

Chapter-5

Sectoral Diversification of the Economy

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5.1: Introduction

The economy of Bhutan consists of three broad sectors viz. primary sector, secondary sector and tertiary sector. Primary sector consisting of agriculture and allied activities have some sub-sectors such as proper agriculture, forestry, poultry, dairy etc. Secondary sector include mining, manufacturing and construction. Tertiary sector consists of a large number of sub-sectors like education, health, transportation, communication, trade, commerce etc. These sectors are interdependent through 'forward linkage' and 'backward linkage'. Following unbalanced growth strategy, the government of Bhutan put priority in a particular sector in each of the Five Year Plans so that other sectors of the economy develop due to the linkage effects. In the First Plan (1961-66), priority was given to agriculture sector. Subsequently, other sectors of the economy got priority during in development.

During this planned development, each of the sectors and sub-sectors achieved product diversification and resulting increase in production. For example, major achievement of agriculture sector is shift in production structure from subsistence crops to value added crops. Similarly, secondary sector is now dominated by production and exports of hydro-electricity. The Royal Government's priority to social sector services has raised literacy rate and health related indicators of the people. It is to be noted that the government has effectively utilized foreign financial assistance in this diversification process. Tourism is a growing service accruing huge revenue and foreign exchange. Enlargement of product items in the traded goods as well as Bhutan's trading partners raised its total trade volume. However, this has been discussed in chapter-6.

5.2: Agricultural Diversification

Traditionally, Bhutan is a backward agrarian economy where 65.4 percent of its total population earns their livelihood from this sector and

18.3 percent of national income comes from agricultural activities. Since the country is a land-locked mountainous one with 72.5 percent of land covered with forests, only 7.7 percent of total land is available for cultivation. Under this limited arable land, agricultural activities had to be diversified very carefully. Livestock is a major part of agricultural development in Bhutan. Vegetables, fruits and forest products are principal items of agricultural exports. Even though traditionally Bhutan has been self-sufficient in foodgrains production, rapid population growth over the last three decades has turned the situation towards food shortage, a shortage that the country is trying to meet through import of food grains. Thus the importance of agricultural sector in Bhutan emerges from income generation, employment, export of agricultural commodities, food self-sufficiency, food security and so on.

Recognizing the importance of agriculture in the national economic development of Bhutan, the government put top most priority on agricultural development in all the Five Year Plans, beginning since the first plan in 1961. However, one objective of this dissertation is to explore the role of foreign aid in the diversification and development of agricultural activities over its plan period. The impact of foreign aid in agriculture is complicated and as a result, its assessment is also tedious. The factors affecting agricultural diversification, agricultural production and increased rural income are multidimensional. Agricultural production, to a large extent, depends on weather and climatic conditions beyond the direct control of the farmers as well as the government. Other such possible forces are literacy rates among the peasants, their health situation and the government policies. The effect of a particular force on agricultural growth is difficult to identify due to the simultaneity of all forces acting together. In addition to this, due to scarcity of data on foreign aid disbursed into various sub-sectors of agriculture, it becomes further problematic to make the assessment. However, absence of information on the disbursement of foreign aid does not necessarily imply absence of the impact of foreign aid on agricultural diversification. The assessment is to be made with the help

of available agricultural statistics. While assessing the impact of foreign aid on the agricultural diversification in Bhutan, distinctions have been made between Indian aid and the aid from other bilateral and multilateral agencies.

The Role of Indian Aid

Indian assistance has played a dominant role for the development of Bhutan's agriculture sector. Total fund for the First Five Year Plan (1961-66) in Bhutan was provided by India. In this plan, priority was given to agriculture and development of infrastructure. The most important achievement of the First Plan (1961-66) was the establishment of agricultural infrastructure and various institutions related to agriculture. In the Second Five Year Plan (1966-71), similar development was anticipated. Various departments like Department of Agriculture, Department of Animal Husbandry and the Department of Forests were established. Agricultural research centres were established for the introduction of cultivating HYV seeds, use of fertilizers and irrigation practices. Agricultural extension services were also established. Marketing of agricultural commodities was organized for the remunerative prices of the farmers.

Department of agriculture was established in 1961. This department was responsible for overall agricultural development of the country. Two research farms were established at Lungthenphu and Bhur at the end of 1963. Training classes were started at Bhur for the technicians operating with agricultural implements like tractors, power-tillers etc. For the horticultural development, two orchards were functioning at Gasa and Bhumthung, where schemes for the distribution of fruit plants and vegetable seeds were distributed¹. A plant protection unit demonstrating methods of pests and disease control came to functioning. Subsidies were given for minor irrigation to the extent of Rs. 2,50,500.

In the Second Five Year Plan (1966-71), similar projects were underway and efforts were made to strengthen and expand agricultural

institutions and activities. This plan proposed to raise food production through the use of improved seeds and better equipments. Exertions were made to popularize fruit cultivation. Due to different types of agro-climatic and soil conditions prevailing in the country, emphasis was given to regional specialization for producing particular crop with cost advantage. Commercialization of agriculture was also achieved through the production of horticultural products during Second Plan (1966-71). Vegetables and flowers were cultivated both for domestic consumption and exports. Agricultural Economics Section and Agricultural Marketing Societies were opened during Second Plan (1966-71) at a cost of Rs. 8,79,712. During Second Five Year Plan (1966-71), a scheme for soil conservation was initiated at the cost of Rs. 1.50 lakhs. In this plan, HYV seeds were distributed among the farms. Another scheme namely Farm Machinery and Workshop was proposed to be established for the purchase of implements and sale of agricultural products. Since, there is popular local weaving all over the country, a sericulture farm was established in Punakha and silk cocoon were cultivated in 1965-66 for the first time.

Bhutan's agricultural sector consists of three broad sub-sectors viz. proper agriculture (cultivation), animal husbandry and forestry. In case of animal husbandry, poultry and dairy animals occupy an important place because these constitute one significant part of rural life in Bhutan. However, veterinary services at that time were highly limited due to scarcity of veterinary surgeons and the lack of trained staff. Still, the department carried out substantial breeding activities in order to improve the livestock situation either quantitatively or qualitatively. Department of Animal Husbandry was established at various places like Samchi, Bidung, Thimphu, Lingmethung, Mera, Thromong etc. during the First Plan (1961-66) and the Second Plan (1966-71). These farms constituted mainly Mithun breeding, sheep breeding, dairy, poultry and Mule breeding. A pisciculture unit was also set up. Veterinary department began to provide proper vaccination for animal population. Training programmes for the veterinary personnel were also conducted by the department of animal

husbandry over the first two plans. At that time, six local boys were trained from India in animal husbandry works and six others were given from Bhutan.

With regard to forest resources, considerable progress was achieved under the first and second plan periods. The major task of the First Plan (1961-66) was to implement scientific exploitation of forest resources as well as afforestation activities. These were essential due to the fact that there were extensive lumbering activities depleting the stock of exploitable timber. In the Second Plan (1966-71), similar forest policies were continued. Experiments for forest based industries were thought of in the Second Plan (1966-71).

Training programmes for the forest related personnel was a major success of the Second Five Year Plan (1966-71). The training programmes were started with proposed outlay of Rs. 57,300. In the Second Plan, provision has been made for three months in the successive two years of the plan to call upon a timber exploitation expert from India deputed by the Indian council of Applied Economic Research. An Indian forest adviser and a retired Divisional Forest Officer were assisting the government of Bhutan and carrying out the training programmes for the local boys as foresters². Various posts of rangers and foresters were filled up by the deputed personnel from India for the training purpose. Bhutanese boys were sent to Dehra Dun, West Bengal and Assam, all in India. Second plan also proposed to train five rangers at the forest college at Dehra Dun and five foresters either at Dow Hill or Jhalabari.

It is already known that 72.5 percent of total land in Bhutan is covered with forests. These forests are very rich with medicinal plants. However, to identify the particular species, detailed survey was felt to be essential. The Botanical survey of India assisted Bhutan in this respect. Decision was also taken to establish medicine industries. These proposed industries included:

- Resin tapping and distillation of turpentine oil

- Distillation of citronella oil from lemon grass and
- Lac-based industries.

Therefore, major achievements of the first two five year plans are afforestation, detection of medicinal plants, training of forest personnel, construction of farm roads, scientific extraction of forest resources, conservation of forest animals, introduction of anti-forest fire measures, grading of timber and other forest resources, construction of forest bungalows, experiments for the establishment of forest based industries, stoppage of unauthorized clearing of forests and so on. It is to be noted that Indian aid has played a significant role in all these development achievements because no foreign aid other than from India was available at that point of time. Aid from other countries or institutions began to pour in since the inception of Third Plan (1971-76) i. e. only after Bhutan became a member of the United Nations Organization in 1971. Since Third Plan (1971-76), aid from other bilateral and multilateral agencies were coming into Bhutan and some domestic savings started supplementing foreign aid. Therefore, the basic agricultural infrastructure and institutional development over the First Five Year Plan (1961-66) and the Second Five Year Plan (1966-71) of Bhutan can be said to be a direct result of acceptance of aid from India.

Aid from Other Bilateral and Multilateral Agencies

Bhutan's major donor for the agricultural sector, other than India are Austria, Denmark, European Community, Helvetas, Japan, Netherlands, UNO, World Bank and so on. Along with other sectors of the economy, Austrian government has assisted Bhutan for the development of forestry. Denmark focused on the promotion of land administration. These roles of other donors are discussed below:

European Community: Considering Bhutan's agrarian economy, the assistance from European Community mainly focused on watershed management, protection of crops against pests and diseases, extension

support to agriculture and development of livestock, improved rural livelihood etc. European Community's country strategy for Bhutan (2007-2013) indicates that the Renewable Natural Resource (RNR) sector will account for 60 percent of the ongoing EC assistance³.

Helvetas: It is a Swiss Non-Governmental Organization supporting Bhutan's rural development programmes since 1977. Its priority areas include improvement of food security management and conservation of natural resources in general, and RNR sector in particular. The agency is focusing on enhancing rural income generation and rural livelihood, rural employment generation, promoting capacities of rural communities and agro-service institutions. Helvetas running a number of agricultural projects in Bhutan such as rural development training project at Zhemgang, east central region agricultural development projects covering Bumthung, Trongsa, Zhemgang districts, participatory forest management project and the natural resource training institutions at Lobesa, which trains personnel for extension services in the field of agriculture, animal husbandry and forestry⁴.

Netherlands Development Organization: This organization is supporting Bhutanese agricultural development in land use and agricultural management. It is supporting programmes and projects for collaborative forest management and development of rural enterprises based on sustainable natural resource base.

FAO: The Food and Agriculture Organization (FAO) of the United Nations is rendering agriculture related technical advisory assistance to the Royal Government. The FAO is also supporting the Ministry of Agriculture (RGOB) for the development and establishment of virtual extension of communication network to enhance linkage between agricultural research and extension programmes.

World Bank: The World Bank assists Bhutan in the areas of department of forests, reforestation and sustainable forest management. World Bank's present focus is on development of rural infrastructures such as roads, irrigation, and block level RNR centres. Besides, the World Bank is

functioning as the international functioning agency for the suitable land management projects funded by the Global Environment Facility (GEF).

Japan: Japan has provided a lot of assistance to Bhutan for the development of agriculture. Japan despatched experts for agricultural mechanization, development of rural roads and overall development of agriculture. Japan's assistance focused also on promotion of agricultural production. Food production projects of Japan through the grant assistance for unprivileged farmers in Bhutan is popularly known as '2KR'. Japan extended 2KR to Bhutan 19 times between 1984 to 2004. Under the 2KR scheme, power tillers were extended to the farmers either on purchase or rental. Counter part funds put in reserve through 2KR have been utilized for the development of agricultural roads and irrigation projects. Japan's technical assistance contributed cultivation of value-added crops such as fruits and vegetables. However, the major drawback of the 2KR project is that the rich farmers only could afford it. Since the supply of power-tillers was below the order of the need, many farmers had to wait for a long time to buy the machines.

Japan International Cooperation Agency (JICA) supported rural development and poverty alleviation through the grant assistance for farm mechanization, development of rural access, promotion of agricultural research and extension, technical advisory and so on. It also works for the development of human resources. Table-5.1 shows agricultural projects of Japan for agricultural and rural development in Bhutan.

Table 5.1: Japan's Agricultural Projects in Bhutan

Project Title	Schemes	Period
Machinery and Equipment for Agriculture Mechanization Plan	Grant aid	1981
The project for Construction of Agriculture Machinery Centre	Grant Aid	1983
Agriculture Development Plan	Grant Aid	1986-1987
The Project For The Paro Vally Agriculture Development	Grant Aid	1989,1990,1993-1995
The project for Improvement of Machinery and Equipment for construction of Rural Agriculture Road	Grant Aid	2004
Grant Aid Program for Increased Food Prduction(2KR)	Grant Aid	1984-2004
Feasibility Study on The Lhuntshi and Mongar Integrated Agriculture Development Project	Development study	1986-1988
The Study on Ground Water Development in Wangduephodrang District	Development Study	1993-1995

The Study on Agriculture and Farm Road Development in The Lhuntse and Mongar District	Development Study	2001-2002
The Agriculture Research And Extention Support Project In Lhuntse and Mongar	Technical Cooperation Project	2004 -2009

Source: *Butan: National Programme to Combat Land Degradation*, RGOB with support from UNDP and GEF, 2009.

