

Two

General Economy of Sikkim

Sikkim, which is situated in the eastern Himalayas, from longitude $88^{\circ}03'40''$ to $88^{\circ}57'19''$ East and from latitude $27^{\circ}03'47''$ to $28^{\circ}07'34''$ North, became the twenty-second state of India on April 26, 1975. It has a total area of 7,096 sq. km., 114km from north to south and 64km from east to west. The entire state is mountainous, with altitudes ranging from 300 to 8,586 masl. There are 440 villages, eight towns, and four districts in Sikkim. The state has four major ethnic groups, namely, *Bhutia(s)*, *Lepcha(s)*, *Nepalese*, and *Limbu(s)*. The climate of the state varies from cold temperate and alpine in the northeast to subtropical in the south. Agroclimatically, the state is divided into four zones, viz., the subtropical zone (below 1,000 metres); the humid zone (1,000-1,600 metres); the mid-hill dry zone (again in altitudes ranging from 1,000-1,600 metres); and the high hill temperate zone (with an altitude of above 1,600 metres). The genetic diversity, of both forest vegetation and agricultural crops, is enormous. The state has about 600 plant species and more than 4,000 species of flowering plants (Sundriyal et al. 1992, pp 11-12). Some salient ecological features of the state are summarised in Table 2.1.

Demographic Features

Temporal changes in the state's population over the previous century have been shown in Table 2.2¹. There are three aspects to these changes. First, initially, the population of the state registered a continuous increase, except for the decade from 1911 to 1921 when it declined by 7.05 per cent. In recent years, the maximum increase (50.76 per cent) was recorded during the 1970s, and this could be attributed partly to decline in the death rate (as a consequence of better health facilities) and partly to the immigration of people from other states of the country in the post-merger period. Second, the sex ratio has not only always remained unfavourable, the number of females per one thousand males progressively declined from 907 in 1951 to 835 in 1981 (Figure 2.1). Despite marginal improvements in this ratio during the subsequent decade, the sex ratio in the state still remains much lower than the national average of 920 and also much lower than those of other Himalayan states, apart from Arunachal Pradesh. Third, the density of population has increased significantly during the last two decades, from 30 /km² in 1971 to 57 /km² in 1991. However, taking into account the fact that nearly 25 per cent of the total geographical area of the state is uninhabited, the density of

1. See Tables 2.2 to 2.24 in Annex 1

Table 2.1: Macro-ecological Features

Parameters	Features
Rivers	Two major river systems originating from glaciers; Rangit (West Sikkim), and Tista (North Sikkim).
Ecological zones	Alpine (>4,000 m), sub-alpine (3,000-4,000 m), cool temperate (2,200-3,000 m), warm temperate (1,400-2,200 m), and subtropical (300-1,400m).
Terrain	Mostly sloping land only with scarce flat lands in valleys. These are marginal lands.
Forests	Lush green broad-leaved mixed forests in subtropical and temperate zones. Silver fir and rhododendron forests in the sub-alpine zone.
Plants of special interest	Rhododendrons, orchids, medicinal plants, and a large variety of wild edible plants apart from plants of academic interest.
Issues of concern	Specific habitat degradation and loss have caused a threat to: <ol style="list-style-type: none"> (1) wildlife such as the Red Panda, <i>Thar(s)</i>, and Musk Deer, etc (2) plant diversity such as medicinal plants (<i>Aconitum</i> sp, <i>Nardostachys jatamansi</i>, <i>Picrorhiza kurrooa</i>, <i>Swertia chirata</i>, <i>Podophyllum hexandrum</i>), wild edibles (<i>Machilus edulis</i>, <i>Bassia buteracea</i>, <i>Elaeocarpus sikkimensis</i>, <i>Elaegnus latifolia</i>, etc), wild orchids, and some species of rhododendron.
Policy initiatives	Creation of natural conservation areas such as the Kanchanjunga National Park, Singba Rhododendron Sanctuary, Kyongnosla Alpine Sanctuary, Fambonglho Wildlife Sanctuary, and Maenam Wildlife Sanctuary

