

Forward

The process of planned economic development in Bhutan started more than a decade ago. With the decade ending March, 1971, we have implemented two Five Plans. We are now in the midst of our Third Five Year Plan which was launched in April, 1972.

This is the first time that we have printed our Plan document. With Our membership of the United Nations there has been an all-round increase of interest in Bhutan and it is, therefore, only appropriate that interested people should be able to know of our efforts to modernise our country and bring a measure of prosperity to our people.

We are following a system of Annual Plans which enables us to review the progress of various schemes and shift the priorities where necessary. In this context, it would not be much relevant to include year-wise phasing of various programmes and we have, therefore, in this document confined our selves only to the Plan outlay as a whole.

I take this opportunity to warmly thank the Government of India for their generous assistance not only in terms of money but also in providing technical personnel. While we are making determined efforts to plan our manpower requirements and orient the same to our development needs, it will be sometime before these efforts will bear fruit.

CHAPTER I

Introduction

1.1 The Kingdom of Bhutan, known as the 'Dragon Land' is situated in the heart of the Himalayas and has an area of about 18,000 sq. miles, roughly between 26.5 and 28.5 degree latitude and between 88 and 92 degree longitude. According to an ad-hoc census conducted in 1969, the population of Bhutan was ten lakhs of which the urban population would be about 30,000. The density of population is roughly 56 per square mile.

1.2 The whole country can be conveniently divided into three zones-- Southern, Central and Northern. The first zone covers the whole of Southern ranges upto a depth of 20 to 30 miles. The annual rainfall in this zone is excessive (over 200) and the vegetation is thick. The second zone consists of valleys at elevations between 3,500 and 10,000 feet with the annual rainfall ranging between 30" and 60 . The valleys towards East are at lesser elevations and have more rainfall. The Northern zone is rather thinly populated and has valleys at elevations over 10,000 ft. The peaks are generally covered with snow and the valleys are used for grazing in summer.

1.3 The main valleys where population is concentrated are Thimphu, Paro, Punakha, Ha, Chirang, Bumthang and Tashigang. The main rivers of Bhutan are Amochu (Torsa), Wangchu (Ryadak), Phochu (Sankosh) and Mandechu (Manas). Only Amochu or Torsa rises in Tibet and all these rivers flow into Brahmaputra in India. Climatic conditions and vegetation vary considerably between valleys.

1.4 The economy of Bhutan is mainly based on Agriculture and Animal Husbandry. The total area under cultivation is about nine lakh acres which constitutes about 9% of the total area. The livestock population is estimated at 5.9 lakh. About 70% of the total area is under dense forests, full of unexploited wealth. The main agricultural products are rice, wheat, buckwheat, barley, maize and potato. As for mineral resources, deposits of dolomite, lime stone, copper, graphite, gypsum, coal and pyrites are presently being explored and indications are that they exist in sizeable quantity.

1.5 Before the advent of planned development in Bhutan, the country's economy was characterized by extreme degree of isolation. Infrastructural facilities were conspicuous by their absence. Modern means of communication were completely lacking. There were no metalled roads, no motorized vehicles and no electricity. There was no Postal or Tele-communication system connecting the country with the outside world. Except for a few pockets here and there, all regions in Bhutan were self-sufficient in foodgrains, a small surplus of foodgrains being exchanged for salt and other essential articles from neighbouring countries. Every family had sufficient land, pigs, poultry and fruit trees which provided the varying content of the diet. The social amenities like Education, Medical and Public Health were meagre. There were 59 Primary Schools in the whole of Bhutan and no Junior or Higher Secondary School. There were four hospitals and eleven dispensaries and only two hospitals were under qualified Doctors, the others being manned by un-trained compounders. It was only towards the end of the fifties that Bhutan emerged out of its traditional isolation and decided to develop the country's economy on modern lines. Accordingly, the Royal Government of Bhutan, in consultation with the Planning Commission of India took to the path of planned economic development.

1.6 The two Five Year Plans, formulated in consultation with the Planning Commission, India, were launched in 1961 and 1966 respectively. These Plans were aimed at creating the basic infrastructural facilities like roads, power, communication system, transport and suitable administrative set-up, besides developing agriculture and animal husbandry. Against the approved outlay of Rs. 1,747 lakh under the First Plan an expenditure of Rs. 1,072 lakh was incurred. The shortfall in expenditure was mainly under the construction programmes. The expenditure during the Second Plan was Rs. 2,000 lakh. The entire expenditure under these plans was financed by the Government of India in the form of a grant. Government of India also provided the services of most of the technical personnel.

1.7 One of the important achievements of the First Two Plans has been the creation of infrastructural facilities. Over 1,000 kms of roads have been constructed. The 180 kms road linking Phuntsholing on the West Bengal border to Paro and Thimphu (Capital) has opened up Western Bhutan. The work is in final stages on the 520 kms, East-West lateral road between Ha and Tashlgang passing through the heart of the country and is expected to be opened for traffic soon. This will bring about greater integration between the Eastern and Western regions of Bhutan and will also open up the entire central area for economic development. The Bhutan Government Transport Service was organized in 1964 and has at present 31 passenger buses and 62 trucks. In 1962, a regular Postal Service was established in Bhutan and by the end of the Second Plan 28 Departmental and 5 extra Departmental Post Offices had been set up. These facilities are available at the Headquarters of Sub-Divisions in Southern Bhutan and at Dzong headquarters in the Central Bhutan. Seven Auto Telephone Exchanges were also established. A telegraph service is now available between the Capital town Thimphu and Siliguri in India. The Hydel Projects at Thimphu, Paro and Wangdiphodrang were completed. The foothill towns of Sarbhang, Bhur, Gaylegphug, Samdrup Jongkhar and Deothang were linked with the Assam Electricity Grid for supply of power. Detailed investigations were undertaken for the Chukha Hydel Project.

1.8 A Directorate was set up in 1961 for introducing modern techniques and practices in Agriculture. The main emphasis was laid on increasing food production by regional specialization of crops, provision of improved seeds, implements and fertilizers, introduction of new and improved varieties, popularisation of fruit and vegetable cultivation and research in new fields like apples, stone fruits etc. During the last decade, a large number of Agricultural Farms, Seed Multiplication Farms and Agricultural Research Stations in various agro-climatic conditions of the country have been set up. There are at present fifteen extension centres, nine demonstration-cum-seed multiplication farms, three agricultural research and extension stations, four orchards and one sericulture research station in the country. These research stations and extension farms have provided training to a sizeable number of farmers in modern methods of farming. Besides the conventional crops, Bhutan has taken to horticulture in a big way. For the first time, production of apples of delicious taste and varieties both at the Government and private farms has started. Foundations have thus been laid for an accelerated development of agriculture and horticulture and the country has good prospects of becoming self-sufficient in foodgrains and developing cash crops like apple, orange, potato and cardamom in a big way.

1.9 For the improvement of cattle, five livestock farms were set up during the First Plan. A cheese making plant was set up at (Gogona) Sa-Ganga. A Mithun breeding farm at Thromong and a small pisciculture unit were set up during the Second Plan period. A special unit for mule and horse breeding was opened at livestock farm, Bidung. Necessary steps were also taken to control the Gid disease of yaks and common diseases like rinderpest etc.

1.10 Twenty-eight Bhutanese boys were trained in India as Veterinary Compounders and Veterinary Assistants.

1.11 Many of the schemes for afforestation and soil conservation could not be implemented for want of trained personnel.

1.12 Social amenities were extended on a significant scale. The number of Schools increased from 59 in 1960-6] to 102 in 1970-71, including 15 Junior High Schools, 4 High Schools and 2 Public Schools. The total enrolment increased from 3,000 to over 9,000. Besides, the scope of the scholarship scheme introduced for sending Bhutanese students for education to India was also enlarged and the number of students presently receiving education in India is about 500 as against 140 in 1960-61. One Teachers'

Training Institute also started functioning at Samchi which provides training to 40 teachers a year. A technical school was also started for providing training in crafts like tailoring, motor mechanics, carpentry etc. to 160 students.

1.13 The number of Hospitals increased from 4 to 6 and dispensaries from 11 to 34 during 1961-71. B.C.G. vaccination and Malaria Eradication Programmes were undertaken. Vaccination against small-pox was also introduced during First Plan Period. A number of compounders and nurses were trained both in Bhutan and India.

1.14 Work on water supply scheme for Thimphu was undertaken in the Second Plan and will be completed in the early part of the Third Plan. Water supply schemes at eight other places were also started.

1.15 The capital town of Thimphu expanded very fast and has now a total population of about 10,000.

1.16 The work on the formulation of Plans and assessment of the past progress had hitherto been considerably handicapped due to the non-availability of statistical data. In the programmes for the Third Five Year Plan, however, a scheme to set up the statistical system has been introduced to overcome the difficulty.

1.17 The proposals for the Third Plan covering the period 1971-76 were discussed in great details at the highest level and the draft plan so prepared was discussed with the Technical Team of the Planning Commission, Government of India, which visited Bhutan in 1970. As a result of these discussions, a total outlay of Rs. 3,550 lakh was finalised for the Third Plan.

1.18 The Royal Government of Bhutan are grateful to the Government of India for their continued financial assistance for implementing the plans and also making available the services of its Planning Commission Experts in formulating the Plan. Towards the total plan outlay of Rs. 3,550 lakh the Government of India have agreed to contribute a sum of Rs. 3,300 lakh during 1971-76.

1.19 As a result of the progress made during earlier plans it is now possible, for the first time, for the country to meet a part of expenditure on Plan Projects. Thus while a sum of Rs. 3,300 lakh will be received from India as development aid, the balance of Rs. 250 lakh towards the Plan expenditure will be met out of domestic resources of the country.

1.20 For the successful implementation of Third Plan, it is considered necessary that keeping in view the overall frame-work of the Five Year Plan, annual plans should be prepared. Through the agency of annual plans, it would be possible to take into account the experience gained in the preceding years and strengthen areas which have lagged behind or divert resources to areas which may become more important. In preparing these annual plans, however, the financial outlay would be kept approximately one-fifth of the entire plan outlay.

1.21 Prior to 1971 there was no single agency which was exercising an overall control over the plan works by keeping watch over the successful implementation of plan schemes in progress or issuing directives on

plan programmes. With the increasing development activities, the need to have one central agency for the plan works became imperative. Accordingly, with a view to putting the process of planning on a more systematic basis, a high-powered Planning Commission has been set up presided over by the King of Bhutan and having as its members, among others all the Ministers of Government and the Representatives of His Majesty, the King in the Ministries of Finance and Development. Main functions of the Planning Commission are to:

- (a) spell out the overall plan objectives and approve Annual Plans
- (b) critically review the progress of plan programmes
- (c) decide upon the inter-sectoral priorities
- (d) select specific development schemes for implementation
- (e) project future needs for development and formulate future plans.

Thus with the setting up of the Planning Commission, it will be possible to have an objective oriented approach towards the process of country's socio economic development.

