the national goals of self-reliance and increasing efficiency would be met. Adequate attention will also be given to the training of women, ensuring environmental sustainability and regional balance.

B. Strategies for the 7FYPB. Strategies for the 7FYP

12.21 The strategies for achieving these objectives need to be viewed in the context of the constraints facing the sector explained earlier in Section on Constraints.

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12.22 The following strategies are proposed:

- Planning for HRD during the 7FYP will be undertaken in an integrated and intersectoral approach through the use of the HRD Master Plan. This Masterplan will take into account the existing needs and predict future manpower requirements.
- Improved co-ordination with the Department of Education and in-country training institutions to ensure that they are able to provide the educational facilities required to produce the necessary number of graduates. This will include strengthening of in-country training institutions such as RIM to increase training capacity and quality within the country.
- The potential resources from the various donors will be used to plan training programmes. Donor-wise project proposals will be prepared and a long-term framework negotiated with each donor for the 7FYP Period. This will ensure compatibility between donor offers of assistance and Bhutan's requirements.
- Attempts will be made to widen the donor-base for HRD both in terms of increased aid from existing donors and assistance from new donors.
- Institutional strengthening activities for human resource management will be continued with emphasis on user agencies both in the public and private sectors.
- Establish national manpower planning capabilities to ensure sustainability of manpower planning process so that proper planning and projection of national manpower needs is integrated into the overall economic planning process.
- Special emphasis of HRD programmes for the private sector to encourage its development and promote the acceleration of industrial development.

C. TargetsC. Targets

Table 12.6 Priority Sectors for the 7FYP

Sl. No.	Sectors	Actions	Allocation in Nu. millions
1.	Education	Teacher training, trainer training, basic education etc.	170.00
2.	Health	P.G, doctors, lab. technicians, nurses, paramedics etc.	87.227
3.	Agriculture and Allied Sectors	Skill upgradation, research, institutional strengthening	365.185
4.	Telecom.	Engineering, skill upgradation, new project.	53.211
5.	Trade and Industry (including private sector)	Skill upgradation, management, self-employment, institutional strengthening	208.00
6.	Accounts and Financial Institutions	Institutional strengthening and expansion, new technology.	102.905
7.	Office automation, computer training	Data processing, hardware maintenance etc.	51.65
8.	Rural and Local Administration	Strengthening rural planning and extension, delivery system etc.	48.152
9.	Others	Other agencies	180.95
	Total		1300.00

Note: The size of the outlay is not directly proportional to the priority because it depends also on the comparative manpower strength in the sector.

IV. Manpower Development Programmes for the 7FYPIV. Manpower Development Programmes for the 7FYP

HRD Master PlanHRD Master Plan

12.23 The HRD Master Plan will have been prepared by the start of the 7FYP period. This will be a comprehensive document covering the needs of both Government and the private sector. The document will be updated annually to take account of changes in priorities that may emerge during the implementation of the 7FYP. This will be the basic document for all HRD planning needs and would incorporate all training to be provided out-of-country and in-country including projects such as the Management Development Project for the RIM, the Institutional Strengthening Projects for the two technical Institutes viz. Royal Bhutan Polytechnic and Royal Technical Institute, and National Resource Training Institute etc.

Establishing National Manpower Planning CapabilitiesEstablishing National Manpower Planning Capabilities

12.24 It is proposed to establish national institutional mechanisms for manpower planning as an integral part of the economic planning process both at the micro and macro levels. For the time-being, the apex body for this institutional mechanism would be the RCSC. This will include strengthening of manpower planning capabilities in the RCSC, establishing such capabilities in various user agencies in the country (ultimately including the Dzongkhag level), training to create a capable cadre of manpower planners, establishment of national application software programmes to maintain and manage manpower databases, and establishment of a labour market information system (including establishment of an employment service organization).

Financing the HRD ProgrammeFinancing the HRD Programme

12.25 There are three different kinds of activities to be funded under the programme :

- (a) External Training (to be funded in hard currency by various donors)
- (b) In-country training in specified areas to be provided by external consultants (hard currency funding required)
- (c) In-country training which will form part of regular activities of Educational Institutes in Bhutan and which will be provided in the Government budget)

12.26 The resources for the third category of training indicated above would be included in the existing recurrent budget of the RGOB. The first two categories would require funding in foreign exchange. The external resource needs of the HRD Plan for training for both public and private sectors are estimated to be \$50 million for the 7FYP. This includes the need for US\$ 1 m for the in-country training programmes to be provided with the help of external consultants.

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Table 12.7 Tentative Sources of Funding

Donor Agencies	Proforma Cost in US\$ '000
Royal Government of Bhutan	86.50
UN System & Special Agencies, UNDP Regional Programme	5885.70
UNDP - Country IPF	8000.00
Asian Development Bank	253.80
HELVETAS	261.60
WUSC	94.8
Other NGOs	34.2
Other Institutions (IRRI, IDRC, East West Centre)	666.00
British Council	2872.50
Fulbright	360.00
Government of New Zealand	660.00
Government of India	5093.60
Government of Japan	1444.80
Government of Italy	120.00
Government of Netherlands	882.70
Government of Germany	404.80
Government of Austria	85.50
Government of Switzerland	337.50
Government of Australia and CP*	2094.00
Government of Malaysia and CP.	177.60
Government of Singapore and CP.	165.60
European Economic Community	14045.60
Unidentified	5973.20
Total	50,000.00

CHAPTER 13

HEALTH SERVICESHEALTH SERVICES

I. Basic SituationI. Basic Situation

Traditional Concepts of IllnessTraditional Concepts of Illness

13.1 Bhutan has inherited a centuries old system of medicine, introduced from Tibet in the 17th century. People's perception of illness is linked to Buddhist tradition and culture, and a substantial section of the population may turn first to spiritual and ritual remedies. *Tzips* (astrologers) are also consulted to identify the cause of the complaint. While a substantial number of people continues to rely on these traditional forms of health care, a willingness to use western health care services is increasing. This dependence on both forms of medicine has been appreciated by the Royal Government, who officially recognised traditional medicine - *So wa rigpa* - in 1967.

13.2 Western health services were introduced in the early 1960's, with the main expansion of health infrastructure starting in the 1970s. From the outset, it was realized that an integrated health service was the most effective strategy to reach a scattered population. Thus the primary health care approach has been pursued even before the declaration of Alma Ata in 1978.

Table 13.1 Demographic Statistics (latest data in 1991)

INDICATOR	LATEST DATA	YEAR
Expectation of life at birth	45.6	80-85
Crude Birth Rate	39.1	1984
General Fertility Rate	169.6	1984
Total Fertility Rate	5.9	1984
Child - woman Ratio	595.5	1984
Population Growth Rate	2.0	1984
Infant Mortality Rate	142.	1984
Child Mortality Rate	21.1	1984
Maternal Mortality Rate	7.7	1984
Gross Reproduction Rate	2.9	1984

Department of Health ServicesDepartment of Health Services

13.3 The Department of Health Services is under the Ministry of Social Services and has 4 Divisions: Health Planning and Development; Public Health; Medi-Care and Central Administration Divisions. The Department is responsible for the provision of health care services to the whole population, through the establishment of the necessary infrastructure, training and employment of staff and distribution of supplies. The Department provides

Health Services

these services through a 4 tier health care system (see Map 13.1 Health Facilities).

Peripheral Level

13.4 Basic Health Units (BHUs) and their peripheral health posts and outreach clinics are the main links between the rural population and hospitals. Each BHU covers 3-6 outreach clinics. A Basic Health Unit is usually manned by a health assistant, an auxiliary nurse midwife and a basic health worker. BHUs and outreach clinics are further supported by a network of voluntary village health workers. There are about 900 trained voluntary village health workers. They are provided with a basic kit containing few essential drugs, bandages and some teaching materials. Referral of patients from the village to the BHUs is usually the responsibility of the voluntary health worker. Community Health Units (CHUs) are also being established and extended from all district hospitals and regional referral hospitals. Community Health Units will act as "a hospital without walls" to deliver promotive and preventive aspects of health service to the population around hospitals.

District Level

13.5 A first level referral services are provided by district hospitals, of which there were 16 in 1991. A district hospital has personnel and equipments which would enable it to give life saving emergency services, promotive, preventive and curative services.

Regional Level

13.6 Second level referral hospitals are regional hospitals. Thimphu General Hospital is the regional hospital for Western region, Damphu Hospital for Central region and Tashigang Hospital for Eastern region. These three regional hospitals provide specialised services.

National Level

13.7 Thimphu General Hospital serves both as a National Referral Hospital and the regional hospital for Western Bhutan. Thimphu Hospital has 200 beds and provides the following special services: surgery, obstetrics, ophthalmology, ENT, paediatrics, orthopaedics, dermatology, dentistry and anaesthesiology.

Indigenous Medicine

13.8 For many centuries, treatment of illness in Bhutan depended on indigenous medicine - So wa rigpa. Since 1967, indigenous medicine has been officially recognised as a parallel scientific system of health service. The National Research and Training Institute of Bhutanese Traditional Medicine in Thimphu serves as an outpatient facility. In addition, there are 6 indigenous dispensaries around the country located in the neighbourhood of modern hospitals. In 1989 about 18,956 clients consulted Thimphu Indigenous Hospital and another 17,730 patients attended the dispensaries. Indigenous medicine is frequently augmented by treatment of illness sought through ritual and spiritual means. Because of the easy access to remedies of ritual and spiritual kind, modern health facilities are often sought as a last resort resulting in diagnostic and therapeutic delays.

Training Institutions

13.9 The Department of Health Services runs three training institutions: the Royal Institute of Health Science in Thimphu, the National Institute of Family Planning in Geylegphug and the Indigenous Medicine Training Centre in Thimphu.

Table 13.2 Health Institutions July 1991

INSTITUTIONS	NUMBER
Hospital beds	944
Basic Health Units (BHUs)	72
Dispensaries	44
Indigenous Hospital	1
Indigenous Dispensaries	6
Malaria Centres	11
Outreach Clinics	350

Manpower

13.10 In May 1991, there were 1,019 persons employed in the Department of Health Services, with 90% employed in the service delivery points such as hospitals and peripheral units. Out of 1019 persons, 283 were expatriates. The remaining 10% are at support institutions such as Directorate of Health, training institutes and medical stores depots. In terms of allocation of manpower between the hospital sector and primary health care sector, 50% are employed in the hospital sector and 40% in primary health care sector.

Table 13.3 Department of Health Services Manpower

Categories	Nationals	Expatriates	Total
Specialists (doctors)	20	17	37
Generalists (doctors)	17	31	48
Nurses with 3+ years of training	42	30	72
Assistant Nurses	114	16	130
ANMs	80	0	80
Health Assistants	112	0	112
Basic Health Workers	114	0	114
Lab Technicians	18	14	32
Pharmacy Technicians	14	0	14
Total	531	108	639

B. Health and Disease Trends

13.11 Although improving, it seems that Bhutan's health indicators are among the worst in the world. However, it should be borne in mind that these indicators are based on scarce data.

13.12 The morbidity pattern for major diseases as a percentage of the total referred cases, based on the records of the Basic Health Units and the dispensaries is shown in Table 13.4

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Table 13.4 Morbidity Patterns for Major Diseases as Percentage of BHU Cases (1985-19889)

Disease	1985	1986	1987	1988	1989
Diarrhoeal disease	18.3	17.5	15.6	15.0	15.2
Respiratory disease	16.6	16.5	16.7	18.2	19.5
Worm infestation	11.6	11.7	11.0	12.9	10.0

13.13 Lack of hygiene and poor sanitation causes many infectious diseases. Diarrhoea and respiratory tract infections remain by far the most frequent diseases treated by the health services. Worm infestations are estimated to occur in up to 80% of the population. The majority of the diseases treated are seasonal and there is a marked fluctuation in the out-patient department attendance between summer and winter. Nutritional deficiencies are an important part of the disease pattern in Eastern Bhutan. A large proportion of the population suffer from gastric problems such as gastritis, peptic ulcer and ventricular cancer due to dietary habits and consumption of doma (a mixture of wet betel nut, paan (leaf) and calcium paste). Sexually transmitted diseases are also common among some sections of the population.

Nutrition Status

13.14 A nationwide nutrition survey was carried out between December 1986 and March 1988. It generated information on the nutritional status of children up to 3 years and women between the age range of 15-45 years. It was found that 56.1% of the children were small for their age and 37.9% of children were found to be underweight for their age according to the WHO classification.

13.15 In the same survey, 13.8% of women examined were found to have Body Mass Index below 18.4 indicating a serious calorie deficiency. Vitamin A and iodine deficiency and anaemia were also found to be unacceptably high.

C. Constraints

Poor Sanitation and Hygiene

13.16 The existing morbidity pattern shows a high prevalence of respiratory infections, diarrhoea and worm infestations. The incidence of these diseases can be minimised and prevented to a large degree by improving the water supply system and promoting sanitation and hygiene. A change in personal hygiene would make a considerable impact on the health of the population.

Remote and Scattered Population

13.17 Because the population is scattered, with an undeveloped road network, the District and Regional level health facilities are fairly unaccessible to the majority of the people. These factors also make the cost of health delivery very high. In most remote areas, the modern health services are sought as a last resort, resulting in diagnostic and therapeutic delays. A delay and in some cases failure to demand health services leads to insufficient utilization of existing health services. The effectiveness of modern health services is thus reduced.

13.18 The low literacy level, especially among women is thought to be a leading obstacle to the improvement of the health status of most people. Giving high priority to the education of women is recognised as an investment in health.

Shortage of Trained Personnel

13.19 As in most other sectors, the health sector is constrained by a lack of trained national staff. The Department is dependent on expatriate personnel. Of the total DHS staff of 1019, 283 were expatriates in 1991.

II. Review of Past Performance

A. Objectives and Strategies in the 6FYPA. Objectives and Strategies in the 6FYP

13.20 In broad terms, the objective for the Health Sector in 6FYP was to strengthen the health infrastructure, especially primary health care and enable the people to attain a level of health which would allow them to lead productive lives. The strategies adopted were the eight essential elements of primary health care:

- Education concerning prevailing health problems and methods of controlling and preventing them
- Adequate supply of safe drinking water and sanitation
- Promotion of food supply and proper nutrition
- Maternal and child health care, including family planning
- Immunization against six major infectious diseases
- Appropriate treatment of common diseases and injuries
- Provision of essential drugs and
- Treatment and control of communicable diseases.

B. Achievement of ObjectivesB. Achievement of Objectives

InfrastructureInfrastructure

13.21 As regards the expansion of infrastructure, the 6FYP target was to increase the number of beds from 922 to 1,130 and the number of BHUs from 68 to 90. As of 1991, the number of beds provided was 944 and the number of BHUs was 76.

Expanded Programme for ImmunisationExpanded Programme for Immunisation

13.22 Universal child immunization (84%) was achieved in 1990. In the same year, a survey revealed that 64% of pregnant women had been immunized with T.T..

Communicable DiseasesCommunicable Diseases

13.23 Leprosy, which was a substantial threat, is now near eradication. The number of infectious cases has been brought down from 300 in 1982 to 250 in 1991. On the negative side, it was not possible to prevent the spread of malaria nor to reduce the incidence of tuberculosis. Both are becoming major causes of morbidity and mortality. Short Chemo Therapy has been introduced for all cases of TB. Malaria is now one of the major communicable diseases in Bhutan. In 1989, 19,162 positive cases were diagnosed. Malaria is spreading into formerly malaria free areas and the parasite is developing resistance to the existing drugs and the vector to DDT.

Health EducationHealth Education

13.24 In order to educate the public on the need for improved health, hygiene and nutrition practices, the Information, Education, Communication for Health Bureau (IECH,B) was established. The Bureau began to work with other Departments and agencies, including the National Womens Association of Bhutan and the monk body.

Improved Water and SanitationImproved Water and Sanitation (Refer to Chapter 14 on Human Settlements)

13.25 A Public Health Laboratory was established in Thimphu where 13 laboratory technicians received training to conduct tests on water samples.

Food and NutritionFood and Nutrition

13.26 High potency Vitamin A capsules were provided biannually to all children under five who were seen at BHUs and Hospital clinics and to all postnatal women seen at clinics after delivery. Vitamin A capsules were also distributed to patients with measles and all diagnosed cases of Vitamin A deficiency. Iron/folic tablets were given to those pregnant and lactating women attending clinics and those with cases of iron deficiency. Iodised salt sales and monitoring continued through the IDD programme. Iodine deficiency remained a serious problem but new occurrences of iodine deficiencies cases are very rare.

III. Objectives and Strategies for the 7FYPIII. Objectives and Strategies for the 7FYP

Health Services

A. Objectives for the 7FYPA. Objectives for the 7FYP

13.27 The major goal in 7FYP is to consolidate and strengthen the existing health delivery system. In addition to the improvement of services, the Department of Health Services will also expand the coverage of services to ensure that the whole population is able to benefit from medical care. The Royal Government intends, as far as possible, to provide a wide range of health care services to the population, so that its people do not have to go abroad to get medical care. The goals for children and women for the 7FYP are shown in Table 13.5.

Table 13.5 Goals for Children and Women in the 7FYP

Sl. No.	Global goals for 2000	Present situation in Bhutan	Bhutan's goal for 1997
CHILD HEALTH			
1.	Reduce IMR by 1/3 or to 50, whichever is less	142 (1984)	50
2.	Reduce U5MR by 1/3 or to 70, whichever is less	195	70
3.	Eradicate polio	0 case reported	Eradicate polio
4.	Eradicate neo-natal tetanus by 1995	8-14 cases for every 1000 births	Eradicate neo-natal tetanus
5.	90% reduction of measles cases	11 cases for every 1000 population	1 cases for every 1000 population
6.	95% reduction of deaths caused by measles.		95% reduction
7.	Maintain more than 85% immunization coverage for under one-year olds.	84%(1990)	At least 85%
8.	Achieve 100% tetanus coverage of all women of child bearing age.	63%(1990)	100%
9.	Reduce diarrhoea incidence among under five year olds by 25%	16%	Reduce to 10%
10.	Reduce deaths caused by diarrhoeas by half.	40%	Reduce to 20%.
11.	Reduce ARI incidence in under five year olds by one-third.	19%	Reduce to 14%
MATERNAL HEALTH			
1.	Reduce MMR by half (per 100,000 live births).	770	358
2.	Ensure 100% access to family planning education/services.	8.8 per 1,000 population (contraceptive pre - valence rate)	100% access
3.	Ensure 100% access to trained attendant during delivery.	10% access	Safe pregnancy.
4.	Ensure 100% access to referral for high risk pregnancies.	5%	100%
NUTRITION			
1.	Reduce severe and moderate malnutrition by half.	38%	19%
2.	Reduce the rate of low birth weight (less than 2.5 Kgs) to less than 10%.	36% (hospital records)	Reduce to insignificant levels
3.	Reduce the rate of iron deficiency anaemia by one-third.	68% (pregnant women)	Virtual elimination
4.	Eliminate Vitamin A deficiency	Virtual elimination	14%(children 0-5
5.	Eliminate Iodine deficiency.	20% of women 14% of school children	Reduce IDD to minimum levels.
6.	Promote breastfeeding to be exclusive feeding for infants from 0 to 4 months of age.	95% of children breast-fed for more than one year.	Strengthen existing healthy BF practices.
7.	Institutionalized growth monitoring/growth promotion to be 100%.	90% access to PHC/Road to Health Card.	Universal use of growth monitoring as a tool to improve nutritional status.
8.	Ensure household food security	To be verified	Ensure adequate nutritional status of population.
WATER AND SANITATION			
1.	Universal access to safe drinking water.	25%	60%
2.	Universal access to sanitary means of excreta disposal.	62%	100% access to latrines, which are not necessarily sanitary.
3.	(Eradication of guinea worm disease) (-does not exist in Bhutan)	50-80%	Decrease incidence of worm infestation to 30% of the population

B. STRATEGIES FOR ACHIEVING OBJECTIVESB. STRATEGIES FOR ACHIEVING OBJECTIVES

13.28 The strategies by which the above objectives will be pursued are as follows:

- the integrated primary health care system which has been developed will be continued as opposed to selective primary health care. This implies that the few vertical programmes that remain will also be phased out.
- the improvement in health services will be achieved through manpower development, better utilization of existing resources and strengthening of support services such as information systems, financial management, supervision and supplies (drugs, equipment and other materials).
- rather than a large expansion in health infrastructure existing health facilities such as dispensaries, Basic Health Units and hospitals will be upgraded.
- the outreach of health services will be expanded as far as possible with as limited manpower expansion. The most cost effective means of delivery will be developed, with greater involvement of other Departments through intersectoral collaboration, voluntary workers and members of the communities.
- the Department will aim to keep its interventions to a minimum possible extent and encourage the population to take responsibility for preventive health measures. To bring this about, health education programmes will be continued. Fostering community involvement in health programmes and creating institutional structures in the community through which health programmes can be sustained will be extremely important.
- the delivery of health services will be aimed at promoting and protecting the health of specific population sub-groups particularly women of child bearing age, children and the elderly.
- those aspects of traditional medicine which are complementary to formal health care will be integrated into the system.
- medical care will be free during the 7FYP, but various modalities of cost recovery will be explored.

IV. Health Sector Programmes for the 7FYPIV. Health Sector Programmes for the 7FYP

Expansion of Health InfrastructureExpansion of Health Infrastructure

Outreach ClinicsOutreach Clinics

13.29 Outreach clinics have contributed to the success of such programmes as the expanded programmes of immunization in 1990. As the benefits of these clinics can be easily perceived, communities will be encouraged to provide the necessary accommodation for the outreach clinics. The Department will support this local initiative by providing roofing materials and tax free timber. Such support will be extended wherever the community is willing to construct clinic space.

Basic Health UnitsBasic Health Units

13.30 Only about 40% of the existing BHUs are fully staffed. Some Basic Health Units need renovation. In view of the staffing and financial resource constraints, only 22 new BHUs will be constructed and 2 relocated and reconstructed. In addition, 6 Grade II Basic Health Units and 1 dispensary will be upgraded to Grade I Basic Health Units and 21 dispensaries will be upgraded to Grade II Basic Health Units.

HospitalsHospitals

13.31 Investments will be made to the extent justified by use of the population in hospitals and curative services. The hospitals will be located to act as referral hospitals for several districts and will be within easy access from various settlements. The National Referral Hospital will be renovated. Regional hospitals will be built in Damphu and Kanglung, subject to the availability of funds. The Kanglung Regional Hospital will have 150 beds, while the present District Hospital in Damphu will be expanded from 20 beds at present to 100 beds. Lhunsi and Paro District Hospitals will be completely rebuilt. Yelilepcha hospital will be expanded from 20 bed capacity to 40 beds. The construction of Pema Gatshel and Riserboo hospitals is underway and the construction will be completed as spillover work on 7FYP. Sarbhang district hospital will be renovated.

Disease Control ProgrammesDisease Control Programmes

Acute Respiratory DiseaseAcute Respiratory Disease

13.32 Respiratory diseases are a major cause of morbidity and constitute approximately 20% of all cases in Basic Health Units. Control of acute respiratory diseases such as pneumonia will reduce the infant mortality rate. Three major approaches will be followed to control acute respiratory diseases. Firstly, training and guidelines will be provided on the management of acute respiratory diseases. Secondly, mothers will be sensitized about homecare and early recognition of sign of pneumonia. Thirdly, immunization against pertussis, diphtheria and measles will be intensified.

Diarrhoeal DiseasesDiarrhoeal Diseases

13.33 After acute respiratory diseases, diarrhoeal disease is the second largest cause of morbidity. Approximately 40% of deaths of children under five are caused by diarrhoea and 15% of all patient seen in health centres in 1989 suffered from diarrhoeal diseases. To reduce the incidence of this disease, access to safe drinking water and sanitary disposal of human excreta is vitally important. Besides the promotion of sanitation, training of mothers in home management, nutrition and other diarrhoea related problems will be stressed. Oral Rehydration Treatment corners will be established in all hospitals and Basic Health Units.

TuberculosisTuberculosis

Health Services

13.34 Tuberculosis remains a major public health problem: the prevalence rate is estimated at 16 per 1000 people of which 4 per 1000 people are infectious. The target for control of tuberculosis incidence is 1 per 1000 for both pulmonary and extrapulmonary cases by year 2000. The Department plans to sustain 100% BCG vaccination, particularly among children. As a matter of routine, people who visit health facilities will be diagnosed for pulmonary tuberculosis. Cases detected will receive short course chemotherapy and treatment for eight months.

Malaria

13.35 Malaria occurs widely in the southern belt of the country. Of all cases seen in Basic Health Units in 1989, 9.4% were diagnosed as malaria. Beside offering treatment for malarial patients, insecticide is sprayed in the endemic areas. Unfortunately, morbidity and mortality has not decreased, probably due to the growing resistance of the parasite. Therefore, control studies will be undertaken to test the relative efficiency of alternative preventive measures. Mass seasonal spraying will continue along with the promotion of use of mosquito nets. Community efforts will be mobilized to control mosquito breeding habitats.

Leprosy Control Programme

13.36 The number of patients under treatment has been reduced from 3,000 in 1982 to 250 by 1991. Over the years, the leprosy control programme has brought about a dramatic reduction in the prevalence of the disease. A number of leprosy hospitals have been managed by Leprosy Mission and Santal Norwegian Mission in collaboration with the Department of Health Services. It has been run as a vertical programme, but it will be integrated into the primary health care system. In 7FYP, the target is to reduce the prevalence rate to 1 per 1000 and to complete multi-drug therapy course in 95% of all known cases and give multi-drug therapy to 90% of new cases. Both an active case-finding and a rigorous surveillance of treated cases will be maintained so that the case detection rate is close to actual incidence. All health workers will be trained in a basic core curriculum on leprosy.

Non Disease Programmes

Population Planning

13.37 Population planning can have considerable influence on the success of all other programmes in the health as well as other sectors. For example, in the Renewable Natural Resources Sector, limited arable land is a major constraint to increasing food production which is necessary for a rapidly expanding population. Thus the proposed programme's objective to decelerate the growth of population below 2% by year 2000 will permit sustainable development in the agricultural sector. The programme will popularise the use of contraceptives and supply sufficient quantities of contraceptives to all the *Dzongkhags*. Other measures will include promotion of breast feeding, maintenance of health camps, introduction of social incentives for small families and raising the legal age of marriage. The major thrust of this programme is to achieve proper spacing.

Essential Drugs Programme

13.38 The Essential Drugs Supply Unit in the Department of Health Services is responsible for all drugs supplies to the health sector. The objective of essential drug supplies programme is to make available at all times an adequate supply of safe and effective drugs of acceptable quality and at a reasonable cost. A standard list of drugs with 253 items have been selected, and all tiers of the system are regularly provided with adequate amounts of drugs. The District Hospitals are supplied with 198 different drugs, the Basic Health Units with 91 and the Village Voluntary Health Workers with 10 different drugs. Based on a National Drug Policy, rational drug prescribing practice will continue to be promoted and monitored. National competence in drug management will be developed by training and retraining health workers. A Drug Control Administration Unit will also be established in the Department of Health Services.