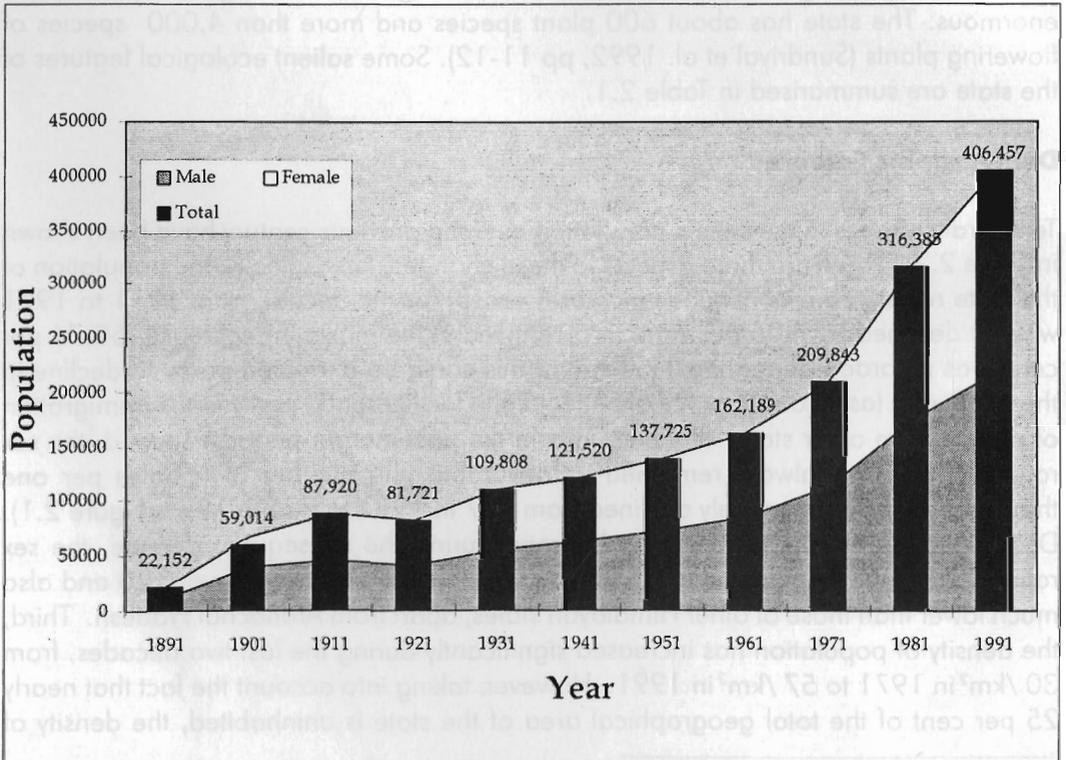


Figure 2.1: Temporal Changes in Population (1981-1991)

population (according to the 1991 Census) comes to around 75/km² compared to 57/km². Yet another way of gauging the population pressure on land is the density of population per square kilometre of arable land. In the state, only 12 per cent of the total geographical area is available for cultivation, the density of population per square kilometre of arable land comes to as high as 470 persons, indicating a high pressure on arable land.

The state's population, according to the 1991 Census, is around four hundred thousand, 90 per cent of which reside in rural areas (Table 2.3). The tribal population, *Bhutia(s)* and *Lepcha(s)*, is 23.36 per cent. Yet another important demographic feature is that a relatively high percentage (18.37%) of the population is found to be below six years of age. These statistics have also improved considerably with the fall in both the death and birth rates. While the former declined from 31 per thousand in 1981 to 23.70 in 1993-94, the latter dropped from 8.90 to 6.40 per thousand in the same duration (Table 2.4).

The state has made substantial progress in improving the quality of its human resources in terms of literacy levels. As depicted in Table 2.5, the literacy level rose from as low as 6.59 per cent in 1951 to as high as 46.48 per cent in 1990-91. The increase has been particularly pronounced since 1971. The most singular feature, however, is an increase in female literacy, which shot up from 1.20 per cent in 1951 to 37.74 per cent in 1991 and is not much lower than the national average of 39.29 per cent. These impressive accomplishments notwithstanding, the literacy levels in the state are much lower than both the national average of 52 per cent and those of other Himalayan states, with the exception of Arunachal Pradesh where it is 41.59 per cent.

The changes in occupational structure in the period from 1971 to 1991 are shown in Table 2.6. Conforming to the prevailing occupational configuration in other states of India, more than two-thirds of the state's working population make a frugal living from agriculture, including livestock-rearing and allied activities. Services, construction, and trade and commerce are other important sources of livelihood. Over time, the 1970s witnessed significant diversification in the occupational structure. For example, the proportion of cultivators declined by as much as 20.88 per cent, while the percentage of those employed in other services increased from 6.23 to 17.93. Construction activities also provided employment to a significant number of workers. In the case of female workers, the increase was particularly high in construction and other services.

The decline in the number of cultivators between the period from 1981 to 1991 was accompanied by a fairly noticeable and proportionate increase in agricultural labourers. Further, while the percentage of workers employed in construction activities and household industries declined marginally, those engaged in other services registered an appreciable decline. The changes during the decade were, however, more conspicuous with regard to female workers. For instance, their dependence on agriculture diminished significantly in comparison to practically no change in the situation of their male counterparts. Again, the percentage of female workers employed in other services rose from 8.42 to

11.19 per cent in contrast to the percentage of male workers which declined from 22.80 to 14.53 per cent. The work participation rate also decreased from 53.18 per cent in 1971 to 40.45 per cent in 1990-91; the decline was equally pronounced for both male and female workers. The work participation rates in the state are not unusually high, keeping in mind the unfavourable physical conditions of the mountain areas coupled with the use of traditional production technology. Over time, female workers have increasingly found employment in those activities which traditionally had been in the male domain.