Environment Friendly Donors: World's first environment trust fund, Bhutan Trust Fund for Environment Conservation came into being in 1991 mainly financed by the Global Environment Facility (GEF). GEF mainly supports sustainable land management, agro-biodiversity conservation, management of protected areas and so on. International Centre for Integrated Mountain Research Development (ICIMOD) works in Bhutan through the government and the NGOs to support sustainable use of medicinal and aromatic plants. . UNDP is also working for the sustainable management of land. World Wildlife Fund (WWF) currently supporting the management of Royal Manas National Park, Sakten Wildlife Sanctuary and Thrumshingla National Park of Bhutan. WWF is striving to protect so-called endangered species like tiger, snow-leopard, Asiatic elephant, black-necked crane and white-belled heron. A detailed discussion of foreign assistance for environmental preservation in Bhutan has been made in chapter-7 of this dissertation.

Impact of Aid on Bhutan's Agriculture Sector

Previous section of this chapter was a glimpse of how the government of Bhutan effectively utilized foreign resources for its agricultural development. The major achievements of aid-funded development were setting up of agricultural infrastructure and agricultural institutions. As a result of this institutional and infrastructural development, agricultural sector of Bhutan witnessed multi-faceted progress involving encroachment of new land under agriculture, agricultural mechanization and commercialization of agriculture.

It has been elsewhere noted that demand for foodgrains started to rise due to growing population and ongoing development programmes. However, even in the early 1980s, only 3 percent of Bhutan's total land was under cultivation due to its mountainous terrain and huge forests.

Ultimately, the country faced shortage of foodgrains and had to import from neighbouring India. On average, 30 percent of foodgrains have been imported for meeting the growing demand for food. Under such a situation, permanent encroachment of land under cultivation was highly essential. This has been achieved over the decades of planned development. Up to 2007, 7.7 percent of total land area (3.8 million hectares or 38394 square km) have been brought under cultivation⁵. However, the share of employment in agriculture as well as the share of agriculture in GDP showed decreasing trend due to the development of industrial and service sectors. While more than half of GDP used to come from agriculture, the sector employing about 90 percent of employment in the 1960s, in 2007 approximately 65 percent of population earned their livelihood from agriculture and only 18.6 percent of GDP came from this sector. This signified Bhutan's overall economic development because the share of agriculture decreases in GDP with the pace of overall development of a country.

The other major impact of foreign aid is the development of agricultural infrastructure such as construction of farms roads, development of storage capacity and marketing of agricultural produces. As of march 2008, there was total of 645.75 km. farm roads. Besides there were 172.75 km. power-tiller track and as of June 2008, there was 1880.0 km. irrigation channel. A large number of research centres as well as irrigation centres have been established. Not only proper agriculture, infrastructures have been constructed for livestock and forestry. In March 2007, there was a total of 70 livestock centres including veterinary hospitals, livestock extension centres and so on. In case of forestry, there were 39 range offices and 62 beat offices. Due to the development of rural infrastructure, time taken by the households for various service centres has significantly come down. Table-5.2 shows the time taken by households to reach nearest service centres in Bhutan.

The other important achievements of the Government of Bhutan are agricultural commercialization and diversification. Agricultural

commercialization refers to cultivation of cash crops and resulting increase in marketed surplus. Instead of bartering agricultural produces, farmers now sell their products at markets at a price. On the other hand, agricultural diversification refers to the production of high value crops or livestock in place of low value products⁶.

Table-5.2: Distribution of Households by Time Taken to Reach Nearest Service Centers

Service Centers / Sources	Upto 30minutes	30-60 minutes	1-2 hours	2 hours or more	Not applicable
RNR Extension Centers					
Urban	38.3	4.8	0.6	0.2	56.1
Rural	30.2	18.1	18.5	19.3	14.0
Bhutan	32.6	14.1	13.1	13.6	26.7
Source of Firewood					
Urban	4.0	3.9	4.4	4.6	83.1
Rural	31.6	26.9	20.2	11.1	10.3
Bhutan	23.3	19.9	15.4	9.1	32.2
Feeder Road					
Urban	29.9	0.2	01	0.3	69.5
Rural	34.3	5.9	6.5	17.2	36.2
Bhutan	32.9	4.2	4.8	12.1	46.2
Food Market/Shop					
Urban	29.9	0.2	0.1	0.3	69.5
Rural	42.0	15.7	15.8	24.1	2.5
Bhutan	57.0	12.0	11.1	16.9	3.0

Source: *Poverty Analysis Report 2007*, NSB, RGOB.

Traditionally, Bhutan's main agricultural products used to be cereals viz. paddy, maize, wheat, barley and buckwheat. While rice is the main crop of western and inner Bhutan, maize is the dominant dry land and *tsheri* (slash and burn) crop cultivated in eastern Bhutan. However, during five decades of planned development, this production structure has completely changed. Emphasis is given on the production of high value products like vegetables, horticultural crops like apples and oranges, cardamom, agro-oils, mushroom and so on. Mushroom and lemon grass oil are the most important value added crops in Bhutan. These crops are produced mainly for the purpose of exports. Bhutan exports fresh mushroom to Japan and Thailand. During the early era of this new millennium, about 26 metric tons of lemon grass oil was produced and

these were exported mainly to Europe⁷. Table-5.3 shows the production of value added crops in Bhutan.

An assessment of the impact of foreign aid on agricultural growth shows that agriculture sector of Bhutan has grown at 1.3 percent during the 2002-07 period, which was below the targeted growth rate of 2.5 percent per annum. The most important achievement of Bhutanese agriculture is that agricultural sector achieved some sort of dynamism.

Table-5.3: Production of High Value Products in Bhutan, 2008.

Districts		Productions			
		Potato	Apple	Oranges	Mashroom
Thumphu		1797.49	1667.00.	0.00	1.93
Paro		4555.98	3071.70	0.00	1.42
Chukha		4471.98	0.00	2208.40	0.49
Samtse	1080.06	0.0	1893.40	0.58	
Punakha		477.12	5.40	341.50	0.12
Gasa		165.19	2.7	0.0	0.08
Wangdue		9207.77	36.30	206.60	0.78
Tsirang		1381.67	3.80	6059.30	0.42
Dagana		1146.27	18.9	6356.50	0.04
Bumthang		4998.31	197.90	0.00	0.29
Trongsa		674.76	2.1	156.70	0.31
Zhemgang		966.20	0.00	1690.30	1.05
Sarpang		823.55	0.00	6161.90	0.98
Lhuentse		1249.47	8.30	176.20	0.18
Mongar		4958.72	24.50	1058.10	0.15
Trashigang		6990.65	13.8	462.20	0.04
Trashiyantse		1726.65	4.90	201.70	0.10
Pemagatshel		2837.91	16.20	7143.00	0.05
S.Jongkhar		1442.71	4.80	4047.70	0.22

Source: RNR Census 2008, Ministry of Agriculture, RG0B

Bhutanese farmers now have well organized credit institutions. However,

this achievement, Japan's contribution deserves special attention. Due to modernization of agriculture, new agricultural technology in general and HYV seeds in particular can be implemented easily. However, mechanization is limited by the very rugged mountainous nature of agricultural fields. Due to increase in agricultural production, Bhutan now maintains a well established Public Distribution System.

In case of forest resources, the utilization remained low due to shortage of manpower and technical know-how. Major impact of foreign assistance in forestry is introduction of commercial logging, generating revenue from royalty and taxes, diversification of forest products through the establishment of forest based industries, preservation of forest animals through the establishment of national parks and so on. Pre-investment survey of forest resources was undertaken with Indian assistance between 1974 and 1979⁸. It helped the government to devise appropriate action and forest related policies. For instance, the government restricted commercial felling of timber and it was taken over by the department of forests exclusively. For value added forest products, trial industries with UNDP assistance was undertaken.

Subsequently, forest based industries have been established. Instead of producing raw timber for export, priority has been given to production of veneer and plywood, furniture, particle board, matches and so on. In this way, Bhutan's forestry sector got highly diversified and foreign aid has played a vital role. According to the Constitution of Bhutan, minimum 60 percent of forest is to be maintained for environmental sustainability. Thus, there are 12 percent additional forests for further exploitation.

Present Agricultural Situation in Bhutan

Present scenario of agricultural sector in Bhutan is completely different from that in the initial stages of planned development. The share of agricultural sector in GDP has sharply declined from approximately 55 percent in 1985 to 18.6 percent in 2007. While 95 percent of Bhutanese

people earned their livelihood from agriculture, the share has come down to 67 percent in 2007⁹. Cropping pattern has also changed over time. In place of traditional crops, more value added crops are being produced. Potato emerged as a significant cash crop. Some processing industries have come into being for the manufacture of non-wood forest products like bamboo and cane in some particular areas. Bhutan has achieved about 65 percent of food self-sufficiency, which is near the national target of 70 percent. This is far below 100 percent because of the limitations imposed by the mountains and huge forest cover for maintaining environmental sustainability. Bhutan is trying to offset its agricultural imports through the exports of horticultural crops and vegetables particularly in India and Bangladesh. In the land tenure system, land reform measures have been implemented and ceiling has been fixed at 25 acres. Due to all these changes, pattern of domestic consumption has also changed. Instead of coarse grains, people of Bhutan are now willing to consume meals with nutritious diet. This assures food security of the Bhutanese people.

Production: Bhutan's main crops are paddy, maize, wheat barley and buckwheat. Agriculture also produces a large quantity of horticultural crops and vegetables. Apple, orange, arecanaut, walnut, plum, pear, peach and guava are main fruits, while major vegetables are potato, chilly, radish, turnip, ginger, beans, brinjal, carrot, cabbage, cauliflower etc. Most livestock products supplement Bhutanese meals with milk, butter, cheese, pork, beef, goat meat, eggs and so on. Table-5.4 gives a glimpse of the nature of major crops produced in Bhutan.

Table-5.4 shows that rice is the main food crop in Bhutan, followed by maize. Rice is produced in western and central Bhutan. Main food crop in the eastern Bhutan is maize. However, maize is recently being replaced by rice whenever possible.

Table.5.4: Output of Major Crops in Current Prices (Nu. millions)

Crops	2000	2004	2005	2006	2007	2008
1. Paddy	891.08	1090.29	1136.63	1189.40	1278.84	1467.62
2. Maize	789.38	951.47	991.92	1037.97	1108.36	1263.25
3. Wheat/ barley	65.44	76.66	79.92	83.63	89.92	103.19
4. Buckwheat/millet	90.69	106.89	111.37	116.54	124.44	141.89
5. Apples	87.22	128.00	130.86	140.52	174.73	197.67
6. Oranges	335.61	730.00	746.34	801.40	996.53	1127.46
7. Potatoe	340.40	495.39	572.84	644.12	708.95	743.88
8. Ginger	12.05	13.11	15.16	15.81	17.41	18.26
9. Mustard	26.89	33.00	38.16	40.59	44.67	46.87
10. Pulses	25.27	38.71	44.77	51.70	56.90	59.71
11. Chilly	71.98	100.30	115.98	123.36	135.78	142.46
12. Cardamom	52.44	58.48	67.62	71.92	79.16	83.06

Source: *National Accounts Statistic Report 2000-2008*, NSB, RGOB, 2009

Animal husbandry is an important component of the rural economy. After producing livestock for sustenance for a long time, now a small amount of marketable surplus is produced. In addition to cattle, most farmers maintain a few chickens and pigs. Yak herding is a common practice in the alpine pastoral zones. The herders either barter or sell their yak products like butter, cheese, milk and meat to people in the lower areas in exchange of cereals and other essential household items¹⁰. Table-5.5 shows the production of livestock sector.

Table 5.5 shows that butter and cheese are two most important animal products. Poultry is kept for egg production and rarely reared for meat. So is the case of goats. Therefore, domestic goat meat production was as low as Nu. 58.7 million in the year 2008. The requirement for meat and livestock products in Bhutan is met through the imports from adjacent India. The imported cattles are slaughtered in two border towns Phuntsholling and Samdrup Jongkar.

**Table.5.5: Gross Value of Animal Products in Current Prices
(Nu. millions)**

Gross Output	2000	2004	2005	2006	2007	2008
Milk	143.9	179.1	194.5	202.1	234.1	270.7
Butter	891.6	1113.4	1328.1	1398.8	1445.7	1617.8
Cheese	541.6	702.9	838.5	934.6	968.1	1120.7
Pork	62.5	62.7	49.7	46.8	49.1	56.7
Eggs	42.0	46.4	36.0	51.9	57.6	73.0
Beef	34.4	42.0	42.8	46.1	53.6	59.3
Cattle Skin	12.0	20.3	20.6	21.0	20.7	21.8
Wool	6.3	7.1	5.3	5.0	4.4	4.2
Goat Meat	42.2	44.8	29.6	32.7	41.8	58.7

Source: *National Accounts Statistics Report 2000-2008*, NSB, 2009.

Forests occupy more than 72 percent of Bhutan's total land area. Hence, forests play a significant role in the lives of the people. Forests not only supply wood or timber, fuel for cooking, grazing of animals and so on, it supports varieties of small and medium scale industries. In some parts of Bhutan, non-wood forest products like bamboo and cane are used for the manufacture of household implements. Bhutan's total wood production may be grouped into four main groups-industrial wood, logs, other industrial wood and fuel wood. While industrial woods are used in the saw mills and other industries, fuel wood are used for domestic purposes. Table-5.6 shows the production of wood during the period 1981-2001.