Expanded Programme of Immunisation

13.39 An immunization coverage of 85% was achieved in 1990. Universal Child Immunization was thus, declared on 13 February 1991. This high coverage in immunization will be sustained at a national level for children under one year of age. Other targets are to eliminate neonatal tetanus by 1995 and poliomyelitis by 1997. Deaths due to measles will also be reduced by 95% by the end of the plan. To keep up the momentum that has been gained, the network of logistical support, vaccines and cold chains will be improved.

Mother and Child Health (MCH)

13.40 In 1990, only 50% of pregnant women had access to antenatal care, which has been seen as the major cause of maternal mortality. The maternal mortality rate still remains one of the highest in the world at 7.7 per 1000 live births. The Department intends to improve and expand antenatal and postnatal services sufficiently so that by 1997, 90% of pregnant women will be brought under adequate antenatal and postnatal care. More than 80% of deliveries took place at home and only 12% of the total deliveries were conducted by trained attendants in 1990. By 1997, 50% of normal deliveries will be attended by trained personnel. Only 60% of pregnant women were found to be immunized against tetanus in 1990. By 1997, 90% of pregnant women will be given T.T. vaccination. These improvements to the service are aimed at reducing the mortality rate to 3.3. per 1000 live births by the end of 7FYP.

Food and Nutrition

13.41 Malnutrition is rare among infants because of breast-feeding. However, breast feeding is beginning to decline with the availability of milk substitutes, which could have serious negative impact on the health of infants. The Department will therefore encourage mothers to continue the practice of breastfeeding through health education. The International Code of Marketing of Breastmilk Substitute will also be enforced.

13.42 Iodine deficiency and Vitamin-A disorders have also been dramatically reduced and it is intended to virtually eliminate these disorders in 7FYP. Vitamin-A, iron and folic acid and mebendazole for deworming will be provided through the health care service.

13.43 Stunting is common among older children: the National Nutritional Survey carried out in 1987-88 revealed that 30% of under fives are underweight for age. In 1989, 6% (10,807) children attending health institutions were found to be malnourished and 1% (1,145) was severely malnourished. The programme will increase the population's knowledge of correct nutrition and encourage changes in the dietary habits of the people.

Indigenous Medicine

13.44 Indigenous medicine remains a popular form of health care in Bhutan. There is one hospital in Thimphu and six dispensaries around the country. Together more than 36,000 patients attended these facilities in 1989. The Department of Health recognises that traditional medicine has an important role to play in the health services and will take steps to increase access to traditional medical services and to integrate these services into the formal health care system. Traditional *Dungtshos* (doctors) will receive training at the National Research and Training Institute of Bhutanese Traditional Medicine in Thimphu, with the aim of increasing their skills and adding to the numbers of trained doctors. A fully equipped pharmaceutical unit and an out patient facility will be established at the National Training Institute in Thimphu. A herbal garden for cultivating rare and valuable medicinal plant will also be established.

Information, Education and Communication for Health

13.45 The main objective of the health services is to bring about positive changes in attitude, behaviour and practices of the people, so that in the long run the people can take more responsibility for the promotion and protection of their own health. The implementation of any health activity is neither effective nor complete without proper health education.

13.46 The Information, Education and Communication for Health (IECH) will aim at increasing the awareness of the population in health promotion activities. The programme will be integrated into all health activities and, to the extent possible, in the activities of other sectors. Community involvement in primary health care will be one of the main avenues of increasing awareness. The involvement of the monk body in health education will be continued.

Other Health Programmes

13.47 The other (special) health programmes include all those programmes which are coordinated centrally by the Department of Health Services. These programmes consist of Primary Eye Care, (AIDS) and Sexually Transmitted Diseases (STDs) Control Programme, Oral Health and Parasite Control programmes. The Primary Eye Care Programme will be extended to the whole population. In oral health programme, plans are to reduce the prevalence of both periodontal disease and dental caries prevalence from 95% and 75% to 45%.

Health Services

Financing the Health Care System

13.48 The Royal Government may not be able to sustain the provision of free curative services as widely as it would wish to for all sections of the population. As there will be major recurrent cost implications of in the expansion of curative services and health infrastructure, the Royal Government will have to give careful consideration to major investments in new hospitals where the recurrent costs will be particularly high and the need for skilled manpower greater than at the primary health level.

13.49 Given the limitation of recurrent expenditure, the Royal Government will encourage the private sector to develop curative services. The private sector will be encouraged to set up private clinics especially in the more affluent areas. The Government will also investigate various approaches to cost minimization and cost recovery in the health sector to be used for further improvements in the quality of health care. The Department will experiment with modest user charges for the more expensive hospital based services for the high income groups in the urban areas. Within the 7FYP period, however, general users charges are not contemplated in hospitals. However, the possibility of contracting out ancillary services in the hospitals such as laundry, catering, etc. will be explored.

Manpower and Financial Requirements for the 7FYP

13.50 The projected needs of manpower are shown in Table 13.5. These estimates take into account the additional health personnel necessary for the expansion of health infrastructure.

Table 13.6 Shortfall in Department of Health Services Manpower
(1991 and 1997 Requirements)

Sl. No	Categories	Actual 1991	Projected 1997	For Expatriate Replacement
1.	Specialist doctors	27	65	17
2.	Generalist doctors	17	40	31
3.	Nurses#	43	96	30
4.	Assistant Nurses	6	48	16
5.	ANMs	34	110	nil
6.	Health Assistants	23	78	nil
7.	Basic Health Workers	36	106	nil
8.	Lab. Technicians	Surplus	18	14
9.	Pharmacy Technicians	32	45	nil
	Total	218	606	108

TOTALS FOR Health						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP_TOTAL
CAPITAL COSTS	77.867	73.435	136.003	89.217	98.353	474.875
RECURRENT COSTS						
a) Existing	67.425	74.167	81.584	89.742	98.716	411.634
b) Project Related	8.750	11.400	37.900	38.140	51.810	148.000
Total Recurrent	76.175	85.567	119.484	127.882	150.526	559.634
TOTAL COSTS	154.042	159.002	255.487	217.099	248.879	1034.509

HUMAN SETTLEMENTS

I. Basic Situation

A. Settlement Patterns

14.1 It is estimated that 90% of Bhutan's population of 600,000 lives in rural areas, although no studies on rural and urban populations have been undertaken to date. No survey has ever been carried out to establish the pace of urbanization or the rate of rural-urban migration. A clear methodology on the distinction between rural and urban settlements remains to be developed in the context of Bhutan. Without a well developed methodology and regular census focused on rural and urban settlements, such estimates of rural population mentioned above are mere approximations.

Rural Settlements

14.2 In general, rural houses are highly scattered. The dispersal of houses has many advantages for the households in terms of proximity of arable and grazing land, and forest areas for the collection of firewood. However, this increases the per capita cost of providing social services by the Government. Settlements are more clustered in colder alpine regions than in the sub-tropical parts of country. The houses on average tend to be bigger in Central and Western Bhutan than in other parts of the country due to climatic and historical reasons as well as availability of building materials. The rural houses are built with a strong emphasis on traditional architecture. The average size of the houses in rural areas ranges between 600 to 900 sq ft and are mostly 2 storeys high. The upper storey is used for living and the lower storey is used in most of the cases for storage of equipments and keeping domestic animals. Timber, mud and stone are predominant building materials. Carpenters and masons are responsible for the design of houses, and the estimation of required construction materials. The reliance on contribution of community labour for the construction of houses as well as subsidy on timber for the construction of rural houses enables people to build large houses. This kind of mutual help arrangement is crucial for construction of houses because of a lack of rural credit facilities.

14.3 It is estimated that village size varies from 2 houses to 100 houses and the average village consists of about 43 houses. Each house is usually occupied by one household. Assuming that there are 8.5 members per household, the number of households or housing stock can be estimated as approximately 70,000.

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14.4 Urban settlements for taxation purposes are classified as having a population between 500 and 25,000. In 1989, 32 urban centres were classified as towns, including Thimphu and Phuntsholing (see Map 14.1 Towns and Roads). Urban housing is characterised by a large proportion of rented accommodation, although this situation has changed with the introduction of a new housing policy for RGOB civil servants in 1988. Civil servants are now paid a housing allowance as part of their salaries, whereas the Government had previously paid the allowance directly to the landlord. This has resulted in a decreased demand for rented accommodation, with public servants reducing their expenditure on housing. The urban areas, particularly Thimphu, are also characterised by a fairly large proportion of informal sector houses or huts, for foreign and national manual workers. The Thimphu City Corporation demolished 237 of these dwellings in 1990.

B. Cadastral and topographical surveys

14.5 Land records form the biggest body of official written information in Bhutan. A system of land records was introduced as early as the 17th century with the issuing of land record documents known as Mathram Chems (a land certificate with a red seal issued by the highest authority). The Land Revenue Survey Division began its first ever cadastral survey (survey of boundaries of individual land holdings, collection of information on rights of ownership and landuse) in Paro Dzongkhag using modern techniques. Until then plots were measured using Chain Surveys. Since 1980, the Division has completed cadastral surveys in Paro, Chirang, Bumthang, Samchi, Geylegphug and

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Chhukha. Certified land registration based on systematic cadastral survey is gradually replacing the Cadastre of Marthams which had been based on inadequate surveys. A computerised data base for land records is also being prepared.

II. Institutions

14.6 Until 1989, the principal Government agency responsible for urban development was the National Urban Development Corporation and the Royal Insurance Corporation acted as the implementation agency to develop public sector housing. The functions of the NUDC were transferred to the Ministry of Social Services in 1989 to integrate urban planning, development and management functions with the other Departments in the human settlement sector. The Department of Works and Housing is responsible for water supply, sanitation and rural and urban planning. Within the Department are 3 Divisions: a Public Health Engineering Division, Housing Division and Urban Planning Division. The Government has recently decided to integrate the construction of water supply facilities with the construction of household latrines and smokeless stoves. The Public Health Division of the Department of Health Services also collaborates with other relevant Departments to promote health and hygiene, mainly through the construction of simple household pit-latrines.

14.7 The provision of municipal services have been made the responsibility of City Corporations in Thimphu and Phuntsholing, and Municipalities or Dzongkhag Administrations in the other 30 urban areas. In rural areas, the *Gup* is responsible for tax assessment and collection and assisting the Dzongkhag Administration in service delivery. Both Thimphu and Phuntsholing City Corporations are headed by a *Thrompon* (City Administrator or Mayor). City Corporations and Dzongkhag Administrations are empowered to raise revenues to cover part of the cost of services through taxation.

14.8 While the Department of Works and Housing is responsible for the planning and designing of rural and urban infrastructure the private sector is largely responsible for actual construction, for both the RGOB and private individuals and companies. Most of the labour force in the construction sector are from India. In 1987 RGOB adopted a policy intended to reduce reliance on foreign labour and incentives were provided to nationals to attract them into the construction sector under the National Workforce programme. There were 97 local contractors registered in 1990, categorised in 4 grades. The highest grade contractors are allowed to undertake contracts exceeding Nu. 3 m and less than Nu. 10 m, with the lowest grade being allowed to undertake 1 contract not exceeding Nu. 0.5 m at one time.

14.9 In 1989 taxation reforms were introduced, with the aim of simplifying the assessment and administration to enable increased domestic resource mobilisation. The urban reforms were related to the need for city corporations and town municipalities to increase the revenue raising capacities to meet their recurrent costs. In urban areas, revenue is raised from the Urban House Tax and the Service Charge.

14.10 The Department of Survey and Land Records is responsible for updating land records and other landuse information for application in other fields. The Department of Survey and Land Records under the Ministry of Home Affairs had a total staff strength of 90 as of July 1991. It has the following divisions: (i) Topographical, Geodetic and Photogrammetric Survey Division, (ii) Land Revenue Survey Division (iii) Land Records and Settlement Division, and (iv) Cartography, Map Reproduction and Printing Division. The Survey of Bhutan also prepares topographic maps of the country and offer services to all users various Departments : Animal Husbandry, Education, Trade and Industries, Works and Housing, Tourism, private agencies, etc. The Survey of Bhutan is the coordinating and storage agency for aerial photography, satellite imagery and its products.

III. Constraints

Rural Housing Design

14.11 Rural houses are spacious, beautiful, and structurally sound using the building materials that are locally available. Like other elements of Bhutanese culture, the continuity in the architecture gives the communities a sense of identity. However, rural houses have many deficiencies with regard to health, hygiene, sanitation and convenience. There is inadequate insulation so that space heating is not efficient. Because the chimneys are not well designed, smoke is a major source of respiratory disease. There is usually no suitable bathing and waste disposal facilities, partly due to the absence of piped water supply in the house.

Lack of Institutional Finance

14.12 The main constraint in rural housing construction is the lack of institutional finance to enable the construction of houses with modern sanitary amenities. The percentage of credit provided by the Royal Insurance Corporation of Bhutan in 1985 for rural house construction was negligible (less than 0.2% of Nu. 68m). Although the Government has continued to make major investments in rural water and sanitation programmes at the community level, individual households would need to increase their own investment considerably to introduce latrines, smokeless stoves, improved insulation and other facilities to improve their living conditions.

Lack of Maintenance Capacity

14.13 Rural areas have been provided with a water supply coverage of 40%, with 60% of the functioning rural water schemes having uncontaminated water supplies. A large number of schemes (40%) are supplied from sub-standard quality sources, while 16% of the schemes are not functioning and 31% require major repairs. This is largely due to the community's inability to take responsibility for the operation and maintenance of completed schemes. Communities lack the necessary skills and spare parts and have not been involved in the initial planning and design of the schemes and therefore do not feel a sense of responsibility for the schemes. Community training and organization has so far been inadequate. Furthermore, the involvement of women in the planning and maintenance of schemes is negligible, although they are involved in the construction of the schemes and are the main users.

Ineffective Designs and Installation

14.14 About 60% to 70% of schools, BHUs and dispensaries had latrines in 1990. However many of the latrines in these institutions were neither hygienic nor well maintained, and were often poorly designed and constructed and then subjected to use by more people than the design allowed for.

14.15 Less than 15% of the rural households have stoves equipped with proper ventilation facilities. Traditional stoves are designed for cooking and as they lack chimneys smoke is trapped inside the houses. This leads to eye irritations and respiratory disorders, both of which have a high incidence in Bhutan. They are also considered to be fuel in-efficient. However traditional stoves are functionally more flexible than the improved stoves, which may account for the lack of interest in the improved stoves.

14.16 The high proportion of water supplies schemes which are no longer functioning is also due to inappropriate designs and installation.

Lack of Awareness of Improved Personal, Domestic and Environmental Hygiene

14.17 Because of the lack of piped water near the houses, water is scarce and personal hygiene is inhibited. Water is stored in vessels for long periods of time and accumulates harmful bacteria. The lack of environmental hygiene is compounded by the use of the lower storey of the house as animal sheds, in many cases. It is therefore difficult to maintain a high level of hygiene in the surrounding footpaths and drainage.

14.18 The installation of latrines in rural areas is low: according to a survey in early 1991 conducted in 13 out of 18 *Dzongkhags*, 38% of rural households did not have a latrine. Of the 62% of the households with a latrine, 15% had improved latrines.

Shortage of National Labour and Construction Capacity

14.19 The shortage of national labour and construction capacity has led to a heavy reliance on foreign labour and construction companies. Many donor construction projects have been implemented on a turnkey basis with all inputs imported, usually from India. While the Royal Government appreciates the provision of this assistance, it recognises that this dependence will not further the aims of increasing national skills and self reliance. The lack of construction capacity is also a major constraint for other sectors. For example, the education sector has been affected by delays in construction of new schools due to lack of construction capacity.

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Lack of Skilled Manpower

14.20. Both the Public Health Engineering Division and the Survey of Bhutan are constrained by lack of skilled manpower. The levels of skills required in Survey of Bhutan are particularly high as the technology being introduced is highly sophisticated.

IV. Review of Past Performance

A. Objectives in the 6FYP

14.21 The broad objectives for the Human Settlement sector in the 6FYP were to:

- achieve a balanced development of all urban centres and create a functional, healthy and aesthetically pleasing physical environment for urban living. This objective included the provision of basic infrastructure such as roads, power, drainage, water, sanitation, recreation, communication and trading facilities. The conservation of environmental character, architecture and agriculture land were also important objectives.
- improve public health by reducing the incidence of water borne diseases through provision and promotion of adequate water and sanitation facilities. In quantitative terms, the following rural coverage was envisaged by the end of 6FYP : water supply in 40% of the total number of villages by constructing 600 new schemes; sanitation facilities in 30% of the households with a target of building 6,211 toilets; smokeless stoves in 100% of the households; and rehabilitation of 303 water supply schemes.
- promotion of prototype rural houses with a view to bring about a better utilization of private investments being made in construction of new rural houses, improve general living conditions and to reduce rural urban disparities to stem migration. This objective envisaged the construction of a total of 210 houses following the prototype designs.
- ensure that rural and urban areas are developed in a systematic and environmentally sound manner, and that the administration of land registration is improved.

B. Achievement of Objectives

Rural Water Supply

14.22 Between 1974 and 1990, a total of 1,387 rural water supply schemes were constructed in rural areas. The 6FYP set a target of constructing 600 new schemes but only 258 were completed as of January 1991. Construction of another 123 schemes were reported to be in progress. Beneficiary communities contributed labour for the construction and maintenance of water supply schemes. A total of 35,000 households (estimated total household number is 70,000) or 305,000 people would benefit from rural water supply programmes if all of them were functioning. However, many of the older schemes are no longer functioning. Thus the actual numbers of households benefitting in 1991 is estimated to be about 26,000 or 225,000 people. Services are evenly provided to all areas of the country.

14.23 Since the start of 6FYP in 1986, the rate of construction of water supply schemes was reduced substantially from 250 schemes to 150 schemes per year. This reflects a change in emphasis, from large numbers of schemes of poor quality to a smaller number of higher quality schemes. The quality of construction in schemes have improved with training of technical staff and standardisation of designs in 1988. But the lack of technical staff in the districts remains a major constraint in improving the quality and scale of water and sanitation programmes.

14.24 A maintenance and operation policy was adopted by the Department of Works and Housing in 1990. This will ensure that timely repair works are undertaken by the users. However, much remains to be done in terms of organization and motivation of the communities in maintenance of schemes.

14.25 On average, the beneficiary communities contribute 15% of the cost of the schemes in the form of labour. Schemes are designed for a 20 year service period.

14.26 In 1990, 17 of the 19 District Hospitals as well as Thimphu Public Health Laboratory were equipped to conduct water quality tests. Tests of water from 200 schemes have shown 60% of the samples with less than 10 faecal coliform per 100 ml at the source, which is the minimum acceptable standard. The chemical quality of the water is excellent.

Urban Water Supply

14.27 A study undertaken in 1989 revealed that 21 of the 24 urban areas studied had a piped water supply and distribution system. At that time 5 urban centres had treatment plants and 4 centres had been provided with treatment plants that were no longer functioning. The survey established that in general the water supplies were sufficient, but that only 5 systems were able to provide a 24 hour service. The distribution systems in Thimphu, Phuntsholing, Paro, Geylegphug, Tashigang and Samdrup Jongkhar have been repaired and extended during the 6FYP.

Rural Latrines Programme

14.28 The Royal Government introduced sanitary latrines during the 6FYP. Under this programme, priority was given to construction of latrines for institutions such as schools, Basic Health Units, dispensaries and monasteries. In addition, 10% to 15% of the rural households had benefitted from this programme by 1990. However more than half of these latrines were not up to a hygienic standard. As of January 1991, 1,768 latrines were established out of a total target of 6,211 in the 6FYP. Some 54,000 rural households (85%) and 2500 urban households (40%) do not have any kind of latrine. A large number of latrines constructed in institutions are also far from hygienic.

14.29 The Department of Works and Housing implements a construction programme of subsidized latrines for individual households but only 1-2% of all households benefitted from this programme. The value of in kind subsidy is not more than US \$15. The Department of Health Services has also promoted the construction of household latrines made out of local materials without any subsidies in Mongar *Dzongkhag*.

14.30 Rural water supply schemes have been implemented without developing complementary activities in latrine construction and hygiene promotion. There is however increasing coordination between sectors in the sanitation programme. In 1991, the Public Health Division (PHD) launched a national programme on Information, Education and Communication for Health. Its objective is to promote improved hygiene practices and to strengthen the delivery of primary health care. In addition to the Department of Health Services, monks, lay priests and the National Women's Association of Bhutan have become actively involved in the programme. The Department of Education has included health and hygiene in the school curriculum.

Urban Sanitation

14.31 A study undertaken in 1989 revealed that sanitation facilities in the 22 urban areas varied considerably. In some towns, the majority of the houses had flush toilets draining to septic tanks, while in other areas open air latrines without any disposal facilities were predominant. Designs have been undertaken for the improvement of the sewerage networks in Thimphu and Phuntsholing.

Smokeless Stoves Programme

14.32 Between 1981 and 1990 some 13,000 smokeless stoves were installed. However, only 9,000 were found to be in use in 1990. The programme was transferred from the National Women's Association of Bhutan to the Department of Works and Housing in 1988. Since then, there has been little construction activity, pending further impact evaluation of past investments.

Rural Housing

14.33 The Royal Government has constructed 18 model houses in 18 *Dzongkhags* to demonstrate the benefits of new designs, building materials and construction methods. 300 carpenters and 171 masons from rural areas were trained in order to spread these new skills. Small subsidies of materials valued at Nu 3,000 were provided to those who adopted the prototype specifications. The main thrust of the new initiative was not on Government investment in construction of new rural houses but on redirecting the rural population's efforts to construct functionally efficient, cost effective, comfortable, hygienic and durable houses. As of April 1991, construction of 86 houses based on prototype designs were reported to be in progress. Thus little over 104 houses out of a target of 210 would be constructed in the 6FYP. However, the numbers of houses constructed appears reasonable for 2 main reasons. Firstly,

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only a fraction - perhaps only about 3% - of the housing stock may be rebuilt every year. Secondly, within that small percentage of construction out of total housing stock, only those people who are near the motor road would show interest in the prototype specifications.

Urban Development Planning

14.34 Urban development planning and a construction control system were introduced between 1983 and 1987. Rules for the control of urban development throughout the Kingdom include "Bhutan Building Rules" and complementary "Guidance Notes" and "Codes of Practice". Urban plans were prepared for Thimphu, Phuntsholing, Geylegphug, Samdrup Jongkhar, Deothang, Pema Gatsel, Kanglung, Mongar, Lhunsi, Jakar, Punakha, Damphu, Dagana, Ha and Gedu. Most of these urban plans have not been implemented due to delays in approval, and are serving only as building control guidelines.

14.35 Arrangements for refuse collection, transport and disposal are inadequate. The rapid expansion of population in all urban centres is placing increasing pressure on storm water channels, culverts and drains. Other major problems include disposal of sullage, vegetable waste and garbage in the drains which then empty into rivers. All of the above cause serious public health problems. However, compared to other developing countries, the general quality of housing and support services in the urban centres of Thimphu and Phuntsholing can be considered to be high. In the other municipalities, living conditions are considerably poorer.

14.36 Urban development planning in Bhutan has to take the fragile environment into account. As there is limited flat agricultural land available, the Royal Government has enacted stringent rules against residential development on farm and forest lands. The surrounding watersheds, geological stability, drainage and irrigation patterns also need to be considered in urban planning.

Survey of Bhutan

14.37. The objectives for the Department for the 6FYP were to improve the efficiency of the Department through increasing the number of skilled personnel, training of existing manpower and introducing new technologies. This was required to enable the Department to fulfil its functions of surveying (cadastral and topographic), updating of existing maps, introducing geodetic control for the whole country and to provide services to other user Ministries and agencies in Bhutan. In the 6FYP the Department was able to complete cadastral field surveys in 7 out of the 8 Dzongkhags planned for the period; to demarcate the boundary with India, using GPS technology, and to introduce the necessary new technology for photogrammetry and cartography. These activities will facilitate the work programmes of other Ministries such as the Ministry of Agriculture, Dzongkhag Administration, etc. The Department also produced various maps, including a topographic map of Bhutan, an administrative map and more specific maps for Departments showing health and education facilities, for example. The Department began to commercialise their activities in the 6FYP, with user agencies having to pay for the department's services. A prefeasibility study of computerisation of land records was undertaken and its recommendations will be implemented in the 7FYP.

V. Objectives and Strategy for the 7FYP

A. Objectives for the 7FYP

14.38 The objectives in the 7FYP are to:

- increase the use of improved water supplies from 40% to 57% of the population.
- improve the water quality from existing supply schemes so that by 1997 45% of the population have access to safe water from improved schemes.
- universalize the use of household latrines and also assist 11,000 households (15% of the rural population) to build hygienic latrines.
- increase the use of smokeless stoves from 8% to 15% of the population by assisting 6000 households to have smokeless stoves.
- enable 90% of the rural primary schools, community schools and monastic schools and health units as well as the main monasteries to use and maintain safe water and hygienic conditions.
- achieve a balanced development of all urban centres and create a functional, healthy and aesthetically pleasing physical environment for urban living. This objective would include the provision of basic

infrastructure such as roads, power, drainage, water, sanitation, recreation, communication and trading facilities. It would also imply the conservation of environmental character, architecture and agriculture land to the extent possible.

- continue the surveying and map production activities to provide the necessary information to ensure that rural and urban planning is based on sound information.

B. Strategies for Achieving Objectives

14.39 To achieve the above objectives the following strategies will be implemented:

- ensure the sustainability of completed facilities through strong community participation in all programme phases, leading to a distinct sense of community ownership after the establishment of facilities.
- through collaboration with other relevant Departments and agencies, increase awareness of the benefits of improved standards of personal, food, and domestic hygiene and therefore increase the demand for and use of water and sanitation facilities.
- improve the design, planning and implementation capacities of the Department of Works and Housing
- utilisation of low cost technology to provide the most cost effective service and enable the maintenance of facilities by beneficiaries. Communities will be expected to contribute at least 15% of the cost in rural areas, while in urban areas, municipal administrations will increase cost recovery through taxation.
- utilisation of high technology in surveying and map production to ensure that the whole country can be surveyed in the most effective and timely manner.

VI. Development Programmes for the 7FYP

Rural Infrastructure Programme

14.40 Gravity-flow water supply schemes of small and medium size (not exceeding 10kms in length), will continue to be the (low cost) choice of technology. In new schemes, only sources with less than 10 faecal coliform/100ml will be used. The water quality of existing schemes will, wherever needed, be improved to contain less than 10 faecal coliform/100ml. Priority will be given to provision of water supplies to social institutions. Where possible these will be established as part of a community water scheme. In all stages the Department will aim to generate responsible community ownership of completed facilities. The main strategy will be to assist communities to develop the necessary technical and organisational skills to maintain and operate the facilities once they are created. The involvement of women will be emphasised. Since mothers and women have set the habits of the young in health and hygiene, the sanitation programme will focus strongly on the women. Village voluntary health workers or other designated persons will be made responsible for testing the quality of water.

14.41 A number of rural water supply schemes have been constructed with inferior designs. Over the years, the schemes have deteriorated and close to 500 water supply schemes are not in working condition. These schemes will be repaired with improved designs. There will be periodic monitoring to ensure proper maintenance of the schemes.