Land Utilisation, Cropping Patterns, and Crop Yields

The statistics on land utilisation provide insights to understanding the constraints and potentials available for agricultural development in any region. The availability of these statistics thus helps to formulate plans in order to harness natural resources, e.g., forests, to maximise production and at the same time preserve the environment and ecology. Figure 2.2 shows that out of the total geographical area of 710 thousand hectares, only 11 to 12 per cent of the land is available for cultivation, including current and other fallow land. The area under forests accounts for more than one-third of the total, and this has tended to increase over time, mainly in response to the measures taken by the government. Further, large areas of land (almost 25 per cent) are barren and uninhabited and are fit neither for cultivation nor any other use. Nevertheless, the net

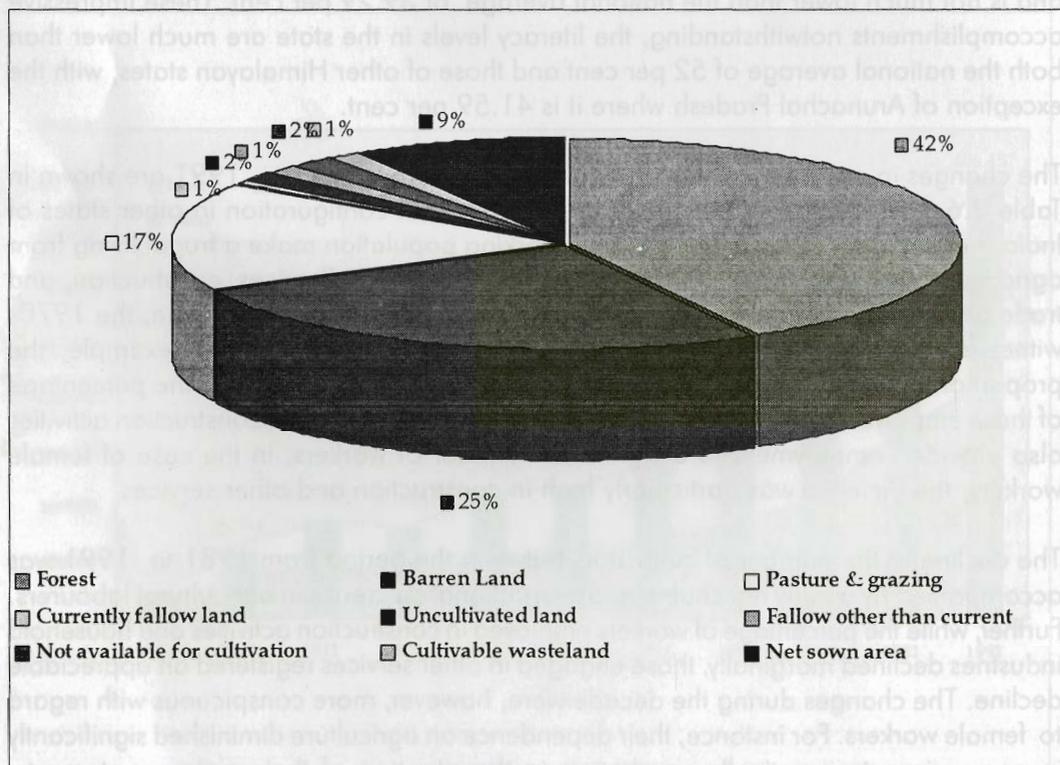


Figure 2.2: Land Utilisation Pattern, 1990-91

sown area is higher than the available land in other northeastern Himalayan states, apart from in Arunachal Pradesh and Meghalaya, where it is 2.7 and 9.1 per cent respectively. The forest cover is, however, comparatively lower in Sikkim than in other states.

The cropping patterns of a region are determined by a variety of factors, most notably, elevation, topography, precipitation, and so on. The climate of Sikkim is conducive for growing a large number of high-value cash crops such as cardamom, potatoes, ginger, and numerous other horticultural crops. In general, while the lower elevations grow paddy and fruits such as oranges (mandarin), the higher areas in the state produce maize and potatoes. Besides, large cardamoms are a traditional cash crop in the state. The cropping patterns of the state have undergone metamorphic changes since the merger with India in 1975. These changes are significant indicators of the ongoing process of agricultural transformation from cereal-dominated subsistence agriculture to high-value, cash-crop dominated commercial agriculture.

The precise changes in cropping patterns in terms of area under different crops between 1975-76 to 1995-96 are shown in Table 2.8 (Figure 2.3). The table highlights the following broad features. First, conforming to the ongoing process of agricultural transformation, the proportion of cultivated area under cereals has declined markedly from 70.16 per cent in 1975-76 to 52.16 per cent in 1995-96.