CHAPTER II

Third Five Year Plan

2.1 The Third Five Year Plan envisages a total outlay of Rs. 3,550 lakh. The sectoral allocation of this outlay is shown in Annexure-I. The summary position is as under:

Major Head of Development	Plan Outlay (Rupees in lakhs)
Agricultural Programme including Co-operation	797.00
Power	248.00
Industry and Mining	163.35
Transport and Communication	907.00
Social Services	1,085.50
Miscellaneous	349.15
Total	3,550.00

2.2 The main objectives set out in the Plan are:

- (i) Expansion of the agricultural production through intensive methods of cultivation, use of high yielding varieties of seeds, improved irrigation facilities etc.
- (ii) Setting up Co-operative Marketing Societies to eliminate middlemen and ensure fair prices to the farmers for their produce.
- (iii) Co-ordinated and concerted development of selected areas so that people feel the necessary impact of planning and development and thereby also rectifying existing regional imbalances to the extent possible.
- (iv) To improve and upgrade the local livestock by distributing good breeds of cattle, pigs, birds etc. and to extend veterinary facilities all over the country.
- (v) Continued development of the infrastructure facilities like construction of roads, bridges, power supply etc., for a rapid economic growth.
- (vi) Acceleration of the pace of industrial development through setting up of small-scale industries, medium industries, industrial estates and also providing incentive to private parties for establishing demand/resource based industries.

- (vii) Improvement of education facilities with emphasis on quality rather than on quantity.
- (viii) Provision of medical and health services with a view to extending them to more people, especially those living in interior regions.
- (ix) Providing special amenities in the Capital Town of Thimphu and develop it in a planned integrated manner.
- (x) Protection and preservation of ancient monuments.

2.3 The special agro-climatic features of Bhutan are ideal for the development of horticulture; Adequate provision has, therefore, been made in the plan for this purpose. The export of cardamom, oranges and potato is expected to go up with the expected increase in production during the Third Plan. The area under apples is expected to double and as a result the apple production is expected to be of a value of about Rs.2.5 crore by 1977. This expansion in apple production would, in consequence, generate additional economic activity and employment for the people. Production of cereals and pulses will also go up. Provision has also been made for organizing co-operative marketing societies to ensure optimum return to farmers by providing efficient marketing facilities, warehouses etc.

2.4 Soil conservation work is yet to be undertaken and a provision of Rs. 25 lakh has been made therefor. A provision of Rs. 70 lakh has also been made for intensive area development programme in the two valleys of Chirang in Southern Bhutan and Tashigang in Eastern Bhutan. This programme envisages an integrated development of agriculture, horticulture, forestry and animal husbandry supported by marketing, minor irrigation and training programmes. Provision has also been made for agricultural research, extension and training programme.

2.5 Under forests, emphasis has been laid on survey work, demarcation and preparation of working plans for afforestation, the progress on which has hitherto been slow. A forest utilization division is also to be created in organizing sales and to undertake intensive study and to pursue the setting up of forest based industries. 8,000 acres of plantation of valuable species will be raised as against 5,000 acres raised upto the end of the Second Plan.

2.6 The installed capacity of Hydel Projects will increase from 760 K.W. to 4,000 K.W. at the end of the Third Plan. In addition to the provision for the completion of various Hydel Projects a sum of Rs. 25.5 lakh has been provided for investigations and surveys. The Central Water and Power Commission, on their own, had carried out detailed investigation on Chukha Hydel Project. The Project offers prospects of cheap and abundant (250 M.W.) power for Bhutan. This Project will be taken up as and when the technical report is received and will be executed outside the Plan as no provision for the project could be made at this stage.

2.7 As regards industries and mineral development, in view of the limited domestic market and lack of technical manpower, emphasis is being laid at present on small and medium scale industries only. A few small scale industries are, therefore, proposed to be developed. Due emphasis will also be given on the preservation of traditional handicrafts. Detailed studies will, however, be carried out for the establishment of industries such as cement, paper etc. Exploitation of rich mineral resources, especially gypsum will also be considered. As and when technical feasibility of such industries is established they will be taken up outside the scope of the plan or the plan ceiling would be suitably modified.

2.8 The pace of work on the development of roads, transport and communication as mentioned in para 1.7 will be maintained. Substantial provision has also been made for the expansion of essential amenities in the country.

2.9 Under Education, greater emphasis will be laid on raising the level and quality of present education rather than on its expansion. While the present scheme for providing scholarships to deserving students for studies in India and other countries will continue, effective measures will be taken to create better education facilities within the country.

2.10 Under the Health Services Programmes, the hospital at Thimphu and three zonal hospitals will be expanded. Three new hospitals will be set up and a few rural dispensaries will also be converted into small hospitals. As a result of these measures, the bed strength will be raised to 343 as against 166 at present. Emphasis will be laid on the control of communicable diseases.

2.11 For the integrated development of Thimphu township, an outlay of Rs. 200 lakh has been made. Effective measures to encourage tourism have been envisaged in the plan and a provision of Rs. 17 lakh has been earmarked for the purpose. For the protection of ancient monuments, a provision of Rs. 15 lakh has been made in the Plan.

ANNEXURE-I THIRD FIVE YEAR PLAN OUTLAY

Head of Development	Outlay (Rupees in lakhs)
I. Agricultural Programme	
1. Agricultural Production	368.98
2. Minor Irrigation	100.00
3. Soil Conservation	25.00
4. Animal Husbandry	125.00
5. Forests	160.00
Total:	778.98
II. Co-operation	18.02
III. Power	248.00
IV. Industries and Mining	
1. Large & Medium Industries	43.33
2. Mineral Development	3.00
3. Village & Small Industries	117.02
Total:	163.35
V. Transport and Communication	
1. Roads	691.00
2. Road Transport	69.00
3. Posts & Telegraphs	130.00
4. Tourism	17.00
Total:	907.00

VI. Social Services

1. General Education	633.00
2. Technical Education	87.50
3. Health	286.00
4. Water Supply and Sanitation	59.00
5. Urban Development	20.00
Total:	1,085.50

VII. Miscellaneous

1. Publicity	27.00
2. Statistics	5.00
3. Development Headquarters	100.00
4. Capital Project	200.00
5. Protection and Preservation of Ancient Monuments	15.00
6. Planning Cell in the Office of the Representative of India	2.15
Total :	349.15

Grand Total: 3,550.00

CHAPTER III

Agricultural Programmes

3.1 Agricultural Production.

3.1.1 Agro-climatically Bhutan can be divided into two main regions viz., Sub-Tropical and Temperate. Sub-Tropical region is the foothill area upto an elevation of about 3,500 ft. The rivers Torsa, Rydak and Manas flatten out in this region. The soil in this region is full of boulders and has a porous surface. This creates typical land management problems. Stony soil, poor fertility and low moisture content make rabi cultivation rather uncertain. Where the land is well terraced, the crop yields are good. The main cash crops are arecanut, cardamom, orange, lemon, mango, litchi and pineapple. The temperate region consists of land at elevations between 3,500 and 13,000 ft. In this region, great prospects of developing horticulture have been realized. The main agricultural crops of this region are paddy, wheat, maize, barley and potato. In higher valleys, double cropping is more common. Thus paddy crop is followed by wheat or barley crops. Rice is generally sown by about April and harvested in early October. Wheat or barley is immediately sown after a gap of 20 days and is harvested in June next.

3.1.2 The cultivated area in Bhutan is roughly 9 lakh acres which is about 9% of the total geographical area. It is estimated that about one lakh acres are left fallow every year and an equal area is under double cropping. Thus the total cropped area may be taken as nine lakh acres. Distribution of this area under different crops is estimated and is given below along with the estimated annual production at present:

Crop	Area in acres	Annual production (in tons)
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Paddy	4,50,000	2,50,000
Wheat	1,50,000	55,000
Maize	1,30,000	50,000
Barley	20,000	7,000
Buckwheat	10,000	4,000
Millet	10,000	4,000
Mustard	10,000	2,000
Total field crops	7,80,000	3,72,000
Cardamom	4,000	300
Potato & Vegetables	45,000	90,000
Fruits	30,000	10,000
Miscellaneous	41,000	10,000
Total other crops	1,20,000	1,10,300

3.1.3 During the Third Five Year Plan, continued emphasis will be laid on increasing agricultural production through regional specialization and adoption of intensive and improved methods of cultivation, use of high yielding varieties of seeds, development of local manurial resources and use of fertilizers, provision of increased irrigation facilities, use of better and efficient farm machinery, intensification of plant protection measures and extension of area under multiple cropping. Special emphasis will be laid on the development of horticulture. More area will be brought under apple, orange, walnut and arecanut production. Cultivation of potato and vegetables will also be given more emphasis.

3.1.4 Additional area of 10,000 acres will be brought under irrigation. A further area of 10,000 acres of cultivable waste is expected to be available for cultivation as a result of irrigation works. Soil conservation measures will cover an area of 2,000 acres. An additional area of 25,000 acres will be brought under fruits, vegetables and spices cultivation. As a result of these measures, production of vegetables and fruits is expected to be augmented sizeably.

3.1.5 During the first two plans, a general awareness of improved agriculture practices through extension services was disseminated to the farmers and basic spade work to put agriculture on a sound footing for future development was initiated. Some of the important measures undertaken to increase the agricultural production were development of irrigation channels, distribution of improved seeds/seedlings, supply of fertilizers and extensive demonstrations to the farmers on improved and effective agricultural practices. Three Agricultural Research Stations at Lungtenphu, Bhur and Kanglung covering 26,250 and 38 acres of land respectively, were set up. At these stations about 40 varieties of paddy, 25 of wheat, 10 of barley, 5 of oats and a large varieties of vegetables were tried and the high yielding varieties suitable for different regions were determined. For the development of horticulture also, three Research Stations at Yusipan, Bumthang and Kanglung were established where significant work was done in several fields. A very good start was made at Yusipang in developing the apple production. With extensive research carried out at these stations the perfected know-how was propagated amongst the farmers through fifteen extension centres established at Thimphu, Paro, Wangdiphodrang, Bhur, Shemgang, Mongar, Tashigang, Samdrup Jongkhar, Gay]egphug, Sarbhang, Chirang, Kalikhola, Samchi, Sibsoo and Ghumaoney. For the production of improved seeds and planting materials for distribution amongst farmers nine Demonstration-cum-Seed Multiplication Farms at Paro, Wangdiphodrang, Bumthang, Shemgang, Mongar, Chirang, Samchi, Kalikhola and Tashi Yangtshi were set up. A model Orchard at Gasa, a Nursery at Ahaley, two Orchards-cum-Nurseries at Wangdiphodrang and Bhur and a Farm at Yusipang were also set up. Through this organizational network established during the first two plans, a countrywide programme of agricultural development was initiated. An account of the significant achievements made during the period is given below:

(a) New area brought under agriculture	2,000 acres
(b) New area brought under orchards	1,300 acres
(c) Fruit plants distributed	1,37,500 nos.
(d) Cost of tools etc. supplied for	Rs. 50 lakhs
(e) Cost of tools etc. distributed at subsidized rates	Rs. 1.40 lakhs
(f) Distribution of improved seeds (during 1969-70)	
(i) Paddy	49 quintals
(ii) Wheat	274 quintals
(iii) Maiz	3 quintals
(iv) Other crops	1 quintal
(g) Supply of fertilizers	500 tons
(h) Demonstrations carried out	1,800 nos.
(i) Area covered under pest control measu	5,265 acres
(j) Skilled fieldmen/gardeners trained	90 nos.
(k) Irrigation schemes taken up	31 nos.

3.1.6 Scheme-wise programme in the field of agricultural production for the Third Plan are given below. A summary of scheme-wise allocation is shown in Annexure-II.

3.1.6.1 Direction: This Scheme is designed to provide an overall control and supervision of programmes relating to agricultural production, minor irrigation, soil conservation and co-operation. A provision of Rs. 18.84 lakh has been made to meet the expenditure on pay and allowances etc.