Table 5.6 shows that production of industrial wood as well as various logging has decreased over the decades 1980s and 1990s. However, removal of fuel wood has gradually increased over time. This evidence shows that wood based industries have remained stagnant over the concerned period. On the other hand, removal of fuel wood increased due to growing needs of the rising population despite various restrictions imposed by the forest department of Bhutan.

Table-5.6: Round Wood Removals in Bhutan (thnd cb metres).

7	Industrial-wood	Sawlogs, veneer/ sleepers logs	Other industrial woods	Fuel- wood	Total
1981	278	240	38	2946	3224
1982	278	240	38	2946	3224
1983	278	240	38	2946	3224
1984	278	240	38	2946	3224
1985	278	240	38	2946	3224
1986	278	240	38	2946	3224
1987	278	240	38	2946	3224
1988	278	240	38	2946	3224
1989	278	240	38	2946	3224
1990	278	240	38	2946	3224
1991	-	-	-	-	-
1992	79	41	38	3875	3954
1993	64	26	38	3872	3936
1994	64	26	38	3876	3939
1995	45	18	27	3889	3934
1996	45	18	27	3920	3965
1997	45	18	27	3972	4017
1998	45	18	27	4066	4111
1999	45	18	27	4142	4187
2000	45	18	27	4221	4266
2001	45	18	27	4284	4329

Source: *Statistic Yearbook for Asia and the pacific 2002*, UN, 2003.

Agricultural Marketing and Exports: Traditionally, marketing of agricultural commodities in Bhutan was characterized by barter system. This was so because on one hand, there was no road transport facilities, on the other hand there was a lack of cash in the economy. However, due to the construction of road and transport facilities, markets for agricultural produce have emerged. In Bhutan, there are five types of markets for agricultural produce:

a) Bartering of agricultural produce

- b) Weekly markets
- c) Auction Yards
- d) Vendors and
- e) Traders

Bartering of agricultural products still exists in the northern Bhutan where road transport facilities are limited. The yak herders of the north come to lower land for bartering rice, salt and other items in exchange of yaks. Weekly markets are located in the urban and semi-urban areas. Farmers with small marketable surplus sell their products in the weekend markets. On the other hand, large marketable surplus are sold through the auction yards which are operated by the Food Corporation of Bhutan. Vendors collect small surpluses of the farmers and sell either in weekly markets or in auction yards. Cash crops are sold to the traders who in turn, export them to the Indian and Bangladeshi markets¹¹.

The Food Corporation of Bhutan (FCB) functions as a marketing arm of the Ministry of Agriculture. During the Eight Plan period (1997-2002), value of auction had risen from Nu.89 million in 1997 to Nu. 181 million in 2001. Aggregate auction value is increasing over time. The government of Bhutan often offers support prices through the function of the auction yards. If the farmers fail to realize remunerative prices through the selling of produce in the weekend markets, they sell their produce to the auction yards¹².

The process of transition to market oriented farming system as well as shifting of production towards high value products enabled Bhutan to export agricultural produce to the markets in India and Bangladesh. A huge amount of fruits and vegetables are exported to India. Bangladesh imports a substantial quantity of apples from Bhutan. Bhutan's potatoes are exported through Phuntsholling auction yard and capture the markets in North Bengal and Assam. Surveys are also conducted for finding new markets in these regions. Bhutan has seasonal advantage over North

Bengal and Assam during the monsoon when less amount of vegetables are produced in the latter places at that period. The government of Bhutan always facilitated exports of vegetables into Indian markets. Not only exports, the government always shows exertions for the development of domestic markets as well.

In order to protect potato farmers from falling prices and to facilitate auction procedures, The Ministry of Agriculture introduced following programmes:

- Identification of new markets
- Development of Auction Manual
- Standardization of 50 kg potato bags
- Allotment of a vacant place at Phuntsholing for the auction facilities.

However, a major part of the country in rural areas is characterized by barter system. It is necessary to set up more and more road transport facilities in the rural areas. Marketing information system is to be farther developed. Standardization of produce can secure remunerative prices to the farmers.

Food security: Food security refers to the access of all people to sufficient food for an active and healthy life at all times. Food self-sufficiency is a pre-condition for food security. Fifty years ago, Bhutan was self-sufficient in foodgrains production and even exported a small surplus to Tibet¹³. However, the situation recently has changed dramatically and Bhutan confronts severe food shortage. This food shortage is caused by the rapid population growth, expatriate labour for development activities as well as change in the consumption pattern¹⁴. Bhutan's geographical constraints impose critical limitation to produce food grains beyond a certain level. There are, on the other hand, Bhutan's comparative advantage in the production of vegetables and horticultural crops. Therefore, as mentioned earlier, one of the food policies of the government is to produce 70 percent food domestically and import the rest 30 percent from India. Bhutan in fact

suffers from food insecurity and foodgrain imports are more than the export of other crops.

Loss of agricultural land due to other forms of land use is a major threat to food security. Encroachment into fertile agricultural land for human settlement, model township, commercial enterprises, construction of roads etc. are reducing agricultural land and crop production. As a proactive measure to enhance domestic food production, the government placed arable land under a protection scheme. Secondly, although food production in Bhutan is labour intensive, there is shortage of farm labour due to the spread of education, off-farm employment opportunities and out migration of agricultural labour to the towns. Adoption of new agricultural practices is limited by the small size of holdings, fragmentation and Bhutan's mountainous slopes. Thirdly, wildlife damage of crops is a constant threat to food production and rural livelihood. At least 42 percent of rural household report wildlife damage. The damages are caused by boar, monkey, deer, elephant, bear, birds etc. To control the menace, the government of Bhutan has developed a National Human Wildlife Conflicts management strategy which is being implemented in several areas. Fourthly, there is lack of farmers' interest in producing substantial marketable surplus due to the absence of rural road access as well as access to markets, particularly in the remote areas of Bhutan.

Realising the importance of food security, government has been consistently pursuing a food security policy by giving a high priority towards increasing food production in all the Five Year Plans. Food security remains a priority concern in the Tenth Five Year Plan (2008-2013) also. In order to address the problem and poverty related issues in the vulnerable areas, Bhutan National Food Security Strategy has been developed. To promote appropriate use of agricultural land for food security, the project 'Protected Agricultural Land for Food Security' has been initiated. After the assessment of damage caused by windstorm to crops of the farmers in Mongar and other areas, a project 'Initiative on

Soaring Food Prices' has been developed through financial support from FAO. The National Plant Protection Centre of Bhutan carried out plant protection research and discussion with the district level agricultural officers. Bhutan's food security is expected to improve with the implementation of these projects and strategies.

5.3: Foreign Aid and Agricultural Output in Bhutan: A Simple OLS Regression

In chapter-3, it has been shown that the relationship between foreign aid and economic growth has become popular studies since the early 1970s. Various econometric models have been fitted, some with multi-country data and the others with single country data. Their results are also different. Most of the studies with single country data established positive relationship between aid and growth. However, these studies are based on aggregate economic performance of a country or several countries. The impact of foreign aid on sectoral growth of an economy has been undertaken only in a few studies. For the Nigerian economy, Godwin Apkodje and Omojimiti¹⁵ has shown that foreign aid does play a significant positive role in the growth of agricultural sector. Here, a simple OLS regression has been fitted for the economy of Bhutan to explore relationship between agricultural output and foreign aid.

Methodology and Data In this section, relationship between agricultural output, foreign grants, exports and GDP per capita (PCI) for the economy of Bhutan has been established. The model is a linear regression model of the following form:

$$Y = \beta_0 + \beta_1 \text{Grants} + \beta_2 \text{Expt} + \beta_3 \text{PCI} + u$$

where Y= growth of agricultural output, Grants= foreign grants, Expt= exports, PCI=GDP/capita and β_i = regression coefficients. Here agricultural output is dependent variable while foreign aid, PCI and exports are the three regressors, u= error term.

Data for the economy has been collected for 20 years for the period 1981-2000 from the Key Indicators for Asia and the Pacific Countries published by the Asian Development Bank (ADB). All are measured in constant prices of 1980. Although data are in fact time series data, stationarity tests have not been performed because power of the test is very low for 20 years data. For the regression purposes, data have been converted into 'log' form. The data for aid variable for the year 1987 has been collected from the *Selected Economic Indicators* published by the RMA, the Central Bank of Bhutan.

Results and Discussions Regression results show that agricultural output of Bhutan significantly depends on foreign grants, PCI and exports. The results of the fitted model have been shown in terms of Tables-5.7 & 5.8.

Table-5.7: Model Summary and ANOVA

R	R square	Adjusted R square	Std. Error of the Estimate
.964	.929	.916	.06318

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.839	3	.280	70.060	.000
Residual	.064	16	.004		
Total	.903	19			

Table-5.8: Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	6.169	.081	-	75.692	.000
Grants	.133	.062	.173	2.156	.047
Exports	.217	.021	.775	10.323	.000
PCI	.167	.052	.235	3.217	.005

Dependent Variable: Agricultural output

Tables (5.7 & 5.8) show that t-statistics for Grants, PCI and Exports all are positive and statistically significant. Therefore, agricultural output of Bhutan increases with increase in foreign grants, PCI and the exports. $R^2 = 0.929$ signifies that 93 percent of agricultural growth is explained by grants, PCI and exports. A one Ngultrum increase in foreign grants raises its agricultural output by 0.133 times more. Similarly, a one dollar increase in exports of the country raises its agricultural output by .217 times more. The model is a good fit as indicated by the high value of R^2 . The joint significance of the model is ascertained by the high F-value of 70.06.

5.4: Industrial Sector

Industrialization in Bhutan was almost non-existent till the 1960s. Excepting some construction activities, no major industries were set up even during the first decade of its planned development. Due to backwardness of the country, lack of trained personnel, scarcity of domestic fund and foreign investment, no such industrial venture was undertaken during that time. Emphasis was given only to agricultural development and construction of roads. A few negotiations were made with foreign countries for the development of industries without any fruitful achievement. In 1961, the Bhutanese government negotiated with a

Swedish company for technical assistance to develop a paper industry, but these negotiations were later abandoned. In 1963-64, a team of Japanese experts considered the possibility of a rayon pulp and paper plant with raw materials from conifer forests. However, this plan was also not realized¹⁶. Industrial sector was dominated by the production of handicrafts, a fruit preserving plant processing orange and pineapples and one distillery.

Industrial sector in Bhutan consists of three sub-sectors- construction, mining and manufacturing industries. Despite its abundance in mineral resources, mining was constrained by the lack of human capital and technical know-how. Water resources were also not utilized due to similar hindrances. However, industrialization of the country began with construction of roads in the First Five Year Plan (1961-66) and the development of small-scale and cottage industries in the Third Five Year Plan (1971-76). Subsequently, some major industries like forest-based industries, cement factory and major hydel-projects were undertaken with the help of Indian assistance.

Bhutan enjoys substantial cost advantage in the production and exports of hydro electricity. Considering the prospective benefit India can gain from electricity generation in Bhutan, the former extended financial and technical assistance for the establishment of hydro-electric projects. This was beneficial for both India and Bhutan since Bhutan used this electricity for domestic purposes, India too can import this electricity at a low cost. The import of electricity is crucial for India due to its power shortage in the North East India including West Bengal. In September 1961, India and Bhutan signed a pact to harness the Jaldhaka River Project for hydro-electric power. The plant was completed in 1968 and generated 18,000 kilowatts of power, of which Bhutan received free 250 kilowatts and the rest was exported to India. This plant is supplying electricity in the northern areas of West Bengal and to the south-western Bhutan, the areas without the supply of oil and coal for fuel. A Hydel

Directorate Commission was established with the help of technical assistance from the Indian Central Water Power Commission. Under this commission's direction, another power plant with 400 kw capacity was completed to serve the needs of Paro district. A few micro hydro-electric projects had been completed at Thimphu and Wanduphodrang. Subsequently, a number of micro-hydel projects were established with the help of assistance from other countries like Japan. These micro-projects have been established mainly for domestic electrification.

Chukha Hydro-power Project of Bhutan was established with the help of Indian assistance. The agreement of this project was signed in 1974 between India and Bhutan, although initial investigations were undertaken in 1961 and construction of the preliminary works began in 1973. Under this agreement, India agreed to finance the entire fund of Rs. 2460 million with 60 percent grant and 40 percent loan basis. The loan would be repayable over a period of 15 years and would carry an interest rate of 5 percent per annum¹⁷. Under this project, Bhutan agreed to sell surplus power to India at an agreed rate to be reviewed every four years. India agreed to purchase all the surplus power from this project. There was huge surplus of electricity in this project due to lower level of domestic electrification in Bhutan.

The project implementation by the Chukha Hydel Project Authority established under the 1974 agreement mentioned earlier, the authority is an autonomous body under the chairmanship of the King's representative in the Ministry of Development, including seven directors, four appointed by the government of Bhutan and three by the Government of India. Water and Power Consultancy Services (India) Ltd. provided consultancy services to the authority. Skilled and technical manpower was also supplied from India. The Chukha Hydro-electric Project is the largest investment project of Bhutan, which is now exporting substantial electricity to India and earning lot of foreign exchange through these exports.