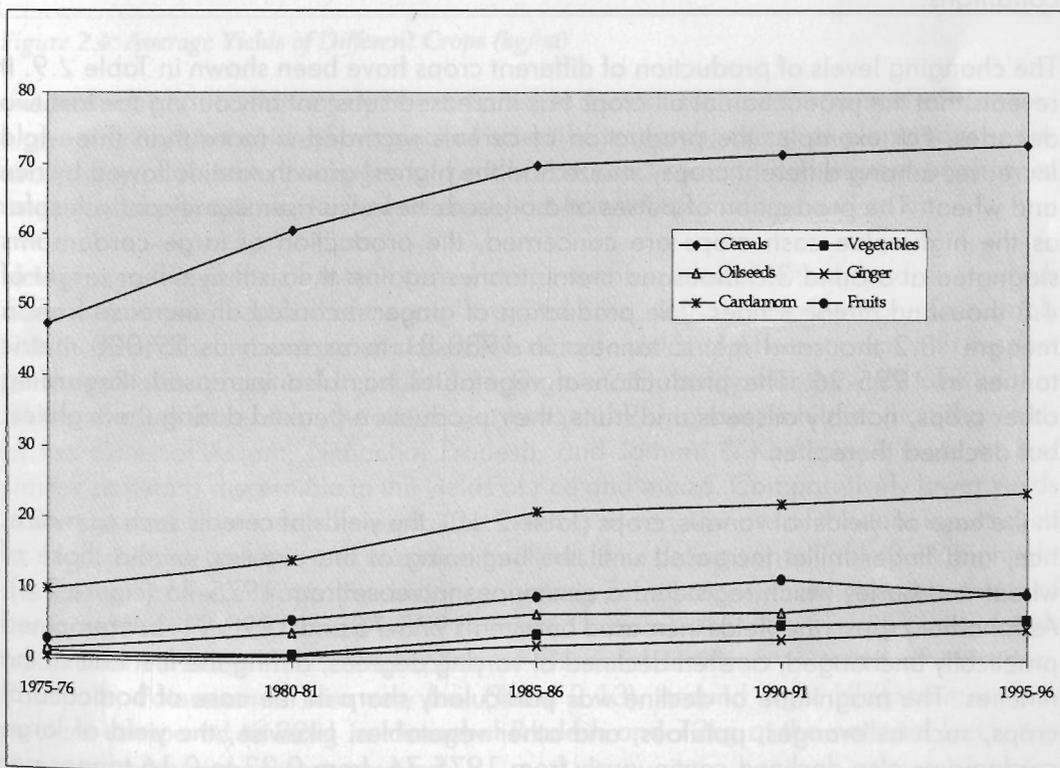


Figure 2.3: Temporal Changes in the Cropping Pattern ('000 ha)

All cereal crops have witnessed a decline, to varying degrees, with maize being recorded at the lowest, followed by rice and finger millet. Wheat, almost non-existent in 1975-76, was introduced in the early eighties and now occupies nearly seven per cent of the total cultivated area. Second, the area under oilseeds increased more than three times, from 2.22 to 7 per cent due to the extension efforts of the Department of Agriculture which promoted quick-growing, high-yielding varieties of rapeseed and mustard. Another interesting feature of the cropping patterns is the unchanged proportion of area under pulses, particularly from 1980-81 onwards. This is in contrast to the trend noted in many other states in India. Third, while the area under fruits has not shown a uniform trend, the area under oranges (mandarin), for which the state has a comparative advantage, particularly at lower elevations, has nearly doubled. The area under vegetables also increased from 0.92 per cent in 1980-81 to 4.17 per cent in 1995-96. Fourth, with regard to spices, the area devoted to large cardamoms remained around 16 per cent over the last few decades. The cultivation of ginger is, however, fast gaining ground, as is evident from the spectacular increase in the proportion of area under this crop. This could mainly be attributed to the launching of a special programme by the state government, for example, the distribution of free seeds to promote cultivation. Fifth, the cropping intensity in the state continues to be low, despite improvements in recent times. In net terms, the cropping patterns in the state are changing in favour of high-value cash crops for which the state is favourably endowed, given its varied agroclimatic conditions.

The changing levels of production of different crops have been shown in Table 2.9. It reveals that the production of all crops has increased substantially during the last two decades. For example, the production of cereals recorded a more than three-fold increase; among different crops, maize had the highest growth rate, followed by rice and wheat. The production of pulses and oilseeds has also risen significantly. Insofar as the high-value cash crops are concerned, the production of large cardamoms stagnated at around 3.6 thousand metric tonnes against the sixth five-year target of 4.5 thousand metric tonnes. The production of ginger recorded an increase from a meagre 3.2 thousand metric tonnes in 1980-81 to as much as 29,000 metric tonnes in 1995-96. The production of vegetables has also increased. Regarding other crops, notably oilseeds and fruits, their production peaked during the eighties, but declined thereafter.