3.1.6.2 Training: There are three Training Centres. The number of trainees is to be increased to 20 in each centre. In order to meet the growing need of suitably trained persons at all levels, the programme of training has been duly emphasized and a provision of Rs. 10.82 lakh has been made under the Scheme.

3.1.6.3 Agricultural Research: The existing Research Stations will be provided with better facilities. These stations will be engaged in isolation and evolution of improved varieties for different regions, standardization of cultural, manurial and soil management practices for the approved varieties. Test trials on the efficacy of insecticides and pesticides will be conducted with a view to employing effective pest control measures. These research stations will also produce seeds of needed varieties in sufficient quantities for supply to the cultivators.

3.1.6.4 Agricultural Extension: Efforts will be continued to familiarize farmers with improved farming practices through organized demonstrations, talks, exhibitions and audio-visual aids. The extension programme will also ensure supply of seeds, fertilizers and farm machinery to the cultivators. A sum of Rs. 86.40 lakh has been allocated for this Scheme.

3.1.6.5 Horticultural Research: Much headway has already been made in horticultural research and the results are promising. These efforts will continue by way of consolidating the activities of the existing three research stations. Emphasis would be laid on production of disease-free planting material. As the production is likely to increase considerably, suitable storage and preservation facilities will be created. A provision of Rs. 24.10 lakh has been made for this Scheme.

3.1.6.6 Horticultural Extension: In order to assist and guide the farmers in orchard management,

distribution of fruit plants and vegetable seeds, advice on improved methods of vegetable cultivation and plant protection, extension service will be provided to the vegetable and fruit growers. Out of a total provision of Rs. 35.40 lakh for this Scheme, Rs. 10 lakh will be utilised for strengthening the existing nurseries and to set up smaller nurseries in new areas.

3.1.6.7 Plant Protection: With the increasing area under cultivation of vegetables and fruits, intensification of plant protection measures is necessary. Incidence of disease and pests is more in the Eastern and Southern Bhutan and this programme will take note of this fact. The field staff will arrange demonstrations and supply chemicals to farmers. A provision of Rs. 15 lakh has been made for this Scheme.

3.1.6. Development of Manurial Resources and Supply of Fertilizers: The farmers have in greater number started using fertilizers and the demand for fertilizer will keep on growing. It is considered necessary to continue providing fertilizers to farmers at subsidized rates. In order to maintain a good level of organic matter in the soil, the farmers will be supplied with green manure plant seeds. Besides, it is also necessary to propagate and popularize amongst farmers the techniques of making rich composts. Proper compost pits will be dug and demonstrations will be carried out for the development of manure. A provision of Rs. 20 lakh has been made.

3.1.6.9 Distribution of Improved Seeds: Seed being the most vital element in increasing the agricultural production, the agricultural research stations will develop and raise sufficient quantity of improved varieties of seeds and with the available extension services, these will be distributed amongst farmers. A provision of Rs. 10 lakh has been made under this Scheme.

3.1.6.10 Farm Machinery and Field Workshops: Response of farmers to mechanized farming has been very good and the demand for farm machinery will continue to increase. In consequence facilities for repair works will also be required for which field workshops will be set up. A provision of Rs. 12.45 lakh for purchase and supply of farm machinery and setting up of field work shops has been made.

3.1.6.11 Distribution of Fruit Plants and Seeds: This Scheme has given good results already and the programme will be continued during the Third Plan. A sum of Rs. 6 lakh will be available for the Scheme.

3.1.6.12 Endiculture and Sericulture: The local woven cloth is a speciality of Bhutan. The raw material viz. endi and silk are imported at present, although possibilities to produce them locally exist. During the Third Plan, two centres at Phomsing and Kanglung will be started. A provision of Rs. 11.97 lakh has been made for the Scheme.

3.1.6.13 Intensive Valley Development: In keeping with the policy of Government to intensify development in the two valleys of Chirang and Tashigang, an intensive agricultural development programme is proposed to be launched during the Third Plan. The measures undertaken in this respect would give an impetus to the economy of the country. Special emphasis is to be laid on preparation of individual farm plans to create in the farmer a desire to use the facilities made available to him and arouse his interest by proper publicity and demonstration and thereby move him from traditional methods towards improved technology. To achieve the above objective, it is necessary to provide the farmers with improved seeds, fertilizers, chemicals and farm machinery at reasonable rates and extend them credit facilities for buying the required materials and seeds and disseminate among them technical know-how.

Some other aspects of rural development like sanitation and night-soil composting will also be taken up side by side. In addition to the existing field staff an Agriculture Development Officer, Sub-Inspectors and field men will have to be appointed who will move from one farm to the other in the village and will have personal contacts with the farmers to look into their problems and acquaint them with modern techniques of agriculture production. Two Assistant Engineer Officers with six Section Officers will be appointed for survey and execution of Irrigation Projects. A provision of Rs. 70 lakh has been made in the Third Five Year Plan for this Scheme.

3.1.6.14 Bondey Farm: An Agricultural-cum-Horticulture farm at Bondey, Paro, is functioning under a Colombo Plan Expert. During the Third Plan, the following programmes will be undertaken in this farm:

- (i) Continued maintenance of model farm
- (ii) Bringing in more area under cultivation through land reclamation and improvement in irrigation facilities
- (iii) Purchase of farm machinery and construction of buildings and
- (iv) Giving guidance to villagers.

A sum of Rs. 20 lakh has been provided.

3.1.6.15 Development of Walnut and Progeny Orchard: Bhutan grows native walnut. Samples of some local fruits tested at Bondey Farm showed that they are of good quality and size. Walnut production is a promising venture and can be cultivated in areas which are waste lands having little of top soil. In order to lay a good scientific foundation for walnut production it is important that a Progeny Orchard is developed. During the Third Plan, a Progeny Orchard of 100 acres will be developed at Yusipang. A provision of Rs. 1 lakh has been made for this Scheme.

3.1.6.16 Visit of Experts: For the expanding activities on research, help of ICAR Project Co-ordinators in the field of rice, wheat, vegetables and fruits will be necessary. In order to meet such expenses as would be necessary for the availability of the experts, a separate provision of Rs. 0.25 lakh has been made.

3.1.6.17 Purchase of Bullocks: Rinderpest and other cattle diseases appear in epidemic form in certain areas and claim a heavy toll of cattle life. During 1969, the farmers in Thimphu, Wangdiphodrang, Punakha and Southern Bhutan lost a number of their animals. Under this Scheme such needy farmers are to be supplied with bullocks free of cost. A provision of Rs. 5 lakh has been made for this Scheme.

3.2 Minor Irrigation

3.2.1 The importance of Irrigation in agriculture is obvious. Irrigation plays a vital role in all intensive agricultural production programmes. In Bhutan, the primary source of water for irrigation is the hill streams which have to be diverted into Irrigation Channels constructed along the contours of the hill slopes. During the Second Plan, 10 Projects were completed and 21 Projects were in different stages of execution. During the Third Plan, it is proposed to complete these 21 Projects and take up new Projects. About 10,000 acres of cultivated area is expected to be brought under irrigation during the Third Plan as a result of this Scheme. A provision of Rs. 100 lakh has been made in the plan which also includes the provision for pay and allowances of the establishment, buildings etc.

3.3 Soil Conservation

3.3.1 Scientific Soil Conservation has yet to start in Bhutan. Cultivation is generally done on hill slopes which are badly prone to soil erosion. This results in heavy loss of top soil and the fertility is affected. A check on the soil erosion is, therefore, a significant measure for improving crop production.

3.3.2 During the Third Plan Period, a Soil Conservation Unit will be set up which will assist the farmers in adopting soil conservation measures, viz. terracing of land, contour bunding and planting soil binding grass and trees. The main activities under the scheme would be:

- (a) Investigations for preventing soil erosion in special areas.
- (b) Technical and financial assistance to farmers in terracing the land.
- (c) Measures to check stream bank erosion in selected areas.
- (d) Construction of soil erosion prevention structures like spill-ways, rock-fill dams, check dams etc. in selected areas.
- (e) Planning for soil binding.

A provision of Rs. 25 lakh has been made for the Scheme.

3.4 Animal Husbandry

3.4.1 Livestock plays a vital role in the country's economy which has been agricultural and pastoral all over the ages. Organized efforts to improve the livestock and their productivity were only started in 1961 when an establishment to look after animal husbandry was set up. Unfortunately, no significant progress could be made so far to accurately assess the quality, grades, productivity etc. of the livestock. The rough estimate of the livestock population in the country is as under:

(a) Cattle including yak	2.38 lakh
(b) Sheep	0.40 lakh
(c) Goat	0.10 lakh
(d) Horse, mule and donkey	0.52 lakh
(e) Pig	1.00 lakh
(f) Poultry	1.50 lakh
Total:	5.90 lakh

3.4.2 The main species of Bovines in Bhutan comprise the Yaks, Mithuns and Siri cattle. Yaks are localised in higher altitudes in the Northern parts of Bhutan. They play a vital role in the country's economy and have multi purpose utility as they provide milk for cheese and butter, meat, hair, dung cakes for fuel and facility for transport. The Mithuns are very popular and are maintained for milk production. The average milk production of Mithuns is estimated around 2.5 kg. per day. Siri cattle are known for their draught power and ability to thrive on scanty grazings, over steep slopes. It is believed that they have hard and sure feet to graze in such areas but they are poor milk yielders and it is estimated that they yield only one kg. milk per day per cattle.

3.4.3 The local sheep in Bhutan are also poor in respect of both the quality and yield of wool. The wool of these sheep is of coarse variety and the average yield per sheep is only about two pounds annually. The pigs and poultry though found in large numbers are not good producers of meat and eggs respectively. The annual production of local poultry is only around sixty eggs per hen.

3.4.4 During the First Plan, schemes for increasing milk production, draught power, meat, eggs, pork, wool etc. were initiated. In view of the stoppage of wool from Tibet, it was envisaged to develop both the quality and quantity of wool produced by local sheep. For the development of Siri cattle a policy of

selective breeding was adopted. In the Southern and Eastern regions where cattle are non-descript, cross-breeding with red Sindhi and Haryana breeds of cattle from India was taken up. Murrah bulls from India were also introduced for upgrading local buffaloes in the border areas. Establishment of four veterinary dispensaries was taken up to provide veterinary aid and control of epidemics. Five livestock farms were established for production of superior breeding stock. The bulls at the livestock farms were made available for breeding purposes.

3.4.5 During the Second Plan, all the activities taken up during the First Plan were intensified. One Mithun Breeding Farm was established at Thromong. A Cheese making plant was also set up under the guidance of Swiss Expert at Gogona. A Sheep Breeding Farm was established at Mera. A special unit of Mule and Horse breeding was opened at the Livestock Farm, Bidung. Sheep breeding and development activities were taken up in Khaling. A total of 800 improved piglets, cattle and some birds for poultry were distributed among villagers around Paro, Samchi, Thimphu and Bidung during the Second Plan. Jersey and Mithun bulls located at Livestock Farm were made available to public for breeding their cows. The working of livestock farms was improved and more land available in various farms was brought under cultivation to produce fodder for the cattle. Necessary steps were taken to control the cattle diseases like Gid, Rinderpest, Haemorrhagic Septicaemia and Anthrax. A total number of 8,865 livestock were vaccinated against various diseases during the Second Plan. Twenty-eight Bhutanese boys were trained as veterinary compounders, veterinary field assistants and livestock assistants. Training was also imparted to local boys in dairy, poultry and piggery management at live stock farm? Samchi. Veterinary facilities to the public were provided at four livestock farms.