India and Bhutan have undertaken some other mutually beneficial

co-operation in the sphere of electricity generation. In 1990, India and Bhutan decided to establish the Tala Hydro-electric and Wangchu Reservoir Scheme, popularly known as Chukha-II and Chukha-III projects. On January 1993, they signed a MOU for the development of Sankosh Multipurpose Project. This project would irrigate about half a million hectares of land in West Bengal. India has also been assisting Bhutan in the construction of Kurichu Power Project and Bunakha Reservoir Project with financial and technical support¹⁸. Table-5.9 shows domestic use and exports of electricity by major hydro-electric projects of Bhutan.

Table-5.9: Domestic Use and Exports of Bhutan's Major Hydro-electric Projects

Period	Domestic Sales (1)					Exports (2)				Total Sales (1+2)
	Basochu	Chukha	Kurichu	Tala	Total	Chukha	Kurichu	Tala	Total	
2000	-	117.8	-	-	117.8	2189.6	-	-	2189.6	2307.4
2001	-	140.2	0.3	-	140.5	2034.9	62.5	-	2097.4	2237.9
2002	91.1	149.5	6.2	-	246.8	1983.1	364.3	-	2347.4	2594.1
2003	107.3	151.3	12.8	-	271.4	2186.0	417.5	-	2603.5	2875.0
2004	192.2	158.4	15.1	-	365.7	2,203.3	508.4	-	2,711.7	3,077.4
2005	325.4	243.1	18.0	-	586.5	2,665.0	529.0	-	3,194.0	3,780.5
2006	388.7	133.4	19.6	61.3	603.0	3,459.5	518.0	1,001.3	4,978.8	5,581.8
2007	372.9	58.7	131.1	397.3	960.0	3,749.1	392.1	5,363.2	10,034.3	10,994.4
2008	398.2	71.4	177.7	205.6	852.9	3,724.5	349.0	6,959.2	11,032.6	11,885.5
2009	381.6	81.8	168.8	287.0	919.2	3,666.6	307.9	6,098.0	10,072.5	10,991.7

Source: *Selected Economic Indicators*, RMA, March 2005/July 2009/Sept. 2010.

Table-5.9 Shows that Bhutan's domestic electricity sales increased little bit more than twice but its export has increased four times during 2004-08 period. Performance in exports is best for Tala Project.

A detailed geological survey of Bhutan was essential for the discovery of its mineral deposits. Under the guidance of Geological Survey of India, this survey was made for the discovery of Bhutan's numerous mineral resources such as dolomites, marble, graphite, gypsum, copper, lead, coal, slate and so on for their commercial use and industrialization in Bhutan.

The first unit of Geological Survey of India was sent to Bhutan as early as in 1961¹⁹. Since then, Geological Survey of India is operating in Bhutan and exploring its mineral resources. Result was the establishment of Penden Cement Factory at Pagli, near Indian border in West Bengal. Penden Cement Factory was a complete gift to Bhutan by the Government of India, which was Bhutan's first modern large scale industry at that time. The Penden Cement Authority was set up in 1974 and its construction began in 1976. The plant was commissioned in 1980. However, full-scale commercial production began in January 1981 and produced 300 MT of cement per day. Limestone was transported by a 6 km rope way from the deposits. For this plant, coal and gypsum were imported from India. During the early 1980s, there were approximately 1,050 employees in this plant including 100 higher level staff. Eighty five higher level staff are Indians, most of the unskilled labourers are also from India²⁰. At present, both productive capacity as well as employment potential of this plant have improved. The surplus production is exported to India and it is to be noted that Penden Factory's cement bears a reputed market in adjacent West Bengal in India.

A number of other industrial ventures were undertaken with Indian assistance. Although a private sector concern, the Fruit Preservation Unit at Samchi was established during the second plan period through the separate and independent loan of Rs. 21 lakh from India. An Indian Industrial Research team revealed that Bhutan had huge scope for the establishment of forest-based industries. These industries were established, for the time being, at Gedu. The match factory at Peri was established with the help of Indian financial and technical assistance.

Not only India, other countries and multi-lateral agencies also marked their foot prints in the process of industrialization in Bhutan through financial and technical assistance. Bhutan's membership in Colombo Plan and that in United Nations opened new avenues of external assistance. United Nations Industrial Development Organization (UNIDO) assisted

Bhutan through its industrial planning and policies. Industrial training programmes were provided by the Helvetas, UNDP and Italy. The World Bank committed an external assistance (loans) of \$ 12030 thousand for the development of calcium carbide industry for the period 1987-88. Kuwait fund committed loans of \$ 11150 thousand in 1986 for the development of Bhutan Boards Product Limited as loans and \$ 2680 thousand was disbursed in 1986. Kuwait fund disbursed another loan of \$ 1520 thousand in 1985 for the development of timber or wood-based industries at Gedu, where the commitment was \$ 9560 thousand for this project²¹.

5.5: Development of Manufacturing Industries under the Five Year Plans*

The number of manufacturing industries in Bhutan remained few during the first three Five Year Plans. Even in 1977, total number of manufacturing industries was only 23 with gross sales of Nu. 42.2 million.

These industries were basically small-scale industries like timber, mineral, food and beverage processing industries, the only two modern industries in Bhutan being Samchi Fruit Preservation Unit and the Penden Cement Factories till 1980. Both the establishments were public sector undertakings. In addition to these, there were three distilleries. Figure-5.1 indicates poor performance of the manufacturing sector during 1980-81 period.

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[*Part of this section was published as an article jointly by the researcher and the supervisors in the *Indian Development Review*, Vol. 3, No. 1 (2005).]

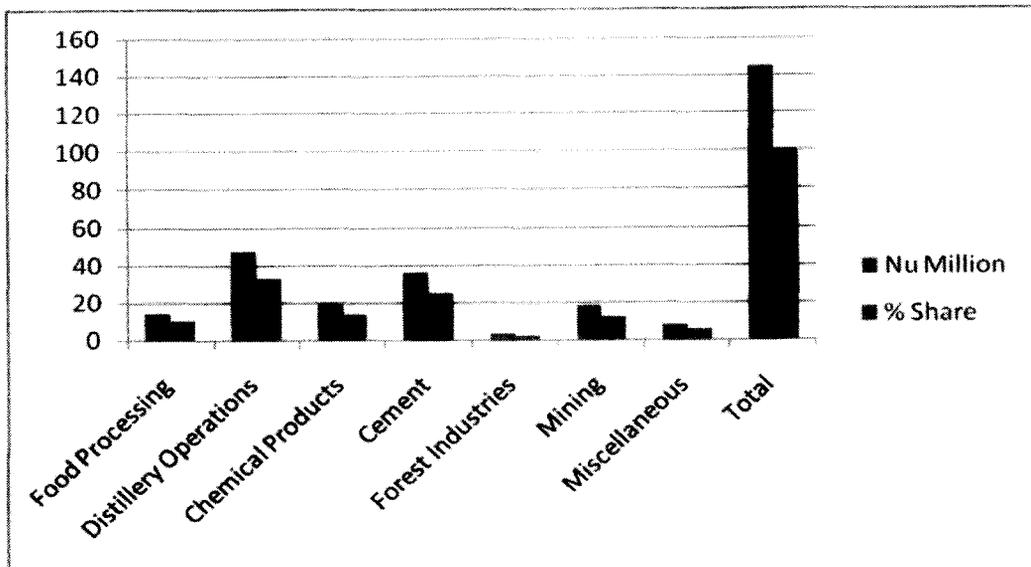


Figure-5.1: Manufacturing Production by Sector 1980-1981

Figure-5.1 shows that the share of distillery operations in production was the largest (32.4 percent) followed by cement production (24.8 percent). Forest-based industries exhibited the worst performance. Total manufacturing production from all industries amounted to Nu 145 Million.

Thus, in the early 1980s the country was lacking industrialization in comparison to the order of its needs. However, the necessity of massive industrialization was realized during the Fifth Five-Year Plan (1981-1987). Certain conditions conducive to massive industrialization emerged. These include (i) the availability of abundant and cheap power supply from Chukha Hydel Project, (ii) identification of a number of commercially exploitable mineral deposits and (iii) adequate development of the physical infrastructure. Under the circumstances, the Royal Government of Bhutan (GROB) has undertaken industrialization in order to achieve the following objectives: (i) maximize the value added from natural resources like minerals, forest, agricultural produce etc. (ii) increase the income level. (iii) generate higher government revenues. (iv) increase export earnings, improve the balance to payments situation, earn foreign exchanges and (vi) encourage traditional crafts and cottage industries.

In order to achieve these objective, Nu 708.411 million expenditure for industry and mining sector was undertaken in the Fifth Five Year Plan (1982- 1987). Table-5.10 shows total outlay of the Fifth Five Year Plan (1981-87) on Industries and mining sector.

Table-5.10: Fifth Five Year Plan Outlay of Bhutan on Industries and Mining Sector (Nu. million).

A. Regular Programmes				
	Programmes	Total	Development	Maintenance
1.	Industrial Estates	1.420	1.225	0.195
2.	Training	6.638	6.638	—
3.	Feasibility studies and report	6.035	6.035	—
4.	Geological survey of Bhutan	10.482	10.00	8.482
5.	Establishment expenses	13.340	5,577	7.763
	Total	45.915	29.495	16.440
B. Investment Programmes				
	Programmes	Total	Development	Maintenance
1.	Graphite Mining and Beneficiation	10.000	10.000	—
2.	State Mining and Processing	3.600	3.600	—
3.	Calcium Carbide	95,000	95,000	—
4.	Polythene Industry	7.160	7.160	—
5.	Nunlum Cement Plant	5 16.000	5 16.000	—
6.	Gypsum	5.000	5.000	—
7.	Cottage and small industries	22.181	22.181	—
8.	Others	3.555	3.555	—
	Grand Total = Regular Programmes + Investment +	708.411	691.67 1	16.440

Source: Fifth Five-Year Plan (1981-87), *Main Document*, RGOB.

Some of the industries in Table-5.10 were proposed to set up in the Fifth Five Year Plan (1981-87) itself. These were Nunlum Cement Plant and Calcium Carbide Manufacturing Plant at Singye Gaon near Phuntsholing. The estimated cost of Nunlum Cement Plant was Nu. 516 million. The Fifth Plan also proposed for two new forest-based industries, i.e., the Integrated Mechanical Wood Based Industrial Complex and Graded Particle Board at Gedu. The former was to be set up in accordance with the recommendation of FAO report in 1980. The plant would consist of a Veneer Factory and a Plywood Manufacturing Plant which would produce plywood, black board, door frame etc. The latter was set up for using the raw materials from the former industry. It produces laminated veneer and other particle boards. Graphic Mining and Beneficiation Industry at Haa was to be commissioned by 1984.

The Sixth Five Year Plan (1987-1992) spent Nu. 8.18 million for site development and pre-investment studies. However, the actual project was to

start in the Seventh Five-Year Plan (1992-1997) at an estimated cost of Nu. 1500 million. Bhutan Calcium Carbide Limited, Bhutan polythene Pipe Company and Gedu Wood Manufacturing Sector started production during the Sixth Five Year Plan (1987-92). In the Sixth Plan the government established Furniture-cum-Training Unit in Thimphu at a cost of Nu. 40 Million. In this plan, Thimphu Agro Industries Project was also undertaken at the cost of Nu. 70 million.

Though RGOB had taken some measures for privatization earlier, the bold step for setting up of private sector industries was undertaken during the Sixth Plan period. In the Sixth Five-Year Plan (1987-1992), some industries were set up under the private sectors. These include Yangzom Cement Plant, Dralha Flower Mill at Phuntsholing, Lhaki Cement Plant at Gomtu, the Ferro-silicon Project at Pasakha, a furniture unit at Bhalazhora, Marble Processing and Mining at Gida Kom and Integrated Wood Complex at Lobesa. Again, in order to develop private sector industries, certain project specific studies were carried out.

The Seventh Five Year Plan (1992-1997) set up another cement industry, viz. Dungsum Cement Plant. It was in eastern Bhutan which is relatively underdeveloped and economically poor. The seventh plan proposed to set up a high-density polythene pipe industry. This plan also encouraged other small scale and cottage industries which were already existing.

Most of the medium and large-scale industries were established in the Fifth and Sixth plan. The Seventh Plan implemented the Dungsum Cement Plant though the first initiative was undertaken in the Fifth Five Year Plan (1982-87). In the Seventh and Eighth Plans, emphasis was given on oil industries. In the Tenth Five Year Plan (2008-2013), main objectives of industrial development strategy included emphasis on cooperatives, women entrepreneurs, employment, privatisation and so on. However, manufacturing sector was, by and large, neglected in the Five Year Plans.

Emphasis was given to other areas like social, cultural and private sectors, good governance and sustainable development.

Performance of the Manufacturing Industries

Remarkable achievement in the field of manufacturing industries was particularly noticed during 1980s and 1990s. These industries are important in the context of production, sales, employment and exports.