In the case of yields of various crops (Table 2.10), the yields of cereals such as maize, rice, and finger millet increased until the beginning of the nineties, as did those of wheat and barley which registered a continuous increase from 1975-76 (Figure 2.4). As for other crops, the yields increased between 1975-76 and 1990-91, but remained practically unchanged, or even declined at varying degrees, during the first half of the nineties. The magnitude of decline was particularly sharp in the case of horticultural crops, such as oranges, potatoes, and other vegetables. Likewise, the yield of large cardamoms also declined continuously from 1975-76, from 0.23 to 0.16 tonnes per hectare. The dwindling yield of cardamoms, which is one of the leading indicators of

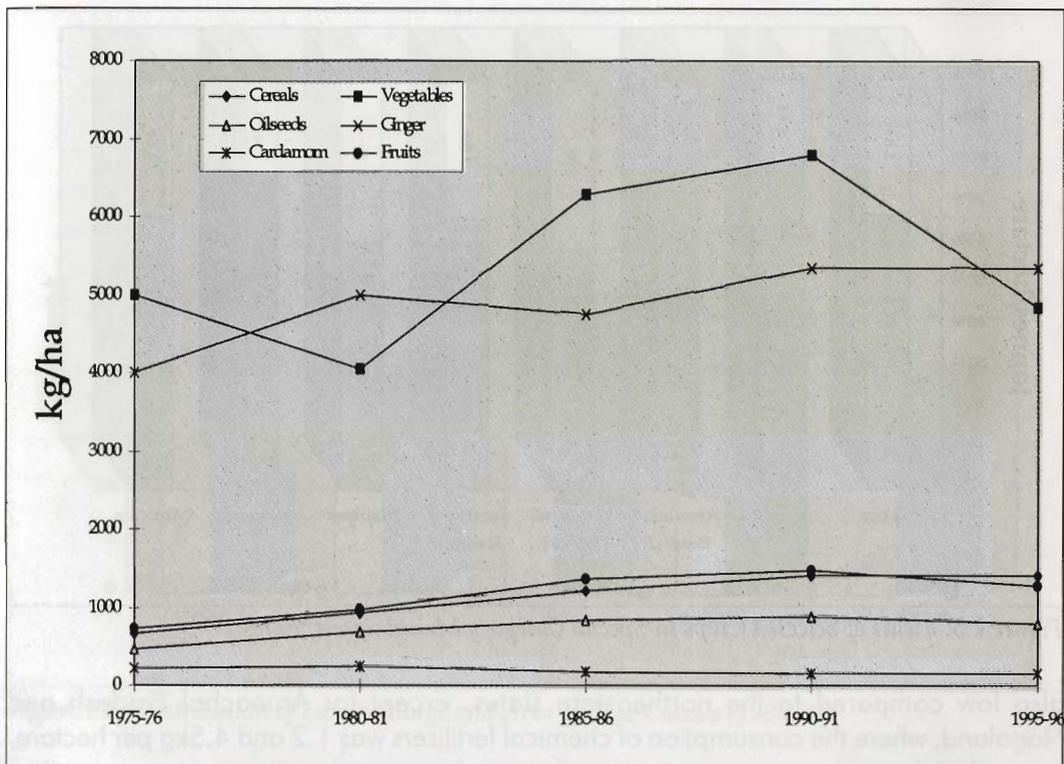


Figure 2.4: Average Yields of Different Crops (kg/ha)

unsustainability, could largely be attributed to factors such as the spread of disease, e.g., *phurkey* and *chirkey*; neglect of scientific research; aging of plantations; non-availability of suitable packages of production practices and consequent haphazard extension of plantations; lack of efficient post-harvest technology, and so on.

However, the yields of major cereal crops such as maize, wheat, and rice, which account for more than half of the total cropped area, do not compare too unfavourably with those of other mountainous states. The data on yields of different crops with respect to these states, presented in Table 2.11 (Figure 2.5), testify that the yield of wheat in Sikkim, though lower than the national average of 2.3 tonnes, is higher than the yields of the states of Assam, Himachal Pradesh, and Jammu & Kashmir. A more or less similar pattern is discernible in the yields of rice and maize. Comparatively lower yields in the state could primarily be explained in terms of very low use of modern inputs such as high-yielding varieties and chemical fertilizers. The data given in Table 2.12 highlight the low use of these inputs. For instance, among cereal crops, more than two-thirds of the area under maize, which is the dominant crop of the state, is still planted with traditional varieties. The consumption of chemical fertilizers in terms of Nitrogen, Phosphate, Potassium is also very low (Table 2.13), around eight kilogrammes per hectare compared to 32kg in Himachal Pradesh and 72kg at the national level. It is

2 *Phurkey* and *Chirkey* are local names for a viral disease which slowly kills the whole plant. The symptoms commence with rotting in the root system and spread throughout the plant.