3.4.6 The quantum of progress made under different schemes was not upto expectations due to shortage of technical staff, inadequate funds and lack of certain essential facilities like buildings, water supply and electricity. The Department also experienced great difficulty in obtaining foundation stock for its various farms. Shortage of vaccines and other biological products was also felt. This was largely due to the initial teething troubles and lack of organisation. These problems have now been overcome and arrangements for procurement of vaccines etc. placed on a sure footing. The vaccination programme against Rinderpest has already been taken up.

3.4.7 During the Third Plan, the existing Livestock Farms will be reorganized by increasing the number of breeding stock to about 100. Cattle improvement programmes will be intensified in suitable pockets where marketing facilities for milk exist. For Sheep Development, the Sheep Breeding Farms will also be strengthened. During the Third Plan, good quality wool production is expected to go up.

Emphasis on the poultry development programmes would be to increase the egg production through distribution of birds to private poultry keepers. The production of farm-bred stock of saddleback Pigs will be increased for their distribution to farmers. In order to check the livestock diseases, intensive vaccination programme will be launched and in order to provide adequate health cover to the improved livestock, 10 more veterinary dispensaries will be opened. A disease investigation laboratory will also be set up. At all the Livestock Farms the available cultivable land will be fully exploited for the production of good quality fodder to meet requirements of feed for farm stock. This would also minimize expenditure on the purchase of feed. Only cheap and essential construction works will be undertaken.

3.4.8 In all 27 schemes have been drawn for the Animal Husbandry. Annexure-III gives the details of the allocations made for each scheme out of the total outlay of Rs. 125 lakh for this programme. The details of various schemes are as under:

3.4.8.1 Direction: The establishment under this scheme will exercise an overall supervision and guide the

activities under different schemes. A provision of Rs. 16.09 lakh has been made which would cover the expenses on pay and allowances, buildings for the staff etc.

3.4.8.2 (1) Livestock Farm, Samchi: This farm has an area of about 100 acres. There are 62 cattle, 771 birds and 39 pigs at present. The farm will be extended to have breeding stock of 30 cows by adding more land. The piggery unit will be strengthened. Fodder cultivation will receive special attention. Each year 30 bulls produced or purchased and reared at this farm will be distributed.

(2) Livestock Farm, Paro: (This farm has an area of about 32 acres. There are 41 pigs and 522 birds at present. This farm will be expanded to be able to distribute 2,000 birds and 4,000 hatching eggs each year.

(3) Livestock Farm, Bidung: (This farm has an area of 150 acres of land and another 150 acres are to be added soon. There are 32 cattle, 22 horses and mules, 11 pigs and 182 birds at present. It is proposed to increase the breeding stock of cattle at the farm to 100. This farm will be expanded to have 100 breeding livestock. The farm will distribute 20 bulls every year and a total of 100 bulls during the plan period.

(4) Livestock Farm, Thimphu: This farm is for the purpose of up grading local cattle and providing milk to Thimphu town. The farm has 77 acres of land and at present there are 40 cattle and 37 pigs at the farm. It is proposed to add 50 acres of land to this farm. This will raise the breedable cattle strength to 100. The farm will distribute 20 bulls every year; a total of 100 bulls during the plan period.

(5) Livestock Farm, Lingmethan: This farm has an area of 145 acres and is to be developed for a carrying capacity of 200 equines and bovines. At present, there are only 166 pigs at the farm. The farm will distribute 15 bulls every year; a total of 75 bulls during the plan period.

(6) Livestock Farm, Chirang: This farm will have an area of 300 acres of land. In the initial stages, the farm will function as a rearing and distribution centre for breeding stud animals. Subsequently, 50 cows and 3 bulls will be purchased as foundation breeding stock for the farm. The farm will distribute 30 bulls every year and a total of 150 bulls in 5 years.

3.4.8.3 Mithun Breeding Farm, Thromong: The farm has an area of 100 acres of land and at present there are 23 cattle at the farm. The livestock strength is proposed to be expanded to produce 20 bulls every year. The farm will distribute 20 Mithun bulls every year and a total of 100 bulls in 5 years.

3.4.8.4 Sheep Breeding Farm, Mera/Khaling: The object of this farm is to upgrade the local sheep and to improve the yield and quality of wool. The farm has 25 acres of land at Khaling and 100 acres at Mera. There are at present 294 Rampur Bushair sheep at the farm and it is programmed to distribute 50 rams every year and a total of 250 rams in five years.

3.4.8.5 Veterinary Dispensaries: During the earlier plans, veterinary services were made available at some of the livestock farms in a limited way. As a separate entity the veterinary dispensaries were set up at Phuntsholing and Deothang only. During the Third Plan the veterinary cover will be strengthened by

setting up dispensaries independently and not as a part of the farms. Accordingly, ten new veterinary dispensaries will be set up. These will be located at (i) Samchi, (ii) Thimphu, (iii) Paro, (iv) Gaylegphug, (v) Chirang, (vi) Tongsa, (vii) Shemgang, (viii) Kurteo, (ix) Dorakha and (x) Wangdiphodrang. These dispensaries will control diseases among animals and also work for the animal husbandry development programme. Breeding bulls and artificial insemination laboratory will be located at these dispensaries to provide facilities for breeding local cows/buffaloes.

3.4.8.6 Training in Animal Husbandry: The Department of Animal Husbandry is entrusted with the responsibility of training of personnel for veterinary compounders, veterinary assistants and livestock assistants. About 40 local boys will be trained in various aspects of animal husbandry. Refresher training will be imparted to the farm managers and two persons will receive training in livestock farm management and sheep husbandry respectively, for a period of 6 months at a suitable institution in India. Veterinary Assistant Surgeons not having specialised training will undergo a practical training for a period of two months at Indian Veterinary Research Institute, Izatnagar, Bareilly. Senior Technical Officers engaged in different fields of livestock development would be provided an opportunity to attend various workshops and seminars organized by Indian Council of Agricultural Research, New Delhi and Department of Agriculture, Government of India.

3.4.8.7 Pisciculture: Special emphasis will be laid on breeding trouts for stocking of rivers in Bhutan. In addition to one pisciculture unit at Ha in western region, one more hatchery tank will be constructed in the country for hatching trout fingerlings. The hatchery unit will also meet the demand of trout fingerlings in the neighbouring States of India.

3.4.8.8 Yak Disease Eradication: The gid disease in Yaks is fairly widespread. During the Third Plan, campaign to eradicate the disease will be further intensified.

3.4.8.9 Disease Investigation Laboratory: In order to provide necessary support in treatment and control of disease a Diagnostic Laboratory is necessary. A disease investigation laboratory at Thimphu will be opened with an outlay of Rs. 2.21 lakh.

3.4.8.10 Visit of Experts: A provision of Rs. 0.20 lakh has been made to meet the expenses on visit of experts.

3.5 Forests

3.5.1 The area under forests is about 70% of the total area of the country. Broadly speaking the following seven types of forests are identified:

(I) East Himalayan Tropical and Sub-Tropical Forests

This type abuts the Indian border. The vegetation is of semi-evergreen broadleaved type, wherein three or more association can be recognised, namely, the phoebe-melia, Duabanga tetrameles, Chickressia Reilsimiedla, and phoebe Engelhardtia Bolischimedia. There are also some forests of sal in the lower elevations. The important timber trees are Shorea Robusta (Sal), Duabanga sonneratioides, Chickressia tabularies, phoebe goalparonsis, Terminalis myriocarpa Ammora Wallichii and Acrocarpus Fraxinifolius.

(2) East Himalayan Pines Roxburghil Type

This occupies areas from about 3,000 feet to 6,000 feet or so, in some places upto 8,000 feet on southern exposures; on ridges it comes down to 2,000 feet. The main species is pinus Roxburghil (chir pine), with abundant undergrowth of lemon grass (*Cymbopogon flexuosus*). This type is found only in the eastern region, specially in the Manas valley.

(3) East Himalayan West Temperate Type

This type extends from 6,000 feet. The main species are the Oaks (*Quercus pachyphylla*, *Quercus Lamellose*, *Quercus Fenestrata*, *Spicata* etc.). *Acer camphellii*, *Michillia* species along with *phoebe paniculata*, *Buchlandia populnea*, *Castanopsis hystrix* and *Betula* species etc.

(4) East Himalayan Mixed Conifers

These extend from about 8,000 feet to 10,000 feet. The main species are the Tsuga and Abies and Blue Pine. The important trees are *Abies dense*, *Abies Spectabilis*, *Picea Spinulosa*, *Tsuga dumora*, *Pinus Wallichiana* is gregarious over considerable areas, and mixed with other species, including *Taxus baccata*, *Larix griffithii*, *Junipers*, etc., in other places.

(5) East Himalayan Dry Temperate Conifers

This type occurs from about 9,000 feet to about 12,000 feet. The main species are Hamlock, Sorce, Blue Pine, Silver Fir and Juniper.

(6) This is mainly Birch and Fir forests.

(7) Alpine pastures, usually existing from 13,500 feet to 16,000 feet in altitude.

3.5.2 The area of forests exploited so far is not more than 8% of the total forests area and there are considerable stands of virgin forests. Organized forests exploitation had started in Bhutan in 1956 with the appointment of a retired Forest Officer from Bengal who was employed to work on commission basis and served upto 1962. The First Plan envisaged strengthening of the departmental organization including training of local personnel, survey and demarcation of forests, preparation of working schemes for the immediate exploitation of forests in the southern belt and working plans for the development of forest in the valleys of Paro, Ha and Thimphu, survey of forest resources for paper and pulp industry, plantations, construction of forest roads and silvicultural operations in already exploited forests of southern Bhutan etc. Due to the nonavailability of personnel, initial organizational problems, lack of forest roads, most of the scheme could not be implemented and against a proposed outlay of Rs. 50 lakh on forestry an expenditure of only Rs. 2.9 lakh was incurred during the First Plan period. The objectives of the Second Plan generally followed those of the First Plan. The situation improved later considerably during the Second Plan period and against an outlay of Rs. 88.5 lakh the expenditure was Rs. 71.34 lakh. The First Plan had envisaged, besides a Conservator of Forests, three Divisional Forest Officers in addition to three working plan officers. Against this in 1970 there is one Conservator of Forests assisted by two Divisional Forest Officers. The progress in raising plantations, opening up of forest roads, etc., has been satisfactory according to the prescribed targets. However, progress in survey, demarcation and work relating to the preparation of working plans has been very slow. At present the only forest working plans are for the southern forests which cover an approximate area of about 3,100 sq. kms. The forests in Bhutan are all State-owned. Special mention deserves to be made of the Bhutan Forests Act, 1969, which has been brought into effect from November 1, 1969. This is an enactment of far-reaching importance and should be able to preserve this important natural resource in Bhutan in the vital national interests. Besides,

declaring the forests as Government reserved forests, the Act also regulates shifting cultivation and grants of rights and concession of timber etc.