14.42 National legislation will be used to lay down the rights and responsibilities of the users and of the implementing agencies in the provision and maintenance of water and sanitation infrastructure. Government will continue to support, train and assist village-based management facilities. A rigorous supervision system will be maintained to monitor the quality of service delivered to the beneficiaries. The Public Health Engineering Division will ensure a high quality of survey and construction services. The operation and maintenance component of the programme will also be strengthened.

14.43 Both the Department of Works and Housing and the Department of Health Services will promote the construction of household latrines. Beneficiaries will be free to choose from three different types of latrines (ventilated improved double pit latrine, pour flush latrine, long drop composting latrine) as alternatives to traditional latrines.

14.44 The improved stoves programme is designed to popularise appropriate types of stoves for different parts of the country, especially in areas where firewood is deficient. Such improved stoves will save cooking time and fuel and contribute to control of respiratory diseases.

14.45 The water and sanitation construction programme will be accompanied by education campaigns to raise

Human Settlements

awareness of the importance of this programme in improving health. Communication materials including, films, slides, booklets will be produced to reinforce public consciousness about sanitation. The Department will continue to collaborate in the Information, Education and Communication for Health programme.

Urban Infrastructure Programme

14.46 The urban water supply programme aims to provide safe drinking water in 7 towns: Jakar, Samchi, Deothang, Wangdiphodrang, Sarbhang, Damphu and Kanglung. The programme will include planning, designing and construction of water supply in the towns. The feasibility study of water supply in these towns was completed in the 6FYP. Scarcity of safe drinking water is common to these towns. Existing water supply schemes in these towns will be also be renovated.

14.47 Sanitation and drainage system in Thimphu and Phuntsholing towns will be improved. This will require establishment of an efficient method of disposal and treatment of garbage. Sites for dumping garbage will be built and fenced off. A number of garbage pits will be constructed. A network of storm water drains will be laid in order to reduce the risk of overflowing during the monsoon.

14.48 At present, the septic tanks in Phuntsholing often overflow and sewage spills into the storm water drains, causing considerable health hazards in Phuntsholing, as proven by the outbreak of cholera in 1991. Along with the sewerage networks, sewerage treatment plants will be established in both Phuntsholing and Thimphu. Under this scheme over 1,100 septic tanks will be rehabilitated and 4.2 km of main and trunk sewers will be rebuilt in Phuntsholing. Sewerage treatment operators and local plumbers will be trained in the maintenance of the scheme.

14.49 Other amenities to be provided in urban areas include public utilities such as street lights, storm water drainage, water supplies, communication facilities, sports and recreational facilities, firefighting facilities, public toilets, market stalls. Such amenities will be established and/or renovated in all the townships in Bhutan.

14.50 Property near the rivers in Paro, Thimphu, Phuntsholing, Bumthang, Tongsa, Samdrup Jongkhar and Haa are prone to flooding. River works will be carried out to save the existing settlements and farm lands from erosion.

14.51 The City Corporations of Thimphu and Phuntsholing will be strengthened with the aim of improving the municipal revenue collection machinery and management information system. Other municipal administrations will be similarly strengthened in future. The cost of provision of services will be recovered through municipal taxes and it is intended that municipal administrations will become self financing. The preparation of various elements of municipal legislation will be necessary to legally support urban planning. Laws relating to urban land, municipal services, urban environment, architectural styles, building rules etc will be adopted.

Survey of Bhutan

14.52 The Department will continue with the activities of the 6FYP, and will aim to complete the cadastral survey of the entire country by the end of the 7FYP. The computerisation of land records will improve the accuracy and therefore legality of this information. The existing 1:50,000 topographic maps of Bhutan will be updated in 14 areas and revised versions printed. In addition to updating the existing maps the Department will start the production of a new topographical base map for Bhutan, with the introduction of analytical photogrammetry. Cadastral maps of 5 Dzongkhags will be digitised and a digital topographical database will be established to provide the basis for a Geographical Information System. The information provide through the GIS will be made available to other user agencies, such as the Ministry of Agriculture, for use in land use planning. For these new activities, equipment, Technical Assistance and training of staff will be required.

Financial and Manpower Requirements

TOTALS FOR Human Settlements						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP_TOTAL
CAPITAL COSTS	94.791	157.648	105.127	111.314	123.900	592.780
RECURRENT COSTS						

a) Existing	33.623	36.985	40.683	44.752	49.227	205.270
b) Project Related	7.163	26.429	27.724	27.745	27.824	116.885
Total Recurrent	40.786	63.414	68.407	72.497	77.051	322.155
TOTAL COSTS	135.577	221.062	173.534	183.811	200.951	914.935
MANPOWER	80	70	54	58	58	320
TA PERSONNEL	124.0	127.3	88.0	87.0	54.0	480.3
TOTALS FOR Department of Works & Housing						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	71.820	92.390	102.760	109.130	123.900	500.000
RECURRENT COSTS						
a) Existing	21.249	23.374	25.711	28.282	31.110	129.726
b) Project Related	5.509	17.644	18.799	18.570	18.649	79.171
Total Recurrent	26.758	41.018	44.510	46.852	49.759	208.897
TOTAL COSTS	98.578	133.408	147.270	155.982	173.659	708.897
MANPOWER	61	48	35	35	35	214
TA PERSONNEL	106.0	102.0	82.0	75.0	54.0	419.0
TOTALS FOR Survey of Bhutan						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	22.971	65.258	2.367	2.184	0.000	92.780
RECURRENT COSTS						
a) Existing	12.374	13.611	14.972	16.470	18.117	75.544
b) Project Related	1.654	8.785	8.925	9.175	9.175	37.714
Total Recurrent	14.028	22.396	23.897	25.645	27.292	113.258
TOTAL COSTS	36.999	87.654	26.264	27.829	27.292	206.038
MANPOWER	19	22	19	23	23	106
TA PERSONNEL	18.0	25.3	6.0	12.0	0.0	61.3

TRANSPORT SECTOR TRANSPORT SECTOR

I. Basic Situation I. Basic Situation

15.1 The lack of a well developed transport network has been identified as one of the major constraints to the development of more remote areas of the country. While a considerable proportion of early FYPs were devoted to the development of basic road infrastructure, the majority of the population remain some distance from motor roads. This increases the cost of providing services to the population of remote settlements and reduces the viability of cash crop or industrial production in these areas.

Suspension Bridges, Foot Trails and Mule Tracks Suspension Bridges, Foot Trails and Mule Tracks

15.2 The majority of the people in Bhutan live at least half a days walking distance from a motor road. Some communities are even more remote: 4-5 days from a motor road. These communities have to rely on mule tracks and foot trails in conjunction with suspension bridges, cantilever bridges and in a few places ropeways to reach the nearest large settlement. Rural communities are responsible for the maintenance of foot trails and bridges on a self-help basis. Suspension bridges provide short-cut links between stretches of foot paths and mule tracks and save much time in reaching one's destination. Thus they increase the accessibility to markets, educational, health, agricultural facilities etc. Given the importance of suspension bridges for the communities, a nationwide suspension bridge programme was launched in the 4FYP, as shown in Table 15.6.

Motor Roads Motor Roads

15.3 The country has a lateral East-West highway from the capital Thimphu to Tashigang (546 km). The East-West highway is connected to Southern Bhutan by 3 North-South highways: Thimphu-Phuntsholing highway (179 km), Tongsa-Geylegphug highway (244 km) and Tashigang-Samdrup Jongkhar highway (180 km). The motor road network is generally limited to providing access between 18 Dzongkhag headquarters and 12 Dungkhags. The road network links a number of major settlements. The least accessible part of Bhutan is South-Eastern areas particularly Kheng and some parts of Mongar, Samdrup Jongkhar, Pema Gatshel and Tashigang. The highways have 8 tonnes axle capacity and were built according to Indian Hill Road Standard and Specification by Project Dantak, an organization of the Government of India. The roads built in Bhutan are generally considered as major technical and engineering feat given the difficult terrain and a lack of geo-technical studies preceding the construction of roads.

Transport Sector

Table 15.1 Major Highways 1990

Sector	Length in Km.
Simtokha - Wangdi	66
Wangdi -Tongsa	129
Tongsa -Jakar	68
Jakar -Mongar	193
Mongar -Tashigang	91
Wangdi -Chirang	90
Chirang -Sarbhong	64
Tala -Raidak	23
Tashigang-S/Jongkhar	180
Tongsa -Sarbhong	270
Thimphu -Phuntsholing	179
Chuzumsa -Drugyel Dzong	40
Chuzumsa -Haa	79
Total	1472

15.4 Motor road construction began in 1959 with the assistance of Government of India. By the end of First Plan (1961-1966), there were bus services connecting some of the Southern towns such as Phuntsholing, Samdrup Jongkhar, Sarbhong, Samchi and Geylegphug to neighbouring Indian towns and railheads. Major roads such as the Geylegphug-Sarbhong, Phuntsholing-Thimphu, Phuntsholing-Paro, Samdrup Jongkhar-Tashigang and Geylegphug-Mangdichu were constructed in the First Plan. In the first two plans, an overwhelming percentage of plan outlays were allocated to the road construction sector. Outlay in the road sector was 58.7% in First plan, 35% in the Second Plan and 17.8% in the Third Plan.

Motor Bridges

15.5 Most of the bridges were constructed as temporary structures (bailey bridges with stone masonry substructure) and they have passed their design life. Within a few years, they will not be suitable for use by heavy vehicles.

Druk Air, Royal Bhutan Airlines

15.6 Druk-Air was formed in 1981. A new aircraft a BAe-146 was purchased in October 1988 to supplement the 2 existing Dornier aircraft. The purchase of the BAe-146 has increased the capacity of the airline as the BAe-146 has a seating capacity of 80 people while a Dornier has an 18 seat capacity. There is only one airport in Bhutan at Paro, although there are many helipads across the country. Bhutan was linked by air to Dhaka in 1986, to New Delhi in November 1988, to Kathmandu in April 1989 and to Bangkok in March 1989. There are flight services to all of these places and Calcutta twice a week. Druk-Air services have facilitated the mobility of officials and tourists.

Table 15.2 Passenger Carriage by Druk Air

Stations	June 1988- June 1989			June 1989- June 1990		
	Arrival	Depart	Total	Arrival	Depart	Total
Paro-Delhi	139	1558	2949	3117	311	6230
Paro-Bangkok	328	290	627	1355	1620	2975
Paro-Dhaka	386	420	806	316	406	722
Paro-Kathmandu	249	226	475	889	903	1792
Paro-Calcutta	3193	3035	6228	1983	1688	3671
Total			11,085			15390

Forms of Transport

15.7 For the day to day needs of transportation in rural areas, back-packing, horses, yaks (only males are used for transportation) and oxen are still widely used. Vehicles are concentrated in the Western and Southern region. At the start of Second Plan, there were 131 vehicles in Bhutan. The Number of vehicles at present is shown in Table 15.3.

Table 15.3 Vehicle Numbers 1980-1988

Year	Cars	Jeeps	Trucks	Buses	Bull dozer	Taxis	Two Wheelers	Diplomatic	Total
1980	76	118	156	9	-	23	299	19	700
1981	167	185	333	14	-	39	455	19	1212
1982	319	276	431	23	6	55	707	23	1840
1983	402	377	498	27	8	60	946	27	2345
1984	620	469	673	37	9	78	1200	36	3122
1985	782	627	826	57	9	117	1513	49	3980
1986	934	810	955	78	10	153	1883	58	4881
1987	1027	951	1075	99	10	213	2281	65	5721
1988a	1235	1105	1249	118	12	250	2882	71	7002

(a) Total includes 80 numbers of power tillers.

Source: Department of Revenue and Customs.

Institutions

15.8 The Department of Roads under the Ministry of Communication is responsible for developing a network of highways and feeder roads. The Department of Roads maintained a staff strength of 1,048 in 1990. A substantial proportion of its staff consists of non-nationals. It has the technical capability to undertake 90 km of base course cutting per year. The Department of Roads has the following units:

- 4 maintenance divisions (Limethang, Lobesa, Wangdi and Thimphu)
- 3 formation cutting units,
- 2 base course cutting units,
- 1 bituminous sealing unit, and
- 1 central workshop in Geylegphug.

Department of Civil Aviation and Transport

Transport Sector

15.9 The Department of Civil Aviation provides infrastructure at Paro Airport, Air Traffic Control facilities, navigational and communication facilities and security for National Airline. It is also responsible for the formulation of rules and regulations to ensure safe operation of Royal Bhutan Airlines and enters into bilateral agreements with other countries to facilitate the establishment of air links. The Bhutan Government Transport Service under the Department of Civil Aviation is charged with the responsibility of providing transport services through private operators and monitoring of passenger services on various bus routes operated by private parties. The Department of Civil Aviation and BGTS has a Driving Institute in Phuntsholing which offers driving lessons for both heavy and light vehicles.

Department of Works and Housing

15.10 The suspension bridge programme is implemented by the Public Health Engineering Division (PHED) of the Department of Works and Housing, Ministry of Social Services. The PHED is responsible for the planning, surveying, site selection, design, procurement of construction materials and supervision of the construction by Dzongkhag District Engineers. At the construction stage, communities contribute at least 20% of the cost in terms of labour. Communities are responsible for regular maintenance of suspension bridges, although the Government assists the communities in renovations which require imported materials such as steel frames.

Constraints

Roads Sector

15.11 The construction and maintenance of roads is technically difficult because of the fragility of the land and risk of landslides during the monsoon period. The monsoon in the first three years of the 6FYP contributed to unforeseen expenditures on maintenance of roads and bridges and diversion of labour and machines to maintenance works. The terrain in which roads have to follow valleys and are cut into hillsides, makes road construction technically more demanding and costly than in the plains.

15.12 Bhutan's small and widely scattered population and low level of development means that per capita costs of road development are high, while most roads carry relatively low volumes of traffic.

15.13 The shortage of national labourers has been a major constraint and the construction of roads has been achieved by dependence on foreign labour mainly from India. In order to address this problem, the National Workforce was established. The purpose of National Workforce was to build a cadre of national skilled workers with on the job training. The size of the National Workforce employed in the Department of Roads was about 1,700 in 1990, with another 2,200 foreign workers. Due to the lack of adequate training and experience, the productivity of workforce has remained low and the turnover of staff has been considerable. In addition, there has a shortage of technical manpower, with an insufficient number of technical personnel to operate all equipment.

15.14 The procurement of machinery and equipment has been through open tendering procedures mainly because of donor conditions. This has resulted in the purchase of a large variety of machinery with different makes and models. The lack of standardization in the procurement of equipment in turn makes spare parts inventory control difficult. Most of the imported equipment from third countries and the necessary spare parts are not easily available in India. Having to depend on importation of spare parts involves lengthy procedures. All of these factors contribute to considerable idle time for equipment.

Suspension Bridges

15.15 The number of suspension bridges planned in the 6FYP were not constructed due to the lack of community labour. Construction of suspension bridges with beneficiary labour contribution was one among many demands placed on community labour for development purposes. In some cases there were unskilled labourers for the construction of bridges, but construction could not take place on schedule because of a shortage of masons among the communities. The materials used in suspension bridges are cement and steel ropes, and beneficiaries do not have the skills to maintain the bridges.

Civil Aviation

15.16 It is an objective of the Royal Government for the Druk Air Corporation to be commercially viable. However, this has not been possible to date and its profitability in future would depend on the increase in the number of tourists. Although the Government has increased the ceiling for overseas tourists inflow to 4,000 a year, the Tourism Corporation of Bhutan has not been able to attract such a number in any year.

15.17 Although improving, the service facilities are not adequate in Paro Airport. There is also insufficient number of national manpower such as Communication Officers, Air Worthiness Officers, Air Traffic Control Officers and metrological officers.

II. Review of Past Performance

A. Objectives and Achievements in the 6FYP

Road Construction

15.18 The broad objective for the Road sector was to provide the most cost effective network of highways and feeder roads to facilitate overall socio-economic development.

Table 15.4 Cumulated Road Length Constructed Since the 4FYP

Category	4FYP	5FYP	6FYP (1990)
National Highways	1358	1450	1453
District Roads	216	447	500
Feeder Roads	185	268	408
Total	1759	2168	2361

15.19 The targets set for the Road Department for the 6FYP were 300 km of formation cutting, 437 km of base course works and 379 km of bituminous sealing. The capability for formation cutting depends on the number of mechanised construction units: 4 mechanized units were planned to be established although only 3 were formed. Each mechanised construction unit was anticipated to undertake 20 km of formation cutting per year. However, at the end of the 2nd year of 6th Plan, only 86 kms of formation cutting had been completed. It is most likely that only about 186 km of formation cutting will be completed in the 6FYP, leaving a considerable amount of spillover works. Due to various reasons including delays in the arrival of bituminous sealing equipment and acute shortages of skilled and technical manpower, the achievement for activities related to bituminous sealing at the end of 2nd year of the 6FYP were also much lower than projected targets. Similarly, the achievement in base course works were lower than expected for the same period.

Table 15.5 Progress with Privatisation of Road Construction and Maintenance Activities (July 1991)

Work Description	Length (Km)	Amount (Nu.)	No. of Contractors Involved
Formation Cutting	76.1	32182461.0	11
Base Course	21.5	6364538.1	2
Permanent works	32.0	6070499.0	3
Restoration	800.0	917914.2	3
Routine-Maintenance	245.0	1716136.8	11
Total		47251549.1	

Transport Sector

15.20 Privatisation of road construction and maintenance was also a major objective in the road sector. Privatisation started in late 1989 and about 28 contractors have so far taken up work worth Nu. 47.25 m. Private contractors have purchased road construction equipment from the government valued at Nu 21.77 m (see Table 15.5)

Targets and Achievements in Suspension Bridge Construction

15.21 A physical target to construct 120 suspension bridges was set for the 6FYP. Targets for constructing suspension bridges ranged from 12 for Tashigang Dzongkhags to 2 for Paro Valley. By the end of 1990, only 31 suspension bridges were completed and work on 15 more suspension bridges were in progress.

Table 15.6 Suspension Bridges Constructed from the 4FYP to 6FYP

Dzongkhag	4FYP	5FYP	6FYP (till 1990)	Total
Thimphu	0	2	1	3
Chhukha	3	5	1	9
Haa	3	6	1	10
Paro	3	8	1	12
Samchi	11	14	3	28
Chirang	8	2	1	11
Dagana	2	3	2	7
Punakha	5	2	1	8
Wangdi	2	10	2	14
Bumthang	2	7	2	11
Sarbhang	9	9	4	22
Shemgang	1	5	2	8
Tongsa	4	5	2	11
Lhuntshi	4	4	2	10
Mongar	9	5	1	15
Pemagatshel	2	6	0	8
S/Jongkhar	10	13	4	27
Tashigang	12	16	1	29
Total	90	122	31	243

Objectives and Achievements in Civil Aviation

15.22 Activities to be implemented in the 6FYP were: completion of Hanger construction, purchase of the new aircraft: the BAe-146; extension of the runway of Paro Airport; construction and equipping of a Terminal Building and Air Traffic Control Tower; construction of a fuel depot for temporary refuelling, replacement of crash fire tenders, survey of Geylephug Airport, training of technical personnel of Druk-Air. Activities that were not implemented were: construction and equipping of the tower, terminal building; purchase of crash fire tenders and survey of Geylephug Airport.

15.23 The Transport Division of Department of Civil Aviation and Transport has continued to privatise all transport of passenger routes. At the beginning of 6FYP, 11 routes were privatised and operated by 6 entrepreneurs. By April 1990, 20 passenger routes were privatised and handed over to 18 operators.

III. Objectives for the 7FY

15.24 The long term objective in the Roads Sector is to construct and maintain all national highways and bridges to facilitate the efficient movement of goods and passengers. A sufficient network of roads is a prerequisite for the socio-economic development of the country. In the long term, the national road network will be extended with the eventual aim of connecting all substantial population centres.

15.25 In the 7FYP, the highest priority will be given to repair and maintenance of the road network particularly highways. Unlike the previous plans where substantial investments were made in constructing new roads, the emphasis will be put on the maintenance of existing roads in the 7FYP. This would ensure that the expansion of the road network does not exceed maintenance capacity. Therefore no new targets for the construction of roads have been set for the 7FYP, besides the completion of spillover works.

15.26 As in the 6FYP, the main objective of constructing suspension bridges will be to provide access to not only markets, administrative and social facilities but also to grazing and agricultural land.

Strategies for the 7FYP

15.27 The private sector will be encouraged to participate in the construction and maintenance works on contract basis, while avoiding the creation of monopolistic trends. The design, survey and specification of roads will still be the responsibility of the Department of Roads. Manuals, specifications and schedules of rates will be frequently reviewed and such guidelines will be followed in both the Department of Roads and the private sector. Private sector involvement in road construction and maintenance has already been quite encouraging. Several road construction companies have been established, with their own construction equipment. But most private construction contractors will find it financially unviable to purchase their own heavy earth moving machinery. The Departments of Roads will therefore hire out construction equipment to private contractors.

15.28 Mechanisation of road works in both road maintenance and construction will continue, as in the 6FYP, to be a major strategy. Road construction mechanization would alleviate the shortage of manpower which exists in Bhutan and improve road construction standards. So far, mechanization has been used only for road formation cutting. Base course and bituminous sealing work are usually undertaken manually.

15.29 The Department of Roads will also continue to develop its technical and engineering capabilities. In particular, the Department will construct at least 2 permanent bridges to replace old bailey bridges (temporary) and continue to provide economic modular timber bridges on feeder roads. For the time being, the private sector will not be involved in bridge construction. To ensure that the road network is developed in the most technically efficient and economically viable manner, a Roads Sector Master Plan will be prepared during the early part of 7FYP.

15.30 Communities' responsibility for the maintenance of suspension bridges will be improved by creating greater awareness of the need for regular maintenance and training in the necessary skills.

IV. Development Programmes for the 7FY

A. Road Sector Programme

Strengthening of Road Maintenance

15.31 There are 4 maintenance divisions located in Lobesa, Tongsa, Lingmethang and Thimphu. Each division has the capacity to maintain 200 km. of roads. By the end of the 7th plan, the Department of Roads will have the responsibility of maintaining an estimated 1,657 km. of roads, assuming that the Thimphu - Phuntsholing and Tashigang - Samdrup Jongkhar highways will be taken over from DANTAK. This figure excludes the maintenance of feeder roads which will be the responsibility of the Dzongkhags.

15.32 Much of the maintenance work will not be carried out by the labour force of the Department of Road. As far as possible, routine maintenance will be contracted out to communities and the private sector. This will reduce the cost of road maintenance and encourage peoples' participation. Routine maintenance works consists of clearing of drains, bridges and culverts after minor landslides. It will also require repainting of sign boards, milestones, parapet walls, warning signs and plantation of trees and grasses along the road side. There are 2 categories of routine maintenance contracts awarded on basis of soil conditions: one at Nu. 9000 per km. and other which is awarded Nu. 6000 per km. a year.

Transport Sector

15.33 There are 7 divisional workshops and an additional 4 divisional workshops will be established in the 7FYP. In addition, the equipment and tools in the existing workshops will need to be replaced. The Divisional workshops will be located in Lobesa, Tongsa, Lingmethang, Shemgang, Thimphu, Sarbhang, Tashigang, Hesothangkha, Tala and Samdrup Jongkhar. The central workshop is located in Geylegphug, which is considered an inappropriate location. Road construction equipment is scattered all over the country which makes it difficult to transport them to the central workshop in Geylegphug for repairs. It is therefore intended to establish a central workshop at Lingmethang which reduce the time required to transport equipment for repair.

Bitumen Sealing Unit

15.34 The Department has one resurfacing unit, with a capacity to resurface 40 km. of roads per year. However the resurfacing capacity required by the Department is estimated at 160 km. of roads per year. This is based on a backlog of 720 km of resurfacing work to be completed in the 7FYP. Out of this, 130 km. of roads are classified as district roads and the remaining 580 km. of road are national highways. An additional bituminous sealing unit will be established and approximately 720 km will be resurfaced in the 7FYP. The sections of road to be resurfaced in the 7FYP are given in Table 15.7.

Table 15.7 Road sector to be resurfaced in the 7FYP

Road	Length (Km.)	Cost in Million Nu.	Road
Damphu-Dagachu	15.0}	10.395	NH
Damphu-Dagachu	27.0}		
Sarbhang-Chirang	9.5	2.19	DR
Tongsa-Yotola	20.0	4.62	NH
Geylegphug-Tongsa	200.0	50.76	NH
Mongar-Lhuntshi	57.0	14.22	DR
Mongar-Kheri	88.0	22.32	DR
Tshelingkhor-P/Gatshel	7.0	1.568	DR
Pema Gatshel-Khotakpa	1.0	0.712	FR
Deothang-Bhangtar	8.0	1.712	DR
Chazam-Doksum	10.0	2.24	DR
Doksum-Tashiyangtsi	30.0	6.57	DR
Simtokha-Lobesa	55.0	12.78	NH
Jakar-Mongar	192.0	50.581	NH
Total	719.5	180.17	

Road Construction Equipment

15.35 The Department of Roads has approximately 450 pieces of construction equipment of various makes. These machines include 21 road rollers, 22 bull dozers, 52 air compressors, 47 long body tipper trucks, 10 water pumps, 15 jeeps, 1 earth vibrator, 5 pay loaders, 1 stone crusher, 7 land cruisers, 2 motor cycles, 1 water tankers, 1 workshop van, 3 excavators, 2 pneumatic rollers, 16 jack hammers, 1 20ton trailer, 8 tractors. By the beginning of the 7FYP almost half of the equipment will be overdue for renewal; their continued use will be uneconomical in terms of maintenance costs and amount of down time required for repairs. New machinery will be purchased to replace the existing machines.

Establishment of a Formation Cutting Unit

15.36 The Department of Roads has a formation cutting capability of 45 km. per year and the private sector has formation cutting capability of 30 km. per year, together making 75 km. of formation cutting possible. The 7FYP

target for formation cutting work is 300 km. or about 93 km. per year. This target can only be achieved with the creation of one additional formation cutting unit. The equipment required are: 1 80KW dozer, 4 150KW dozers, 6 air compressors, 4 tipper trucks, 3 fuel tanks, 1 fuel tankers, 1 pick-up van, 1 workshop van, 1 mobile lab. van and 2 tractors.

Table 15.8 Per Km Cost of Construction and Maintenance
(Nu. million at 1989 prices)

Description	Road Classification			
	A	B	C	D
Construction				
Formation Cutting	0.65	0.545	0.475	0.35
Base Course	0.31	0.275	0.25	0.20
Bituminous	0.21	0.20	0.195	-
Permanent works	0.38	0.35	0.25	0.15
Total for construction	1.55	1.37	1.17	0.70
Maintenance				
Routine Maintenance	0.16	0.145	0.103	0.005
Resurfacing	0.20	0.185	0.150	-
Restoration work	-	-	-	-
Total for maintenance	0.36	0.33	0.253	0.005

New Road Construction

15.37 Most of the new road construction will be in South-eastern region of Bhutan comprising of Pema Gatshel and Tashigang. Road density is lowest in these areas and hence accessibility is extremely poor, often requiring up to 3-6 days of trekking to the road head. New roads in these areas will provide access for goods and people, who are relatively more isolated. Increased accessibility will be followed by other development activities in these areas and thus bring about a balanced regional development.