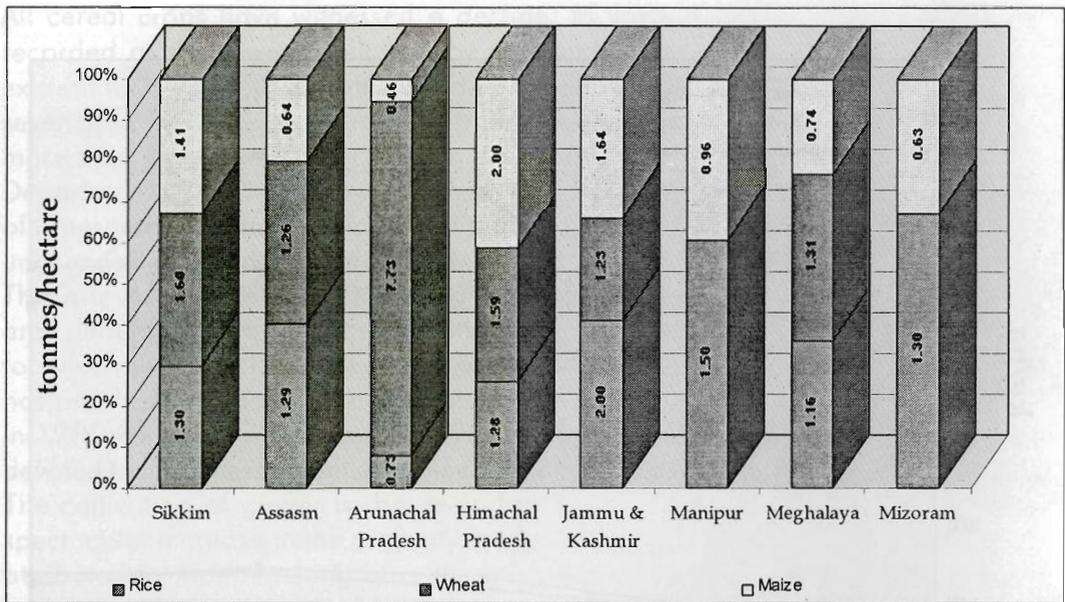


Figure 2.5: Yields of Selected Crops in Special Category Mountainous States

also low compared to the northeastern states, except for Arunachal Pradesh and Nagaland, where the consumption of chemical fertilizers was 1.2 and 4.5kg per hectare, respectively.

In brief, agriculture in Sikkim is a unique example of largely organic-based farming, also called 'low input agriculture'.

Distribution of Landholdings

The changing distribution of landholdings and the significant increase in the proportion of agricultural labour households suggest the ongoing process of marginalisation and rural proletarianisation in the state. As can be seen in Table 2.14 (Figure 2.6), the distribution of landholdings has tended to become more skewed over time; the value of the gini coefficient increased from 0.5169 in 1976-77 to 0.5639 in 1991-92. The worsening distribution of landholdings is also evident from the fact that, in 1991-92, nearly one-half of the total holdings were marginal or below one hectare, whereas their share in the total area was only 10.30 per cent. In comparison, 2.38 per cent of the holdings at the top of the land distribution hierarchy accounted for as much as 20.20 per cent of the total area. The per capita availability of different types of land has also declined rapidly over time as a consequence of the mounting population pressure (Table 2.15).

Livestock Population

The livestock population, excluding poultry, in the state during the last two decades increased from 0.25 to 0.34 million, recording an almost 33 per cent increase (Table