Production and Sales of Manufacturing Industries: Bhutan has established a manufacturing sector over the plan period. The country has at present a diversified production structure in this sector. Bhutan's industrial sector includes three industrial sub-sectors (a) Manufacturing and Mining, (b) Power and (c) Construction. Among these, construction has played a dominant role in terms of production in 1980s. The situation changed in the early 1990s when the manufacturing sector was given due importance even though construction began to play a dominant role again from 1998 onwards. However since 1998, construction sector has been playing the dominant role once again. Though mining and construction has registered a considerable increase in terms of production, manufacturing sector has remained more or less stagnant. Table-5.11 shows the production of major manufacturing industries in Bhutan.

Table-5.11 shows that Penden Cement Authority is the largest seller of manufacturing products, the second largest being Bhutan Ferro Alloys. Total manufacturing production has doubled during the period 1998-2009.

Manufacturing Exports: Bhutan exports substantial amount of manufacturing goods. Bhutan Boards Product Limited, Bhutan Carbide and Chemicals Ltd, Bhutan Forest Product Limited, Penden Cement Authority and Bhutan Ferro Alloys Ltd. are the major exporters. Till the year 1999, Bhutan Carbide and Chemicals Ltd. has been the largest

exporter followed by Bhutan Ferro-Alloys Ltd. Total exports have also increased over time.

Table-5.11: Total Sales of Major Manufacturing Industries of Bhutan

Industry	Years											
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1. Army Welfare Project	237.93	234.87	255	283.8	255	190.4	233.8	240	279.4	315.	302.1	327.8
2. Bhutan Board Ltd.	383.82	257.75	228.6	294.1	288.8	491.5	546.2	394.6	381.7	400.0	397.8	413.7
3. Bhutan Carbide & Chemical Ltd	583.64	564.33	474.6	675.9	707.5	703.4	731.6	760.2	765.3	1382.9	1877.3	1189.7
4. Bhutan Fruit Products Ltd	112.27	124.90	108.8	111.6	133.9	122.4	174.1	69.4	134.7	148.5	560.8	201.2
5. Bhutan Polythene Co.	15.84	26.68	21.8	46.9	46.7	28.8	59.2	56.5	66.7	79.9	39.2	72.7
6. Penden Cement Authority	564.71	684.45	696.7	763.9	814.3	896.1	851.8	807.0	1352.3	1663.6	1327.5	1784.6
7. Bhutan Ferro Alloys Ltd.	488.43	534.73	428.4	579	643.2	658.1	748.3	651.2	678.3	1886.4	1898.8	1711.8
8. Bhutan Agro Industries Ltd.	24.75	21.38	19.7	27.9	27.7	26.1	34.9	34.6	45.2	50.5	57.6	71.4
9. Eastern Bhu Coal Co.	78.72	97.08	126.5	141	133.4	110.7	26.0	180.0	203	222.5	337.7	197.3
10. Druk Satair Corp. Ltd.	59.08	77.36	94	98.3	106	118.4	140.4	172.9	258.4	242.6	338.5	468.8
11. Druk Plaster & Chemicals Limited	-	-	-	-	-	-	31.3	40.5	49.2	44.5	42.4	51.9
Total	2549.2	2628.5	2446.5	3022.4	2944.4	2854.2	3476.3	3407.4	4214	6459.0	7179.8	6490.8

Source: Selected Economic Indicators, Royal Monetary Authority of Bhutan, Vol. 14, No. 1, March 2000 & Royal Monetary Authority Annual Report 2007/08, Royal Monetary Authority of Bhutan, Jan. 2009.

In the year 1993, export of major industries totaled at Nu. 985.31 million. However, in 1999 it increased to Nu. 468.98 million. Thus, exports of those industries increased three times over the period 1993-1999. Table-5.12 indicates the export structure of major manufacturing industries.

From Table-5.12 one of the interesting features of this export structure is that Bhutan exports most of its manufactured products to India. During period 1993-2009, share of manufacturing exports to India

ranged from 93 percent to 99 percent. The share of exports to third countries remained very low till 2009.

Employment: The problem of unemployment in Bhutan has emerged as a serious issue. In such a situation, the process of industrialization can create ample employment opportunities especially because most of the industries are forest-based and agro-based.

Table-5.12: Export Structure of Major Industries (Nu. million)

Years	Total Exports	Exports to India		Exports to Third Countries	
		Total	Share	Total	Share
1993	752.22	750.15	0.99	7.07	0.01
1994	827.88	816.54	0.99	11.34	0.01
1995	1627.39	1566.88	0.96	60.51	0.04
1996	1800.99	1771.44	0.98	29.25	0.02
1997	1975.33	1964.15	0.99	11.18	0.01
1998	2191.30	2162.72	0.99	28.58	0.01
1999	2098.21	2051.44	0.98	46.77	0.02
2000	1644.5	1578.9	0.96	65.6	0.04
2001	1997.5	1929.4	0.96	68.1	0.04
2002	2022.9	1986.2	0.98	36.7	0.02
2003	1880.4	1857.7	0.99	22.7	0.01
2004	2483.7	2446.0	0.98	37.7	0.02
2005	2317.9	2253.1	0.97	64.8	0.03
2006	3065.7	3000.6	0.98	65.1	0.02
2007	4916.8	4572	0.93	344.8	0.07
2008	5747.1	5628.7	0.98	118.4	0.02
2009	5029.3	4938.9	0.98	90.4	0.02

Source: *Selected Economic Indicators*, Royal Monetary Authority of Bhutan, March 2000/Sept 2010 & Royal Monetary Authority Annual Report 2007/08, Royal Monetary Authority of Bhutan, Jan. 2009.

In the year 1997, there were 12592 persons engaged in mining and manufacturing sector, 47 percent employment was provided by mineral-based industries and 20 percent by agro-based industries, 18 percent by forest based industries and 15 percent by other non-classifiable industries. Therefore, although the number of mineral based industries is the least, it is playing the most significant role in terms of employment. One of the

interesting features of employment is that the sex ratio of employees in the manufacturing and mining industries was 2.4 males to every one female worker.

Problems of the Manufacturing Sector: The establishment of a strong manufacturing sector in Bhutan was a major objective of the Five-Year Plans, especially since the Third Plan (1971-76). Equally important was the increase in the share of manufacturing sector in the Gross Domestic Product. However, till the Tenth Five Year Plan (2008-2013), Bhutan's manufacturing sector remained basically undeveloped. Various geographical and economic hindrances attributed to lower level of the development of the manufacturing sector.

Bhutan is a landlocked country without any sea port service. Transport facilities are likely to be impossible. Its mountainous terrain geographical location rules out the possibility of railways. Construction of highways also involves high cost. Despite the connection of major towns by highways, most of the interior areas and villages are still lacking metal roads. The country is producing and exporting substantial amount of hydropower. But the irony is that most of the villages are going without electrification. Other services like telecommunication and air services are also very limited. By and large, rural infrastructure is still underdeveloped. Under the circumstances, transportation cost becomes very high. Profitability and competitiveness of the manufacturing sector become limited by the bottlenecks mentioned.

Input supply is another problem for the development of the manufacturing sector. Inputs like machinery spares and chemicals are imported from India. These small and vital inputs sometimes pose serious problems due to the absence of proper supply network. Forest based and mineral based industries frequently face this type of problems.

Labour and management problem is a major concern. Since indigenous labour with skill and operational efficiency is very limited, most of the manufacturing industries had to depend upon Indian labour.

Further, the domestic producers lack required experience and management skills because most of the manufacturing industries are newly established. Thus, productivity becomes hampered and remains low.

The falling government expenditure in the manufacturing sector may be treated as another bottleneck. In 1982, the Central Government expenditure on mining, manufacturing and construction was Nu. 8.9 million. In the late 1980s the same expenditure increased to Nu. 99.6 million because a few new industries were set up. It further increased in 1988. However, in 1998 the expenditure dramatically fell in Nu. 10.5 million. Even in 2001, the Central Government expenditure in the mining, manufacturing and construction sector was only Nu. 24.2 million, the lowest of all the sectoral expenditures, which marginally increased to Nu. 75.2 million in 2004²².

5.6: Interdependence between Agriculture and Industries: A Simultaneous Equation Model

Agriculture is the backbone of Bhutanese economy. However, agricultural development, to a large extent, depends on industrialization of a country like Bhutan. In fact, both the agricultural and industrial sectors are mutually interdependent. They are interlinked with the so-called 'forward linkage' and 'backward linkage'. 'Forward linkage' means that the products produced in the agricultural sector like bamboo, wood, silk etc. are used for industrial production. Labour is also transferred from agriculture to the industrial sector for the development of the latter²³. On the contrary, 'backward linkage' implies that products of industrial sector such as machineries, fertilizers, pesticides etc. are used for agricultural development. In this section, an effort has been made to explore the interdependence between agriculture and industry in case of Bhutan. We can use statistical tools for exploring the interdependence. It is convenient to establish the relationship with the help of a simultaneous equation system. The model takes the following equations form:

$$Y_1 = \alpha_0 + \alpha_1 Y_2 + X + u_1 \quad (1)$$

$$Y_2 = \beta_0 + \beta_1 Y_1 + Z + u_2 \quad (2)$$

where Y_1 = agricultural production, Y_2 = manufacturing production, X = foreign grants, Z = gross domestic savings, u_1 and u_2 are the two stochastic error terms. Here Y_1 and Y_2 are endogenous variables while X and Z are exogenous variables. Therefore, the model is a two equation simultaneous system.

Identification Identification is important because it determines the method of estimation to be followed among all the alternative methods under simultaneous equation system. There are two types of conditions of identification-order condition and the rank condition. Order condition is necessary condition, while the rank condition is sufficient condition for identification. The order condition is satisfied for both the equations under consideration. The rank condition for identification, in a two equation system, requires that at least one of the exogenous variables excluded from the first equation must have a non-zero population coefficient in the second equation²⁴. Here, equation (1) excludes Z variable and equation (2) excludes X variables which have non-zero coefficients in equation (2) and (1) respectively. Thus the rank conditions for identification are also satisfied by these two equations.

Nature and Sources of Data: Data* have been collected for 20 years between the period 1981-2000 from the Key Indicators for Asia and the Pacific Countries (1991 and 2002 issues) published by the Asian Development Bank (ADB). All variables have been measured in real terms. Agricultural production and industrial production series are measured on the basis of fixed prices, specifically at 1980 factor cost. In case of foreign grants and savings data, the values at current market prices have been divided by implicit GDP deflator for converting them into real variables. Due to missing of data for the foreign grants variable for the year 1987 in the above reference, it has been collected from Selected Economic Indicators (Dec. 1989) published by the Royal Monetary Authority of

Bhutan, the Central Bank of the country. Although data are in fact time series data, stationarity tests have not been performed because power of the test is very low for 20 years data.

Test for Simultaneity: When there is no simultaneity in an equation system, the OLS estimators are consistent and efficient. But if there is simultaneity, OLS estimators are not consistent. In a situation of no simultaneity, if we apply simultaneous equation methods, the estimators thus obtained are consistent but not efficient²⁵. Therefore, tests for simultaneity have been performed before estimating the equations. The test followed here is the popular Hausman's specification error test. For this test, Y_1 has been regressed on all exogenous variables (X and Z) to obtain estimated Y_1 (\hat{Y}_1) and the residuals (V_t). Then Y_2 has been regressed on estimated Y_1 and the residuals. Since the coefficient of V_t in this regression is statistically significant with t - statistic 7.757, there is simultaneity between Y_1 and Y_2 . The results of this regression have been shown in Table-5.13.

Table-5.13: Results of Hausman's Test

Regressors	Unstandardized coefficients		Standardized coefficients		
	B	Std.Error	Beta	t	Sig.
Const.	-7.373	1.284		-5.740	.000
Z	.720	.104	.438	6.919	.000
\hat{Y}_1	1.778	1.888	.614	9.444	.000
v_t	2.019	.260	.328		.000

Dependent variable Y_2

Estimation: Both the equations in this model are exactly identified. In case of the exactly identified equations under simultaneous system both Indirect Least Square (ILS) and Two Stage Least Square (TSLS) methods are applicable for estimation and both methods would produce identical results. The estimation method followed here is the TSLS because it is easy

to apply.

From these reduced form equations, we get estimated Y_1 (i.e. \hat{Y}_1) and estimated Y_2 (i.e. \hat{Y}_2), which are used as the regressors in the second stage of the TSLS. For applying the TSLS method, we first derive two reduced form equations from the given structural equations. The reduced form equations are:

$$Y_1 = \hat{w}_0 + \hat{w}_1 Y_2 + \hat{w}_2 X + \hat{u}_1 \quad (3)$$

$$Y_2 = \hat{w}_3 + \hat{w}_4 Y_1 + \hat{w}_5 Z + \hat{u}_2 \quad (4)$$

In the second stage, the original structural equations are estimated by replacing Y_1 and Y_2 by their estimated values obtained in the first stage regression i.e. replacing Y_1 by \hat{Y}_1 and Y_2 by \hat{Y}_2 . The results of the TSLS have been shown in Table-5.14.