15.38 The 7FYP target for construction work has been estimated on the assumption that the Department of Roads has the capability for formation cutting for 60 km. road per year. Another 30 km of formation cutting will be undertaken by private road construction companies.

Suspension Bridges

15.39 An additional 75 bridges will be constructed, including bridges with steel towers, suspended bridges, reinforced concrete bridges, wooden beam bridges, and traditional wooden cantilever bridges. In addition existing bridges will be improved with regular maintenance work and a store will be constructed in Phuntsholing for storage of materials and equipment.

Transport Sector

Table 15.9 Target for the Construction and Maintenance of Suspension Bridges during the 7FYP

Dzongkhag	Construction	Maintenance
Thimphu	3	8
Chhukha	5	9
Haa	3	8
Paro	3	13
Samchi	5	20
Chirang	4	9
Dagana	5	6
Punakha	5	6
Wangdi	4	13
Bumthang	4	10
Sarbhang	6	23
Shemgang	5	9
Tongsa	4	9
Lhuntshi	3	8
Mongar	4	12
Pemagatshel	4	7
S. Jongkhar	5	25
Tashigang	5	25
Total	77	220

Civil Aviation Civil Aviation

15.40 Construction, furnishing and equipping of a new terminal building, construction of a new approach road, purchase of crash fire tender vehicle, and installation of water supply in the airport areas will remain as spillover works. These activities will be undertaken during the 7FYP.

Transport Sector

**Financial and Manpower Requirements for the 7FYPP
Financial and Manpower Requirements for the 7FYP**

TOTALS FOR Transport						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP_TOTAL
CAPITAL COSTS	203.043	154.653	149.152	150.425	109.619	766.892
RECURRENT COSTS						
a) Existing	41.176	45.294	49.823	54.806	60.286	251.385
b) Project Related	23.491	40.292	62.907	77.892	86.109	290.691
Total Recurrent	64.667	85.586	112.730	132.698	146.395	542.076
TOTAL COSTS	267.710	240.239	261.882	283.123	256.014	1308.968
MANPOWER	289	0	79	0	79	447
TA PERSONNEL	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS FOR Department of Roads						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	187.843	139.453	133.952	135.225	94.419	690.892
RECURRENT COSTS						
a) Existing	38.378	42.216	46.437	51.081	56.189	234.301
b) Project Related	22.991	39.792	62.407	77.392	85.919	288.501
Total Recurrent	61.369	82.008	108.844	128.473	142.108	522.802
TOTAL COSTS	249.212	221.461	242.796	263.698	236.527	1213.694
MANPOWER	205	0	79	0	79	363
TA PERSONNEL	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS FOR Department of Civil Aviation and Transport						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	15.200	15.200	15.200	15.200	15.200	76.000
RECURRENT COSTS						
a) Existing	2.798	3.078	3.386	3.725	4.097	17.084
b) Project Related	0.500	0.500	0.500	0.500	0.190	2.190
Total Recurrent	3.298	3.578	3.886	4.225	4.287	19.274
TOTAL COSTS	18.498	18.778	19.086	19.425	19.487	95.274
MANPOWER	84	0	0	0	0	84
TA PERSONNEL	0.0	0.0	0.0	0.0	0.0	0.0

CHAPTER 16

COMMUNICATIONS SECTOR COMMUNICATIONS SECTOR

I. Basic Situation I. Basic Situation

16.1 The remote and scattered population, combined with the transport constraints imposed by a mountainous terrain, makes the development of all forms of communication a most vital aspect of development. Communication systems are necessary to enable all levels of administration to coordinate development activities and to ensure that people in the remotest areas are able to participate in the planning process. These systems also enable the Government to inform the population in all areas of the country of RGOB programmes and of other important political and social issues. Communications systems, particularly the media, are an important educational tool for both formal educational programmes and also as a means of improving the public's general knowledge about Bhutan and the outside world.

B. INSTITUTIONS B. INSTITUTIONS

Facilities Facilities

16.2 The Ministry of Communications is responsible for the development of all communication networks, through the Department of Posts, Telegraph and Civil Wireless, the Department of Information and Broadcasting, and the Department of Telecommunications. As of December 1990, the number of institutions in the communication sector were as follows: 86 post offices and 25 branch (part time) post offices, 44 civil wireless stations, 8 telegraph offices, 1 weekly newspaper, many institutional bulletins, newsletter and journals, 4 printing presses, 1 broadcasting station, and 2461 working telephone connections served by 13 telephone exchanges. Besides printing presses, wooden block prints are also used extensively, especially in monastic institutions and villages.

16.3 The staff strength of Department of Telecommunication as of mid 1991, consisted of 339 persons. It had 9 graduates, 14 diploma engineers, 29 junior engineers and 23 other people in the technical and scientific cadre. The ratio of total staff per 1,000 subscribers is a widely used indicator for the evaluation of telecommunication staff performance. This ratio is comparatively high for Bhutan because of small size of network, old technology which requires manual operation and scattered population.

16.4 In the same year, The Department of Information and Broadcasting had a staff of 137, the Postal Services 273, Civil Wireless 150 and Telegraph 32.

Print Media Print Media

16.5 Kuensel is the weekly national newspaper published from Thimphu every Saturday. It has usually 12 pages and is published simultaneously in 3 languages: English, Dzongkha and Nepali. It was first produced in its tabloid format in 1986, although it was started in 1960s in its earlier version in A4 size. Kuensel is produced on a modern desktop publishing system and printed at the Government Press.

16.6 The combined circulation of three editions of Kuensel is approximately 10,000 a week. Kuensel is delivered in most parts of the country only by mid-week through a network of sales agents. It is one of the most important media for official announcements, public advertising, international news and national issues. It receives international news from UPI and Gemini news services and will also be linked to Reuters. To provide a comprehensive coverage of national news, there is a network of stringers in all the Dzongkhags.

16.7 Apart from Kuensel, there are monthly news letters such as Shercol, the Sherubtse College newsletter, Ministry of Agriculture's news letter and regular bulletins from many other agencies.

Communications Sector

Printing Presses

16.8 There are 4 printing presses, including the Government Press in Thimphu. The other 3 are in Thimphu, Phuntsholing and Geylegphug. All of these printing presses are engaged in producing stationery for both the private sector and RGOB offices, in addition to printing bulletins, reports and institutional magazines. There is another private printer in Thimphu who uses desktop publishing. For the bulk of publishing at competitive prices, religious and other books are printed in India.

16.9 In rural areas and monastic institutions, the technique of printing with wooden blocks has been used for centuries and continues today. Hand made paper (from the bark of edgeworthia and daphne) is preferred when books are reproduced.

Sound Broadcasting

16.10 Broadcasting was first started in Bhutan as an amateur radio station run by the National Youth Association of Bhutan. Bhutan Broadcasting Service as it is now known was formed in 1986 as part of the Department of Information and Broadcasting Services. On average there are six hours of daily broadcast or 42 hours per week. News services are shared between Kuensel and the Bhutan Broadcasting Services. Programmes are produced in English, Nepali, Dzongkha and Tshangla or Sharchopkha.

Development Support Communication Division

16.11 The functions of Development Support Communication Division (DSCD) of the Department of Information are to assist other organizations - both private and Government - to formulate communication strategies and develop various kinds of communication materials in support of development programmes. Forms of communications materials produced by DSCD include leaflets, pamphlets, posters, flipcharts, photographs, news and feature articles, audio tapes, radio releases, slides, film strips, transparencies, motion pictures, bill boards and video tapes. The DSCD is also responsible for supplying a set of audio visual equipment to all the 18 Dzongkhags.

Postal Services

16.12 The total volume handled by the Postal Services is over seven million articles a year. The volume of articles has been increasing at an annual rate of 4%. This growth rate is expected to accelerate to 6-8% during the 7FYP. The mail is carried on most of the routes by private passenger bus services at a fixed rate. Departmental mail transport and runners are used only in remote areas, where there are no private passenger services. Air mail going out of the country is not airlifted, but despatched by road transport from Phuntsholing to Calcutta, which delays airmail transmission. By the end of the 6FYP, air mail will be despatched by Druk-Air from Paro.

Telegraph and Facsimile Services

16.13 Telegram and telex services are available only in Thimphu and Phuntsholing. The telex network has only one telex exchange in Thimphu with two multiplexers. One is linked to Phuntsholing with 23 telegraph channels and the other is linked to Delhi, India with 46 telegraph channels. In 1991, fax machines were also introduced in Thimphu, Paro, Chimakoti, Wangdiphodrang and Punakha post offices for public use.

Wireless Services

16.14 There are wireless stations in all the 18 Dzongkhags and several dungkhags. Wireless services are thus the only radio communication service covering the entire country. The wireless service is also used in communication with the Royal Bhutan Embassies in Delhi and Dhaka.

Telephone Services

16.15 The telephone network consists of 13 public telephone exchanges. The total installed capacity is 4090 direct exchange lines and 2,461 working connections.

Table 16.1 Telephone Facilities 1990

Exchange	Year of Est	System	Total capacity	Working Connection
Western Zone				
Thimphu	1990	NEAX61E	3000	1000
Phuntsholing	1965	RAX	400	387
Chimakoti	1980	RAX	50	49
Haa	1965	SAX	50	39
Paro	1967	SAX	100	75
Punakha	1979	CB	20	19
Samchi	1976	RAX	100	58
Wangdiphodrang	1971	RAX	50	48
Central Zone				
Geylegphug	1973	SAX	100	98
Sarbhang	1976	RAX	50	47
Tongsa	1974	SAX	35	34
Eastern Zone				
Tashigang	1968	SAX	35	34
S. Jongkhar	1966	SAX	100	87
Total			4090	2461

16.16 All the exchanges are of step-by-step strowger type except the ones in Thimphu and Punakha. The Thimphu exchange is a digital exchange which can process international, transit and local calls, with an equipped capacity of 3,000 direct exchange lines. The Punakha exchange has been replaced by a SAX (small automatic exchange).

B. ConstraintsB. Constraints

16.17 The constraints are common to the entire communication sector. The constraints relate to: shortages of qualified technical manpower and lack of appropriate technology, machinery and equipment. Although the Ministry has attempted to minimise the size of existing manpower in line with RGOB policy, the institutional capacity of the Departments has not been able to meet the requirements of recent programmes. The introduction of modern digital technology in the telecommunications subsector will require highly trained technical manpower. The other subsectors are all lacking modern equipment.

16.18 While communication facilities exist, all 3 sub-sectors are not connected into a unified network. Thus it is not possible to communicate with all areas of Bhutan through the existing telephone and telex system. The only system through which this is possible is the Civil Wireless network.

Communications Sector

II. Review of Past PerformanceII. Review of Past Performance

A. Objectives and Strategies in the 6FYPA. Objectives and Strategies in the 6FYP

Print Media and Sound BroadcastingPrint Media and Sound Broadcasting

16.19 The main objective of media was to disseminate policies, programmes and strategies for social and economic development and to facilitate the flow of communication among all sections of the society. These objectives were pursued through the development of institutional capabilities and physical infrastructure.

TelecommunicationsTelecommunications

16.20 The main objective in the 6FYP was to prepare for the implementation of the Telecommunication Masterplan in the 7FYP. This was achieved through the preparation of a comprehensive telecommunication project and physical works (land acquisition, land development, mule track construction etc) prior to the purchase and installation of equipment.

Post, Telegraph and Civil WirelessPost, Telegraph and Civil Wireless

16.21 The main emphasis in this sector was to bring about improvement in the quality of services. Only a modest expansion was allowed. The strategies for enhancing efficiency were: consolidation and integration of services, introduction of modern postal technology and development of skilled personnel through training.

B. Achievement of ObjectivesB. Achievement of Objectives

Print Media and Sound BroadcastingPrint Media and Sound Broadcasting

16.22 Transmissions hours for the Bhutan Broadcasting Service were increased from 4 hours during weekdays to 4 hours during weekdays and 6 hours during Sundays in 1987. The clarity of reception was improved when Bhutan Broadcasting Service changed its frequency to 60 metre band or 5025KHZ in 1989 and FM transmission was introduced in Thimphu. The main development in 6FYP was the opening of 50 KW broadcasting centre in 1991.

16.23 The Development Support Communication Division continued to provide assistance in developing communication services. It produced media material on environmental sanitation, health, nutrition, agricultural extension, education, animal diseases etc.

Telecommunication ServicesTelecommunication Services

16.24 A detailed Telecommunication Development Plan was completed in 1989. In March 1990, a Satellite Earth Station and a digital telephone exchange was commissioned in Thimphu which enabled a international direct dialling facility to be introduced for Thimphu telephone subscribers. The international subscriber dialling facility between India and Bhutan was introduced in August 1989. A direct microwave link between Thimphu and Phuntsholing was established in 1991.

Postal ServicesPostal Services

16.25 According to 6FYP targets, 10 new post offices were to be established and 45 post offices were to be upgraded/renovated. The actual implementation has been very low: due to financial constraints, only 2 new post offices - Pasakha and Tashichhodzong - were established and 2 post offices (Yongphula and Panbang) were upgraded. Of the 10 mail vans proposed only 2 were purchased. The construction of Thimphu General Post Office Complex was completed and opened in 1988.

Telegraph and Civil Wireless ServicesTelegraph and Civil Wireless Services

16.26 International telegraph services have been introduced in all wireless stations in 1990. Fax machines were introduced in post offices in Thimphu, Paro, Chimakoti, Wangdiphodrang and Punakha in 1991. 8 new wireless stations were opened during the 6FYP period.

III. Objectives and Strategy for the 7FYPIII. Objectives and Strategy for the 7FYP

A. Objectives for the 7FYPA. Objectives for the 7FYP

16.27 Since the development of the communications sector can be seen as assisting in the achievement of national objectives, all the objectives of the communication sector are linked to national objectives.

16.28 The specific objectives for the communication sub-sectors are to:

To Provide an Efficient Communications Network for the Benefit of the Whole Population

16.29 As explained in the Transport Sector Chapter, Bhutan has a limited network of motor roads. Most communities are accessible only by suspension bridges, foot trails and mules tracks. The mountainous terrain makes the construction of motor roads technically difficult and the scattered population makes road construction costly on a per capita basis. Further, the high maintenance of motor roads is another factor which inhibits the expansion of the roads network in the 7FYP. An efficient communications network can overcome some of these constraints and thus major investments will be made in the telecommunication sector to improve communications. Advanced telecommunication facilities will link the more isolated parts of the country and improve their integration into the national Government administration.

To Increase Awareness of Social Issues and economic Development and to Promote Participation of All Sections of the Population in the Development Process

16.30 All media activities ranging from production of broadcasting programmes to institutional news letters, serves to inform the general public or specialised readers on particular issues. The primary focus of nationalised media including Kuensel, the Broadcasting service and Development Support Communication will continue to be to assist in the development process. These official media will disseminate plans, policies, programmes with extension materials and also provide feedback to the relevant Departments from the beneficiaries of RGOB services.

Increase Cost effectiveness and Cost Recovery for Communication Services

16.31 In line with national objectives of increasing efficiency and cost recovery, the Ministry of Communications will identify those areas where privatisation would improve efficiency and financial viability. Postal services is one area where this will be considered. The private sector will be encouraged to participate in postal services through the commissioning of retail outlets to act as agencies for postal collection and sale of stamps. The collection of telephone charges is another activity that will be considered for privatisation. Those agencies that remain in the public sector will improve their efficiency through adopting more commercial management practices.

B. Strategies for Achieving Objectives

16.32 These subsectors shall continue to increase their services to meet the growing demands at a competitive cost. Institutional strengthening, especially human resource development and introduction of modern technology will be common strategies for all sub-sectors.

16.33 In the postal sector, increased efficiency will be achieved through improvements in mail transportation, and introduction of modern postal technology and air mail services. In the official media subsector, Kuensel, the Bhutan Broadcasting Service and the Development Support Communication Division, professionalization of existing manpower will be the main strategy. The strategies of the telecommunication sector are to: interconnect the existing 3 separate network sectors into a unified national telecommunication network; to extend the telecommunication network to all Dzongkhags; to make provisions for further expansion of the telecommunication network to gewog and village levels, and to prepare the infrastructure for the development of non-voice services and broadcast distribution by selecting appropriate technologies.

IV. Development Programmes for the 7FYPIV. Development Programmes for the 7FYP

Print and Broadcasting Media

16.34 There were 6 hours of broadcasting at the end of the 6FYP. Transmission hours will be increased by one hour every year for the first four years of the plan. In the final year of the 7FYP, transmission hours will be increased by 2 hours. This will bring the total number of transmission hours to 12 hours every day. Dzongkha and English programmes will receive more broadcasting time, although greater airtime will be allotted to Sharchop and Lhotsham (Nepali) programmes. However, programme expansion in terms of airtime will have to be curtailed if it is not possible to develop the institutional capability of the BBS to a corresponding degree. The Bhutan Broadcasting Services will also distribute inexpensive radio sets at nominal costs in remote areas to promote radio listening.

16.35 Although the national weekly newspaper, Kuensel will continue to be produced on a weekly basis, the content and volume will be increased for all three editions. In terms of content, greater emphasis will be given to national news supplied by Kuensel's Dzongkhag stringers. Towards the latter half of the 7FYP, the Dzongkha edition will carry 20 pages, English editions 20 pages and Nepali editions will carry 12 pages. To provide for this proposed expansion, equipment for desk top publishing, photography sections, news library etc. will be acquired.

16.36 The construction of a Development Centre for the DSCD, for which designs have been prepared, will be undertaken if donor funding becomes available. Otherwise, there will be no major capital expenditures for the DSCD but the Division will continue to provide the usual services to agencies and private sector.

Postal Services

16.37 The speed and reliability of mail transport will be improved through the introduction of 10 mail vans in a phased manner. At present the Department uses passenger bus services operated by private transporters, in addition to Government runners in the more remote areas. The private bus services have serious drawbacks in that the bus owners' priority is carriage of passengers and goods, and this determines the bus schedules. In some areas the volume of mail is so great that private carriers are unable to transport all the mail. Thus the postal service is unreliable. In addition, the transport of mail bags is insecure as they are transported on the top of buses with other baggage and the mail often is damaged in transit. Expedited mail services and airmail services will be started at the beginning of 7FYP using Druk-Air services. Electronic mail services will be introduced in post offices where there is sufficient demand for such services. The capability of the Philatelic Unit will be enhanced to design, produce and market stamps and thus generate more revenue.

Civil Wireless Services

16.38 Until the telephone services are inter-connected and unified into a single network, the wireless services will remain the most important form of communication in Dzongkhags. An additional 5 wireless stations will be established and 40 sets of equipment will be replaced.

Telecommunications

16.39 Work on microwave routes and exchanges will be carried out in the following order (see Map 16.1 Microwave Transmission Network):

- Route 1: Thimphu-Tongsa-Jakar-Mongar-Tashigang microwave link with exchanges at Tongsa, Jakar, Mongar and Tashigang
- Route 2: Tongsa-Shemgang-Geylegphug-Damphu microwave link with exchanges at Shemgang, Geylegphug and Damphu
- Route 3: Tashigang-Pema Gatshel-Samdrup Jongkhar microwave link with exchanges at Samdrup Jongkhar and Pema Gatshel
- Route 4: Thimphu-Paro-Haa-Chimakoti-Phuntsholing-Samchi microwave link with exchanges at Paro, Chimakoti, Haa, Phuntsholing and Samchi
- Route 5: Thimphu-Punakha-Wangdi microwave link with exchanges at Punakha and Wangdi.

16.40 The first three routes will be completed by 1994 and other routes by 1997. These five microwave routes will provide for transmission to 16 of the 18 Dzongkhags as well as the town of Phuntsholing. The two remaining

Dzongkhags -Dagana and Lhunsi- will receive telecommunication connections by Digital Radio Concentrator System.

16.41 For an area which has less than 300 subscribers, services over carrier (SSOC/Digital Radio Concentrator System) will be established instead of digital exchanges (see Map 16.2 Telephone Switching Network). Therefore, 10 Dzongkhags will be served by Digital Radio Concentrator System. Consequently, the number of exchanges required will be reduced to 9 and these exchanges could be installed at Thimphu, Phuntsholing, Samchi, Paro, Tongsa, Geylegphug, Tashigang, Damphu and Samdrup Jongkhar.

Communications Sector

V. Financial and Manpower Requirements for the 7FYPV. Financial and Manpower Requirements for the 7FYP

TOTALS FOR Communication						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP_TOTAL
CAPITAL COSTS	381.473	112.684	245.569	88.087	80.980	908.793
RECURRENT COSTS						
a) Existing	48.521	53.373	58.711	64.582	71.040	296.227
b) Project Related	10.630	16.069	23.884	41.361	52.034	143.978
Total Recurrent	59.151	69.442	82.595	105.943	123.074	440.205
TOTAL COSTS	440.624	182.126	328.164	194.030	204.054	1348.998
MANPOWER	37	28	25	19	12	121
TA PERSONNEL	32.0	6.0	3.0	0.0	3.0	44.0
TOTALS FOR Department of Information & Broadcasting						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	27.850	1.111	1.160	0.580	0.330	31.031
RECURRENT COSTS						
a) Existing	9.568	10.525	11.577	12.735	14.008	58.413
b) Project Related	1.300	1.400	1.400	1.400	1.400	6.900
Total Recurrent	10.868	11.925	12.977	14.135	15.408	65.313
TOTAL COSTS	38.718	13.036	14.137	14.715	15.738	96.344
MANPOWER	20	12	11	5	0	48
TA PERSONNEL	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS FOR Department of Telecommunication						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	345.150	108.250	241.180	84.950	78.050	857.580
RECURRENT COSTS						
a) Existing	19.513	21.464	23.611	25.972	28.569	119.129
b) Project Related	5.000	10.000	17.510	34.660	45.000	112.170
Total Recurrent	24.513	31.464	41.121	60.632	73.569	231.299
TOTAL COSTS	369.663	139.714	282.301	145.582	151.619	1088.879
MANPOWER	8	8	7	7	5	35
TA PERSONNEL	26.0	6.0	0.0	0.0	0.0	32.0

TOTALS FOR Department of Post, Telegraph and Civil Wireless						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	8.473	3.323	3.229	2.557	2.600	20.182
RECURRENT COSTS						
a) Existing	19.440	21.384	23.523	25.875	28.463	118.685
b) Project Related	4.330	4.669	4.974	5.301	5.634	24.908
Total Recurrent	23.770	26.053	28.497	31.176	34.097	143.593
TOTAL COSTS	32.243	29.376	31.726	33.733	36.697	163.775
MANPOWER	9	8	7	7	7	38
TA PERSONNEL	6.0	0.0	3.0	0.0	3.0	12.0

CHAPTER 17

RENEWABLE NATURAL RESOURCES SECTORRENEWABLE NATURAL RESOURCES SECTOR

17.1 The agricultural sector represents the single largest and most important sector in the Bhutanese economy, accounting for 45% of GDP in 1989 and 90% of total employment.

I. Basic SituationI. Basic Situation

A. Structure of the SectorA. Structure of the Sector

Land Use Land Use

17.2 The assessment of land resources and land use has been constrained by lack of recent, detailed data. The Master Plan for Forestry Development (MPFD Draft 1991) has a more recent assessment based on comparison of 2 former studies: Pre Investment Study in 1957/59 based on aerial photography and Negi in 1983 based on 1977/78 Landsat satellite data, with the MPFD survey based on 1989 SPOT satellite data.

17.3 The main finding of the MPFD has been that the total forested area is estimated at 56.8% of land area, below previous estimates of over 60%. While a large part of the forest area remains unutilized, forests represent a major source of fuelwood, fodder and construction materials. As livestock graze in forest areas, there is no clear distinction between livestock and forests land uses. Zonal surveys undertaken in 1987-89 have shown that out of total area of land being utilised, more than 50% was accounted for in the others category. This includes, Tsamdok and Sokshin land, i.e. private registered land with forest cover and public land with private grazing rights respectively. Most of temperate pasture areas are subject to year round intense grazing without showing signs of overgrazing except close to population centres.

17.4 The area under cultivation has been estimated as follows:
This is higher than the previous estimates of arable production accounting for 8% of total land area.

Table 17.1 Land Under Cultivation 1991 (hectares)

Valley Cultivation	46,000
Terraced Cultivation	204,000
Unterraced Cultivation	304,000
Shifting Cultivation	75,000
Orchards	19,000
Total	648,000

Source: Master Plan for Forestry Development (Draft 1991)

Changes in Land UseChanges in Land Use

17.5 The MPFD has compared land use between the PIS study in 1958 with the most recent assessment and found the following changes in land use.

Renewable Natural Resources

Table 17.2 Changes in Land Use from 1958-1989

Class ('000 ha)	PIS (1958)	MPFD (1989)
Agriculture	299	554
Broadleaved Forest	1485	1056
Coniferous Forest	1011	1006
Degraded and Other	1245	1426
TOTAL	4040	4042

Source: Master Plan for Forestry Development (Draft 1991)

17.6 These figures indicate the following significant changes:

- agricultural area has increased at the same rate as population growth
- degraded forest and other open areas have increased at a more modest rate than increases in agricultural land, but have risen to almost the same total area
- the area of coniferous forest has remained stable
- broadleaved forest area is the most rapidly decreasing category
- the main shift in land use has been from broadleaved forests to arable production and grazing
- estimated decrease in forest cover is 16.7% of the 1958 area and 34.3% over hundreds of years.

17.7 Zonal surveys also indicated that permanently cultivated land is fairly constant by region, and it is generally considered that all accessible and moderately sloped land is being utilised. The MPFD study found that the degraded forests are mainly in southern Bhutan, with a large part clustered round human settlements, and affecting mostly the tropical and sub tropical hardwoods and temperate hardwoods.

Crop Production

17.8 Bhutan has extremely diverse agricultural conditions due to major differences in altitude and climate as well as slope and soil characteristics. The country has been divided into 5 agro-ecological zones to group together areas with similar temperature and rainfall: Temperate, Warm Temperate, Dry Sub Tropical, Humid Sub Tropical and Wet Sub tropical. (MAP) A wide range of crops are grown depending on cropping conditions and food self sufficiency requirements. Rice and maize are the principal cereals grown in all zones, on 77% of all cultivable land. Maize covers the largest crop area, but is relatively more important in sub tropical area of the south. In the Temperate zone the major crops produced are wheat, buckwheat, potatoes, mustard seed and barley. Rice is the principal wet land crop in the monsoon season. and where irrigation water is available wetland winter crops include wheat, mustard seed and potatoes. Dryland crops in the warm temperate zone include wheat, potatoes, mustard. Land is usually terraced for rice production, while rainfed crop land is not, nor are most orchards. Oranges, cardamom and other tropical fruits production is concentrated in the south, apples are produced mainly in the temperate area and potatoes are produced in the mid elevation areas. Substantial areas of dryland have been converted to orchard crops in response to the higher profits obtained from horticultural crops. Rice is the preferred food crop and many farmers would wish to convert dry land to wet land to produce more rice.