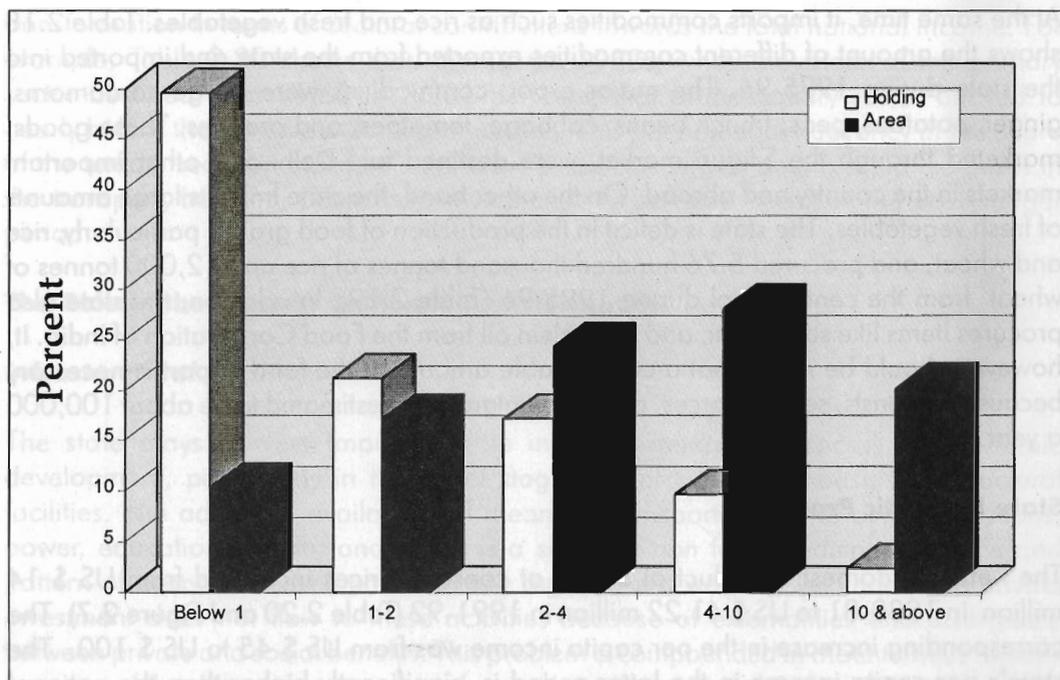


Figure 2.6: Distribution of Landholdings and Area by Size Classes (1990-91)

2.16). Regarding composition, there have been no significant changes in the share of bullocks, yaks, sheep, and equines. The cattle population, however, increased between 1976-77 and 1981-82 but declined thereafter, primarily because of the substitution of local cattle with improved stock. The number of goats has nearly doubled; their proportionate share in the total livestock increased from 23.84 to 33.60 per cent. This suggests the replacement of cattle with goats due to the increasingly dwindling access to forest fodder and also because of the increasing human population pressure on land. The number of domesticated pigs also declined. The poultry population recorded a three-fold increase; practically every household in the state keeps some poultry which, besides enriching the diet, helps to meet emergency cash requirements.

The production of different livestock products has increased over the period. For example, milk production more than trebled from 10.95 thousand tonnes in 1980-81 to 31,000 tonnes in 1994-95 (Table 2.17). Similarly, there has also been a phenomenal increase in the production of eggs. A network of cooperatives has been established under the umbrella of the Sikkim Milk Supply Union to collect surplus milk from the producers and supply to markets in places such as Gangtok. There are around eighty such societies which collect about 5,000 litres of milk per day. More recently, the formation of milk cooperatives has been encouraged by the Indo-Swiss project, and one such co-operative is functioning successfully in western Sikkim.

Trade Flows

The state exports high-value cash crops, such as large cardamoms, ginger, and oranges.

At the same time, it imports commodities such as rice and fresh vegetables. Table 2.18 shows the amount of different commodities exported from the state and imported into the state during 1995-96. The major export commodities were large cardamoms, ginger, potatoes, peas, french beans, cabbage, tomatoes, and oranges. These goods, marketed through the Siliguri market, were destined for Delhi and other important markets in the country and abroad. On the other hand, the state imports large amounts of fresh vegetables. The state is deficit in the production of food grains, particularly, rice and wheat, and procured 5.76 hundred thousand tonnes of rice and 12,000 tonnes of wheat from the central pool during 1995-96 (Table 2.19). In addition, the state also procures items like salt, sugar, and palmolein oil from the Food Corporation of India. It, however, should be noted that a considerable amount of the food import is necessary because of tourists, security forces, and other migrants — estimated to be about 100,000 a year.

State Domestic Product

The net state domestic product of Sikkim at constant prices increased from US \$ 14 million in 1980-81 to US \$ 41.22 million in 1991-92 (Table 2.20 and Figure 2.7). The corresponding increase in the per capita income was from US \$ 45 to US \$ 100. The state's per capita income in the latter period is significantly higher than the national average of US \$ 63 and those of the other sister states of Assam, Arunachal Pradesh, Himachal Pradesh, and Meghalaya. In terms of per capita income, Sikkim ranks fifth among the states of India. The state's economy is also witnessing rapid structural