Dependent variables	Regressors	Unstandardized coefficient		Standardized coefficients		
		B	Std. Errors	Beta	t	Sig.
Y1	Cont.	5.33	.247		21.577	.000
	X	.206	.118	.268	1.741	.100
	\hat{Y}_2	.253	.058	.67	4.355	.000
Y2	Cont.	-4.517	2.605		-1.734	.101
	Z	.864	.217	.526	3.985	.001
	\hat{Y}_1	1.365	.382	.471	3.571	.002

Table-5.14: Results of TSLS

Discussions and Conclusion: For the first equation, the regression coefficient of \hat{Y}_2 is positive (0.253) and statistically significant (t-statistic = 4.355). Therefore, industrial production in Bhutan positively affects its agricultural production. A one Nu. increase in industrial production increases the agricultural production by 0.253 times more. Similarly, for the second equation, the regression coefficient of \hat{Y}_1 (1.365) is also positive and statistically significant (t-statistic=3.517). Thus, increase in agricultural production raises industrial production. A one Nu. increase in agricultural production raises its industrial production by 1.365 times

more. The results show that, for the economy of Bhutan, agricultural development and the industrial development are mutually interdependent. There is both 'forward linkage' and 'backward linkage' in this economy. It is also interesting to notice that the coefficient of grant variable in the first equation is positive (.206) and significant (t-statistic=1.741) at .01 level.

5.7: Service Sector

Service sector is the core sector of an economy because the quality of life of people is determined by the nature of services provided by the government. It is a vast sector of an economy comprising a large number of varied activities. Services can broadly be divided into two broad categories-economic services and social services. Economic services include internal and external trade, tourism, transportation, communication and so on. Health and education are the crucial components of social services. These social services are fundamental inputs for generating human capital of a country. However, despite this utmost importance of the service sector, it was critically underdeveloped in Bhutan till 1960.

Economic development of Bhutan has been substantially retarded by the lack of human capital. Realizing this bottleneck of development, the Government of Bhutan extended its service sector through the extension of communication, trade and tourism related activities as well as the promotion of education and health services over the plan period. Bhutan now possesses its own human capital base for running a big network of public services and basic social services like health and education. Quality of life of the Bhutanese people has improved with access to education and health services (e.g. medical facilities, sanitation, potable water, family planning programmes), as well as access to primary, secondary, higher secondary, tertiary and technical education. Education and health would be the subject matter of this section. Economic services like tourism and

trade would be discussed in the subsequent section as well as in chapter-6.

5.7.1: Education

Bhutan's traditional education system was confined to monastery premises since the advent of Buddhism in the 8th century A.D. Main subject matter of this curricula comprised religion, culture, dance, drama, art, crafts, philosophy and meditation. Secular and modern education was completely absent in this monastic education. Bhutan's first school was opened in 1915 and some more school in the 1950s²⁶. In the eve of the inception of Bhutan's First Five year Plan in 1961, there were only 59 primary schools, 29 run by the government and the rest by the private bodies. In addition, 100 students were getting their education in India. Total number of students during that time was 14,540 (11,600 boys and 2,932 girls)²⁷. There was no secondary and tertiary education or technical education in Bhutan. Petty teachers were also untrained, professionally. No text books in national language and systematic curricula were available. Therefore, the quality of available primary education was very poor.

Under such a situation, the government had to adopt a holistic plan for the development of education infrastructure from the first plan onwards. A number of primary schools, high schools, higher secondary and public schools were established. One teacher training institute, one museum, one technical school and one library were also established. Provision was also made for translation and publication of text books. Total expenditure for the development of educational infrastructure in the First Five Year Plan (1961-66) was Nu. 9.4 million, 8.8 percent of total plan outlay.

Quality, rather than quantity of education was given priority at this juncture. In the Second Five Year Plan (1966-71), only a few schools were

established, the reason being the shortage of trained teachers and less number of students in the schools due to remoteness and geographical constraints. At the end of the Second Plan (1966-71), there were 83 primary schools, 15 junior high schools, 4 high schools and there were about 9,000 students receiving education under the guidance of about 500 teachers. Central schools were also established. Central schools were at the middle of a cluster of secondary schools.

In this early phase of planned development, hostel facilities were given to the students from remote areas of the country. The government provided free education to all students. For the public schools, the government provided food, bed and clothing free of cost. A hostel was run by the Bhutan Government for the students studying in India. Scholarships were given to some students studying abroad. However, educational policies of the government emphasized cutting down the number of scholarships as domestic educational infrastructure was getting developed. A lot of money was spent in all the Five Year Plans for the development of educational infrastructure in the country. Table-5.15 shows educational expenditure over the Five Year Plans:

Table-5.15: Education Budgets under Various Plans (Nu. million)

Five Year Plans	Period Covered	Total Plan Outlay	Educational Expenditure	Percentage of Total Plan
First FYP	(1961 -1966)	107.1	9.4	8.8
Second FYP	(1966 -1971)	202.2	35.7	17.7
Third FYP	(1971 - 1976)	475.2	90.0	18.9
Fourth FYP	(1976 - 1981)	1106.2	134.6	12.2
Fifth FYP	(1981 - 1987)	4648.3	519.1	11.2
Sixth FYP	(1987 - 1992)	9559.2	778.8	8.1
Seventh FYP	(1992 - 1997)	15,590.7	1,738.0	11.1
Eight FYP	(1997 - 2002)	34,981.7	3,292.7	9.4
Ninth FYP	(1997 - 2002)	70,000.0	10,209.4	14.5
Tenth FYP	(2008-2013) (draft)	141,692.2	33,453.5	23.6

Source: Department of Education, Country Report, RGOB, Feb, 2009.

Table-5.15 shows that the Tenth Five Year Plan (2008-2013) of Bhutan registered highest share in educational expenditure. This increasing expenditure on education accelerated the process of development of educational infrastructure. The result was increase in the number of educational institutions, growth of literacy, enrollment ratio and growing share of women in education. Table-5.16 shows education situation of Bhutan at the end of the Sixth Five Year Plan (1987-92):

Table-5.16: Educational Institutions, Pupil Enrolment and Teachers 1990

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

Source: Seventh Five Year Plan (1992-97), *Main Document*, RGOB.

School curricula were developed in accordance with the Indian system of education up to the Sixth Five Year Plan (1987-92). Since, there was no board of examination for class-X and class- XII during that time, students appeared in examination in the Indian board of examinations. Students throughout Bhutan sit for a Common Examination in Class VIII, set by the Bhutan Board of Examination. After the Common Examination in Class

VIII, students in Bhutan sit for the Indian Certificate of School Examination in Class X and then for the Indian School Certificate Examination in Class XII²⁸. During the Sixth Five Year Plan (1987-92), two major changes in Bhutan's education policies were involvement of local communities in the primary education and development of Bhutan's own curricula keeping in mind the agrarian structure of the economy. Agriculture is one of the major subjects in the primary education of Bhutan.

Higher education was also developed simultaneously. Within the Ministry of Education the Department of Adult & Higher Education (DAHE) formally established in 2003 in accordance with the Ninth Five-Year Plan (2002-2007), has the mandate to oversee all aspects of tertiary education, non-formal education and adult education. Bhutan's higher education includes various colleges, all under the Royal University of Bhutan. The University, the first in the Kingdom now administers colleges viz. College of Education, College of Science and Technology, College of Natural Resources, Sherubtse College, Gaedugg College of Business Studies, Royal Institute of Health Science, Royal Institute of Management, National Institute of Indigenous Medicine, Institute of Language and Cultural Studies and Jigme Namgyel Polytechnic.

Foreign assistance had to play a vital role for the development of education infrastructure and promotion of literacy rate in the country. All the initiatives under the First Five Year Plan (1961-66) and the Second Five Year Plan (1966-71) of Bhutan were undertaken with the help of Indian aid. The Third Plan (1971-76) onwards, assistance from other bilateral and multilateral agencies showed growing interest for education in the country. There are several other donors in education: World Bank, UNICEF, WFP, Helvetas and Canada. The programmes are complementary in most cases. Helvetas/SDC closely worked with IDA/World Bank and actively promote donors' coordination. Most of the donors focused on the quality of education and concentrated in the field of teacher training. Denmark has

implemented various teacher training projects. Training, cultural aspects and indigenous knowledge received due attention in these project planning and implementation throughout the project and programmes²⁹.

In the field of primary and vocational education, donors maintained close cooperation with Bhutan. In the higher education, assistance was extended by the donors for the development of public-private partnership. The Danish supported programme closely monitored further developments in the education and health areas of special interest to the private sector to promote further private sector involvement. Canadian International Development Agency (CIDA) invited Bhutan to submit a proposal to continue Canada's assistance for strengthening its education. Its first project (1992-1998) focused on strengthening Bhutan's two teacher training institutes, upgrading academic background of secondary school teachers and post-secondary lecturers, enhancing the capacity of curriculum and professional support services and the Bhutan Board of Examinations³⁰. UNICEF concentrated on basic education, girl's education and non-formal education. Non-formal education programmes are continued into the current country programme and comprehensive assistance is provided through policy formulation, development of curriculum and materials, capacity building of instructors and improvement in the learning environment of such centres. While Denmark focussed on basic education, Switzerland on teacher training.

Education remained one of the priority sectors even in the Ninth Plan (2002-07) and the Tenth Plan (2008-13). Education Targets for the Tenth Plan are:

- Enhance Primary Net Enrolment to near 100 percent
- Enhance Basic Net Enrolment to near 100 percent
- Enhance Enrolment of Girls in tertiary institutes to 80 girls for every 100 boys
- Enhance literacy rates upto 80 percent.

The Tenth Plan capital outlay for education sector is Nu. 11,755.99 million.

The government views public resource expenditure on education as vital investment that have both immediate and long term benefits for individuals and the society. Education plays a crucial role in accelerating economic growth through creating a productive national workforce. The advent of a democratic form of governance in Bhutan in 2008 also demands a better education policy to make well-informed choices and participation in national and local political affairs. Moreover, the expansion of and improvements in the quality of education at all levels contributes to determine the emergence of a knowledge-based society. For these reasons, education sector continue to receive high priority within the Tenth Plan (2008-13). As per the plan objectives, special emphasis will be laid on sustaining universal basic education in terms of enhanced net enrolments, providing equal opportunity and access to education at all levels, improving education quality and standards, enhancement of value based education and promotion of national literacy. Further expansion of higher education, particularly technical and management education are other areas of significant priority for human capital formation³¹.

As a result of the importance given in education in all the subsequent plans over time, Bhutan has been able to set up a strong human capital base within the plan period starting with nothing at the 1960s. Bhutan Civil Service base is now well staffed with 19,848 personnel. Student-teacher ratio is 30:1, the highest in the Community Primary Schools and the lowest in higher studies. Table-5.17 shows the number of institutions and the students in 2008.

Table-5.17: Number of Schools and Institutions, Staff and Students, Bhutan, 2008.

	CPS	PS	LSS	MSS	HSS	Pvt.	Other Inst.	NFE Centres	Daycare Centres	Total
Number of School and Inst.	261	81	89	44	24	24	19	747	10	1,299
Teaching Staff	1000	799	1627	1177	754	298	814	736	26	7231
Bhutanese	998	792	1537	982	510	189	737	736	26	6507
Non-Bhutanese	2	7	90	195	244	1.9	77	0	0	724
Number of Students	29702	22813	48706	32292	16155	7444	5542	13830	294	176778
Male	15174	11516	24113	16481	8491	3752	3702	4183	143	87555
Female	14528	11297	24593	15811	7664	3692	1840	9647	151	89223
Student to Teacher Ratio	30	29	30	27	21	25	7	19	11	24

Source: *Statistical Yearbook of Bhutan 2009*, National Statistics Bureau, (Note: CPS-Community Primary School, PS-Primary School, LSS-Lower Secondary School, MSS-Middle Secondary School, HSS-Higher Secondary School, Pvt-Private School, NFE-Non-Formal Education, * Other inst. includes tertiary education, vocational institutes and Sanskrit Pathshala etc. * Tertiary education doesn't include students studying abroad).

Table-5.17 shows that the number of students entering into higher secondary level drastically decreased vis-a-vis lower secondary level. It is a result of the large number of dropouts in the lower and middle secondary level. This is a major problem in the development of education. There are so many other problems faced by the education sector in Bhutan. Until recently, the country depended heavily on expatriate teachers in education due to the lack of national teachers. In 1995, out of 2,400 teachers almost 600 (25 percent) were non-Bhutanese. As a result of the teacher training programmes the trend is now changing. The number of non-Bhutanese teachers has remained stable although total number of teachers is going up. The admission problems in urban areas have also given a boost for the establishment of private schools. High number of pupils moving to another district poses a severe cost burden because boarding is expensive. It may also accelerate rural-urban migration process³².

5.7.2: Health and Sanitation

Standard health of the people is an important determinant of productivity of labour. Health is more important determinant than education for the creation of active labour force and human capital in a particular country. Health facilities in Bhutan had been almost non-existent till the 1950s. People were dependent on traditional medicine and village healers. Before the inception of the First Five Year Plan (1961-66), there were only 4 hospitals, a few dispensaries and a Leper Colony with 120 patients. Medical staff was meagre. There were only 2 doctors in two hospitals and all the dispensaries being under the charge of compounders.

Under such a situation, the First Five Year Plan (1961-66) had to introduce modern medical services through the construction of a comprehensive medical base. Primary task of the First Plan was to: (i) establish a Directorate of Health Services for proper organization, administration and guidance of the department, (ii) improve working condition of existing hospitals and dispensaries and to open two more dispensaries, (iii) start one mobile dispensary and (iv) initiate measures to control and eradicate communicable diseases such as small-pox, malaria, tuberculosis, leprosy, goitre and helminthiasis³³. All the measures for Bhutan's present health infrastructure were introduced in the First Plan (1961-66). In the Second Plan (1966-71), existing institutions were strengthened with more medical personnel and better equipments. At the end of the Second Five Year Plan (1966-71), there were 16 doctors, 53 compounders, 34 nurses and 20 vaccinators.