Livestock Production

17.9 Cattle are owned by 95% of households, with average ownership 6-10, varying from 1-30, 3 draft animals, 3 milk animals, 2 horses or mules, 3 pigs and 3 poultry. Mithun is a local name for species *Bos frontalis*. From land use point of view reliable livestock figures not available, particularly as migratory herds are not adequately covered in CSO figures.

Forest Resource Utilisation

17.10 The forests of Bhutan form an integral part of the farming system, with forest products being used for fuelwood, fodder, manure and construction materials. The total value of fuelwood taking into account energy value

and the opportunity cost of collection, has been estimated at Nu.200 m. (MPFD 1991). Only 5% of this can be considered commercial fuelwood, with the remaining 95% being collected by households and other users themselves. The value of livestock feed has been estimated at Nu. 300m. Forest also contain plants which are used for medicinal purposes.

Farming Systems Farming Systems

17.11 Traditional labour intensive production methods are used, as there is little scope for mechanisation on steep slopes. Water is not a constraint, but management of water in irrigation systems is inefficient. Crop rotation (*Tsheri*) is widely practised and has traditionally been based on a long fallow period. As a result of Forest Legislation farmers are restricted to a maximum fallow period of 12 years, and are beginning reduce the period to 8-10 years as the availability of land has declined. Restrictions on clearing of forest land for arable production are also beginning to result in reductions in the fallow period. In most parts of Bhutan traditional soil conservation techniques have appeared to limit soil erosion to a minimum. In the southern foothills high population pressure and steep slope production are beginning to cause erosion in many parts, as the population are originally from plains of India and are unaccustomed to hill farming.

17.12 Livestock are totally integrated in all farming systems. Manure is collected and spread on fields, often in substantial quantities in the central valleys, but less so in the southern areas. Cattle are grazed in the forest areas and fed from crop residues. They provide milk, butter, cheese and meat, while horses are widely kept for transport. There are some communities in high altitude areas who are totally dependent on Yak and sheep husbandry.

Agricultural Producers Agricultural Producers

17.13 The agricultural sector consists of 65,000 farm households with an average farm size of 1.5 hectares. Farm distribution is highly skewed: 45% of farmers with less than 1 hectare cultivating 16% of the total. Conversely 16% of farmers with holdings of more than 2.5 hectares, hold 42% of the total area. Average farm size is substantially higher in the west. Under existing legislation farm households may only plant an area of up to 10 hectares, excluding horticultural crops. Farm size has been decreasing as farms are subdivided between children, and many small farmers are unable to meet their food requirements. A study in the Punakha Wangdi area during 1990, showed that 40% of all farmers operated as part owners/tenants. A small number of landless tenants were also identified, accounting for 3-5% of the total.

Forestry Forestry

17.14 Employment in the forestry sector has been estimated at 25,000, with the majority involved in non-monetary fuelwood collection, and accounting for 20,000 average person years of work (MPFD 1991). Final demand from the private sector is estimated at Nu. 300m per annum 1991 prices, consisting mainly of consumption items such as construction timber and fuelwood. Final demand from public sector, is estimated at Nu. 70 million. Although no detailed figures are available, the MPFD estimates that the Bhutan Logging Corporation (BLC), the Integrated Forestry Development Programme (IFDP), Bhutan Board Products Limited (BBPL) and Gedu Wood Manufacturing Corporation (GWMC) pay Nu.20m annually in royalties and taxes.

Exports and Imports Exports and Imports

17.15 Bhutan is 66% self sufficient in all cereal production, being virtually self sufficient in maize, barley, millet and buckwheat, but only 52% self sufficient in rice, 24% in wheat, and 20% in edible oils. To meet the food deficits, cereals and edible oils are imported from India. Because unit production cost are substantially lower in India than in Bhutan, imports of cereals are steadily displacing local produce. Imported cereals are being consumed by farmers, both as a result of greater access to markets and rising cash incomes from the sale of horticultural produce. Horticultural crops: oranges, apples, potatoes, cardamom, ginger, chilies, vegetables and processed fruit products, are exported to India, Bangladesh, Singapore and Japan and the recent increases in these exports has resulted in a surplus in agricultural trade (excluding livestock products). Total agricultural revenues in hard currency were US\$ 6.5 million in 1989, having risen from US\$ 0.17 in 1986. Producers are encouraged to export to hard currency earning countries with a premium of 30%.

Forestry exports Forestry exports

17.16 The value of wood and wood products exports has been increasing during the 6FYP, as shown in Table,

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earning increased revenues for Bhutan. The increased production was from the Gedu Wood Manufacturing Corporation which started production of blockboards and veneers in 1988.

Table 17.3 Forestry Exports to India (Nu.million)

Type	1986	1987	1988
Timber	53.3	121.2	91.4
Blockboard	21.2	29.3	31.0
Sawn Logs and Veneers	0.6	0.9	104.7
TOTAL	75.1	151.4	227.1

B. ConstraintsB. Constraints

17.17 The scarcity of land for arable production, combined with infertile soils and high infiltration rates in the south, present major constraints to increasing arable production. Natural levels of nitrogen and phosphorous are unusually low, with only moderate organic content. Yields of crops are generally low due to poor soils, with rice and maize yields higher in the Warm Temperate and Dry Sub Tropical Zones. The prevalence of share cropping is seen as a major constraint to improving agricultural productivity as these producers have no incentive to increase yields and cropping intensity or invest in land improvements.

17.18 Acute labour shortages occur during the peak seasons, which most farmers overcome through systems of exchange labour. However increasing urbanisation and education of young household members are resulting in increased labour shortages, affecting mainly larger scale farmers at present. The returns to production of rice, wheat, millet and mustard seed are below the prevailing market wage rates, whereas high maize yields in the Dry Sub Tropical Zone provide adequate returns to labour.

17.19 The distances between communities and lack of roads is a major constraint to marketing of crop and livestock products and thus reduces the incentive to increase agricultural production in remote areas. The removal of this constraint is beginning to lead to increases in production and marketing of agricultural produce. However, many farmers still attach high priority to household food self sufficiency as they remain situated a long way from roads. At present very little private sector marketing of cereals and oilseeds takes place. Small quantities of particular varieties of rice, maize and mustard oil are sold in the weekly markets that have been established in all main centres. The main crops marketed are cash crops, mostly for export.

17.20 The shortage of nutritious feed for livestock is a major constraint, and livestock numbers are considered to be in excess of the capacity of the resource. Large herds are maintained, consisting of up to 50% of unproductive animals, placing additional demands on the limited grazing resource. Agricultural land use planning and particularly forestry management planning is severely hampered by lack of detailed data. The policy and project planning capabilities of the Ministry of agriculture are also constrained by lack of agricultural statistics.

C. InstitutionsC. Institutions

17.21 Apart from agricultural producers themselves, the Ministry of Agriculture has the major responsibility for promotion of agricultural development. The MOA provides support services to farmers through three Departments of Agriculture, Animal Husbandry and Forestry.

17.22 The principal infrastructure of the Ministry of Agriculture is as follows:

Department of Agriculture

- 174 Agricultural Extension Centres
- 5 Agricultural Research Stations
- 6 Seed and Plant Production Farms

- 2 Agricultural Training Centres
- 2 Farm Machinery Centres

Department of Animal Husbandry

- 18 Veterinary Hospitals
- 104 Veterinary Centres
- 11 Livestock farms
- 3 Fodder Research Stations
- 2 Veterinary Diagnostic Laboratories
- 1 Veterinary Institute
- 1 Vaccine Production Centre
- 1 Inoculant Production Centre
- 1 Milk Processing Plant

Department of Forestry

- 11 Forestry Territorial Divisions
- 3 Wildlife Rangers
- 1 Special Patrol Unit
- 1 Forestry Training Institute

17.23 The MOA has declared a number of protected areas as wildlife sanctuaries, game reserves, reserved forests and a national park, totalling 9,505 sq.km or about 20% of country. There are no specific protected species as hunting has been banned of all large animals except the wild pig which considered to be a pest. Some species carry higher penalties for poachers and therefore can be called strictly protected.

17.24 The protection of wildlife and establishment of protected forests and reserves is the responsibility of the Division of Wildlife under the Department of Forestry. The Division is understaffed, only 53 staff to control 9,500 sq.km. Deputy Director, 3 forests rangers 9 foresters, and 39 guards. In addition to the Division of Wildlife, a Non Government Organisation, the Royal Society for Protection of Nature was created in ? to promote conservation awareness and encourage conservation activities.

Provision of Services

17.25 The staff of the MOA Headquarters provide technical support services, whereas the extension activities are the responsibility of staff at the Dzongkhag level. The Dzongkhag extension staff are employed by the Ministry of Home Affairs and form part of the Dzongkhag administration. Coordination of the arable related work programmes is the responsibility of the Research and Extension Division of the DOA. Although there is a ratio of 1 extension agent to 280 farming households, because of their scattered and remote locations, many farmers do not benefit from extension services. Extension agents carry out a wide range of activities: farmer training, technical demonstrations, supervising land development, spraying pesticides, distributing seed and fertilisers, and arranging credit. Animal Husbandry services are provided through the technical staff at the Dzongkhag level and include treatment of livestock, regular deworming and vaccinations, advice on improving pastures and introducing improved livestock management practices. A Forestry extension programme is being developed.

Manpower

17.26 As in other sectors, the MOA is constrained by lack of senior qualified professional staff: in March 1990 there were only 40 Bhutanese graduates. Within the 18 Dzongkhags there were 233 extension staff, 68 irrigation staff, including administrative, technical and skilled staff. At headquarters there were 106 staff, within the ADP's 149 staff and supporting institutions 281 staff in 1989. Within the DAH there are 23 graduates, 428 technical staff of which 296 attached to 18 Dzongkhag administrations, remaining 132 attached to central programmes, 74 administrative and support staff, general support 12 staff, National Workforce 90 Total 638. The Department of Forestry had the following staff in 1988/89: 25 Professional Foresters, 52 Forest Rangers, 108 Foresters, 335 Forest Guards, 136 Village Forest Guards, 42 Wildlife Guards, 81 Administrative staff, 20 technical staff and 105 support staff.

Credit

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17.27 The only source of institutional credit for small farmers is the Bhutan Development Finance Corporation (BDFC) which provides credit for all sectors of the economy. It is an autonomous institution with its own Board of Directors. Agricultural credit is available under 3 types of loans: seasonal, for crop inputs, medium term for livestock and equipment, and long term for land development and orchard crops. Most loans have been provided for livestock. A total of 23,000 farmers (35% of the total) have received institutional credit since agricultural credit was first provided in 1982. The BDFC has 32 credit officers in the field, who administer credit to all sectors. The informal, traditional credit system remains the most important source of credit, with farmers borrowing from money lenders, large farmers and traders. The practice of providing advance payments against cash crops, particularly apples and oranges is widespread. Despite the higher interest charges: between 20% and 60%, farmers often prefer these sources of credit as they offer greater flexibility and access.

MarketingMarketing

17.28 The Food Corporation of Bhutan is responsible for the importation and wholesale distribution of cereals, edible oils, salt and sugar; management and distribution of cereals on behalf of the World Food Programme; management of a security reserve of cereals and purchase of cereals produced by farmers in Bhutan. Auction yards have been established by the FCB, to facilitate the marketing of agricultural products, where prices are determined by demand and supply. The commercial retail operations of the FCB were privatised during the 6FYP. The private sector is also involved in the importation, wholesale and retail of cereals and edible oils, as well as in the purchase of cash crops produced in Bhutan. Processing of rice, wheat, maize and mustard seed is undertaken by private sector processors with small scale equipment.

Livestock MarketingLivestock Marketing

17.29 Only a few slaughterhouses exist in Bhutan, mainly near the border with India. Livestock from the interior are exported to India. Live animals and meat are supposed to be inspected by the DAH, but it is reported that these controls are not always implemented. There are 4 quarantine stations at Samchi, Phuntsholing, Geylegphug and Samdrup Jongkhar. Theoretically all animals are quarantined for 15 days before being permitted entry into the country, but such measures are not always enforced.

Forestry MarketingForestry Marketing

17.30 The Department of Trade and Industry is responsible for the marketing of forestry products. (see Chapter 18)

II. Review of Past PerformanceII. Review of Past Performance

A. Objectives in the 6FYPA. Objectives in the 6FYP

17.31 The objectives of the 6FYP were similar to those of previous Plans: to increase self sufficiency in staple foods, to increase per capita incomes of the rural population, and to increase productivity per unit of farm labour and agricultural land. The strategies for achieving these objectives were to improve the provision of services and incentives to the rural population and to channel these services more effectively through Area Development Projects.

B. Achievement of ObjectivesB. Achievement of Objectives

17.32 Agricultural statistics have not been collected on an annual basis, thus preventing an analysis of production trends during the 6FYP. However, a major agricultural survey was undertaken in 1988-89, which provided the following statistics. The growth of the agricultural sector has been estimated at 5% between 1980-1989.

Table 17.4 Production of Cereal and Horticultural Crops 1988/89

CROPS	AREA	YIELD	PRODUCTION
Rice	64,630	920	59,449
Maize	182,850	548	100,136
Buckwheat	32,560	330	10,734
Wheat	25,100	445	11,981
Barley	12,930	441	5,697
Millet	32,310	353	11,398
Mustard	17,280	300	11398
Potato	10,370	2,996	5,178
Apples	4,554		4,692
Oranges	16,238		367
Cardamom	14,126		2,573
TOTAL	412,948		cereals 199,395 Others 43, 874

Source: Agronomic Survey 1988-89 adjusted to Post Enumeration Survey 1990-91.

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Source: Agronomic Survey 1988-89 adjusted to Post Enumeration Survey 1990-91.

Arable Subsector

17.33 The strategies were implemented through the following programmes. Area Development Programmes were established and were successful in encouraging significant increases in the use of fertilisers and improved seeds. However, this approach has raised some concerns. Firstly, the ADP's were provided with high levels of technical support, equipment and facilities to cover a small area, while the remaining areas had access to fewer manpower and financial resources, a situation that could lead to equity problems in the future. Secondly, it would be impossible to sustain such high levels of assistance in the long term. The ADP strategy will therefore be revised in the 7FYP.

Research

17.34 New high yielding varieties of rice were developed and released for the 5 agro ecological zones. Farmers were beginning to adopt the new varieties, particularly in the ADP's. New maize, wheat and oilseed varieties were also ready for release by the end of the 6FYP. Green manuring adaptive research also showed promise for enhancing soil fertility, particularly in Southern Bhutan. Research has also been undertaken in mushroom propagation and essential oil production, two areas which appear to have significant commercial potential.

ExtensionExtension

17.35 The extension capabilities of the technical units have been strengthened and streamlined through the creation of the Research and Extension Division. The staff of the Division provide regular support visits to the Dzongkhag staff, whose skills are regularly improved through in-service training. An Extension Publication Unit has been established to publish extension guidelines and technical information. The service continues to be handicapped by the shortage of qualified personnel, which the MOA has taken appropriate measures to address. A new diploma course for agricultural extension staff was introduced at the National Agriculture Training Institute.

Input SupplyInput Supply

17.36 The MOA is responsible for the supply of agricultural inputs of which the following quantities were supplied in 1989-90:

Fertilisers	1669mt
Oil Seeds	11mt
Cereal Seeds	492mt
Vegetable Seeds	1,409mt
Temperate Fruit Plants	53,012
Sub Tropical Fruit Plants	28,200

17.37 The input supply system is constrained by a lack of proper storage facilities, transport and access roads.

ConservationConservation

17.38 The Department of Forestry has the major responsibility for conservation activities, however the DOA has been involved in on-farm soil conservation programmes. These have included contour bunding, terracing, and conversion of *tsheri* land to permanently cultivated land, which have been implemented in all Dzongkhags. New soil conservation techniques such as ditch and bund, vegetative bunding, and strip cropping have been tested in the Chirang Hill Irrigation Project (CHIP) and the Punakha Wangdi Valley Development Project (PWVDP) areas. Watershed management programmes were also initiated in these project areas.

MarketingMarketing

17.39 The 6FYP has seen the complete privatisation of the FCB retail operations. Cash crop marketing was facilitated and increased significantly through the operation of auction yards. The operation of the FCB has been strengthened, resulting in improved financial performance. A major breakthrough was made in the marketing of apples and oranges to Bangladesh, indicating the potential of horticulture as a source of increased incomes and foreign exchange.

Livestock SubsectorLivestock Subsector***ResearchResearch***

17.40 New breeds have been identified for improving performance and productivity. These breeds have been produced at the DAH farms and distributed to farmers. The adoption of the improved breeds has been higher in the ADP areas, where the extension programme has been more intensive. Research trials have also been undertaken to identify suitable fodder species and develop improved pasture propagation. A Fodder Research Master Plan has been developed to improve the coordination between fodder research stations.

ConservationConservation

17.41 The pasture and improved grazing management programmes have been designed to reduce pressure on the grazing resource.

MarketingMarketing

17.42 The poultry section of the Central Pig and Poultry Breeding Centre, Wangchutaba has been privatised. The milk distribution/marketing system in Thimphu has been privatised, while the privatisation of the Regional Mithun Farm, Chhukha and the Milk Processing Plant in Phuntsholing are under consideration. Several milk marketing

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cooperative societies have been formed under the HLDP and the HAADP to increase the opportunities for marketing of milk in rural areas.

Forestry Subsector

17.43 The RGOB policy has been to put protection of forests as a higher priority to commercial exploitation and to deliberately slow the pace of development. This has involved laws and regulations restricting grazing in critical watersheds and protected forests, the banning of logging on steeper slopes, and restriction of the conversion of forest lands to other uses.

Area Development Projects

17.44 The Bhutan Forestry Development Project Phases I and II integrated felling, extraction, plantation and nursery development, staff training and bark beetle control in Bumthang. This project developed the Departmental capacity in planning, logging, reforestation and disease control in both hardwood and softwood areas. The Integrated Forestry Development Project (IFDP) was initiated in the Bumthang Dzongkhag where 4 forestry units and a silviculture and training centre were developed. Results from these projects will be applied to other parts of the country where appropriate during the 7FYP.

Research

17.45 The main objective of forestry research has been to create a data base for the development of management plans and conservation activities. This was furthered through the creation of the Forestry Research Division in 1987. The research programme is problem oriented and directed towards 4 areas: forest management and silviculture, basic studies, forest protection, land use and agroforestry.

Conservation and Watershed Management

17.46 Forestry development has been largely conservation oriented as sustainable utilisation has been constrained by lack of accurate data. The Forestry Conservation and Management Project has been developing integrated approaches to forestry activities, including watershed management. The Department has initiated a pilot project in Dutey Khola near Phuntsholing. The Department has also declared various catchment and forest areas as protected areas. An Inter Departmental Watershed Management Committee has been formed to coordinate watershed management programmes and activities being implemented by all 3 Departments. A draft Watershed Management Policy and Act has been formulated and should be in effect by the start of the 7FYP.

Social Forestry and Afforestation

17.47 Tree planting has been encouraged as early as 1979 in Bhutan by Royal Decree. In the early years of the programme seedlings were distributed free to farmers. In 1985 a Social Forestry Day was initiated by the MOA, an annual event involving school children in planting trees. The active involvement of communities did not commence until 1987 in Chirang Hill Irrigation Project and 1988 Phuntsholing Forest Management and Conservation Project. The DoF has created an Afforestation Division to implement a large afforestation programme, covering 18,000 hectares by the end of the 6FYP and to encourage communities to plant trees to provide for fuelwood, fodder, construction materials requirements and as part of conservation programmes.

III. Objectives and Strategy for the 7FY

A. Objectives for the 7FY

- 17.48 The objectives for the 7FY relate to national objectives of:
- sustained increases in overall and per capita incomes and standard of living for the whole population;
 - promotion of self reliance;
 - conservation of the environment.

17.49 The objectives for the agricultural sector are:

- sustainable development of arable production to enable self sufficiency in food production;
- improvements in the incomes, living and nutrition standards of the rural population;
- sustainable utilisation of natural resources.

Food Self Sufficiency and Food Security Food Self Sufficiency and Food Security

17.50 Food self sufficiency has been the major objective in the agricultural sector, at the national and household level. Rising levels of cereal imports have raised concern over the potential for achieving food self sufficiency, particularly with increasing urbanisation, combined with limited arable land and low yields. Increases in production and export revenues from horticultural crops have presented the possibility of attaining household and national food security, i.e. sufficient revenue can be earned from the production of horticultural crops for households and the country to purchase cereal food requirements. The returns to horticultural crops have been shown to be significantly higher than cereal production, indicating Bhutan's comparative advantage in horticultural production. While it has been accepted that food self sufficiency is not a realistic goal for Bhutan, the achievement of a percentage of food self sufficiency remains an important objective, in meeting the national objective of reducing dependence on external resources. This is particularly important for farmers who cannot obtain income from the production of cash crops or other sources. The achievement of self sufficiency is also an objective for the livestock sub sector.

Sustainable Utilisation of Natural Resources Sustainable Utilisation of Natural Resources

17.51 Sustainable utilisation entails the use of resources in such a way as to ensure that production requirements of both current and future generations are catered for. This does not imply that to preserve the environment, it is necessary to restrict agricultural production, a concept associated with conservation of natural resources. Sustainable utilisation implies that agricultural production can be increased as long as soil fertility is not depleted and such increases can be continued in the future. Thus soil conservation, afforestation, agroforestry, organic fertilisers, crop rotation etc, can be used to allow for sustainable increases in agricultural production. These increases will not be as great as those possible without consideration of sustainability.

B. Strategies for Achieving Objectives B. Strategies for Achieving Objectives

17.52 In order to achieve the above objectives, the following strategies have been formulated for the improvement in MOA assistance to the agricultural sector.

Integration and Strengthening of Project Planning and Implementation Integration and Strengthening of Project Planning and Implementation

17.53 One of the main weaknesses of the MOA has been the fragmented nature of its planning and implementation activities, particularly as each of the 3 Departments has been fairly autonomous, with little integration of operations. The MOA has recognised the interdependence of arable, livestock and forestry production at the farm level and therefore the need for greater integration of the planning and implementation of MOA activities under a Renewable Natural Resource strategy.

17.54 This has been addressed through the formation of a Policy and Planning Division in 1990, however the planning capabilities of the PPD will need to be strengthened further during the 7FYP. The PPD will also provide technical support to planning activities at the Zonal and Dzongkhag levels, where area specific plans are also drawn up. This will ensure greater integration of activities at the Regional, Dzongkhag and Headquarters levels, as well as increased integration of Departmental activities. With assistance from ISNAR, MOA will examine the potential for integrating the research activities of the Departments of Agriculture, Animal Husbandry and Forestry, to develop a farming systems approach to research. This could also reduce the financial and manpower resource requirements of the MOA. Improved coordination with other agencies such as BDFC, Department of Health and Survey of Bhutan is also necessary.

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Institutional Strengthening

17.55 The strengthening of MOA institutions is viewed as an important requirement for improving the services provided to the rural population. All sections of the MOA will be strengthened, through training and recruitment of additional staff. Technical level training of MOA staff will be improved with the opening of the Natural Resources Training Institute, where staff will receive multi disciplinary training. The MOA will also assist in the development of private sector, in order to encourage increased private sector involvement in marketing and input supply, and thereby reduce RGOB involvement in these areas. Communities will also be assisted to develop their project planning and management skills and will assume greater responsibility in project implementation.

Strengthening of Regional Development

17.56 One of the major lessons learned in the 6FYP was in regard to the implementation of Area Development Projects as described in Section II.B. During the 7FYP, Regional Development Areas (formerly zones) will be established and will integrate all ADP activities. This will enable the wider spread of the benefits already gained from ADP's. Single crop development programmes will be applied to other crops, but implemented within the regional development programmes.

Integration of Environmental Sustainability into all Agricultural Activities

17.57 The supply of land for agricultural production is limited, with only small increases in production expected from development of previously unused land. Thus sustainable development has to be based on sound conservation practices, land management and land use planning programmes. One of the most important requirements for sustainable utilisation is the development of land use planning capabilities, to identify and quantify natural resources, current use and draw up long term plans for all areas of the country. Monitoring of land use should then become an ongoing activity. Such capabilities will be developed in the 7FYP. Once these land use plans are available the PPD will work with Regional and Dzongkhag level staff to develop appropriate programmes. Environmental Impact Assessments will be undertaken for all new projects, with continuous monitoring of the impact of project implementation. Research and extension activities will also be reoriented to include activities which ensure the sustainability of agricultural production.

17.58 Rather than restricting agricultural production, particularly *tsheri* production, the MOA will assist farmers to integrate new techniques into existing production systems. For example, agroforestry is considered to be one of the new production systems which would be easily adapted by farmers into existing farming systems. Farmer's attitudes towards soil conservation, as shown by refined terracing techniques and mulching systems, are already highly developed. Since the expansion of agricultural land will only be possible by clearing forest areas, it is important to identify those areas where this would be environmentally viable and where agroforestry would present a viable alternative to logging. In the livestock subsector, emphasis will be placed on increasing productivity to raise incomes rather than increasing livestock numbers.

IV. Development Programmes for the 7FY

Arable Sector Development Programme

17.59 As explained in above, support to the arable sub sector will be channelled through Regional and Dzongkhag level extension staff. In order to achieve the objectives of increasing arable production on a sustainable basis, it will be necessary to strengthen Regional and Dzongkhag planning and implementation capabilities. The Central Support programmes will concentrate on the provision of support services to the Regional and Dzongkhag levels. These will include research, extension, supply of seeds, and planting materials, farm mechanisation, irrigation and other technical support services.

17.60 The new strategies for the arable sector will be implemented through the Accelerated Food Production Programme (AFPP) and the Integrated Horticultural Development Programme (IHDP). The AFPP provides the basis for promoting food self sufficiency through improvements in research and extension capabilities and the IHDP concentrates on the development of high value cash crops. The AFPP will promote increases in the productivity of cereal production, as the potential for raising output through increasing area cultivated is limited by

the shortage of suitable land. This can be achieved through the introduction of new cropping patterns to improve soil fertility, such as incorporation of legumes into the farming system. Under the IHDP, a Horticultural section will be established within the Research and Extension Division, to provide assistance to producers in the form of research, extension and marketing support. The Potato Development Programme will be integrated into the IHDP and Regional Plans.

Research Research

17.61 Research programmes will be strengthened and expanded to examine the constraints to increasing food production in all 5 agro ecological zones. Irrigation, mechanisation and post harvest losses research will be integrated into the research programme. Greater participation of farmers and extension agents in on-farm testing will ensure that research is relevant to farmers' needs and higher adoption rates. The DOA will pay more attention to the integration of fodder and other animal husbandry considerations into arable production systems. The integration of all three Departmental research programmes will be the subject of a joint RGOB/ISNAR review.

Extension Extension

17.62 The extension service will be improved, largely at the Regional and Dzongkhag level, through training of staff and farmers, establishment of Regional Training Centres, upgrading of extension facilities, and improvements in information and publications. Extension methods will focus more on farmer participation in problem solving and transfer of technology at the farm level. This will require an expansion in the number of extension agents to 400, an increase of 167, and will provide a Extension Agent to farmer ratio of 1:150. The output of the National Agricultural Training Institute at Paro and the new National Resources Training Institute at Lobesa will be increased from 20 to 25 per year to provide for the increase.