3.5.3 During the Third Plan the objectives are:

- (a) To give top priority to survey of forest resources, land use and soil erosion, which is considered to be the basis for a proper planting and development of forest, forest-based industries and land use;
- (b) To give high- priority to survey and demarcation of forests which could not be taken up during the First and Second Plans;
- (c) For a proper and scientific management of forests, to regulate the felling of trees according to yield as prescribed by the working plan, provision is being made for immediate creation of a Working Plan Division with headquarters at Paro. Preparation of working plan coupled with survey and demarcation of Thimphu Division will be taken up first;
- (d) To create a new territorial division with headquarters at Samdrup Jongkhar or Deothang which will cover about half of the area of the present Sarbhang Division. At present with the creation of Tashigang and Tongsa ranges and increase in developmental activities in eastern Bhutan, the present area of Sarbhang Division has become very unwieldy;
- (e) Creation of a Forest Utilisation Division specially to help in organizing sales and to intensively study and pursue the question of forest-based industries;
- (f) To construct forest roads and extraction paths. It is necessary to tap the forest resources of the interior to increase revenue from the forest;
- (g) To give training to local people at various levels both within and outside the country; and
- (h) To raise plantations of valuable species in the valley of Paro, Thimphu and Tashigang. Bulk of the mature trees in the accessible areas in southern Bhutan has depleted due to excessive fallings. The target of Third Plan is to raise 8,000 acres of plantation as against 5,000 acres raised upto the end of the Second Plan.

3.5.4 An outlay of Rs. 160 lakh has been finalised. A scheme-wise allocation of this outlay is as under:

Scheme	Plan Outlay (Rs. in lakhs)
1. Direction	62.00
2. Survey of forest resources and land use survey	25.00
3. Training	5.90
4. Survey and Demarcation	5.00
5. Exploitation of forests	12.10
6. Afforestation	15.00
7. Roads and paths	13.50
8. Silviculture operations	2.00
9. Forest Industries	0.50
10. Construction of buildings	14.00
11. Wild Life Sanctuary	5.00
Total :	160.00

ANNEXURE-II AGRICULTURAL PRODUCTION

Name of Scheme	Plan Allocation (Rs. in lakhs)
1. Direction	18.84
2. Training	10.82
3. Agricultural Research	21.75
4. Agricultural Extension	86.40
5. Horticultural Research	24.10
6. Horticultural Extension	35.40
7. Plant Protection	15.00
8. Development of Manurial Resources & Supply of Fertilizers	20.00
9. Distribution of Improved Seed	10.00
10. Farm Machinery and Field Workshop	12.45
11. Distribution of Fruit Plants & Seeds	6.00
12. Endiculture and Sericulture	11.97
13. Intensive Valley Development	70.00
14. Bongdey Farm	20.00
15. Development of Walnut and Progeny Orchard	1.00
16. Visit of Experts	0.25
17. Purchase of Bullocks	5.00
Total:	368.98

ANNEXURE-III ANIMAL HUSBANDRY

Name of Scheme	Plan Allocation (Rs. in lakhs)
1. Direction	16.09
2. Livestock Farms	
(a) Samchi	10.84
(b) Paro	4.59
(c) Bidung	9.39
(d) Thimphu	11.60
(e) Lingmethang	7.18
(f) Chirang	9.22
3. Sheep Breeding Farm, Mera/Khaling	6.19
4. Mithun Breeding Farm, Thromong	5.60
5. Veterinary Dispensaries	
(a) Deothang	2.08
(b) Phuntsholing	2.84
(c) Samchi	3.03
(d) Thimphu	4.08
(e) Paro	3.58
(f) Gaylegphug	1.86
(g) Chirang	4.00
(h) Tashigang	1.76
(i) Shemgang	1.87

(j) Dorakha	1.83
(k) Wangdiphodrang	1.87
(l) Kurteo	1.48
6. Mass Vaccination and Mobile Dispensary, Sarbhang	6.90
7. Pisciculture Unit	3.21
8. Yak Disease Eradication	1.20
9. Disease Investigation Laboratory	2.21
10. Training in Animal Husbandry	0.30
11. Visit of Experts	0.20
Total:	125.00

CHAPTER IV

Co-operation

4.1 It has been experienced in the past that farmers have not been getting a fair price for their produce. As has been noticed almost everywhere this class finds itself at the mercy of the middlemen who advance money and purchase crops even before they are ready. This invariably results in crops being sold at unfair prices. Farmers also cannot afford to wait for long to obtain a fair price for their produce because of their poor financial position as also for the reason that the produce may deteriorate with the passage of time. While thus on one hand, developmental measures being undertaken by Government are leading to increased production, the resultant benefit is going largely to the middlemen and that too not from Bhutan. It has thus become necessary that some measures should be taken to ensure that the farmers get their legitimate due. To this end, it would be necessary that the middlemen are eliminated as far as possible. It has, therefore, been decided to start three Co-operative Marketing Societies at Samdrup Jongkhar, Sarbhang and Phuntsholing. They will be on a voluntary basis. To give technical guidance and help, Co-operative Marketing Officers would be appointed at all these places. Stores facilities will also be provided. Co-operative Marketing Officers would keep touch with the prospective customers in the neighbouring Indian territory and enter into suitable arrangements for the supply of various agricultural items produced in Bhutan. This would, to a large extent, eliminate the middlemen and the farmers will be able to get a fair price for their produce. In course of time when the success of the scheme is felt, more and more farmers are expected to join it. A provision of Rs. 18.02 lakh has been made under this head.

CHAPTER V

Power

5.1 Traversed by numerous rivers cutting through steep hill slopes and deep valleys, Bhutan is gifted with a great potential for the generation of power. Prior to 1960, except for the limited exploitation of this hydropotential for turning indigenous turbine wheels of rice hullers, grinders etc., no large scale exploitation was attempted. Due to the inaccessibility and the lack of technical man-power, no progress could be made in collecting technical data on rivers with a view to exploiting them on a large scale. Recently, attempts have been made to map the details and collect comprehensive data on these rivers.

Detailed data have since been collected by the Central Water and Power Commission of India on Wangchu basin in the west on the main highway connecting the base town Phuntsholing and Thimphu. Near Chukha village on this river, more detailed investigations have been carried out with a view to setting up a major hydroelectric project. The technical feasibility of this project has since been established. When completed the Chukha Project will have a generating capacity of 250 M.W. with scope of expansion and will as such be a major source of power. As the project will have considerable financial implications (over Rs. 30 crore) the question of taking up this project and its financing is under active consideration of the Government.

5.2 The development programmes as envisaged in the earlier plans had taken into consideration the poor communication system and small and uncertain load growth in various consumption centres. Micro-Hydel Projects were, therefore, taken up which not only permitted quick construction and quick return but created a climate for power demand. During the First and Second Plans, substantial progress has been made. Three micro-hydels at Thimphu, Paro and Wangdiphodrang have been completed. All these Stations are in the western region. At Thimphu the demand has already outgrown the supply and acute power shortage is being experienced. The demand growth rate is estimated as 100 K.W. per year. At Paro and Wangdiphodrang, the power shortage is not immediately felt. Construction has also begun on the Tashigang Project in eastern region. Foothill towns at present are connected to the nearest grids in India. The total local generating capacity at the end of Second Plan, excluding standby and a few diesel sets (aggregating to about 200 K.W.) was 770 K.W. The C. W. & P. C., Government of India, have been rendering valuable technical assistance in the development of Hydel Projects and this arrangement resulted in very low over-head costs and quick execution of projects.

5.3 Like roads, power is another area where development adds significantly to a common man's comfort thereby making a direct impact. Keeping this aspect in view, the Government as a measure of deliberate policy decided to set up micro projects so as to achieve quicker results. This now having been done the emphasis has now been appropriately shifted to investigate and set up bigger projects so as to make power available for uses other than purely domestic.

5.4 A brief summary of the technical details in respect of the projects which are in progress or have been completed are given in Annexure-IV to the chapter.

5.5 During the Third Plan period, total power potential is aimed at 4,000 K.W. and a plan provision of Rs. 248 lakh has been made. The new project that would be taken up are at Gidakom (1,000 K.W), Mongar (100 K.W.) and Tongsa which is still to be investigated. Gidakom project is planned to meet the immediate needs of Thimphu-Paro valleys. Mongar project is intended to cater to local needs of township. Tongsa project will be investigated for about 5 M.W. capacity so as to cater to the needs of Tongsa, Bumthang and Shemgang Districts. Thus under the schemes on generation a sum of Rs. 117.50 lakh has been provided which includes Rs. 6.75 lakh for direction work. The details of plan outlay on generation schemes is as under:

Generation Schemes	Plan Allocation (Rs. in lakhs)
1. Wangdiphodrang	3.45
2. Tashigang	22.46
3. Gidakom	42.16
4. Mongar	19.08
5. Tongsa	23.60

5.6 For the works on transmission lines a sum of Rs. 105 lakh has been provided in the Plan. The programme of work will be as under:

Transmission Schemes	Plan Outlay (Rs.in lakhs)
1. Expansion in existing lines	20.00
2. Distribution in foothill towns	8.00
3. H. T. lines in new towns	22.00
4. Distribution in new towns	15.00
5. Gidakom-Paro-Ha-Thimphu grid	35.00
6. Lines for existing hydels	5.00
Total:	105.00

5.7 Apart from generation and transmission works, for an advance power planning, surveys and investigations will be undertaken. A Plan provision of Rs. 25.50 lakh has been made out of which Rs. 14.50 lakh will be utilized for investigations and Rs. 11 lakh will be utilized on developing a suitable organisation for the investigation works.

ANNEXURE-IV TECHNICAL DATA--HYDEL PROJECTS

Project	River	Design discharge in cusecs	Net head in Feet	Installed capacity in KW	Peak capacity in KW	Length of power channel in Feet	Remarks
Thimphu	Dichu	13.23	335	360	270	5,736	Commissioned on 8.2.1967
Paro	Tochu	33.50	140	400	300	17,900	Commissioned on 14.5.1967
Wangdiphodrang	Nahari	13.65	250	300	200	5,800	commissioned
Tashigang	Bamri	10.00	550	750	500	7,160	Work is in progress
Gidakom	Bemagongchu	30.00	500	1,250	1,000	14,100	Work is in progress
Mongar	Gamgolari	8.50	175	150	100	1,680	Work is in progress
Trongsa	Chandijichu	-	-	-	-	-	To be investigated for 5 MW

CHAPTER VI

Industry And Mining

6.1 During the First Two Plans, an expenditure of Rs. 14.50 lakh was incurred mainly to explore the available resources and on establishment of a Distillery and a Fruit Preservation Factory. Some of the basic industrial surveys revealed unexploited mineral and forest resources. While the infrastructural facilities were being developed very little could be done in exploiting the mineral resources and development of industries.

6.2 The Third Five Year Plan envisages an outlay of Rs. 163.35 lakh for mineral development and industries. Stress has also been laid on increasing the existing activities such as Handicrafts, Handloom and Mineral and Forest based Industries. Keeping this aspect in view and the overall economic situation in the country, the Industrial Development Programmes have been oriented towards achieving the following objectives:

1. Providing encouragement to traditional arts and crafts.
2. Development of weaving industry.
3. Effecting exploitation of horticulture produce, forest resources and minerals.

In order to fulfil these aims the following schemes are being taken up for the planned development of Industries in the country. A summary of the Plan allocation by schemes is given in Annexure-V to this chapter.