Bhutan's health infrastructure comprises a network which starts with Basic Health Units (BHUs), Peripheral Health Post (dispensaries) and progresses to district, regional and national referral hospitals. Over the Third Plan and Fourth Plan period, a number of Basic Health Units (BHUs) was established. Number of doctors, nurses, technicians has increased. During the early Fifth Plan period (1981-87), basic health structure of Bhutan consisted of primary health coverage through 42 Basic Health

Units, 40 dispensaries, 13 district hospitals and 3 referral hospitals. There was one hospital bed for every 2000 population. Rural piped water supply schemes were started in the Third Plan (1971-76) and till the end of the Fourth Plan (1976-81), 250 schemes were completed which have had a significant effect in controlling water borne disease in these areas³⁴.

Under the Sixth Five Year Plan (1987-92), Bhutan's health sector had undergone major changes. A major shift has occurred since 1979 from the purely curative to preventive and promotive aspects of health services, from urban to the rural population and from mass campaigns to a system of integrated health services. Emphasis has been put on eliminating disparities and augmenting health services for the under privileged and in the underserved areas of the country³⁵. During that time, the Health Department ran three training institutions: (i) Health School at Thimphu, to provide courses in mid-level manpower training and diploma course in general nursing, (ii) National Institute for Family Health at Gayleghug, to provide reorientation courses to all types of health workers and to other related departmental staff and (iii) an Indigenous Training Centre where indigenous physicians and pharmacists are given training. Immunization services had been undertaken to achieve universal coverage by the year 1990.

Since then, a few hospitals and some Basic Health Units (BHUs) have been constructed up to the Tenth Five Year Plan (2008-2013). As of 2008, there were 31 hospitals and 178 BHUs spread over 205 Gewogs providing primary health care services. Besides the allopathic system, there exists a well established network of Indigenous Medical Facilities under the Institute of Traditional Medical Services that has basically three functions- medical services for out patients, collection and manufacturing of indigenous medicines and research and training of the Physicians (Drungtso) and Compounders (Menpas). Table-5.18 shows recent health infrastructure of Bhutan:

Table-5.18: Current Health Facilities in Bhutan

Institutions	2004	2005	2006	2007	2008
Number of hospitals	29	29	29	29	30
Number of basic health units	176	176	176	178	178
Number of dispensaries/outreach clinic	476	485	514	519	519
Number of indigenous hospitals	1	1	1	1	1
Number of indigenous dispensaries	21	21	21	26	35
Persons per doctor*	5227	4379	4312	4197	3924
Number of hospital beds**	1113	1078	1133	1159	1159
Persons per hospital bed**	676	589	570.9	568	568
Doctors per 10,000 persons	1.9	2.3	2.3	2.4	2.5
Hospital bed per 10,000 persons**	15	17	17.5	17.6	17.6
Population covered by health care (%)	90	90	90	90	90
Population access to safe drinking water (%)	n.a	84	81.4	82.3	83.2
Women attended by trained personnel during child birth(%)	53.6	52.3	57.1	53.6	66.3
Doctors	135	145	150	154	171
DHOs/ ADHOs	23	22	22	37	38
Health Workers(HA/BHW/PMW)*	201	171	229	232	425
Basic Health Workers	171	210	173	173	n.a
Sister and Nurses / B.Sc Nurses**	522	538	587	559	567
General Nurse Midwife/Staff Nurses (GNM)	183	202	200	255	n.a
Auxiliary Nurse Midwife (ANM)	140	134	134	123	n.a
Assistant Nurses	175	174	174	176	99
Other Technicians	368	438	420	510	552
Indigenous Physicians	31	30	30	38	n.a
Indigenous Compounders/Menpas	26	36	42	43	54
Malaria Workers	47	48	48	48	48
Village Health Workers (VHW)	1,201	1,200	1,087	1,200	1,200

Source: *Statistical Yearbook of Bhutan 2009*, NSB, RGOB.

Table-5.18 shows that the number of persons per doctor has decreased from 5227 to 3924 during 2004-2008. Similarly, hospital beds per

10,000 persons increased from 15 to 17.6, while the number of dispensaries increased from 476 to 519 during the same period.

Sanitation facilities have been developed by considerable extent. Currently, around 75 percent of rural residents have access to safe drinking water sources reflecting a sharp reduction in the rural-urban gap in terms of their access. This has been possible due to the effective implementation of Rural Water Supply Schemes all around the country. The proportion of population with access to safe drinking water increased to 84.2 percent in 2005 with improvements particularly noticeable in rural areas. The proportion of population with access to toilet facilities was 89.2 percent in 2005 as compared to 88 percent in 2000. In rural areas, sanitary latrines were also available to 86.6 percent of rural population. Goal-7 (Target 10) of the Millennium Development Goals (MDGs) of Bhutan 'Halve between 1990 and 2015, the proportion of people without sustainable access to safe drinking water and sanitation' was achieved by the year 2007³⁶.

Due to increase in the number of health institutions, qualitative upgradation of health infrastructure as well as the number of health personnel, quality of life of the people have considerably improved over the plan period. Life expectancy has increased to 66 years from 46 years in the seventies. Both infant mortality rate and maternal mortality rate have decreased. Between the period 1990 and 2007, mortality of under-five children has reduced by about half. Under-five mortality rate was estimated at 61.5 per 1,000 live births in 2007. A major factor responsible for the sharp declines in child mortality has been attributed to the expanded programme of immunization. Bhutan is well on track to achieve the MDG target of reducing maternal mortality to below 140 per 100,000 live births by 2015. From as high as 720 cases per 100,000 population in 1990, TB incidence has reduced to 127 cases per 100,000 population in 2007. In 2007, there were 874 cases in total as compared to 4,232 cases in 1990.

Because there is a close link between increased coverage of safe drinking water and sanitation and the decreased incidence of infectious diseases such as diarrhoea, typhoid and cholera, these cases have decreased dramatically due to improved sanitation facilities. The proportion of population with access to safe drinking water increased to 84.2 percent in 2005 with improvements particularly in rural areas. Currently, around 75 percent of the country's rural residents have access to safe drinking water reflecting a sharp reduction in the rural-urban gap in terms of their access. Despite these achievements in the health indicators, Bhutan's present health infrastructure is far below the order of the need. There are miles to go for an all accessible health sector in the country.

5.8: Tourism Development

Tourism industry has become a significant field of activity all over the world. The developed countries were the pioneers for encouraging tourism development due to their strong economic and natural resource base. For the time being, the developing countries have also developed this industry and now it is a major source of revenue, foreign exchange and employment opportunities. The countries differ regarding their tourism infrastructure and tourist products. Bhutan, a land-locked small country located in the Eastern Himalayas, possesses huge potentialities for tourism development. Its dense forests, mountainous beauty, traditional cultural value systems all are attractive to the foreign tourists. However, tourism industry in Bhutan was opened as late as in 1974. Since then, its tourism industry is playing a vibrant role in the earning of revenue, foreign exchange and employment opportunities. In 2005, Bhutan's tourism industry earned 18.5 million US dollars from 13,643 tourists. Since unemployment is a newly emerging issue in Bhutan, it can be tackled through the development of tourism industry. Bhutan's tourism industry was initially government controlled, but it was privatized in 1991. Even though a

significant source of revenue, tourism development poses some serious problems in the sustainability of development process. So, Bhutan approached very cautiously in the matters of tourism development.

Major Tourist Attractions in Bhutan

Bhutan's mountainous sceneries, pristine environment, religious-cultural value system, secular and religious music, dances, festivals, historic monuments, traditional arts, crafts and huge botanical-zoological resources are the most important tourist attractions. National Day commemorates the establishment of hereditary monarchy on 17 December 1907 by the first king Ugyen Wangchuk. However, the existing King's Birth Day and His Coronation Day are the most important secular festivals, which are celebrated through parades and dances by the school children. Most important religious festival is Tshechu, a festival in honour of Guru Rinpoche for his great deeds³⁷. It is to be noted that tourists are permitted inside the courtyards of the Dzongs (fortresses) exclusively during the festivals. Some festivals are celebrated as 'New Year' at different times and places. These are halfway between religious and secular festivals. Bhutanese arts and paintings are unique concerned with interpretation of Buddhist values and beliefs. Bhutanese craftsmen excel in their images on metals, deities, bells, swords, pillars, Jewelleries and so on. Original paintings of Bhutan since the beginning of the 16 th century have been preserved in the temple Tanshing in Bamthang. Other historical interests include Bhutan's National Library in Thimphu, National Textile Museum, Folk Heritage Museum and Simtokha Dzong.

Adventure tourism like river-rafting, mountain-biking, rock climbing are common tourism practices in Bhutan. The most important adventure tourism in Bhutan is trekking. There are thirteen tourist treks in Bhutan some of which involve long journeys. Thus, trekking adventure in Bhutan is a real adventure.

Rare 770 species of birds are observed in Bhutan. Fishing (Catch and release system due to prohibition) is becoming favourite tourist activity. Forests cover more than 72.5 percent of its total land area. 165 species of animals as well as over 300 species of medicinal plants make Bhutan potentially important tourist destination. Jigme Dorji National Park, Black Mountain National Park and Royal Manas National Parks are other tourist destinations. Eco-tourism is becoming viable and popular with these biological resources combined with involvement of the local people. Very recently, the Black-Necked Crane Festivals for the protection of black-necked cranes (were being killed by the farmers) are being organized by the Royal Society for the Protection of Nature (RSPN), an NGO³⁸.

Tourism Development Under the Five Year Plans of Bhutan

In the initial stage of tourism development, tourism industry in Bhutan was under the Ministry of Finance. It was reorganized in 1980 as the Tourism Commercial Organization under the Ministry of Communications and Tourism. It was further reorganized by forming Bhutan Tourism Corporation in 1983 under the Ministry of Trade and Industry. However, tourism industry was privatized in October 1991 in conformity with the greater development plans of Bhutan. Since then, the Tourism Authority of Bhutan (TAB), a regulatory division of the Ministry of Trade and Industry, oversees the tourism activities.

Thus, in the initial stage, the government owned entire tourism infrastructure. The government invested Nu. 15.2 million for the development of tourism facilities including Nu. 12.2 million in hotel infrastructure. In the Ninth Five-Year Plan (2002-2007), total expenditure in the tourism sector was Nu. 183.672 million. Out of this total expenditure, Nu. 58.163 million is recurring expenditure while Nu. 125.509 is capital expenditure³⁹. Foreign aid has often been used for the development of tourism industry. In July 1997, a training project for the tour operators with an estimated cost of Nu. 24.5 million was proposed to

be set up. The Austrian Government agreed to advance required external aid of Nu. 17.5 million for the same project⁴⁰ and planned to establish a hotel-cum-tourism management institute by 2008. With the ongoing globalization process, Bhutan is welcoming Foreign Direct Investment (FDI) for tourism development, especially the development of hotel infrastructure. In 2004, tourism sector was boosted up because of the opening up of a luxury hotel with the help of FDI⁴¹. Other high-end projects financed by FDI are also underway.

There have been some major policy changes for the tourism development in the Ninth Plan of Bhutan (2002-2007). Major policy changes in this plan include:

- Promoting and maintaining Bhutan as a high quality tourist destination
- Generating tourism related employment opportunities, especially for the rural people
- Developing innovative tourist products in order to meet the interests of the visitors
- Reduction of seasonality of tourist arrivals
- Enhancement of knowledge of the tourist guides regarding local history and culture
- Preservation of historical sites, domestic environment and culture and
- Promoting the quality of hospitality services

It has been mentioned that development philosophy is guided by 'Gross National Happiness', its tourism policy is reflective of this larger development philosophy⁴². With all these views and learning from the mistakes committed by other developing countries, the government has followed a sustainable tourism policy, which should be environment friendly, socio-culturally desirable and economically viable.

Since the beginning, therefore, the RGOB has followed a restricted tourism policy with a quota of 200 tourists per year. Later on, it was raised

to 4000 per year. However, at present there is no upper limit. Rather, tourist arrivals are restricted indirectly through the pricing policies⁴³. Bhutan is following the policy of 'high value low volume' tourism policy for minimizing the adverse effects. At the beginning, the cost was set at US \$ 130 per day per person. It has been subsequently raised to US \$ 165 per day and further to US \$ 200 per day per person. 10 percent of this revenue goes to the external foreign travel agent, 35 percent to the government as royalty and the rest to one of the 33 private tour operators. The wealthy tourists tolerate these high costs because part of it goes to meet the benevolent social activities of the government such as provision of free education and medical services and taking a good deal of care of its people⁴⁴.

Tourists Pattern in Bhutan

The beginning of tourism industry in Bhutan is of recent origin. For the first time, tourists arrived in 1974 during the coronation of the King Jigme Singye Wangchuck⁴⁵. However, there arrived a mere 287 tourists by that year. This least number of tourist arrival is significant for the fact that it signaled the breaking of long isolation of the country and the development of a viable tourism industry. Since then, there has been a 20 percent average increase in the number of tourist arrival. During the period 1995-2003, an average of 5,000 tourists visited Bhutan annually. The government expects the tourists to bring not only considerable money but also to come with experience and respect for Bhutan's divine culture and pristine environment.