Seed Production and Distribution Seed Production and Distribution

17.63 With the wider adoption of new technology, it will become all the more necessary to produce and distribute improved seeds and planting materials. The production and distribution will be decentralised to reduce transport costs and wherever possible, farmers will be contracted for seed multiplication and private sector retailers will be encouraged to sell seeds to farmers.

Input Delivery Systems Input Delivery Systems

17.64 The adoption of new technology will require increased supplies of other agricultural inputs such as fertilisers. This will be facilitated through the expansion of storage facilities and improvements in the management of the revolving funds operated by Dzongkhag extension staff.

Plant Protection Services Plant Protection Services

17.65 The Plant Protection Services will be responsible for research based on the Integrated Pest Management concept, including pathology, entomology and other plant protection research. The Plant Protection Service will provide advisory services to other units within the DOA and to farmers through the training of farmers and extension staff. The services will be decentralised through the establishment of Regional Plant Protection Centres in Tashigang and Geylephug. Plant protection chemicals will continue to be provided through the service and to discourage indiscriminate, environmentally damaging use, subsidies will be reduced. Pesticide legislation and plant quarantine guidelines will be drawn up.

Irrigation Development Irrigation Development

17.66 Activities in the 7FYP will be based on the Irrigation Sector Study, which will have been completed by the end of the 6FYP. The emphasis of irrigation development will be on rehabilitation of existing schemes, examination of new materials and technologies, exploration of groundwater potential for use in irrigation and training of farmers in project planning and management skills, to encourage greater involvement of farmers in the operation of the schemes, particularly through formation of Water Users Associations.

Farm Mechanisation Farm Mechanisation

Renewable Natural Resources

17.67 An in depth study of farm mechanisation will have been completed by the end of 6FYP and will form the basis of developments in this area in the 7FYP.

Livestock Sector Development Programmes

17.68 As mentioned above the livestock subsector programmes will focus on increasing productivity through breed improvement and processing of livestock products to increase incomes, rather than on increasing livestock numbers.

Breed Improvement

17.69 This will be the major component of the livestock sub sector development programme. Artificial Insemination facilities will be strengthened and new centres established in feasible areas. Mobile insemination services will be established where feasible. The distribution of breeding stock will also continue from the network of breeding farms. Initiatives will be taken to introduce AI for other livestock.

Dairy Development

17.70 Milk production will be encouraged through establishment of milk processing and marketing systems. Additional cooperative societies will be established in rural areas, which will also provide a channel for extension services.

Sheep Development

17.71 A nucleus breeding flock of improved sheep for wool production will be available by the end of the 6FYP, which will provide a base for expanding sheep production in the Bumthang, Tongsa, Wangdiphodrang and Tashigang areas. The wool produced will be aimed at the weaving industry and wool processing facilities will be established.

Animal Husbandry Farms

17.72 The Government Animal Husbandry Farm will continue to provide improved breeds for distribution to farmers and to act as a focal point for research activities. These farms will continue to be improved and upgraded.

Commercial Enterprises

17.73 This programme will support the Dzongkhags to improve nutritional standards, through the development of livestock enterprises. The scheme will aim to provide urban areas with livestock products, and commercial dairy, piggery, and fish farms will be established.

Animal Health Services

17.74 The existing network of animal health services will be strengthened and expanded. An Epidemiological Unit will be established at Serbithang to study the disease outbreak pattern in the country. The Zonal Laboratories will be strengthened by providing additional facilities for immediate diagnosis of diseases in the field. The vaccine production and distribution facilities will be upgraded, with additional vaccines produced in Bhutan. More attention will be paid to surveying, control procedures and quarantine mechanisms to prevent spread of animal diseases. Mobile services will be introduced to train Voluntary Village Animal Health Workers.

Animal Nutrition

17.75 Improving animal nutrition is another important part of increasing livestock productivity. The existing pasture development programme will continue to identify suitable species for agroforestry and fodder production. The intercropping of leguminous fodder crops will be encouraged to provide additional feed for livestock and to improve soil fertility. The production of fodder tree species will also be incorporated into the fodder programme for

distribution under the Social Forestry Programme of the Forestry Department.

Research and Development

17.76 The present research activities will be continued and strengthened following the Review of the RNR Research programme.

Extension

17.77 Through the Extension Sub Division, the DAH will continue to provide technical support to the Dzongkhag extension and farmer training programme.

Forestry Sector Development Programmes

17.78 During the 6FYP, the DoF implemented a conservation oriented programme, with emphasis on collection of data, development of management plans and reforestation of degraded areas. Efforts were made to involve communities in forestry projects and activities, however there has been insufficient understanding of farmer's needs and local forest uses and social organisations. The DoF recognises the importance of involving communities in forestry activities and this will be the major strategy for the 7FYP.

17.79 The collection and analysis of data will continue and will be integrated into a Geographical Information System to provide the basis for management plans and land use planning in general. The Master Plan for Forestry Development will be finalised during the 7FYP to provide guidelines for future developments in the forestry subsector.

Afforestation

17.80 The afforestation programme will continue to be implemented with a target of 2,500 ha per annum. The programme has two aims: to improve soil and water conservation and to meet the forest product requirements of the population. The Department will endeavour to increase community participation in the programme through the Social Forestry programme. The Afforestation Division will assume responsibility for the Seed Storage Centre from the Research Division to improve the collection and storage of seeds for distribution under the afforestation programme.

17.81 The MPFD has analyzed the areas of degraded land that require rehabilitation measures and have found that in some areas soil and water conservation improvements can only be achieved through reintroducing forest cover. However of the 230,000 ha identified as degraded, only 32% require afforestation, while the remaining 68% of degraded land can be converted to agricultural land, 5-7% for agroforestry, 12-15% for wood production by communities and private farmers, 1-2% to other activities such as mining, industry residential areas and the remaining area could be incorporated in management units of protected areas.

Forest Protection

- 17.82 The Forest Protection Programme will have 2 components: fire prevention, and insect and disease control:
- (i) Fire Prevention activities during the 6FYP were able to reduce the incidence of forest fires, through extension and publicity. These activities will be continued and expanded during the 7FYP.
 - (ii) Insect and Disease Control The Department successfully controlled a bark beetle epidemic in Western Bhutan during the 6FYP and has been able to develop its skills in this area. A Protection Cell has been created in the Research Division and will continue to provide support for disease control activities.

Forest Management

17.83 During the 7FYP, efforts will be made to develop management plans for as many areas as possible. These management plans will allow the sustainable utilisation of forests by communities and commercial enterprises where appropriate. The Forest Resource Management Division will be strengthened through additional staff, staff training, computerisation of data processing and further improvements in the Photointerpretation Cell.

Renewable Natural Resources

Wildlife Management Wildlife Management

17.84 The development of management plans for protected areas will continue during the 7FYP. The DOF is considering revising the boundaries of the reserves, as the existing areas include a high proportion of alpine and tropical habitats and lack of temperate and subalpine habitats. The DOF will also develop regulations on types of activities and land uses allowed in each of the protected areas. Due to resource constraints the DoF will prioritise the planning of reserves and develop management plans for these areas.

Research and Extension Research and Extension

17.85 The Research programme will continue during the 7FYP, with greater efforts to integrate the programme with the Departments of Agriculture and Animal Husbandry. The extension programme will be more clearly defined, with greater emphasis on involving communities in forestry activities.

Marketing Development Programmes Marketing Development Programmes

17.86 Agricultural marketing and pricing issues will be the responsibility of the PPD of the MOA. The Food Corporation of Bhutan will remain a Department under the MOA and will be responsible for activities which are considered to be in the public interest and would not be provided by the private sector. Some functions of the FCB may be better suited to private sector involvement and these will be considered during the 7FYP for privatisation. While these are considered, the FCB will continue to be responsible for wholesale distribution of essential commodities, with prices fixed by the FCB on the advice of the MOA PPD. The FCB will continue to establish auction yards to facilitate marketing of agricultural products and will gradually privatise the management of the auction yards. A Marketing Unit will be maintained in the FCB to undertake research and to regulate the auction yards operated by Commission Agents. The FCB will also manage the distribution of World Food Programme commodities, and the storage and distribution of food security stocks. Consideration will be given to privatisation of the salt iodisation plant in Phuntsholing. To strengthen the storage capacity of the organisation, an additional 5,600 MT of storage facilities will be constructed during the 7FYP.

Financial and Manpower Requirements for the 7FYP Financial and Manpower Requirements for the 7FYP

TOTALS FOR Renewable Natural Resources						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP_TOTAL
CAPITAL COSTS	182.983	221.733	248.253	298.024	324.554	1275.547
RECURRENT COSTS						
a) Existing	118.902	130.792	143.870	158.257	174.083	725.904
b) Project Related	43.670	68.366	91.407	105.906	122.811	432.160
Total Recurrent	162.572	199.158	235.277	264.163	296.894	1158.064
TOTAL COSTS	345.555	420.891	483.530	562.187	621.448	2433.611
MANPOWER	356	174	136	111	68	845
TA PERSONNEL	440.0	398.0	272.0	207.0	170.0	1487.0
TOTALS FOR Planning & Policy Division (Agriculture/HQ)						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	14.650	70.308	109.123	184.323	220.777	599.181
RECURRENT COSTS						
a) Existing	17.651	19.416	21.357	23.493	25.842	107.759
b) Project Related	1.633	28.274	48.022	58.738	74.077	210.744
Total Recurrent	19.284	47.690	69.379	82.231	99.919	318.503
TOTAL COSTS	33.934	117.998	178.502	266.554	320.696	917.684
MANPOWER	6	2	1	0	0	9
TA PERSONNEL	136.0	136.0	109.0	76.0	76.0	533.0

Renewable Natural Resources

TOTALS FOR Department of Agriculture						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	75.742	64.056	51.453	48.276	41.992	281.519
RECURRENT COSTS						
a) Existing	38.127	41.940	46.134	50.747	55.822	232.770
b) Project Related	30.222	27.125	28.067	29.520	27.991	142.925
Total Recurrent	68.349	69.065	74.201	80.267	83.813	375.695
TOTAL COSTS	144.091	133.121	125.654	128.543	125.805	657.214
MANPOWER	147	62	57	49	45	360
TA PERSONNEL	204.0	198.0	100.0	68.0	34.0	604.0
TOTALS FOR Department of Animal Husbandry						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	29.072	21.250	19.479	15.328	12.445	97.574
RECURRENT COSTS						
a) Existing	33.825	37.208	40.928	45.021	49.523	206.505
b) Project Related	2.951	3.620	4.942	5.666	6.641	23.820
Total Recurrent	36.776	40.828	45.870	50.687	56.164	230.325
TOTAL COSTS	65.848	62.078	65.349	66.015	68.609	327.899
MANPOWER	24	21	20	19	13	97
TA PERSONNEL	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS FOR Department of Forests						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	45.794	48.394	51.850	50.097	49.340	245.475
RECURRENT COSTS						
a) Existing	29.299	32.228	35.451	38.996	42.896	178.870
b) Project Related	8.864	9.347	10.376	11.982	14.102	54.671
Total Recurrent	38.163	41.575	45.827	50.978	56.998	233.541
TOTAL COSTS	83.957	89.969	97.677	101.075	106.338	479.016
MANPOWER	165	66	39	43	10	323
TA PERSONNEL	63.0	64.0	63.0	63.0	60.0	313.0

Renewable Natural Resources

TOTALS FOR Food Corporation of Bhutan						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP TOTAL
CAPITAL COSTS	17.725	17.725	16.348	0.000	0.000	51.798
RECURRENT COSTS						
a) Existing	0.000	0.000	0.000	0.000	0.000	0.000
b) Project Related	0.000	0.000	0.000	0.000	0.000	0.000
Total Recurrent	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL COSTS	17.725	17.725	16.348	0.000	0.000	51.798
MANPOWER	14	23	19	0	0	56
TA PERSONNEL	37.0	0.0	0.0	0.0	0.0	37.0

MANUFACTURING AND TRADE MANUFACTURING AND TRADE

I. Basic SituationI. Basic Situation

18.1 The industrial sector remained fairly undeveloped at the end of the 6FYP. But this sector is envisaged to be the main source of economic growth during the Plan period. Several major projects were started in the 6FYP, which accounted for the high rate of growth of the sector. Efforts will be made to encourage further investments and to provide the private sector with the necessary access to credit, markets and entrepreneurial skill training, to promote the development of this sector in the 7FYP.

A. Structure of the SectorA. Structure of the Sector

Wood based IndustriesWood based Industries

18.2 Wood based industries consist mainly of sawmills. Except for Gedu Wood Manufacturing Corporation (GWMC) an integrated saw mill, plywood mill and joinery factory and Bhutan Particle Board Products Limited (BPBL) in Tala, most of the saw mills are small scale and operate on a temporary basis depending on the supply of logs. The machinery of the sawmills - horizontal bandsaw headrig, vertical band resaw, circular cross cut saws - are inefficient but their cost are relatively low. Mechanisation is minimal in the sawmills; most of the operations are labour intensive. Most of the sawmills undertake contract sawing for Bhutan Logging Corporation, a parastatal body. Not all the sawmills shown in the table may be operating. Most of the woodbased sawmill are concentrated in the western and southwestern parts of the country. It is estimated that about 75% of the output from the wood based industries originates from the western and southwestern part of the country. Processing of timber is limited, Most secondary and tertiary production, such as joinery and furniture, is done by small scale enterprises with 4 to 5 workers. The quality of sawing is usually poor, indicating the use of unsophisticated machinery and prevalence of improper saw doctoring methods.

Manufacturing and Trade

Table 18.1 Number of Wood Based Industries 1990

Type of wood industry	Total
Sawmills	49
Sawmills-cum-Crate boxes plants	5
Particle Board Factory	1
Blockboard Factory	2
Plywood Factory	1
Joinery/Wood Works	4
Broomhandle Factory	3
Furniture Factory	33
Tea Chest/ Crate Factory	4
Wooden Handicraft	1
Total	103

Vegetable and fruit based industries

18.3 Bhutan produces a large variety of horticultural crops, including apples, oranges, cardamom, ginger, many kinds of vegetables, nuts, asparagus, mushrooms, lemon grass oil, black pepper and other kinds of spices. Horticultural crops are beginning to contribute significantly to Bhutan's export trade: horticultural exports accounted for 25% of total exports in 1988. Horticultural crops also provide higher returns to the producers than other crops and thus are a better source of increasing farmer's income. However, average yields appear to be low due to poor management, low grading and post harvest handling. Research and extension services for horticultural crops are rudimentary, but will be improved during the 7FYP (see Chapter 17).

18.4 Most of horticultural products are consumed fresh within the country, but apples and oranges are exported to Bangladesh and India. There are a few fruit and vegetable based industries notably Bhutan Fruit Products in Samchi and Thimphu Integrated Food Industries (production to start in 1992). Bhutan Fruit Products is a major fruit processing unit which produces fruit juices, ketchup, sauces and canned fruits. There are 2 small units producing juices in Thimphu and Jakar, Bumthang.

18.5 Vegetable processing units are even less well developed than fruit processing units. The production of high value vegetables like mushrooms and asparagus are encouraged. Mushrooms are exported in small quantities to Thailand and Japan, where they fetch very high prices.

18.6 Cardamum is exported to India, Bangladesh and Singapore. Lemon grass oil is produced for export to India for use in essential oils and perfumes. Mustard oil is produced for local consumption.

Alcoholic and non-alcoholic drinks

18.7 There are three large distilleries: Samchi distillery, Samdrup Jongkhar distillery and Geylegphug distillery. Alcoholic drinks are made in Jakar, Bumthang. Soft drinks are manufactured in Phuntsholing, by a company which operates under licence from an Indian Company. In 1988 Bhutan exported alcoholic products (mainly rum and whisky) worth Nu 18.4 m to India and imported alcohol worth Nu 4 m from India. In addition, Bhutan imported rectified spirit worth Nu 15 m from India for blending and bottling purposes.

Mineral based industries

18.8 (see Chapter 19 on Mineral Development)

Unregistered manufacturing sector

18.9 The unregistered manufacturing sector is quite significant in Bhutan. It provides a wide range of goods for daily use by the producers and also for sale, as well as generating part time employment. Although the importance of the unregistered sector is known statistics on this sector are non-existent, as the producers are scattered and often working from home. Goods produced in the unregistered sector include weavings, applique works, embroidery, painting (thangkha), wood work, mask carving and statuary, bamboo and cane works, metal works etc.

Trade and Industrial licenses

18.10 As of September 1991, there were 7,848 licensed trading establishments dealing in different products, compared to 6,760 issued at the beginning of the 6FYP. Trading is undertaken by the private sector entrepreneurs with the exception of two parastatal bodies i.e. the State Trading Corporation of Bhutan (STCB) and the Food Corporation of Bhutan(FCB). The Food Corporation of Bhutan purchases its quota from the Food Corporation of India and wholesales food items to private commission agents. The State Trading Corporation of Bhutan channels exports and imports to India and third countries. The number of industrial licenses issued at the beginning of the 6FYP was 290, which had increased to 953 at the end of September 1991.

Tourism

18.11 Until November 1991, the development of tourism in Bhutan had been the responsibility of the Bhutan Tourism Corporation, a quasi autonomous and self-financing body. As mentioned in Chapter 6 on Privatisation and Public Enterprise Management, the Bhutan Tourism Corporation was being privatised at the end of the 6FYP. In late 1991 there were 11 private tour operators. One third of tourists come to Bhutan for mountaineering and trekking, while the rest come for cultural tours.

18.12 Tourists come mainly from United States, West Germany, Japan and the United Kingdom. Tourist arrivals are mainly concentrated in March, April, August, September, October and November. The average stay is one week in Bhutan. The tariff rates vary according to seasons as well as the facilities tourists use. October and April are categorised as peak season. March, May, July, August, September and November are categorised as medium seasons. Low season falls in the month of January, February, June and December. The daily tariff rate shown in Table 18.2 apply to tourists who come in a group of not less than four. If the number of tourist is less than 4 at a time, there are separate surcharges over and above the daily tariff rate. The surcharge of a single tourist is US\$ 40 a day. If there are two tourists, the surcharge is US\$ 30 each and if there are 3 tourists, the surcharge is US\$25 each. There are discounts on the daily tariff rate for children.

Table 18.2 Daily Tariff Rates for Tourists (1990 in \$US)

	Peak season	Medium season	Low season
Hotels	220	175	130
Lodges	150	130	100
Camps/tents	130	120	90
Trekking	130	120	80

Manufacturing and Trade

Table 18.3 Tourist Arrivals from Countries other than South East Asia and Earnings in \$US million 1987-89

Year	Arrivals	US \$ m
1987	2524	2.687
1988	2199	1.967
1989	1502	1.947
1990	1538	1.910

B. Constraints

High transport costs

18.13 Bhutan is landlocked between India and Tibetan region of China. There is no trading relationship between China and Bhutan. Southern Bhutan towns are 600 km from the nearest seaport at Calcutta. Because of its landlocked position and rough terrain, transport cost are very high for both imports and exports. High transport costs reduce the competitiveness of Bhutanese industries which depend on imported raw materials and intermediate goods.

Lack of infrastructure

18.14 The major settlements and dzongkhag headquarters are connected by motor road but a large part of the country is not accessible by motor road. Transportation links are thus lacking to provide rural producers easy access to markets. Many routes are blocked either with landslides in summer or snowfall in winter. Such unreliability in road transport disrupts the marketing of perishable goods, causing losses to producers. The road conditions are worse on feeder and district roads as they are not as well maintained as the national highways.

18.15 Tourism infrastructure such as hotels and transport is inadequate, especially during the tourist seasons. The Bhutan Tourism Corporation has a total capacity of 265 beds in 5 of the major hotels and a total fleet of 17 vehicles. While this may be inadequate during peak tourist times, at other times occupancy rates in hotels are very low. This fluctuation in tourist arrivals can be minimised if tourists from India can be encouraged during the low season.

Lack of Power

18.16 Many areas in Western Bhutan and Southern border towns have access to electrical energy and can establish industries which depend on regular supply of electrical energy. The lack of electricity supply in most areas of Bhutan prevents the growth of trade, commerce and industry.

Financial constraints

18.17 Development in manufacturing and trade should be increasingly undertaken by the private sector, given the government policy of privatisation and encouraging private sector growth. But the private sector capacity for investment is limited, especially in large scale manufacturing projects.

Entrepreneurial skills

18.18 As much as there is a lack of financial capacity in the private sector to invest in large scale industries, there is a lack of entrepreneurial management skills. As the industrial sector has only recently begun to develop, most entrepreneurs have not had the necessary experience in business management. At the middle and lower management level, factory floor managers, quality control managers, accountants, foreign workers are relied upon.

Input supply

18.19 Most of the companies depend upon imports of raw materials from India, which does not generally pose problems. A significant proportion of material inputs come from Bhutan and a small proportion come from third countries. Inputs from third countries are negligible because of the extreme difficulty in obtaining foreign exchange. However, shortages of small but vital inputs, such as machinery spares and chemicals often causes loss of production.

18.20 Those enterprises with the most serious input problems are in the forestry and mineral based subsectors. The main problem in these industries are not the shortage of supplies of raw materials per se but of obtaining the required quality. In the forest subsector, enterprises can not obtain sufficient quantities of logs of the required quality and size. In the mineral subsector, the shortages of raw materials of the required quality is the result of lack of detail in feasibility studies.

Labour

18.21 Most companies have problems in attracting and keeping adequately trained employees at all levels, which reduces their operational efficiency. At the level of unskilled workers, there is much dependence upon Indian nationals in factories near the Indian border. The problem is to attract and keep Bhutanese in the factory environment. At the levels of skilled workers such as mechanics, electricians, laboratory technicians, there are insufficient numbers of trained nationals.

C. Institutions

18.22 The Department of Trade and Industry is responsible for promotion and regulation of trade and manufacturing. The Department provides assistance and services to entrepreneurs in the form of establishment of industrial estates, coordination with other agencies in the identification of suitable projects and markets, entrepreneurial training and advisory services. The Department of Trade and Industry has four regional offices: Thimphu, Geylegphug, Phuntsholing and Samdrup Jongkhar. The Department of Trade and Industry had a staffing strength of 67 in 1990. This excludes the staffing strength in Ministry of Trade and Industry which had 66 people in 1990. The Department of Trade and Industry also manages the Business Opportunity and Information Centre to provide advisory and counselling services to prospective entrepreneurs and businesses.

18.23 Bhutanese entrepreneurs, contractors and industrialists have formed the Bhutan Chamber of Commerce, with its secretariat in Thimphu. The business community in each town elects a member of their community a member of the Bhutan Chamber of Commerce. The aim of the BCC is to promote private sector business.

18.24 The State Trading Corporation of Bhutan (STCB) is the focal point for import and export of goods between the Government of Bhutan and other countries. The STCB is a self-financing agency which is loosely attached to the Ministry of Trade and Industry. STCB has four functional divisions : Export Division, General Import and Sales Division, Automobile Import and Sales Division and Finance and Accounts Division. In late 1991, STCB had a staffing strength of 123.

18.25 STCB has its head office in Thimphu with a regional office in Phuntsholing. STCB also maintains branch officer in Calcutta to clear goods in-transit to Bhutan or out of Bhutan. The functions of Automobile Imports and Sales Divisions are to deal with imports and sales of automobiles and spare parts, and imports and sales of machinery and equipment from both India and third countries. The General Imports and Sales Division deals with imports and sales of goods other than automobiles. Much of the work of this division is concerned with imports and sales of quota items from India. The Export Division of STCB promotes and markets Bhutanese products in order to diversify export markets and earn higher amount of foreign exchange. This division negotiates rates and quantities for exports and imports. All export items to third countries are channelled through Export Division of STCB. STCB also compiles trade statistics on a monthly basis for submission to the Department of Trade and Industry.

Manufacturing and Trade

II. Review of Past PerformanceII. Review of Past Performance

A. Objectives of the 6FYPA. Objectives of the 6FYP

18.26 The main objectives in the manufacturing and trade sector were to:

- increase the share of industry GDP through industrial development
- improve trade balance and promote internal trade
- substitute imports through domestic production
- increase exports of manufactured and processed goods to international markets in order to earn hard currency
- promote regional balance
- generate foreign exchange revenue from tourism while protecting the environment and culture from possible adverse consequences of tourism.

B. Achievement of ObjectivesB. Achievement of Objectives

Manufacturing sectorManufacturing sector

TradeTrade

18.27 The share of manufacturing sector of total GDP remained small, although its contribution to GDP has increased from about 3.2% in 1980 to 7.1% in 1989. The real rate of growth of the manufacturing sector was 15% in the 1980s.

18.28 Foreign trade as a proportion of GDP increased over the period 1982-1988 from 53% in 1982 to 75% in 1988. The ratio of trade with India to GDP increased from 47% in 1982 to 56% in 1988; whilst the share of third country trade rose from 6% in 1980 to 19% in 1988.

18.29 Imports from both India and third countries are mainly manufactured foods and machinery and transport equipment. In terms of third country exports, the food and allied sectors accounts for the largest share, mainly because of the recent increase in the export of fresh fruits (apples and oranges) to Bangladesh. Other important exports to third countries are cardamum (mainly to Singapore), broom handles (mainly to The Netherlands), and philatelic stamps and handicraft goods to various countries. The main exports to India are electric power, crude materials (agro, forestry and mineral) and some wood and mineral products.

18.30 The current account balance with India has improved as a result of the export of electricity and increases in the export of raw materials, including wood and mineral products. The share of export (in the total trade with India) increased from 32% in 1985 to 89% in 1988. The manufacturing trade balance with third countries worsened as a result of the combined increase in the import of capital goods and transport equipment and the slow growth of exports to these countries. The share of manufactured exports in the total trade with third countries increased from 7% in 1985 to 9% in 1988. The proportion of third country exports in GDP was less than 1% in 1988, implying that the export trade has been overwhelmingly with India. Also evident from the above is the fact that there is high dependency of the export sector on Indian market and a consequent need for diversification.

18.31 New trade routes and transit points between India and Bhutan, and Bangladesh and Bhutan were opened in the 6FYP to facilitate increased trade.

18.32 The 6FYP envisaged the establishment of the Dungsum Cement Project in Nanglam at an estimated cost of Nu 848 m or 33.15% of 6FYP allocation for the Department of Trade and Industry. Funds were used for site development and pre-investment studies for the project. However, the Project will only be started in the 7FYP.

Industrial Activities in the 6FYPIIndustrial Activities in the 6FYP

18.33 Despite the delays in the implementation of the Dungsum Cement Project, which would have made significant difference to the manufacturing growth rate, other enterprises were initiated in the 6FYP in the manufacturing sector stepped up its activities in many other areas. Bhutan Calcium Carbide Limited, Bhutan

Polythene Pipe Company and Gedu Wood Manufacturing Centre started production during the 6FYP. Private sector and Government investment totalled Nu. 635 m in these three projects during the 6FYP. The Government also established a Furniture-cum-Training Unit in Thimphu at a cost of Nu. 40 m. Thimphu Agro-industry Project costing Nu 70 m will be completed in December 1992.