6.2.1 Industrial Surveys: The Scheme of industrial surveys envisages taking up of (a) Feasibility studies of industries based on local resources, (b) departmental surveys to collect data and statistics required for planning the industries. Specialised agencies such as National Industries Development Corporation consulting firms, Council of Scientific & Industrial Research Laboratories' Experts etc., will be requested to conduct feasibility studies. The proposed surveys and feasibility studies are:

- (a) Large Scale Cement Plant, Pagli (based on limestone deposits)
- (b) Small White Cement Plant, Paro (based on limestone deposits)
- (c) Technical Magnesium Carbonate (based on dolomite)
- (d) Dolomite Lime (based on dolomite).
- (e) Chemical Grade Lime
- (f) Slate Mining
- (g) Gypsum Mining and Sulphuric Acid
- (h) Marble deposits
- (i) Resin and Turpentine
- (j) Activated carbon and pine tar
- (k) Lemon Grass Oil
- (l) Manas Valley Forest-based Industries

- (m) Lead--Zinc
- (n) Graphite
- (o) Puzzolanic Clays
- (p) Plywood

6.2.2 Fruit Preservation Unit: The country is rich in Horticultural resources and the main products are apple, peaches, plums and orange. In view of the excellent prospects in this respect, the existing Fruit Preservation Factory at Samchi will be expanded and one more branch of the Factory will be established in Eastern Bhutan. The technical feasibility and collaboration are being arranged through Central Food Technological Research Institute, Mysore and Tatas, the leading business house of India.

6.2.3 Financial Assistance for Small Industries: With increasing awareness of the benefits of small industries, entrepreneurship is fast developing and more and more local entrepreneurs are coming forward to establish small scale and cottage industries. As banking and financial Institutions in Bhutan are in their initial stages of development, the entrepreneurs look forward to the Industries Department for their credit requirements. A scheme of giving financial assistance on easy terms will be taken up.

6.2.4 Handloom Development Schemes: Weaving of cloth is a traditional cottage industry of the country. At present, the cloth is woven on traditional handlooms of small width with the result that its cost is high and production is limited. In order to commercialise the production this scheme envisages introduction of improved handlooms by training the local weavers and creating service facilities like supply of yarn and setting up of dye houses. Three handloom training-cum-demonstration centres will be established at Thimphu, Tongsa and Tashigang. A yarn distribution centre and dye house will be set up at Samdrup Jongkhar and another yarn centre will be opened in central region for the facility of weavers of that area.

6.2.5 Handicrafts Development Schemes: Traditionally some exclusive handicrafts are being produced in the country, specially Thankhas, wooden bowls, slate, wood & metal carvings, silver jewellery, clay work, bamboo and cane articles of a high quality. It is proposed to organize the production of these traditional handicrafts and impart training in the crafts to save them from extinction. During the current plan, a Fine Arts Centre at Thimphu for production and training in crafts like Thankhas, Carvings, Paintings, Clay Statues etc., Handicraft Emporiums at Thimphu and Phuntsholing, Wood Work Centre at Paro and Bamboo Work Centre at Samdrup Jongkhar will be set up.

6.2.6 Industrial Areas and Estates: Keeping in view the potential areas of growth, three centres have been earmarked for development of Industrial areas and estates. They are Phuntsholing, Gaylegphug and Samdrup Jongkhar. 40 acres of land has been acquired in Phuntsholing and work on construction of Industrial Estate has been started. 100 acres of land has been acquired at Gaylegphug for construction of some industrial sheds and development of plots. The development of Industrial area at Samdrup Jongkhar will also be taken up.

6.2.7 Distribution of Improved Tools: With increasing awareness of industrial development, the demand for improved tools for carpentry and smithy and small hand-operated machines like rice hullers, sewing machines etc., is rapidly increasing. Accordingly, a scheme has been drawn up under which improved tools and implements will be supplied at subsidized prices.

6.2.8 Industrial Training: Programme for training local personnel hardly needs emphasis. A scheme will

be launched whereby local people will be trained in Industrial Trades like Carpentry, Blacksmithy, Metalwork, Masonry, Fitter Job, Machining etc. Two Industrial Training Centres are proposed to be set up at Shemgang and Khaling. It is also proposed to send local personnel for training in India in the specialised trades.

6.2.9 Design and Development Centre for Handicrafts: A Central Design and Development Centre at Thimphu will be opened which will do research cataloguing, costing for commercial production etc. of the old arts and crafts of Bhutan.

ANNEXUR-V INDUSTRY AND MINING

Schemes	Plan Outlay (Rs. in lakhs)
I. Direction	33.35
II. Large and Medium Industries	
1. Industrial Surveys	12.00
2. Fruit Preservation Units	8.00
III. Mineral Development	3.00
IV. Village and Small Industries	
1. Financial Assistances to S.S.I.'s	5.00
2. Handloom Development Schemes	15.50
3. Handicrafts Development Scheme	20.50
4. Industrial Estates/Areas	40.00
5. Distribution of Improved Tools	3.00
6. Industrial Training Centre	10.00
7. Exhibitions and Fairs	3.00
8. Handicrafts Design and Development Centre	3.00
9.(a) Power Subsidy	2.00
9.(b) Raw Materials Depot	5.00
Total:	163.35

CHAPTER VII

Transport And Communication

7.1 Roads, Bridges, Rest Houses etc.

7.1.1 Prior to the advent of planning, except for the mule tracks, there were no motorable roads in Bhutan. In those days, it was a difficult journey of over five days to reach Thimphu from Phuntsholing, while

today it is a matter of five hours easy drive on a beautiful motorable road. The development Of t roads network had been a great achievement of the earlier two plans. Regions within the country which had hitherto been too remote and cut off have now been opened up. Work is in progress on a west-east lateral road which will ultimately connect Ha with Tashigang and when completed, will bring about a closer link between places in the northern part of the country. Major part of the expenditure on this road will be outside the scope of plan funds and the work is being executed by Border Roads Organization of India.

7.1.2 All the road works were not financed out of the plan funds. During the earlier two plans a sum of Rs.13 crore was spent on the construction of roads and the following works were undertaken by the Border Roads Organization and the Government:

- (a) Phuntsholing-Paro road (180 Kms)
- (b) Confluence-Thimphu road (38 Kms)
- (c) Sarbhang-Chirang road (60 Kms)
- (d) Tshalemaphé-Wangdiphodrang road (64 Kms)
- (e) Approach road to Tala (8 Kms)
- (f) Lobeysa-Punakha road (13 Kms)
- (g) Tashigang-Rangjung road (12 Kms)
- (h) Wangdiphodrang-Tongsa-Baykar-Mongar-Tashigang road (380 Kms)

The work on the first two roads which was undertaken by the Border Roads Organization of India has already been completed. Other road works are in progress.

7.1.3 During the Third Plan, a sum of Rs. 276 lakh has been provided for the completion of works on the continuing schemes viz., Sarbhang-Chirang road, Approach road to Tala, Lobeysa-Punakha road, Tashigang-Rangjung road and includes a provision of Rs. 80 lakh for the completion of Tshalemaphé-Wangdiphodrang road being constructed by the Border Roads Organisation. The following new road works will also be undertaken:

- (a) Roads within Chirang valley (32 Kms) for which a sum of Rs. 40 lakh has been provided.
- (b) Improvement of approach roads to border towns for which Rs. 50 lakh has been provided.
- (c) Internal roads in important towns for which Rs. 50 lakh has been provided.

Thus a total sum of Rs. 536 lakh has been provided in the plan for road works including that for the survey of new schemes and improvement of mule tracks.

7.1.4 For the construction of bridges an outlay of Rs. 55 lakh has been provided. Construction of suspension bridges at the following thirteen places will be taken up:

- | | | |
|-------------------|---------------|-------------------------|
| 1. Dorakha | 2. Punakha | 3. Lamidara |
| 4. Chengmari | 5. Chargharey | 6. Kalikhola Dagapela |
| 7. Chanch Khola | 8. Dagana Chu | 9. Mao Khola |
| 10. Rong Khola | 11. Bade Nadi | 12. Pankhar/Phangri Zam |
| 13. Burichu Khola | | |

Bridges on bridle paths will be constructed at the following seven places in the interior regions:

- | | |
|-------------------------|------------------------|
| 1. Tashigang Duktey Zum | 2. Kurteo Cha Zum |
| 3. Khen Phankar Zum | 4. Phyiko Shingkar Zum |
| 5. Langthil Zum | 6. Paro Shari Zum |
| 7. Sha Thanchu Zum | |

7.1.5 During the Third Plan, Rest Houses and PWD Staff Quarters will be constructed at the following ten places:

- | | |
|-------------|---------------|
| 1. Chirang | 2. Gaylegphug |
| 3. Shemgang | 4. Tashigang |
| 5. Samchi | 6. Deothang |
| 7. Mongar | 8. Punakha |
| 9. Tongsa | 10. Ha |

A provision of Rs. 20 lakh for the Rest Houses and Rs. 25 lakh for PWD Staff Quarters has been made in the plan.

7.1.6 To sum up the total plan allocation under roads, bridges, rest houses etc. is Rs. 691 lakh as per the following details:

Details	Plan Allocation (Rs. in lakhs)
(a) Continuing Schemes on roads	276.00
(b) New road works, surveys and improvement of mule tracks	260.00
(c) Bridges	55.00
(d) Rest Houses	20.00
(e) PWD staff quarters	25.00
(f) Maintenance of roads/bridges and mechanical equipment	55.00
Total:	691.00

7.2 Road Transport

7.2.1 Bhutan Government Transport Service was organized for the first time in 1965. It now runs passenger and freight services on all the motorable routes. By the end of the Second Five Year Plan, the BGTS had 31 passenger buses and 52 trucks. Gross earnings of the BGTS amounted to Rs. 39 lakh during 1969 and the net profit was computed at Rs. 6 lakh.

7.2.2 During the Third Plan transport facilities will be further strengthened. A provision of Rs. 69 lakh has been made for the replacement and addition to the existing fleet of vehicles and extension of workshop facilities.

7.3 Posts and Telegraphs

7.3.1 Although a courier service for the carriage of official mail was in existence in Bhutan for several years in the past, it was only in October, 1962, that a regular post office was opened at Phuntsholing and postage stamps valid for internal and external postage were issued. This was followed by opening of post offices at Paro and Thimphu. These initial postal facilities were restricted to the transit of unregistered mail with the modest beginning made in 1962. Towards the end of 1964, however, positive steps were taken to organize a country-wide postal system and a Postal Adviser was appointed. To begin with, priority was accorded to the following programmes:

- (a) Opening of Post Offices at important administrative centres.
- (b) Training of personnel in Post and Telegraphy.
- (c) Organizing a fleet of mail jeeps.
- (d) Construction of departmental buildings.
- (e) To evolve a sound philatelic programme.

Within a short period, by the end of Second Five Year Plan, good progress was made and there was a

network of 33 Post Offices, a Philatelic Bureau, seven Telephone Exchanges and a teleprinter service between Thimphu and Siliguri in India. There is a fleet of 18 Jeeps for Mail Services. Services of 31 trained Post Masters and over 50 other trained local personnel are now available to the Department. In matters of Philately the name of Bhutan is known all the world over for the colourful stamps which depict the various facets of life and are typically original in design. A list giving names of places where postal facilities existed at the end of Second Plan is given in Annexure-VI to this chapter.

7.3.2 During the Third Five Year Plan, schemes have been drawn with a view to achieving the following objectives:

- (a) Maintenance and improvement of existing Post Offices.
- (b) Opening up of Post Offices in new areas.
- (c) Training of personnel.
- (d) Setting up of three new Telephone Exchanges.
- (e) Increasing the efficiency of postal system.

A total Plan outlay of Rs. 130 lakh has been envisaged, scheme-wise breakdown of which is given in Annexure-VII to this chapter.

7.4 Tourism

7.4.1 It is expected that tourist traffic to Bhutan, especially to Thimphu and Paro would increase sufficiently during the coming years. To construct suitable accommodation for tourists during the Third Plan, a provision of Rs. 17 lakh has been made. The following schemes will be taken up:

- (a) Tourist Cottages at Thimphu at a cost of Rs. 10 lakh.
- (b) Tourist Cottages at Paro at a cost of Rs. 4 lakh.
- (c) A Rest House at Phuntsholing at a cost of Rs. 3 lakh.