Tourist arrival in Bhutan has increased steadily since 1990. In 2000, tourist arrival increased to 7,559. This increase was due to the emergence of Bhutan as a quality destination and additional licensing for the tour operators⁴⁶. The increase in the number of tourists over the period 2000-2009 as well as the seasonal fluctuations of tourists arrivals within the years have been shown in Table-5.19.

Table-5.19: Number of Tourist Arrivals Between 2000-2009.

Period	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2000	65	223	1066	995	415	187	162	307	683	2247	996	213	7559
2001	185	355	553	1632	276	146	129	252	868	1308	517	172	6393
2002	55	269	862	683	296	79	114	213	747	1137	643	151	5249
2003	192	98	654	1215	397	176	112	198	612	1456	862	289	6261
2004	89	358	831	1304	448	313	276	476	1248	2263	1198	445	9249
2005	334	631	2166	1474	700	315	274	576	168	3412	1443	613	13626
2006	412	532	1381	3344	999	422	454	896	2187	3777	2084	854	17342
2007	441	814	2539	2666	1045	580	588	1133	2952	4512	2733	1091	21094
2008	532	1311	3512	3173	1862	869	1085	1386	2428	6162	4126	1190	27636
2009	667	811	2184	4263	1743	764	858	1220	3020	4326	2607	1017	23480

Source: Department of Tourism, (Adapted from *Selected Economic Indicators*, Sept. 2003/ Sept. 2010, Royal Monetary Authority of Bhutan).

Table-5.19 shows that there is substantial seasonal variation in Tourist arrivals. Tourist visit increases only in the peak seasons of six months consisting of March, April, May and September, October and November. Over the rest of the year, the tourist arrivals sharply fell due either to extreme cold or heavy rain.

Developed countries of the world are basically source markets for Bhutan tourism. As the country is becoming well acquainted with the developed countries, their interest in Bhutan is also increasing, leading to an increase in tourist arrivals from those countries. Table-5.20 shows the pattern of change in the origin of tourists from selected developed countries between the period 1996-2003.

From Table-5.20, it is clear that USA, Japan, Germany, U.K. and Italy are the six most important markets for Bhutan tourism. It also shows that the USA and the U.K. have increasing trends in the number of people visiting Bhutan while Japan and Germany register a decreasing trend.

Table-5.20: Number of Tourist Arrivals in Bhutan by Nationality, 1996-2003

Nationality	1996	1997	1998	1999	2000	2001	2002	2003	Change 2002/03 (%)
United States	963	910	1471	2122	2754	2149	1913	1806	5.6
Japan	1211	1173	1032	1102	875	1038	892	952	6.7
Germany	722	533	520	574	662	414	346	496	43.4
U.K.	358	642	686	646	595	681	519	605	16.6
France	331	229	366	236	399	287	192	288	50.0
Netherlands	131	234	370	362	359	180	197	179	9.1
Canada	57	89	82	149	194	197	166	121	27.1
Australia	71	121	64	131	179	138	214	165	22.9
Taipei, China	32	83	135	179	175	44	40	90	125.0
Italy	242	186	218	276	156	192	177	331	87.0
Spain	49	33	109	118	141	73	68	77	13.2
Switzerland	161	186	170	296	137	170	164	177	7.9
Austria	156	156	270	197	131	128	92	152	65.2
Belgium	77	75	95	107	95	76	22	104	372.7
Thailand	181	140	19	71	92	36	46	66	43.5
Others	396	573	596	592	615	590	546	658	20.5
Total	5138	5363	6203	7158	7559	6393	5599	6267	12.0

Source: Asian Development Bank, *Technical Assistance for the South Asian Sub-regional Economic Cooperation: Tourism Development Plan*, November 2003.

The average length of stay for the tourists in Bhutan is very short. In 2000, it was 8.13 days. However, the length of stay varies based on the nature of tourist activities. For example, trekkers on average stay 7.4 days while cultural tourists averaged 8.3 days⁴⁷. The highest length was achieved in case of some special tours such as bird watching and religious studies. Repeated visits are very rare in Bhutan.

Impact of Tourism on Economy

Bhutan's tourism industry is making a good contribution to the generation of revenue, earning of foreign exchange and provision of employment opportunities. Today, tourism industry is the sixth largest producer of revenue and third largest foreign exchange earner of the country. Bhutan's tourism industry earned US \$ 7.98 million in 2002. During the period 1995-2002, average earnings from tourism grew at 5.1 percent annually. Yet, despite the significant contribution that tourism industry is making in revenue generation, tourism earnings are growing at a slower rate vis-a-vis its overall economic growth of 8 percent per annum. In 2002, average earning per tourist was 1,425 dollar. Currently, tourist earnings have considerably increased and reached the level \$ 38.8 million in 2008. Table- 5.21 gives a clear picture of changes in the tourist earnings over the period 2000-2009.

Tourism is a major source of foreign exchange earning essential for ever growing imports. In the early phase of development, demand for foreign exchange was low. However, with the ongoing economic diversification and social uplift, the number of development projects increased substantially. It is to be noted that since the current account deficit of Bhutan is met with acceptance of foreign aid, balance of payment has been favourable to the country. However, the major goal of Bhutan's planned development process is to achieve self reliance by taking least possible foreign aid⁴⁸. Under the circumstances, increased foreign exchange from tourism is a good complement to the growth of exports.

Table-5.21 shows that there is substantial fluctuation of tourist earnings. It increases rapidly during high season, while falls sharply during slack season. Tourism accounts for about 5 percent of Bhutan's national revenue and 15 to 20 percent of its total exports.

Table-5.21: Bhutan's Tourist Revenue During 2000-2009 (US\$ million)

Period	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
January	0.1	0.2	0.1	0.2	0.1	0.2	0.4	0.5	0.6	0.7
February	0.2	0.4	0.2	0.1	0.4	0.6	0.5	1.0	1.5	0.9
March	1.3	0.8	1.1	0.8	1.1	2.9	2.0	3.7	5.1	3.0
April	1.4	2.3	1.1	1.8	2.0	2.2	4.7	4.1	4.4	5.8
May	0.6	0.4	0.4	0.5	0.6	0.9	1.4	1.4	2.4	2.1
June	0.2	0.1	0.1	0.2	0.3	0.4	0.4	0.7	1.1	0.9
July	0.2	0.1	0.1	0.1	0.3	0.3	0.5	0.5	1.0	0.8
August	0.3	0.2	0.2	0.2	0.4	0.6	0.8	1.0	1.4	1.3
September	1.0	1.5	1.2	0.9	1.9	2.3	3.3	4.3	4.1	4.7
October	3.7	2.1	2.4	2.2	3.6	5.6	6.1	7.3	9.8	6.7
November	1.5	0.8	0.9	1.1	1.5	1.9	2.9	4.0	6.0	3.5
December	0.2	0.2	0.1	0.3	0.5	0.6	0.8	1.4	1.5	1.2
Total	10.5	9.2	8.0	8.3	12.5	18.5	23.9	29.9	38.8	31.9

Source: Department of Tourism, (Adapted from *Selected Economic Indicators* Sept. 2003/Sept. 2010, Royal Monetary Authority of Bhutan).

The problem of unemployment in Bhutan is an emerging issue. The educated Bhutanese are opting for white-collar jobs and tending to migrate to urban areas. Bhutan's tourism industry is offering direct, indirect as well as induced employment opportunities which would obviously mitigate the unemployment problems. Tour operators and tourist guides are getting direct employment in the tourism industry. For a long time, licenses were limited to 33 tour operators. However, by 2001, 89 tour operators had been registered. In September 2001, there were 224 cultural guides and 87 trekking guides. While some guides are permanently employed by the tour

operators, others are employed on a temporary basis. Hotel staff and transport operators are availing indirect employment opportunities.

A total of 32 hotels and guest houses were approved for tourists' accommodation within 1996. By 2001, the number increased to 57 with 1013 rooms at different places of Bhutan. These hotels are employing 1000 staff. In case of transportation, Druk Air, the only air service of Bhutan is playing a significant role. When the service was established in 1982, there were only 20 persons employed. However, the total employment figure increased to 200 by 2002. Induced employment opportunities are most significant for the people. Derived demand for the craftsmen's products for meeting the tourist requirements as well as the demand originated from the development of tourism infrastructure are the key elements of induced employment.

Since decentralization and people's participation in the development process was the long cherished contexts of development in Bhutan⁴⁹, it was reflected in the tourism industry through promotion of rural and culture based tourism. Local peoples involve in these tourism activities and earning income. It will also blockade the trends of rural urban migration.

Problems: The Questions of Sustainability

The problems of tourism industry in Bhutan are two fold- structural problems which include lack of tourist infrastructure, limited diversification of tourist products, seasonality of tour activities, regional imbalance etc. and the spatial problems such as the sustainability of tourism development. Tourist infrastructure is limited to few hotels, tour operators and tourist guides. The nature of ownership of private tourist activities is highly skewed. Out of 89 tour-operators, six were reported to have handled 80 percent of tourist arrivals in 1993. However, because small tour operators are becoming operational, the inequality is decreasing. In 2000, top six tour operators handled 60 percent of foreign

tourists. Most of the tourist guides are Thimphu-based and rural involvement is still very low. In order to avoid the inequality of involvement of rural and urban people in the tourism industry, the government is emphasizing alternative tourism activities like cultural tourism, ecotourism etc. Inter-regional inequality is another problem. Most tourist activities are concentrated in Thimphu and Paro. Haa and Gasa have low level of tourist activity while Zhemgang and Lhuetse have no tourist activities at all. However, these regions have huge potentialities such as trekking, bird watching, medical tours, adventure tourism as well as cultural tourist activities.

The problem of seasonality is imposed by the geographical and climatic nature of the country. March-April and October-November are the periods of high tourism activity. Tourism activities in monsoon and winter is limited by heavy rain and extreme cold. The seasonal nature of tourism leads to unequal arrivals of visitors over the year. It also imposes heavy pressure on the limited tourist infrastructure during the peak seasons. Revenue earned from tourism also fluctuates substantially. The average length of stay is also very short. Although price subsidies are offered for the slack season tourists, alternative tourism development strategies are drawing special attention.

Product diversification in tourism is insufficient for Bhutan. Tourism in Bhutan has so far been mostly limited to cultural tourists, sightseers and trekkers. In 1999, out of a total of 7,158 tourists, 6,328 were cultural tourists and 830 sightseers⁵⁰. However, other forms of tourism such as ecotourism, adventure tourism, health tourism and domestic tourism have good prospects. The Tourism Authority of Bhutan is giving most priority to the quality of tourist products by promoting tourist infrastructure, cleaning of tour treks, providing training to the tourist guides and improving hospitality services.

The Department of Tourism lacks both manpower and finance for managing the tourism industry effectively. Due to rising competition

among tour operators, some are giving rebates to foreign tourists. Breaking of this pricing integrity is contradictory to the Royal Government's 'High value-Low volume' tourism policy. It is significant to note that collection of data and intensive research is essential for the sound tourism policies and correct decision-making.

Sustainability of tourism is a key element of tourism development. Nepal's tourism industry was given importance from early 1960s. Over a long period of time it has adversely affected the environmental and socio-cultural balance of the country. De-forestation due to wood harvest for supplying fuelwood to the tourists affected Nepal's landscape. Use of plastic, tin and other non-degradable materials turned some popular treks into 'garbage trails'. Indian tourism industry is also accused of degrading its natural environment. Overcrowding, congestion, environmental pollution emerged where full-fledged tourist centres are set up. Environmental injury is observed in Garwal Himalayas where ecological balance was long preserved⁵¹.

Aware of such possibilities of environmental degradation, Bhutan's tourism industry has remained strictly controlled from the very beginning. Thus, so far it has produced minimum adverse effects. The Fifth Five Year Plan (1982-87) document of Bhutan pointed out that tourism has not created in Bhutan the cultural and environmental problems like many other tourism oriented countries⁵². However recently, tourism related environmental and cultural problems like destruction of vegetation, creation of garbage trails etc. have been noticed in some tourist places even though these have not yet reached critical level because 72.5 percent of Bhutan's land is still covered with forest.

5.9: Conclusion

Prolonged discussion in this chapter reveals that different sectors of Bhutan's economy achieved substantial diversification during its plan period. Agriculture sector achieved dynamism through production of value added crops,

commercialization and mechanization of agriculture, particularly in case of horticulture. Foreign financial and technical assistance have played a significant positive role for this achievement. Industrial sector underwent major changes dominated by hydro-electricity. However, other subsectors of industrial sector progressed marginally. Indian assistance is notable for expansion of Bhutan's hydro-electricity base. Service sector has diversified the most. Bhutan's traditional education system was replaced by modern system of education. As a result, literacy rate has gradually increased and recently, a strong civil service base is in operation. Regarding health sector, development of health care and sanitation facilities eased Bhutan to achieve its millennium development goals. However, the country needs more health care institutions as well as trained personnel to meet growing needs of the day. Various multilateral agencies assisted the government to achieve these social sector goals. Tourism services expanded in terms of tour destinations and hospitality services. This sector has emerged as major source of government revenue and hard currencies. Sustainability of development remained a central theme of this sectoral diversification.

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