18.34 Industries were also established by the private sector during the 6FYP. The most significant one are : Yangzom Cement Plant at Bhalujhora, Dralha Flour Mill in Phuntsholing, Lhaki Cement Plant at Gomtu, the Ferro-Silicon Project at Pasakha (production will start in 1992/93), a Furniture Unit at Bhalujhora, Biscuit Manufacturing Unit at Phuntsholing, Marble Mining and Processing at Gida Kom and Integrated Wood Complex at Lobesa.

18.35 Several comprehensive sub-sectoral and project specific feasibility studies pertaining to the manufacturing and trade sector were carried out. Project specific studies were conducted for 12 medium and large scale projects in addition to assistance provided to private sector entrepreneurs in financing 17 project studies in cottage and small scale industries.

Tourism performance in the 6FYPTourism performance in the 6FYP

18.36 The number of tourist arrivals had stagnated since 1987. However, the Bhutan Tourism Corporation has been able to maintain the revenue earnings at a steady level because of the increase in night halts in Bhutan. The flow of tourist is not expected to increase unless the necessary infrastructure is expanded and improved, and a vigorous marketing and publicity is undertaken.

III. Objectives and Strategy for the 7FYPIII. Objectives and Strategy for the 7FYP

18.37 The objectives in the manufacturing and trade sector relates to the national objectives of

- sustainability and self-reliance particularly internal resource mobilization.
- efficiency
- development of human resources including women
- privatisation and private sector development
- promote regional balance

A. Objectives for the 7FYPA. Objectives for the 7FYP

18.38 The objectives in the 7FYP for the manufacturing and trading sector are to:

- increase in revenue generation
- increase the share of the manufacturing sector in GDP from 7% in 1989 to 13% by 1997 (at an average growth rate of 13.4% per year)
- increase the output of retail and wholesale trade, hotels and restaurant in GDP from Nu 268.8 m in 1989 Nu 325 m in 1997 (average annual growth rate of not less than 2.4%)
- improve the trade balance by increasing exports both to India and third countries
- substitute imports through domestic manufacturing
- increase foreign currency earning through tourism

B. Strategies for Achieving ObjectivesB. Strategies for Achieving Objectives

Reliance on market-based mechanismsReliance on market-based mechanisms

18.39 To achieve greater economic efficiency in the manufacturing and trading sector, a greater role will be given to market mechanisms. This will be accomplished through the further privatisation of public enterprises and contracting out of many of the departmental activities to the private sector, as discussed in Chapter 6 on Privatization and Public Enterprise Management.

18.40 The procedures of obtaining licenses to establish manufacturing and trading activities will be relaxed and simplified. Public awareness of the rules and regulations on licensing will be increased. Price control on goods and wage control will be avoided as much as possible, so that prices and wages reflect their economic values.

Replacement of quantitative restrictions by tariffsReplacement of quantitative restrictions by tariffs

Manufacturing and Trade

18.41 Replacement of quantitative restrictions by tariffs will be considered by the government. This policy change would bring additional revenues to the government that might otherwise go to the import licence holders or traders. Third country imported goods would then become available to anyone prepared to pay the tariffs and would reflect private sector priorities. Tariff exemptions, e.g. for government approved projects, will be gradually abolished. The preferential treatment in terms of tariff rates e.g. for importing cars for civil servants, will also be gradually phased out. While replacing the quantitative import restriction system by tariffs, tariffs will be fixed a rate high enough to prevent re-export to India.

18.42 The sales tax structure on goods from India will be simplified. At present, the sales tax rates vary between zero and 40 per cent. This differential sales tax structure could lead to smuggling of goods in the higher tax bracket and thus loss of revenue to the government. In order to reduce the incentive for smuggling and evasion of sales tax of the goods in higher sales tax bracket, the number of sales tax will be reduced to two or three different rates.

Incentives for regionally balanced growth

18.43 To promote more regionally balanced growth in manufacturing and trading sector, incentive packages will be provided for industries to be established in less developed areas. For the purpose of providing these incentives, dzongkhags have been categorised into first, second and third priority dzongkhags according to their stage of industrial development. Industries established in first priority dzongkhags will be provided with 20% of project costs. Second and third priority dzongkhags will be given 10% and 5% of the project costs respectively. In addition, industries which are in the first priority dzongkhags but are not located the industrial estates will be provided with 20% of the project cost as a capital grant.

18.44 Other kinds of assistance will be provided to entrepreneurs at crucial stages of business development. Entrepreneurs will receive assistance to identify projects, prepare project reports and select technology in the pre-investment stage of projects. After the viability of the project is established, the entrepreneurs will be assisted in the implementation phase to develop infrastructure if the project is outside the proposed and existing industrial estates.

18.45 In the operational phase, national employees will be given skills development training and advisory services to industries in operation and management. The support will be further extended to marketing of products by way of assistance in market and product identification, trade fairs and exhibition. However, the present system of price support will be gradually phased out.

IV. Manufacturing and Trade Development Programmes for the 7FYPIV. Manufacturing and Trade Development Programmes for the 7FYP

Dungsum Cement Project

18.46 The Dungsum Cement Project will involve the establishment of a 1,500 TPD Dry Cement Plant with precalcinator. The Plant will have the electrostatic precipitator and dust collectors to control pollution at a stipulated level. The project is estimated to cost Nu 1500 m. Out of the total cost, the foreign exchange requirement is about US \$ 13 m. This plant will require about 100,000 Mts of coal which can be met fully by the coal deposits in Bhutan. The gypsum requirement is about 25,000 MTs per year which will be met from Khotakpa Gypsum Mines. Power will be provided eventually from the proposed 45 MW Kurichu Hydro Project. Otherwise, it will be drawn from through high tension line from Bongaigoan, India. A total manpower requirement in both the mine and the plant is estimated at 542. The internal rate of return is estimated between 13.2% and 16.1% depending on the assumptions on the level of non levy sales.

Tourism

18.47 Since the privatisation of Bhutan Tourism Corporation in late 1991, several travel agencies have become involved in tour operations. Policy guidelines and regulations on tourism have been developed by the Board of Tourism. The Board has decided to allow up to 4,000 tourists a year during the 7FYP. This increased inflow of tourist will be possible with the expansion of tourist infrastructure and better marketing.

Formulation of project proposals and preparation of feasibility studies

18.48 Project identification and feasibility studies will be undertaken. The Department will assist the private sector in such activities by fielding short term specialists.

Integrated Development of Essential Oil Industry

18.49 The production and distillation of plants for essential oils has been identified as an area with significant potential, as it is a high value, low volume product and can be produced by small producers in remote areas. The DTI and the Ministry of Agriculture will implement a coordinated programme to encourage the increased production and distillation of suitable plants. The DTI will assist producers to purchase small scale distillation equipment and will identify markets for the products. The programme is particularly applicable to Eastern Bhutan where the farmers can either grow essential oil plants such as palma rosa or harvest plants containing essential oils such as lemon grass. This programme will provide income for the low income farmers.

Development of Cottage, Small and Medium Industries

This programme will promote small and medium scale industries by providing financial and administrative assistance.

Product standardisation

18.50 Indigenous industrial products do not have to conform to any standard. A Bhutan standard institute will be established to develop product standards, to protect the rights of consumers and improve the export potential of goods produced in Bhutan.

Development of Industrial estates

18.51 To provide the necessary infrastructural facilities for private sector enterprises, 12 industrial estates and 12 service centres will be established. This will reduce the cost per enterprise of service provision, such as power and water and will facilitate the provision of extension services by the DTI to entrepreneurs.

Industrial health and safety regulation

18.52 Employees need to be protected and their working conditions improved. Safety and health regulations will therefore be developed during the 7FYP and enforced by the DTI.

Trade promotion

18.53 To diversify export in terms of both destination and products, the DTI will assist the private sector to identify new markets and products. Entrepreneurs will also be assisted to attend trade fairs and exhibitions.

Management advisory services

18.54 The DTI will continue the entrepreneurship development programme started in the 6FYP, for new entrepreneurs and will also provide training for existing entrepreneurs to improve the business management skills. Existing enterprises are often operating well below capacity, due to lack of these skills. Specialist services will also be provided to such enterprises to suggest practical solutions.

Saw milling training centre

18.55 To enhance the productivity of wood based industries and improve the quality of wood products, a training centre for producers will be opened in Gida Kom during the 7FYP.

Major Private Sector Investments

Ferro-Silicon Project

Manufacturing and Trade

18.56 The Ferro Silicon Project is estimated to cost about Nu 569.9 m out of which foreign currency component is about Nu 324.4 m. Ferro silicon is an ingredient in the production of steel, for which there is an increasing demand. Ferro silicon production is highly power intensive and needs quartzite with high silica content. Both of these inputs are available at competitive prices in Bhutan. Annual consumption of electricity will be in the range of 154 million units. The annual inputs required are: 32, 900 tons of quartzite, 10,470 tons of metallurgical coke, 6,600 tons of coke, 4,600 tons of wood chips, and 4,700 tons of mill scale will be required. The project is under implementation and will come into production in 1992/93. The proposed output is about 15,000 tons per year of ferro silicon in various ranges. The enterprise will employ about 390 people. The sales revenues are estimated to range from Nu 260 m to Nu 262 m in a typical year.

Brewery Plant Brewery Plant

18.57 A brewery plant with a production capacity of 50,000 hectolitres is proposed. It will require 80 people and cost Nu 476 m to establish. Agricultural experiments have shown that barley for brewing can be grown in many parts of the country. It is estimated that gross annual profits of the brewery plant will be about Nu 67 m. It is assumed that about 70% of the beer produced will be exported to neighbouring countries.

Readymade Garment Manufacturing Unit Readymade Garment Manufacturing Unit

18.58 A Readymade Garment Manufacturing Unit will be established and production will be export oriented. Dresses and garments will be produced for export to America and Europe. The establishment costs of the Unit are estimated at Nu. 21.21 m and employment at about 290 people. Gross annual profit is estimated to be at Nu. 8.876 m and convertible currency earning is estimated to be at US\$ 0.348 m.

Particle Board Particle Board

18.59 A particle board unit is planned for development in the 7FYP, with an installed capacity of 15,000 cubic metre per year. The establishment cost has been estimated at Nu 148 m, with employ creation for 25 people. Annual sales receipts is expected to be Nu 97 m. Most of the particle board products will be exported to India and Bangladesh.

V. Financial and Manpower Requirements for the 7FYP V. Financial and Manpower Requirements for the 7FYP

TOTALS FOR Manufacturing and Trade						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP_TOTAL
CAPITAL COSTS	165.378	156.264	95.835	88.504	74.019	580.000
RECURRENT COSTS						
a) Existing	27.382	30.121	33.133	36.446	40.090	167.172
b) Project Related	17.204	17.563	18.006	18.591	20.386	91.750
Total Recurrent	44.586	47.684	51.139	55.037	60.476	258.922
TOTAL COSTS	209.964	203.948	146.974	143.541	134.495	838.922
MANPOWER	67	20	10	0	0	97
TA PERSONNEL	84.0	58.0	21.0	25.0	7.0	195.0

CHAPTER 19

MINERAL DEVELOPMENT MINERAL DEVELOPMENT

19.1 There have been small scale mining activities in Bhutan for over a thousand years. Slags are found in many parts of country. They point to mining of lead-zinc and iron ores for production of artifacts, weapons, and most notably a series of iron-chain suspension bridges which were constructed in the 14th century by saint Thangthong Gyalpo (1385-1464).

19.2 Mineral exploration began only in the early 1960s. Less than 30% of total area of the country has been mapped geologically. Geological surveys are carried out jointly by Survey of India and Department of Geology and Mines of the Royal Government. So far surveys have shown that there are deposits of coal, limestone, dolomite, talc, marble, gypsum, slate, lead, zinc, copper, tungsten, graphite, iron, mica, phosphate, pyrite, asbestos and gold (see Map 19.I Minerals Deposits and Map 19.II on Mining in Activities)

I. Basic Situation

Table 19.1 Major Mining Companies 1990

Minerals	Mining Company	Ownership	Output in MT
Dolomite	Kalesore Dolomite Mine	TTC*, private	18,443
Dolomite	Khagrakhola Dolomite Mine	Chhundu, private	19,708 (1989)
Dolomite	Bhutan Mining Enterprises	Private	17,971
Dolomite	Khanaburty Dolomite Mine	Singye, private	34,400
Dolomite	Chainaikhola Dolomite Mine	Chaula, private	114,050
Limestone	Yangzom Limestone Mine	Private	9,000
Limestone	Penden Limestone Mine	Government	138,324
Carbide	Bhutan Carbide & Chemical Limited	Joint	20,522 (1989)
Coal	Penden Duckpa Coal Company	Joint	20,000
Gypsum	Shumar Gypsum Mines	Government	40,000
Tufa	Kalapani Calc Tufa Mine	Government	16,152
Slate	Shaa Slate Mine	Government	300,000 (sq ft 1989)

* Tashi Commercial Corporation

19.3 At present, coal, limestone, dolomite, calc-tufa, slate, gypsum are mined for domestic industries as well as export. Their production constituted less than 1% of GDP in 1990. Mineral production in Bhutan in 1990 is shown in Table 19.2.

Mineral Development

Coal mining and deposits Coal mining and deposits

19.4 Coal is mined on a small scale in Bhangtar in Samdrup Jongkhar and exported to neighbouring tea estates of India as well as Bangladesh. Detailed exploration has been carried out in Gerua and the Dimala Khola blocks on Bhangtar-Deothang road. So far, the area have not shown any indication of large coal deposits because of the tectonised nature of its occurrence. In Gerua block, a total reserve of 89,000 tonnes of coals has been estimated at 50 metre depth from the surface. Assessments of coal deposits in other parts of Bhangtar are in progress.

Dolomite mining Dolomite mining

19.5 Dolomite is mined by five private companies and exported to India and Bangladesh. Large dolomite deposits occur close to the border with India. Bhutanese dolomite has good export potential, as the quality of dolomite is suitable for use in steel, glass and magnesium metal manufacturing processes.

Gypsum mining Gypsum mining

19.6 Gypsum is mined in Pema Gatshel for use in cement plants. In addition, gypsum is exported to India and Bangladesh.

19.7 A quartzite mine is being opened in Chhukha for export of quartzite lumps to India and Bangladesh. Investigations of quartzite deposits have been given great emphasis in view of the establishment of Ferro Alloys Limited at Pasakha. The quartzite deposits at Tintale, Samchi have been found to be suitable for use by Ferro Alloys Limited. This enterprise is owned jointly by the Royal Government, a private Bhutanese company and a Japanese company. A total of 4 million tonnes of quartzite with silicon was proved by Geological Survey of India, Bhutan Unit, for this company.

Limestone deposits and mining Limestone deposits and mining

19.8 Limestone is mined for manufacture of portland cement and calcium carbide. There are three cement plants in Samchi Dzongkhag each with installed daily capacity of producing 400 tonnes, 100 tonnes and 30 tonnes, respectively. Investigations of Rongri area in Sarbhang has proved a deposit of cement grade limestone of about 1.94 million tonnes. Bhutan Calcium Carbide Limited is developing the infrastructure to utilise this deposit. There is also a reserve of 4.012 million tonnes of cement grade limestone in Pagli extension area, which would feed the 400 tonnes per day Penden Cement Authority. Gumtu Mini Cement Plant would require about 50,000 tonnes of limestones per annum and a reserve of 0.9 million tonnes of limestone was proved in Titi area for use by this Plant. A major cement plant will be established in the 7FYP: the Dungsum Cement Plant in Nanglam. A reserve of 2.8 million tonnes of limestone has been proved in the Kangrazhi and Kurung Ri area of Nanglam which will be used by the Dungsum Cement Project.

Base metal deposits Base metal deposits

19.9 Investigations are in progress in Gongkhola, Tongsa for copper deposits. A borehole has indicated the presence of mineralised zone. Drilling in Burkhola in Sarbhang area for strategic minerals has shown a reserve of 3.42 million tonnes of scheelite ore of varying quality.

Institutions Institutions

19.10 The Department of Geology and Mines is under the Ministry of Trade and Industry and is responsible for geological mapping, mineral exploration and providing geoscience services required by other government agencies and the private sector mining companies. The Department of Geology and Mines works in close collaboration with Geological Survey of India, Bhutan Unit which is based in Samchi, Bhutan.

19.11 The Department of Geology and Mines, as a matter of government policy, is not involved in mining operations. It is a support organization which provides information on mineral deposits to promote mineral based industrial development. It also provides geo-technical information to the Department of Roads, Department of Works and Housing, Department of Power for evaluation of engineering hazards and on questions of structural stability. The Department of Geology and Mines supplies lithological and structural information to the Ministry of

Agriculture to prepare land-use and forestry management plans.

19.12 The Department has two divisions : Geology Division and Mines Division. Within the Geology Division, there are the following units: exploration unit, chemical laboratory unit, geotechnical unit, photogeology and remote sensing unit and information and documentation unit. The Mines Division has two units : mines evaluation and information unit and mining rules, regulations and inspections unit.

19.13 As of June 1991, the Geology Division had 6 geologists, each specialised in a particular field, with a support staff of 71. The Mines Division had 4 mining engineers with a support staff of 16.

Constraints

Inaccessibility

19.14 Due to problems of inaccessibility to many parts of the country, 70% of the country has not been brought under geological surveys. Except for a few pockets in other parts of the country, most of the surveys have concentrated in the southern belt because of fewer logistical constraints. Surveys in target areas require substantial investments in manpower, field gear and equipment and most of these field kits and equipments are non-existent.

Manpower

19.15 There is an acute shortage of trained professionals in this sector in both the Department and private mining organisations. The shortage of manpower is likely to persist for several years as there are no Bhutanese who are on training in this field. Therefore, services in terms of geoscientific and engineering surveys and interpretation of information can not be provided adequately to the mining community. Geological Survey of India, Bhutan Unit has been carrying out most of the investigations of mineral raw materials.

Facilities

19.16 There is a general absence of equipments, laboratory instruments and other physical facilities to undertake geoscientific studies. The existing laboratory is unsuitable for geological survey. There is neither a petrological or mineralogical laboratory for mineral identification and mapping, nor a geo-technical laboratory for environmental and hazard mapping studies. A lack of laboratories facilities, drilling machines and other equipment has also affected the performance of trained manpower that exists.

Mining legislation

19.17 The existing mining operations are not governed by any mining legislation and are monitored in an ad hoc way. A lack of legislation could lead to problems of environmental degradation, unsafe working conditions for the miners, unsystematic extraction methods etc.

II. Review of Past Performance

A. Objectives in the 6FYPA. Objectives in the 6FYP

The objectives of the mining and quarrying sector in the 6FYP were to:

- increase the share of mining and mineral-based industries in GDP;
- increase self-sufficiency of Department of Geology and Mines in the area of mineral exploration, geological mapping and engineering geology.

B. Achievement of Objectives

Mineral Development

Table 19.2 Estimated Production of Selected Minerals 1985-89 (in MT)

Minerals	1985	1986	1987	1988	1989
Dolomite	105033	231822	235128	207429	218413
Limestone	161596	192424	177706	168704	131546
Gypsum	10198	24838	20146	27997	48308
Coal	26669	30155	36600	19066	20816

19.18 In current prices, mining and quarrying sector achieved a compound growth rate of 20% between 1980/89. However, the growth has slowed down and even declined after 1986. The GDP of the mining and quarrying sector was estimated at Nu 37.4 m in 1986 and declined to Nu 35.7 m in 1989 with a 0.8% share of GDP in 1989. However, the fall in the gross product of mining and quarrying sector might not have actually occurred considering the expansion of activities over this period. The fall may be attributable to a lack of data on prices and output of mines.

19.19 In terms of the objective of increasing self-sufficiency of the Department of Geology and Mines, achievements were not met largely due to financial constraints. The funds provided were absorbed by the recurrent expenditure of the Department, so that only 2 drilling machines could be purchased. Other activities such as manpower training and the construction programme to establish laboratory, geological museum and geological laboratories had to be postponed.

19.20 A number of mineral explorations were carried out by both the Department of Geology and Mines and Geological Survey of India, Bhutan Unit. As detailed in Section A, many deposits were proved in specific areas. Based on these discoveries, several mineral based plants such as Ferro Alloys Limited, Mini Cement Plant in Gumto, Nanglam Cement Plant, etc, will be established (see Chapter 18 for more details on these projects).

III. Objectives and Strategy for the 7FYPIII. Objectives and Strategy for the 7FYP

A. Objectives for the 7FYPA. Objectives for the 7FYP

19.21 The objective of the mining and quarrying sector for the 7FYP are related to national objectives of

- self-reliance and sustainability
- efficient utilization of natural resources
- diversification of the economy

19.22 The objectives of the mining and quarrying sector in the 7FYP will remain the same as the objectives of the 6FYP, namely to:

- increase the share of mining and mineral-based industries in GDP; and
- increase self-sufficiency of Department of Geology and Mines in the area of area of mineral exploration, geological mapping and engineering geology.

B. Strategies for Achieving ObjectivesB. Strategies for Achieving Objectives

19.23 The institutional capability of the Department of Geology and Mines requires strengthening through the provision of well equipped research and analytical facilities such as mineralogical, geo-chemical and geo-technical laboratories. The existing analytical laboratory is not capable to carry out a routine geo-chemical survey. The samples are usually sent out of the country but this practice is expensive and cumbersome. The private sector cannot develop the capability to carry out any mapping, reconnaissance and exploration for some time, which is required to generate greater knowledge of the mineral resources. For this purpose, laboratories facilities such as petrological and mineralogical laboratory will be necessary to carry out mapping and mineral identification.

19.24 It is equally important for a cadre of geologists and engineers to be trained for both the private sector and the Department of Geology and Mines. This is particularly important if Bhutan is to indigenise the manpower in mining and quarrying sector. This will be one of the main strategies in the 7FYP to alleviate the acute shortage of manpower in the latter part of 7FYP and 8FYP.

19.25 Prospects for increasing mining and quarrying, by either the public sector companies or the private sector companies will therefore depend crucially on the scale of investigation mounted by the personnel of Department of Geology and Mines as well the Geological Survey of India, Bhutan Unit. Most of the staff of Department of Geology and Mines for most of the times have to be out in the field undertaking surveys. The provision of field equipment for on site studies of rocks and minerals and camping facilities are therefore crucial to their general performance in the field.

19.26 Mining activities have as yet not caused any major environmental problems. Most of the mining can be described as small scale rat hole mining. The situation is however likely to change when more mineral raw materials are required to feed an increasing number of mineral based industries and more mechanised methods of extraction are introduced. To take into account the likely environmental problems that may occur, environmental regulation pertaining to not only the mining sector but also other sectors, will be framed and introduced in the 7FYP. A well defined mining act will be finalised to regulate mining activities. The Mining Act will update the existing mining regulations of 1989 which were approved as an interim measure. Mineral development policy will also be developed, including mineral taxation policy, mines safety rules, environment protection rules etc.

19.27 As part of an active environmental management, the Department of Geology and Mines will provide the necessary services to assess the environmental impact of projects in other sectors. The Department of Geology and Mines will undertake systematic field surveys of geological and geochemical factors involved in projects. Geo-technical assessments will be undertaken to assist agencies involved in road and dam site construction, agriculture, forestry and land use planning etc.

IV. Development Programmes for the 7FYPIV. Development Programmes for the 7FYP

Construction of DGM Building

19.28 A multipurpose building to house both laboratory facilities and offices will be built. The establishment of laboratories facilities is of the highest priority in view of the programmes which depend on its use. It will be probably located in Central Bhutan. It would provide space for housing, laboratory equipments and accessories, storage of valuable drilling cores, survey and drawing equipments.

Geological information system

19.29 The geological literature on Bhutan has grown but information systems have not been developed to collect and analyse the data. Geological data is thus scattered and are difficult to access in times of need. The situation has hampered field investigations. In 7FYP, library facilities will be expanded by the development of a computerised data base management system and subscriptions to relevant books and international journals on geology, mines, and mineral industries. The Department of Geology and Mines will publish its own journal and bulletins to inform the private sector of its activities and findings.

Drilling machinery

19.30 Exploration drilling by the Department of Geology and Mines at present depends on contract drilling services from India. With the expansion of exploration drilling, it would be more cost effective for the Department to have its own skilled drill technicians and drilling machineries. During the 7FYP, 15 detailed explorations are envisaged, which would require 3 additional tone boring drill machines, water pumps, accessories, spare parts, etc.

Surveying and Drawing Equipment

19.31 The survey team of the Department of Geology and Mines has to prepare base maps at a scale of 1:2000 to 1:500 during detailed mapping of mineral deposits or preparation of mine designs. The drawing cell of the Department has to make geological maps and illustrate geological reports. However, the Department has inadequate survey and drawing equipment. To strengthen the survey and design cell, the following equipment will

Mineral Development

be purchased: 3 theodolites and accessories, 1 distomat, 3 drafting machines, 1 Modi Xerox, 1 leitz data printers etc.

Geological Museum Geological Museum

19.32 A geological museum will be opened, probably in Central Bhutan. It will have exhibits of the Department's activities, minerals, rocks and fossils. The museum will act as a store house of country's mining and geology and will attract layman, future geologists, students, entrepreneurs and mining engineers on educational tours.

Survey, exploration and geotechnical studies Survey, exploration and geotechnical studies

19.33 The latest geological map of Bhutan (1:500000) published by the GSI in 1983 covers the central and foothill regions. The eastern, western and northern regions remain unmapped in detail. Regional geological maps and reports are crucial inputs in geo-science based on developmental sectors like Department of Roads, Department of Works & Housing, and Agriculture & Power. Therefore, production of geological maps will be taken up. Geological mapping and mineral exploration go hand in hand. Mineral exploration establish metalogenic settings and their economic potential. Once an area with a mineral potential is selected, reconnaissance mineral surveys will seek to locate target areas which call for detail investigation.

Geological mapping Geological mapping

19.34 Detail geological mapping of western extension-Bhurkhola for tungsten, Wangdi area for construction material, Urichu and Khar for Gypsum, Kalikhola for phosphate, Bhurichu, Chirang for quartzite and Gurungkhola area, Thimphu, Haa and Paro for zinc and lead will be done.

Mineral exploration Mineral exploration

19.35 Exploration and investigation will also be conducted for Tungsten in Nobding, Merak Sakten and Bidung for Pegmatite bodies, Wangdi and Chirang for tertiary granite.

Geotechnical studies Geotechnical studies

19.36 Geotechnical studies are important for the development and design of mines as well as in construction and infrastructural requirements. DGM is involved in site selection and foundation studies for heavy buildings and structures for which a geotechnical cell has been created.

19.37 Geotechnical investigation will include studies of landslides along highways, dam site studies, bridge foundation studies in Geylegphug, Mandechu, Sarbhang, Kurizampa and Chazam, Tashigang. Detail natural hazard studies will be undertaken in Kurteo, Dagana, Tongsa and Sorchen.

Research Research

19.38 Research on the origin and trace element distribution of tungsten in Bhurkhola and Dopani will be carried out. Similar research on trace element distribution of copper in Gongkhola will also be done. Selected personnel of the Department will go on study tours to other South East Asian countries. They will review small scale mining activities in these countries in order to promote a system of mining that could be economically, technically and environmentally suitable for Bhutan.