ANNEXURE VI LIST OF POST OFFICES IN 1970

- | | |
|--------------------------------|---------------------|
| I. General Post Offices : | 1. Thimphu |
| | 2. Phuntsholing |
| II. Departmental Post Offices: | 1. Paro |
| | 2. Haa |
| | 3. Sarbhang |
| | 4. Samchi |
| | 5. Chirang |
| | 6. Gaylegphug |
| | 7. Samdrup Jongkhar |
| | 8. Tashigang |
| | 9. Wangdiphodrang |
| | 10. Chapcha |
| | 11. Lhunsi |
| | 12. Mongar |
| | 13. Byakar |
| | 14. Tongsa |

15. Punakha
 16. Sibsoo
 17. Chengmari
 18. Kalikhola
 19. Shemgang
 20. Dorakha
 21. Lingshi
 22. Gasa
 23. Dagapela
 24. Deothang
 25. Daga
 26. Tashi Yangtshi
- III. Extra Departmental Post Offices:
1. Putlibhir
 2. Chimakothi
 3. Lamidara
 4. Khasadrapchu
 5. Kanglung

ANNEXURE-VII POSTS & TELEGRAPHS

Name of Schemes	Plan Outlay (Rs. in lakhs)
1. Direction	10.14
2. Executive Staff	4.39
3. Existing Post Office	13.29
4. Departmental Post Office	2.20
5. Extra Departmental Post Office	1.37
6. Expansion of Postal and Telegraph facilities	3.61
7. New Services	1.69
8. Philatelic Services	6.07
9. Carriage of Mail by vehicles	14.57
10. Telegraph Services	5.54
11. Buildings	37.30
12. Training	0.81
13. Runner Services	7.75
14. Telephones	20.00
15. Telephone & Telegraph Trainees	1.27
Total:	130.00

CHAPTER VIII

Social Services

8.1 General and Technical Education

8.1.1 Before the commencement of the First Five Year Plan, education in the country covered only the primary stage. In 1961 there were 59 lower and upper primary schools. About 140 Bhutanese children (100 with scholarships and 40 at their own expenses) were receiving education in India.

8.1.2 At the end of the First Plan, there were in all 83 Primary and 20 Junior High Schools with about 7,000 students and 375 teachers. During the Second Plan, four Junior High Schools were upgraded as High Schools. At the end of the Second Plan there were 83 Primary Schools 7 15 Junior High Schools and 4 High Schools and there were about 9,000 students receiving education under the guidance of about 500 teachers. Besides these schools run by Government, there are schools managed by private bodies also. During the Second Plan, ten such primary schools were brought on Government grant-in-aid list.

8.1.3 For the first time in the history of the country 20 students passed Bhutan Matriculation Examination conducted by the Department of Education in 1968. Another batch of 18 students got through the same examination in 1969. Out of the first batch, five students were sent to Australia for further studies under Colombo Plan. Others were absorbed in different departmental training schemes.

8.1.4 In addition to the Public School established at Thimphu during the First Plan, one more Public School at Kanglung was set up during the Second Plan. The number of students being educated in these two Institutions is 350. The strength of teaching staff is 25. Both the Institutions are residential.

8.1.5 Construction of buildings for the Teachers' Training Institute which was started during the end of the First Plan, was completed during the Second Plan. The Institute started functioning in May 1968, with 40 trainees and 7 teachers including the Principal. The course is of two years' duration. On completion of training, the trained personnel are absorbed in primary and junior high schools.

8.1.6 A Technical School was started during the First Plan at Kharbandi for giving technical training in tailoring, mechanics, carpentry and automobile repairs. The carpentry section is at present given training to 160 students.

8.1.7 Three hundred and eight students are being given training in the Rigney Monastery School. This Institution intended to help preserve the cultural heritage of the country is also providing Bhutanese language teachers required for the schools.

8.1.8 As no text books were available in the national language, the Department of Education implemented a Scheme for the writing and translation of books in Dzongkha and Nepali. By the end of the Second Plan, about a dozen text books were made available for use in schools.

8.1.9 The work on conversion of Ta Dzong into a National Museum was taken up and completed during the Second Plan.

8.1.10 To provide facilities for higher education, a scheme for awarding scholarships to Bhutanese students in India was started in the First Plan and was continued in the Second Plan. Under this scheme, two hostels for boys and girls are being maintained at Kalimpong for such students as are not able to get seats in respective boarding houses of their schools. Students are being awarded scholarships for degree course under degree scholarships scheme. The Department of Education is also extending facilities for technical studies, such as Engineering and Medical, to Bhutanese students.

8.1.11 Even with all the facilities provided during the first two plans, it has not been possible to cater to the needs of the country in this important field. A large number of students have still to be educated in schools in India which calls for substantial expenditure. During the Third Plan the education system of the country will be strengthened so that it may not be necessary to send students to India except in highly specialised fields like Engineering, Medicine etc. With this end in view a new orientation has been given to the system of education in the country during the Third Five Year Plan. During the Third Plan the aims would be:

1. To lay greater emphasis on quality rather than on quantity of education to be imparted. To achieve this objective, provision of adequate trained teachers, class rooms and staff quarters in all the schools has been made.
2. (i) To close down those primary schools where attendance has been very poor.
(ii) To upgrade some of the good primary schools as Junior High Schools. To ensure more regular attendance, provision for residential facilities in Junior High Schools has been made.
3. To replace existing high schools by Central Schools. Under this scheme 9 Central Schools will be established in important parts of the country. Each school will be provided with one well-equipped hostel for residential purposes. Modern teaching aids will be used in these schools. Facilities for science education will be extended in selected Central Schools.
4. To expand the existing Public Schools at Kanglung and Thimphu. More seats would be provided in these two schools for admission.
5. To establish a Degree College in Thimphu. Arrangements for teaching both arts and science subjects will be made. The college will have highly qualified teaching staff. Science laboratories will have to be fully equipped with modern scientific apparatus.
6. To expand the existing Technical School at Kharbandi and to open one new Technical School at Deothang in Eastern Bhutan, in order to meet the growing need for technical personnel.
7. To expand the Teachers' Training Institute at Samchi so as to make available a larger number of trained teachers during the Plan Period.
8. To enable the Department to publish and translate more books in different subjects in national language by appointing a senior writer in addition to the existing staff.
9. To continue the existing schemes for award of stipends and scholarships. With the establishment of the proposed Degree College at Thimphu, the number of students going to India for Degree Course under this scheme would gradually decrease.

8.1.12 When all these schemes proposed above are fully implemented, the country will be benefitted in more ways than one. It will become, to a large extent, self-sufficient in regard to the need of educated personnel for its developmental programmes.

An outlay of Rs. 720.50 lakh has been included in the Third Plan. A scheme-wise allocation of the outlay is shown in Annexure-VIII to the chapter. Brief notes on each scheme are given below:

8.1.12.1 Direction: The establishment under this scheme will exercise an overall control on the programmes in respect of education.

8.1.12.2 Primary Schools: During the First and Second Plans, 83 primary schools were established in

different parts of the country. But it has been noticed that in about 30 schools the number of students has been rather discouraging. It has, therefore, been decided to close down all such primary schools where attendance is less than 30. Thus, approximately 30 primary schools may have to be closed down. A few good primary schools are also proposed to be upgraded as Junior High Schools.

8.1.12.3 Junior High Schools: Out of the existing 15 Junior High Schools, 8 schools are going to be upgraded to Central Schools. The primary schools are proposed to be upgraded as Junior High Schools. In all during Third Plan there would be 11 Junior High Schools.

8.1.12.4 Central Schools: The practice hitherto followed had been to upgrade Junior High Schools into Higher Secondary Schools as and when considered necessary. It is, however, felt that instead of raising all Junior High Schools to the status of Higher Secondary Schools in course of time, some places may be selected all over the country for the location of Central Schools which could cater to the Primary and Junior High Schools of neighbouring areas. Such Central Schools would be strengthened by additional facilities like hostels, libraries etc. so as to provide a nucleus for good education. This would thus result in utilizing the limited resources more gainfully by concentrating efforts in fewer places rather than spreading out the same in a larger number of schools. A new orientation has thus been given to the existing scheme of upgrading the Junior High Schools to Higher Secondary Schools. The existing Higher Secondary Schools will also be redesignated as Central Schools. Including the existing Central Schools (Higher Secondary Schools), by the end of Third Plan, Central Schools will be set up at the following places:

Thimphu, Paro, Samchi, Sarbhang,

Mongar, Tashigang,

} With facilities for scientific studies.

Punakha, Shemgang and Lhuntshi.

A few of the Central Schools so established may be further converted into Public Schools.

8.1.12.5 Thimphu Degree College: With the expansion of education, it has been felt necessary to establish one Degree College to cater to the needs of higher education to matriculates. This Degree College is proposed to be located at Thimphu. To begin with, Arts faculty is proposed to be opened. Under this faculty, Dzongkha, Nepali, English, History, Economics, Political Science and Philosophy are proposed to be introduced.

8.1.12.6 Public Schools: Under the command of His Majesty, the King of Bhutan, one Public School was started in Thimphu in the last year of the First Five Year Plan. Taking into consideration the needs of the people of eastern Bhutan, one more Public School was started during Second Plan at Kanglung. The main aim of opening these two Public Schools was to prepare students for Senior Cambridge or equivalent examination. The education in these two schools is on the same pattern as in Public Schools in India and abroad. The construction of school and residential buildings has more or less been completed at Kanglung, whereas at Thimphu it is still in progress. To cope with the anticipated increase in admission in these two schools, provision for 225, 250, 275, 300 and 325 students has been made for each school in respective years of the Plan. Since both the schools are residential, provision for boarding, clothing, uniforms etc., has been made for all the students in addition to the free supply of text books, stationery and sports goods.

8.1.12.7 Teachers' Training Institute, Samchi: The Teachers' Training Institute at Samchi started functioning in the year 1968 with 40 trainees and seven teachers including Principal. This institute will be providing teachers for schools in Bhutan. Presently all the teachers in the schools in Bhutan are recruited

from outside.

8.1.12.8 Rigney Monastery School: This school was started in the First Five Year Plan to provide Monastic (religious) education to the boys which would help in preserving the cultural heritage of the country. The school also provides Bhutanese Language Teachers to teach Bhutanese language to the students in other schools in the country. During the Second Plan, stipends for 150 students were provided. To expand this scheme, a provision of 200 stipends - Rs. 100/- per month for nine months has been made.

8.1.12.9 Technical Schools: Keeping in view various development activities in the country one Technical School at Kharbandi was started during the First Five Year Plan, the main object being the availability of technical personnel within the country. This school started with about 50 students and had about 160 at the end of the Second Five Year Plan. In this school carpentry, tailoring, mechanics and automobile section have been functioning. The number of students to be admitted in this school is aimed at 250 by the end of Third Plan. One more technical school will be established in eastern region at Deothang during the Third Plan.

8.1.12.10 Translation and Printing of Books in Bhutanese: Before the commencement of the First Plan, no book was available in the national language Dzongkha. As such, writing and translation of books in national language was undertaken by the Department of Education. This work will continue during Third Plan period.