Appraisal of mining projects and beneficiation studies Appraisal of mining projects and beneficiation studies

19.39 Bhutanese mining agencies have been consulting firms in India and abroad for project appraisal, feasibility and market studies for proven mineral deposits. The Mines Division will build up its capability to evaluate the technical and economic feasibility of known mineral deposits. Further it will plan and design for at least 3 mineral deposits found to be technically and economically viable.

19.40 Appraisal of the mineral deposits will be carried out with respect to the iron ore deposits at Maure, Kalikhola, Talc deposit at Samchi and Mica deposit at Chirang. Until nationals receive adequate training, technical services will be used in mine planning and designing and to provide the necessary guidance to national staff.

Mineral Development

19.41 Beneficiation studies will be carried out in order to find out whether tungsten metal and graphite deposits can be mined commercially. Areas to be studied are Bhurkhola in Sarbhang and Chilaila in Paro. Pilot beneficiation plants will be established and detailed project reports will be prepared for mineral exploitation.

Manpower development

19.42 The Department of Geology and Mines has not been able to expand its technical staff since 1984. Therefore, a comprehensive manpower development programme will be implemented in the 7FYP to ensure an adequate number of technical personnel. Technical skills of the present employees will be enhanced by in-service training, short term affiliations to mining concerns, study tours, seminars and workshops.

V. Financial and Manpower Analysis

TOTALS FOR Mineral Development						
	1992/93	1993/94	1994/95	1995/96	1996/97	FYP_TOTAL
CAPITAL COSTS	34.859	32.869	15.776	8.248	8.248	100.000
RECURRENT COSTS						
a) Existing	4.963	5.460	6.005	6.606	7.267	30.301
b) Project Related	4.188	4.188	5.188	4.988	4.988	23.540
Total Recurrent	9.151	9.648	11.193	11.594	12.255	53.841
TOTAL COSTS	44.010	42.517	26.969	19.842	20.503	153.841
MANPOWER	6	3	3	2	1	15
TA PERSONNEL	18.0	6.0	3.0	0.0	0.0	27.0

ENERGY SECTORENERGY SECTOR

I. Basic SituationI. Basic Situation

20.1 The energy sector became one of the major sources of economic growth during the 6FYP, its contribution having been negligible in previous years. This sector is envisaged to provide substantial revenues in the years to come. However, as explained in Chapter 7, Economic Outlook, the benefits will only be realised in the 8FYP, as the major new projects will be initiated in the 7FYP and commissioned at the end of this period.

A. Structure of the SectorA. Structure of the Sector

20.2 While there have been significant increases in electricity production, the major consumer of energy is the household sector, reflecting the low level of development in the other sectors of the economy, particularly the industrial sector. The percentage share of energy consumption by sectors 1984 and 1989 is shown in Table 20.1.

Table 20.1 Percentage Share of energy Consumption

Sector	% in 1984	% in 1989
Agriculture	0.7	1.2
Industry	3.9	13.1
Transport	4.3	5.2
Commercial establishments	0.0	0.0
Government organisations	3.4	3.3
Electricity generation	1.7	0.0
Total	100	99.9

Source: Energy Data Profile, Dept of Power, April 1991

Energy SourcesEnergy Sources

20.3 Firewood consumption data has been compiled on the basis of a household energy survey carried out by the Department of Power in 1990. There are many unavoidable problems in estimating firewood consumption and so the data reported must be used with caution. Firewood accounts for 77% of total energy consumption: an estimated 1,170,000 cubic metres in 1989. This includes all users of firewood such as households, commercial establishments for example agro-industries, institutes such as schools, monastic bodies, army, police etc. As a percentage of the total consumption of firewood, the household sector used 95%, Government and commercial establishments 3%, the agriculture sector 0.9% and industry used only 0.7%. Annual consumption of firewood for a typical household was estimated at 14 cubic metres. Out of this quantity, 7 to 9 cubic metres was used in cooking and the rest was used for space heating.

Electricity and Hydropower Generation Electricity and Hydropower Generation

20.4 The theoretical potential for power generation has been estimated at 20,000 MW although the exploitable capacity in Bhutan has been estimated at 6,000 MW. There are at present 21 run of the river hydro-electricity generation stations, which have a capacity to generate a total of 355 MW: less than 6% of the estimated exploitable capacity. Existing hydro-power generating capacity includes the Chukka Hydro Scheme with an installed capacity of 336 MW, 7 small size hydro-plants ranging from 300 to 1,500 kw and 12 micro hydels with capacity ranging from 10 to 80 kw. There are also three plants of 200 kw capacity each under construction which will be completed in the 6FYP.

Energy Sector

Table 20.2 Power Generation by Department of Power and Chhukha Hydel Project 1986-1989 (Nu.million)

	1986	1987	1988	1989
Department of Power				
a) Hydro	5.452	5.38	2.711	2.527
b) Diesel	1.546	0.313	0.239	0.022
Sub-total	6.998	5.693	2.95	2.549
Chhukha Hydel Corporation	339.386	1470.466	1541.057	1554.301
Total	346.384	1476.159	1544.007	1556.85

Petroleum Products

20.5 Of the total energy consumption, petroleum products accounted for 8% in 1989. Petroleum products are mostly used in the transport sector. As the number of vehicles has increased, the demand for diesel oil and motor gasoline has risen simultaneously. The use of LPG is increasing at an annual rate of 15%. Kerosene is used for cooking and lighting in the household sector. In the industrial sector, 2,500 tons of furnace oil is used by the Bhutan Chemical and Carbide Limited (BCCL), Pasakha. Petroleum products are imported and distributed by a private company. There are 18 fuel depots in the country, with sub-depots for the distribution of kerosene.

Coal and Coke

20.6 According to the 1989 energy survey, coal and coke accounted for 0.8% of total energy consumption. A total of 18,000 MT of coal and coke were used in 1989. The main consumers of coal and coke are industries e.g. food processing units, lime kilns, candle and brick factories. Coal and coke imports are channelled through the State Trading Corporation of Bhutan as well as private agencies. Bhutan has recently started exporting a small quantity of coal to Bangladesh and neighbouring tea estates in India.

Charcoal

20.7 Bhutan Chemical and Calcium Carbide Limited (BCCL), Pasakha is the only user of charcoal in the country, with an annual consumption of 20,000 MT. Charcoal is used as a raw material in production and not as fuel. 90% of the charcoal is imported from India.

Biogas

20.8 The share of biogas in the total energy consumption is minimal. To date, a total of 54 biogas plants based on a fixed dome design have been built in the Kalikhola gewog of Sarbhang Dzongkhag. The production capacity of each of these plants is 2 to 3 cubic metres per day and are used only for lighting purposes. Two biogas plants of a floating gas holder type were built in Punakha Dzongkhag. The plant in Ritsha has a production capacity of 4 cubic metres per day while the plant in Lakha has a capacity of 9 cubic metres per day.

Solar and Wind Energy

20.9 The use of solar power is minimal. The Department of Power has provided 271 solar panels to monasteries, institutes, Basic Health Units etc. in remote areas. Some of the solar panels may no longer be functioning. Solar panels are used for battery charging for lighting. A whole village of 30 households, Shingkhari in Bumthang was provided with solar lighting under Indian Assistance in 1991. Solar panels for heating water were tested by the Department of Power and the former Science and Technology Division, however this research has been discontinued.

20.10 Wind energy is used only in 2 places: in the Swiss Project Farm in Jakar, Bumthang for battery charging and in the Centre for Agriculture Research Development (CARD) in Wangdiphodrang for irrigation.

Exports and Imports

20.11 In 1988, total energy imports were valued at Nu 112.4 m: 6% of the value of all merchandise imports. Coal is both exported and imported. In 1988, coal imports from India amounted to about 18,000 MT and in the same year, the quantity of coal exported to Bangladesh was 19,000 MT. A total of 5,000 MT of coke was imported in 1988. Electricity is both imported and exported between Bhutan and India. Electricity is exported from Chhukha Hydel Corporation in Western Bhutan to India. Electricity exports to India were estimated at Nu 41.96 m in 1986, Nu 275.88 m in 1987 and Nu 337.3 m in 1988. Electricity is imported in Bhutan's border towns of Geylegphug in Central Bhutan and Samdrup Jongkhar in Eastern Bhutan. The value of electricity import was Nu 34.69 m in 1986, Nu 14.23 m in 1987 and Nu 1.55 m in 1988.

C. Institutions***Electricity Sector***

20.12 The Department of Power is responsible for the provision of the necessary infrastructure, staff and maintenance capacity for power generation, transmission and distribution. As of December 1990, the Department of Power employed 574 people, being one of the five largest Departments in terms of staffing strength. The Department of Power has, among others, the following divisions: Planning Division, Project Division, Operation and Maintenance Division and Chukka Hydel Corporation. The Chukka Hydel Corporation is managed as a separate entity by a Board of Directors.

Fuelwood

20.13 Most fuelwood, particularly in remote areas is collected by users with payment to the Forestry Department under the Ministry of Agriculture. In theory, licences are required for the collection of fuelwood from the local Forest Officers and Rangers, if the firewood is not dead wood. Felling trees for firewood is strictly controlled by the forestry officials who are found in every gewog.

Petroleum Products

20.14 A private company operates the supply of petroleum products throughout the country. The Company operates 18 fuel depots, one in each dzong. In addition, 3 large, Government funded fuel depots are being constructed in Dechenchholing near Thimphu for Western Bhutan, Deothang for Eastern Bhutan and Sarbhang for Central Bhutan.

D. Constraints

20.15 Each of the subsectors in the energy sector face different constraints. However, as in many other sectors, they face common problems: a scattered population, rugged terrain, poor communications and manpower shortages. In the hydro-power sector, the main constraints are an insufficient number of technical personnel, high costs of casual labour and lack of finance. Because of the rough terrain and scattered population, the per capita cost of transmission and distribution of electricity is extremely high.

20.16 In general, there is an adequate supply of fuelwood at a reasonably small distance from most settlements. But there are a number of settlements where forests have been cleared to allow for expansion of cultivation. In these areas, firewood collection involves significantly more time and effort.

II. Review of Past Performance**A. Objectives in the 6FYPA**

20.17 The objectives in the 6FYP were to:

Energy Sector

- increase Government revenues through the generation of power for sale to India; and
- promote regional balance by investment in power projects, particularly in Eastern Bhutan.
- work towards the goal of providing electricity to all parts of the country

B. Achievement of Objectives

Table 20.3 6FYP Outlay and Actual Expenditure for the Department of Power

Schemes	Financial outlay	Expenditure by Oct'90
Generation	39.66	53.60
High Voltage Transmission	2.77	92.41
Subtransmission and Distribution	102.04	85.86
Rural Electrification	132.36	47.00
Survey and Investigations	31.00	5.17
Central Establishment	40.13	100.76
Total	347.95	384.80

Power Generation

20.18 The major achievement in the 6FYP was the commissioning of the Chukka Hydrel Corporation with an installed capacity of 336 MW. Revenue earning by 1991 from the sale of power to India has risen to Nu. 384m a year. Along with the commissioning of Chhukka Hydrel Corporation, a number of high voltage transmission lines and substations were also completed. The western part of the Kingdom is now covered by a well established grid. A total of 12 micro hydels (includes Khaling min hydrel 3x0.2 MW, Gyetsa mini hydrel 3x0.5 MW, Tamshing micro hydrel 30.0 kw, Thinley gang micro hydrel 30.0kw, Surey micro hydrel 70.0 kw, Kekhar micro hydrel 20.0 kw, Bubja micro hydrel 30.0 kw, Tongsa micro hydrel 50.0 kw, Rukubji micro hydrel 40.0 kw, Tansibji micro hydrel 30.0 kw, Ura micro hydrel 50.0 kw, Yadi micro hydrel 30.0) were commissioned. Micro hydels at Dagana (200 kw) and Damphu (200 kw) and Tintibi will be completed in the plan period.

High Voltage Transmission and Substations

20.19 According to the 6FYP targets, 320 km of transmission lines were to be established. However, most of the transmission lines depended on the establishment of power projects such as the Kurichu Power Project which were not implemented. As of December 1990, 119 km of transmission line had been established in the following places: between Phuntsholing - Pasakha, Phuntsholing -Penden, Chuzum - Paro, Chuzum - Haa, Simtokha - Wangdiphodrang. Along with the high voltage transmission routes, several sub-stations were also established.

Sub-transmission and Distribution

20.20 Major works were completed in Thimphu and Paro, with most of the sub-transmission and distribution network in Thimphu being buried underground. The overhead lines were made more stable and reliable. Some minor works were also completed in Phuntsholing, Tashigang, Bumthang and Samdrup Jongkhar.

Rural Electrification

20.21 Most of the rural electrification programmes were planned for villages in Southern Bhutan. However, due to the lack of finance and manpower, actual expenditure has been only 36% of the planned outlay as of October 1990. The number of villages electrified have increased from 127 in 1986/87 to 171 in 1988/89 and the number of towns electrified has increased from 19 in 86/87 to 20 in 1988/89. The number of consumers has increased from 11,361 in 1986/87 to 14,092 in 1988/89.

20.22 Despite the progress mentioned highlighted above, over 90% of the population does not have access to electricity. The eventual goal of providing adequate, reliable and safe electrical energy throughout the country remains to be realised.

Hydrological Investigations

20.23 Hydrological investigations were to be undertaken for the four major river basins e.g. Wangchu, Phocho Mochu, Dangmechu and Mangdechu. However, only a preliminary study for Wangchu was completed. Detailed Project Reports on both Wangchu Stage II at Tala village and Wangchu Stage III at Pipping village are yet to be prepared. A reconnaissance report on Yonglachu Project (1MW) at Lhunsi has been finished and detailed Project Reports have been prepared for Kurichu Hydro project (45MW) and Tangsibji Hydro Project (45 MW). Pre-feasibility and feasibility studies have been prepared for the Rangjung Hydro Project (1.1 MW) and Basochu Hydro Project (41MW).

20.24 Although hydrological investigations of four major river basins were not undertaken, these investigations will be completed under the Power System Master Plan. Work commenced on the formulation of the Master Plan in March 1990 and will be completed in 1993. The Power System Master Plan will establish a systematic hydro-meteorological data collection network and determine hydro power development for the next 20 years, based on economic and technical viability. The Master Plan will guide the future course of action in the detailed investigation of major river basins and produce a ranked list of potential hydropower project sites.

III. Objectives and Strategy for the 7FYPIII. Objectives and Strategy for the 7FYP

A. Objectives for the 7FYPA. Objectives for the 7FYP

20.25 The objectives in the power sector relate to the national objectives of:

- Sustainability and self-reliance through revenue generation by exploiting hydro-power resources in a sustainable manner
- Efficiency
- Regionally balanced growth and equitable provision of services

20.26 The main objectives for the power sector in the 7FYP are to:

- increase Government revenues through the generation of power for sale to India and to industries in the country;
- fulfil demand for electrical energy at minimum cost and as much as uniform way as possible to all the consumers through a system that is safe, reliable and efficient;
- ensure balanced regional development through provision of energy for industrial growth; and
- ensure environmentally sustainable use of hydropower resources.

Revenue Generation

20.27 The Royal Government views the power sector as one of its main sources of revenue through the export of hydro-electric power and internal sale of power. Power sector development is also seen as key to the progress of manufacturing sector which depends on reliable supply of electricity. As mentioned above, earning through export revenues from electricity has increased from Nu. 275.9 in 1987 to Nu 375 in 1991. This increase in revenue was due, primarily to the increase in the power tariff from Nu 0.20 per kWh in 1987 to Nu 0.27 per kWh in 1991. It is envisaged that these revenues will increase further with the development of new capacity: Kurichu Hydel Project (45MW) is scheduled to be implemented between 1993 and 1997, Tangsibji Hydel Project (45MW) from 1995 onwards and Basachu Hydel Project (41MW) between 1993 and 1997. All three major projects which will produce substantial power for export or internal consumption, but only in the early part of the 8FYP. However, these projects must be started in the 7FYP to create a major impact on the revenue position in the 8FYP. It will be realistic to assume that no additional revenue will accrue to the government from these projects in 7FYP. Within the 7FYP, the Chhukha Tail Race Tunnel, planned for implementation between 1993 and 1995, will generate an

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additional revenue of about Nu 24 m a year.

Uniform Provision of Electricity

20.28 Most of the population (90%) still do not have access to electricity. It is the long term goal of the Government to provide electricity to all the population through an efficient, safe and reliable system. To provide as much electrical energy as possible to all parts of Bhutan, the establishment of national grids will be important. Excess power can then be drawn through the national grid from areas of excess supply to areas where electricity can not be generated. In more remote areas, where supply of power is not viable through the national grid, solar panels and micro hydels will be provided.

Balanced Regional Growth

20.29 Electrical energy is pre-requisite for industrial development. After roads, the availability of energy is considered to be a major stimulus to economic growth. Kurichu Hydel Project, Rangjung Hydel Project, Yonglachu Hydel Project, Tangsibji Hydel Project, will, apart from producing power for domestic uses, also support a large number of small industries and bring about balanced regional growth. The whole country will be covered by three inter-connected grid system: Western grid, Central grid and Eastern Grid. Electricity will be feed from both big and small power projects into the high voltage grids and transmitted into various parts of the country. The inter-connection between different grid systems means that electricity produced in one region can be wheeled to another energy deficit area, though some loss will be sustained while transmitting over long distance.

Sustainable Development of the Energy Sector

20.30 Water is the most important resource in hydro-power generation and one of the main controlling factors in maintaining hydrological regimes is sustainable watershed utilization. The development of new power generation schemes will therefore place much emphasis on watershed management. In order to achieve this, deforestation in the watershed area and in general will be prevented. The provision of electricity will also encourage the rural population to reduce their fuelwood consumption, although these changes are likely to take several years as people will have to adapt to the use of new forms of energy. The socio economic implications of introducing electricity in rural areas is one of the issues being examined under the Power Master Plan. The harnessing of rivers for generation of hydro-power must also ensure that there are no significant environmental and ecological disturbances. Thus, environmental impact assessments will be included in the design of all new projects.

B. Strategies for Achieving Objectives

20.31 The strategies for the achieving the above objectives will be dependent on the involvement of other Ministries. For instance, the sustainable use of hydro resources through minimising any negative impact on the environment will require collaboration with the Ministry of Agriculture, the Geotechnical Division of the Department of Geology and Mines, etc. The strategy for balanced regional growth will likewise depend on the programmes of other sectors notably the Department of Trade and Industry and the private sector. Although the Department of Power will be responsible for the supply of energy, the plans and strategies of user sectors will need to be coordinated with the Department's programmes.

20.32 To move towards the objective of eventual provision of electricity to all parts of the country will require the establishment of a number of hydro electric plants and a network of distribution and transmission lines. The implementation of Tangsibi Hydel Project in Central Bhutan, Kurichu Hydel Project, Rangjung Hydel Project and Yonglachu Hydel Project in Eastern Bhutan would contribute towards regionally balanced growth. To ensure that the most economically, technically and environmentally sound projects are implemented, the Power System Master Plan will be used to guide the selection of sites for plants in future.

20.33 The manpower requirements in all categories of skills in the power sector is considerable, particularly if all the projects are to be implemented. The requirements of additional staff including construction workers if all projects are implemented is shown in the table on manpower and financial analysis. Once funding is secured for projects, the next constraint in the implementation of projects would be a shortage of manpower. The current strength of the Department of Power is 600 and over 2,200 additional persons (staff on permanent basis) would need to be recruited during the 7FYP. To fulfil the demand for scientific and technical personnel, a substantial proportion of the Human Resource Development Programme is earmarked for the power sector manpower requirements. High school graduates will also be guided towards scientific and technical courses to minimize these

shortages.

20.34 Alternative contracting arrangements will be explored to reduce technical and clerical manpower requirements. For example, lumpsum contracting of works as opposed to the current system of item-rate contract may reduce manpower requirements. The item-rate contract method requires the Department of Power to undertake detailed measurements, record entries, bill verification and material procurement. In the lump sum contract system, the Department of Power would be responsible only for quality control and monitoring of progress.

20.35 A large number of casual labourers will be required over the 7FYP. National labour will not be sufficient and foreign workers will therefore be required. The rules and regulations for recruitment of foreign labourers are being simplified to facilitate the employment of non national labour.

IV. Energy Sector Development Programmes

Kurichu Hydel Project (45MW) Kurichu Hydel Project (45MW)

20.36 A Detailed Project Report was completed in 1987 for this project, at Gyelposhing near Kurizampa, which is planned for implementation from 1993 to 1997. The site which is flat is accessible by road and no geo-technical problems are foreseen. Considering these favourable factors, the project can be completed in four years i.e. by 1997. At the same time, the Eastern grid transmission line will be established so that power can be evacuated as soon as the Kurichu Hydel Project is commissioned. The project will form the node for the high voltage Eastern grid. This major project will be key project in the overall industrial and rural development of Eastern Bhutan. The network will connect Mongar, Pema Gatshel, Nanglam, Tashigang and Samdrup Jongkhar resulting in extensive electrification of industries both outside and inside the proposed industrial estates, public installations and rural households. It will also supply power to the gypsum plant in Pema Gatshel, Dungsum Cement Plant in Nanglam and the coal washeries at Bhangtar.

Basochu Hydel project (46MW) Basochu Hydel project (46MW)

20.37 This project, at Maza fall on the highway between Wangdiphodrang and Chirang, is planned for implementation from 1993 to 1996. The power station will be connected to the Western grid through a 220 KV transmission line from Simtokha to Basachu which will be installed between 1993 and 1996. The commissioning of Basachu Project will increase the reliability of the Western grid and meet the internal demand of Western Bhutan. The project will transmit additional power into the Western grid. A high voltage transmission line will also be installed between 1993 and 1996 to connect Geylegphug and Basachu via Chirang.

Tangsibji or Central Hydel Project (45MW)Tangsibji or Central Hydel Project (45MW)

20.38 A Feasibility Report was completed in 1984 and the project is expected to take four years from 1995 to 1998. The project will feed power into the Central grid which will be installed between 1993 and 1996, connecting Tongsa, Shemgang, Damphu and Geylegphug. At Geylegphug, it will be connected with the Indian grid system. The demand for power from this project will arise in the Geylegphug area, emerging townships, rural areas and proposed industrial estates. In terms of dzongkhags, Sarbhag, Bumthang, Tongsa and Chirang will be served by this power project. Surplus power which may be available before the load in Central Bhutan picks up, will be exported to India by evacuating power into the Western grid.

Yonglachu Hydel Project (1 MW)Yonglachu Hydel Project (1 MW)

20.39 This project on Yonglachu will be implemented between 1994 and 1996. It will supply power to dzongkhag offices, schools, hospitals, veterinary and agriculture extension centres as well as the households of Lhuntsi Dzongkhags. The station will be designed to allow for the installation of an additional unit in the future, to meet increased demand.

Rangjung Hydel Project (1.1MW)Rangjung Hydel Project (1.1MW)

20.40 This project on Kathiri River near Radi in Tashigang will be started in 1992 and completed in 1993. Rangjung power plant will supplement the power generated by Chhenary and Khaling power stations. Rangjung Hydel Project will meet the increasing demand for power in Tashigang dzongkhag.

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Chhukha Tail Race Chhukha Tail Race

20.41 Although the Chhukha Hydel Plant was originally designed to have an installed capacity of 336 MW, it can be operated only to a maximum of 320 MW because the water level in the tail race tunnel reaches above the maximum designed level. In practice, the generation has been restricted to 310 MW for safety reason. The construction of an additional tail race tunnel would enable the Chhukha Hydel Corporation to generate power at the rated capacity. The construction will take 2 and a half years and the maximum additional revenue per annum at Nu 0.27 per kwh will be Nu 24.93 m.

Bunakha Reservoir Scheme Bunakha Reservoir Scheme

20.42 This scheme is intended to build extra storage capacity for additional power generation during lean months to increase peaking capacity in Chhukha Hydro Power Station. Construction of a 140 m dam at Bunakha is considered feasible. However, it will take 2 years to complete hydrological investigation and another 3 to 4 years for construction phase. The reservoir if constructed is expected to generate an extra 185 Mu of energy per year and rise the Chhukha power revenue by about Nu 50 m at Nu. 0.27 per kWh.

Chhukha II and Chhukha III Chhukha II and Chhukha III

20.43 Investigations for two large projects downstream from Chhukha will be completed in the early part of 7FYP. One of them will be a 1000 MW run of the river scheme with a diversion structure below Mebri and an underground power house below Tala. The other located near the border will have a 200 m high dam with a surface power station with an installed capacity of 600 MW. Regardless of which scheme is selected for implementation, project implementation will start only at the closing years of 7FYP and commissioned in the 8FYP.

Rural Electrification Rural Electrification

20.44 The Plan provides for the expansion of rural electrification during the 7FYP. The existing network will be extended into rural areas wherever there is excess power. However, much of the rural electrification programmes will depend firstly on the execution of generation projects and secondly on the installation of high voltage transmission lines to which low voltage subtransmission and distribution lines can be connected.

Transmission lines and associated substations, subtransmission and distribution lines Transmission lines and associated substations, subtransmission and distribution lines

20.45 High voltage transmission and associated substations are estimated to cost about Nu 1030 m. This cost includes the installation cost of the Eastern region grid, Central region grid, Simtokha-Basachu line and Basachu-Geylegphug line. The Subtransmission and distribution programme covers the establishment of low-voltage networks in the urban areas. A provision has been kept for the expansion of townships as well as emergence of new townships and realignments of lines where new townships are likely.

Power Master Plan and Hydrology Investigations Power Master Plan and Hydrology Investigations

20.46 The formulation of Power Master Plan was started in 1990 and will be completed by 1993. It will guide the future actions in the power sector. The Master Plan will produce a ranked list of potential hydro-power project sites. These sites have to be investigated in detail for investment decisions. In addition to investigation for power projects, hydrological investigation will include collection and dissemination of hydrological and meteorological data, both for use by the Department of Power and other agencies.

Unspecified Power Schemes Unspecified Power Schemes

20.47 Unspecified Power Schemes refers to three types of expenditure: (1) projects which are not yet firm and further details needs to be worked out; (2) expenditure on recommissioning of existing power plants; and (3) solar energy projects, wind and biogas energy projects and minihydro plants (such as the proposed Chhalori mini hydel project in pema Gatshel and Dongdichu mini hydel project in Tashi Yangtshi. Expenditure items on recommissioning

items will include purchase of new electro-mechanical parts; repair and modification of water conducting system; repair of turbine nozzles, blades and insulation of alternator and choke windings; improvement of control panel, switchgear and switchyard and manufacturer's consultancy service. Power plants which require major recommissioning works are:

- (1) Gidakom Hydel Station (1250 kW)
- (2) Paro Hydel Power House (400 kW)
- (3) Wangdi Hydel Power House (300 kW)
- (4) Chhenary Power House (750 kW)
- (5) Khalanzi Power House (390 kW)
- (6) Nagu Hydel Power House (50 kW)
- (7) Lhuntshi Power House (20 kW)
- (8) Thimphu Power House (360 kW)