8.1.12.11 Degree Scholarship for Students in India: Under this scheme, Bhutanese students are sent for higher education in colleges in India. With the establishment of one Degree College in the country, the number of students going in for higher studies in India is expected to be reduced and confined only to specialised courses. Thus in the first three years of the Plan provision for 40 stipends per annum has been made. These students would continue their studies for three years. There may be no fresh admission in the fourth and fifth year of the Plan as the Degree College may be in a position to admit arts and science students.

8.1.12.12 Scholarships for Studies in India: Under this scheme, Bhutanese students are awarded scholarships to study upto Matriculation/I. S. C. Examination in India. At the end of the Second Plan, about 400 students were studying in India. With the strengthening of the existing high schools, public schools and upgrading of a number of junior high schools in the Third Plan, it may not be necessary to award fresh scholarships for studies upto T.S.C./Matriculation in India. But the students who are already studying in India would continue their studies during the Third Plan and the scheme will have to be continued for the present.

8.1.12.13 School for Buddhist Studies: A new Scheme for opening a school for Buddhist studies at Dechenphodrang has been included in the Third Plan.

8.2 Health

8.2.1 Prior to 1961 the medical facilities within the country were very limited. There were four hospitals with inadequate facilities, 11 dispensaries and a Leprosy Colony with 120 patient beds. Most of these facilities were functioning under untrained staff. There were in all two doctors in the country. Lack of

qualified staff at all levels, very limited transport and communication facilities and shortage of proper accommodation were some of the major initial problems in creating necessary and adequate medical facilities for the country's population. During the First Plan, therefore, the following steps were taken:

- (1) Directorate of Health Services was established for proper organization and planning.
- (2) The existing hospitals at Thimphu, Paro, Wangdiphodrang and Tashigang were improved and provided with trained medical staff. Two new hospitals were opened at Samchi and Sarbhang.
- (3) In addition to improving the existing 11 dispensaries two new dispensaries at Ghasa and Shemgang were established.
- (4) Steps were taken to control and eradicate communicable diseases like small pox, malaria, goitre, leprosy, tuberculosis and venereal diseases. In spite of great initial handicaps considerable progress was made during the earlier two Plans.

8.2.2 For the convenience of medical planning the country is divided into seven medical zones with zonal headquarters at Thimphu, Paro, Samchi, Phuntsholing, Sarbhang, Byakar and Tashigang. The present patients bed strength in the existing zonal hospitals is 166 and the hospitals are much better equipped. In the rural areas, 34 dispensaries have been established so far. Names of places where dispensaries have been set up are shown in Annexure-IX. Considerable progress was also made in the control and eradication of diseases. Iodised salt was supplied and as a result thereof incidence of goitre is very much reduced. Mass vaccination and malaria eradication programmes were also launched. With only two doctors and a few compounders in 1961 the number of medical personnel increased to 123 by the end of Second Five Year Plan. There are now 16 doctors, 53 compounders, 34 nurses and 20 vaccinators.

8.2.3 The Third Five Year Plan envisages the following programmes:

- (i) Thimphu hospital will be reorganized and expanded from 50 to 100 beds. Specialists' facilities in surgery, medicine, midwifery, dentistry, pathology and ophthalmology will be provided.
- (ii) The other zonal hospitals will also be expanded and dispensaries at Paro, Sibsoo, Byakar, Tongsa and Chirang will be converted into hospitals.
- (iii) Bed strength for leprosy patients will be increased.
- (iv) A 30 bed T. B. Ward will be added to Tashigang hospital and the existing bed strength of 30 for T. B. at Samchi hospital will be increased to 50.
- (v) The total bed strength of zonal hospitals will be raised to 343 from 166.
- (vi) Fourteen new dispensaries will be set up at suitable places.
- (vii) Preventive and disease control measures will be adopted.

8.2.4 A total outlay of Rs. 286 lakh has been envisaged in the Plan. The allocation of this outlay by schemes is shown in Annexure-X to this chapter.

8.3 Water Supply and Sanitation

8.3.1 Water supply facilities exist in 12 towns at present. The Third Plan envisages improvement in the existing facilities and eight more towns will be covered. A plan outlay of Rs. 50 lakh has been envisaged as per the scheme wise details given below:

Scheme	Plan Outlay (Rs. in lakhs)
1. Existing Schemes and their augmentation	25.00
2. New Schemes	18.00
3. Sewerage and drainage	9.00

4. Maintenance	6.00
5. Preparation of Master Plan for Water Supply in Bhutan	1.00
Total:	59.00

8.4 Urban Development

8.4.1 An outlay of Rs. 20 lakh has been provided for creating amenities like parking places, public gardens etc. in some of the major towns of the country except Thimphu, the Capital town which has been treated on a separate footing.

ANNEXRE-VIII CENTRAL AND TECHNICAL EDUCATION

Name of Scheme	Plan Outlay Rs. in lakhs)
I. Direction	22.25
II. 1. Primary Schools	82.00
2. Junior High Schools	66.00
3. Central Schools	180.00
4. Thimphu Degree College	73.00
5. Thimphu Public School	43.75
6. Kanglung Public School	33.00
7. Teachers' Training Institute, Samchi	15.50
8. Rigney Monastery School	11.50
9. Translation & Printing of Books in Bhutanese	3.00
10. Degree Scholarships for students in India	16.60
11. Scholarships for studies in India	82.00
12. School for Buddhist studies	4.90
III. 1. Technical School, Kharbandi	49.00
2. Technical School, Deothang	38.00
Total:	720.50

ANNEXURE-IX LIST OF PLACES WITH DISPENSARIES IN 1970

1. Byakar	18. Khaling
2. Chengmari	19. Lamthey
3. Chimakothi	20. Lunana
4. Chirang	21. Lhuntse
5. Daga	22. Mongar
6. Dagapela	23. Paro
7. Dalim	24. Pepachu
8. Dorakha	25. Samdrup Jongkhar
9. Dechheling	26. Sibsoo
10. Dechhencholing	27. Shinkharlauri

11. Dogar	28. Shemgang
12. Dungsam	29. Surey
13. Gasa	30. Tala
14. Ghumaoney	31. Tomigangsa
15. Gomdar	32. Tongsa
16. Ha	33. Urang
17. Kalikhola	34. Yangtse

ANNEXURE-X HEALTH

Name of Scheme	Plan Outlay (Rs. in lakhs)
1. Direction	10.25
2. M. S. D. Phuntsholing	1.54
3. Hospitals	
(a) Thimphu Hospital	46.00
(b) Tashigang Hospital	33.34
(c) Samchi Hospital	20.31
(d) Sarbhang Hospital	15.00
(e) Phuntsholing Hospital	12.62
(f) Civil Annexure to B. R. Hospital, Deothang	0.75
(g) Leprosy Hospital, Gidakom	4.55
(h) Leprosy Hospital, Kurteo	2.60
(i) Leprosy Hospital, Mongar	5.95
(j) Leprosy Hospital, Parkijuli	1.25
4. Dispensaries	
(a) Improvement of existing dispensaries	50.83
(b) Establishment of new dispensaries	14.78
5. Preventive/control measures	58.43
6. Training Programmes	2.80
7. Establishment of indigenous dispensary	3.00
8. Treatment of Bhutanese outside Bhutan	2.00
Total:	286.00

CHAPTER IX

Miscellaneous

9.1 Publicity and Press

9.1.1 Publicity Department came into existence on 1.7.1965. It has two schemes under it viz: (1) Direction and (2) Printing Press. During the Second Five Year Plan the proposed outlay of this Department was Rs. 19 lakh and the actual expenditure was Rs. 17.06 lakh. The main functions of the Publicity Department are as follows:

- (a) Publication of 'Kuensel' a fortnightly news bulletin in English, Bhutanese and Nepali.
- (b) To conduct audio-visual programmes at various places in Bhutan to educate the masses on public health, hygiene etc.
- (c) To collect, record and file important press clippings and cuttings pertaining to Bhutan. Important news broadcasts are also recorded for purpose of reference.

9.1.2 The Department subscribes to various newspapers and magazines. Important press clippings and cuttings are maintained and recorded in files. News bulletins are also monitored and important international events are published in the foreign news column of Dzongkha and Nepali bulletins.

9.1.3 During the Third Plan, it is envisaged to expand journalistic activities and make the 'Kuensel' first a weekly and later with the expansion of the press, a daily bulletin. The Department would have its own dark room for developing and printing of photographs. One still camera, one tape recorder and one 16 mm. sound projector will also be acquired for audio-visual activities of the Department during the Third Plan.

9.1.4 The Government Press at Thimphu came into existence in 1965 with the object of printing 'Kuensel' and undertaking printing works of Government and the private parties. At present, the press is equipped with moderate printing machines, cutting machine, stitching machine, perforating machine and binding facilities. During the Third Plan the facilities in this press will be expanded to cope with the increasing work load. With better equipments, added to the press, printing of school and college books will also be taken up. A block making unit will also be set up in the press.

9.1.5 A provision of Rs. 27 lakh has been made in the Plan for publicity and press.

9.2 Statistics

9.2.1 At present there is no agency in Bhutan to collect, collate and interpret statistical data relating to development programmes and the economy as a whole. As a result, even the basic essential data are not available. In the absence of a properly organized statistical agency, it has not been possible to prepare a detailed progress report of the first two Five Year Plans and their impact on the economy of the country and lives of the people. Due to the planned developmental effort during the last ten years, a stage has now reached when a suitable statistical machinery should be set up for collection of the statistical data required in connection with the assessment of the progress of the previous Plans and the current Plan in progress and for the formulation of future Plans.

9.2.2 To fill up the various gaps in the statistical outline of the country, during the Third Plan, a beginning will be made. A provision of Rs. 5 lakh has been made to develop a small statistical cell which will take up the work on the assessment of Plan schemes progress and provide necessary statistical service. Efforts will also be made to train local persons in statistical work.

9.3 Development Headquarters

9.3.1 The Third Five Year Plan envisages an outlay of Rs. 100 lakh for the Planning machinery at the Headquarters, co-ordination of regional development programmes and the office of Financial Adviser. This provision is mainly for the pay and allowances, buildings and other expenses for the establishment. The Development (H. Q.) will exercise an overall control and supervision on the various Plan programmes. The progress made will be periodically reviewed.

9.4 Capital Project

9.4.1 Thimphu which is the capital of Bhutan has developed very fast during the last three years and requires to be developed on proper lines in future. There are now a large number of modern-residential houses, an impressive school building, a modern hospital complex under construction, developed market area, a helipad, a public pavilion and an excellent network of internal roads. Considering the limited resources only the following projects will be taken up during the Third Five Year Plan:

Project	Outlay (Rs. in lakhs)
1. National Assembly Building	16.00
2. High Court Building	8.50
3. National Archives	10.00
4. Public Library-cum-Town Hall	5.00
5. Stadium	2.00
6. One hundred low income group houses	25.00
7. (a) Approach Roads	18.00
(b) Internal Roads	50.00
8. Flood Protection Works	23.50
9. Water Supply Scheme	11.00
10. Sewerage Scheme	20.00
11. Drainage Scheme	11.00
Total:	200.00

9.4.2 Thus, restricting the programmes to the barest minimum a provision of Rs. 200 lakh has been made in the Plan for capital town project.

9.5 Protection and Preservation of Ancient Monuments

9.5.1 A Plan outlay of Rs. 15 lakh has been provided for the protection and maintenance of buildings of historical importance in Bhutan.

9.6 A provision of Rs. 2.15 lakh has been made in the Plan for construction of building to house the office and staff of Planning Cell, in the office of the Representative of India in Bhutan.