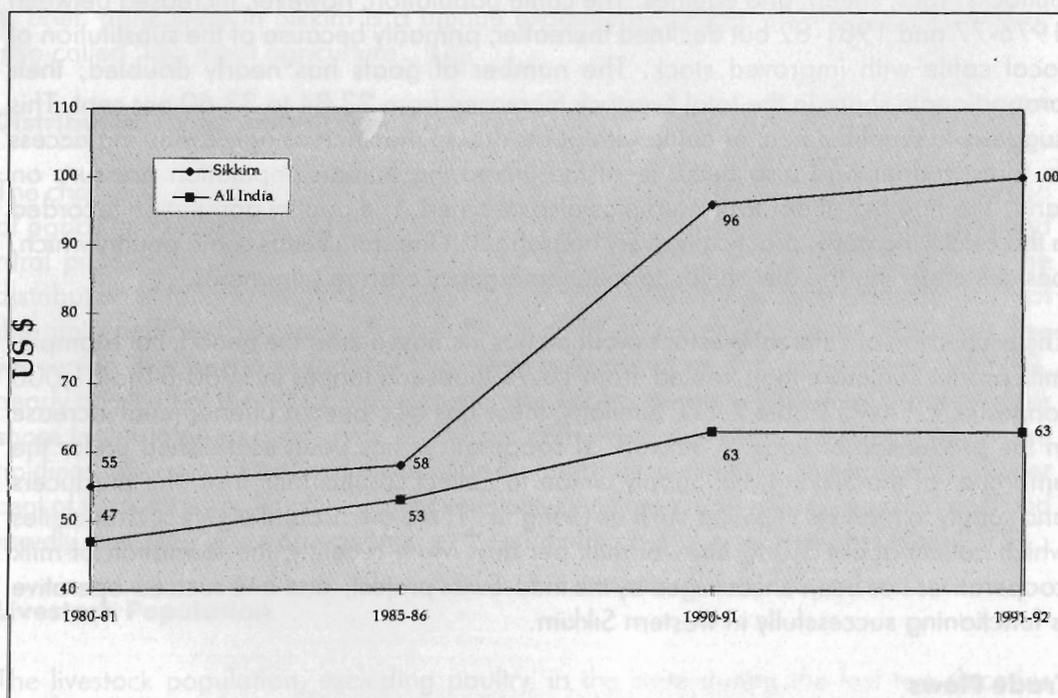


Figure 2.7: Growth of Per Capita Net State Domestic Product

transformation in terms of sectoral contributions towards the total national income. For example, Table 2.20 shows that, during the 1980s, while the share of the primary sector declined from 51.60 to 36.01 per cent, that of the tertiary sector buoyed to nearly half of the total state domestic product. This phenomenal buoyancy in the share of the tertiary sector in the state's domestic product is largely due to rapid increases in the transport, banking, public administration, and services' sector in the post-merger period.

The Role of the State in Economic Transformation

Infrastructural Facilities

The state plays a very important role in accelerating the process of economic development, particularly in the initial stages, by providing the basic infrastructural facilities. The adequate availability of means of transportation and communications, power, education, health, and so on is a *sine qua non* for expediting the pace and pattern of economic development in any region. As is well known, adequate private investment does not flow to these activities because of externalities and divergence between private and social benefits. This problem is compounded in mountainous regions because of the difficult terrain and unfavourable physical conditions. In this context, the state of Sikkim, by all reckonings, has made satisfactory progress in the provision of infrastructural facilities during the last two decades (Table 2.21). The availability of basic facilities, such as education, health, transportation, water supply, electricity, and so on, has improved tremendously. For example, a hundred per cent of the villages have been given electricity connections and more than eighty per cent have access to safe drinking water. The number of educational institutions increased from 264 in 1975-76 to 1,458 in 1994-95. The enrollment, particularly of females, in these institutions has also increased substantially. In fact, every village has a primary school within a radius of two kilometres. The number of banks, post offices, and road lengths has also increased and compares very favourably with the national average and also with those of other mountainous states. While the number of banks per ten thousand is 145.6 in the state, the national average is just half. Again, the per capita deposit in the state in 1993 was US \$ 95 compared to the national average of US \$ 89.

Plan Outlay

Realising that the lack of adequate infrastructural facilities can pose a formidable constraint to boosting the economic development of the state, its policy-makers accorded a very high priority to transportation and communications. Table 2.22 shows that, in the first four plans implemented before the state's merger with India, the percentage of total plan outlay on this sector varied between 48 per cent in the first plan to 41 per cent in the fourth plan. The sector has continued to remain high on the agenda in terms of sectoral outlays, even in the later plans. Another important aspect which needs to be underscored is that, despite a decline in the proportion of plan outlay allocated to this sector, the absolute amount has increased from US \$ 0.45 million in the first plan to US

\$ 12.76 million in the seventh plan. Likewise, in order to tap the vast hydro-electricity potential, the power sector has also been given a very high priority, as is evident from the continuous increase in the proportion of plan outlay on this sector. In the eighth plan, nearly one-fourth of the total outlay was earmarked for this sector. Agricultural and rural development are other important sectors. The plan outlay on these sectors was particularly high in the fifth, sixth, and seventh plans. It, however, needs to be mentioned that the provision of adequate infrastructural facilities, such as transportation and communications, for which very high priority was accorded in the first four plans, helps the agricultural sector in more ways than one, e.g., facilitating the marketing of produce, ensuring easy availability of basic inputs, and so on. The proportion of outlay on education also increased, particularly in the seventh and eighth five-year plans. In brief, the development strategy pursued by the state was broadly sensitive to mountain specificities. And, the high priority of the transportation and communication sector eased the inaccessibility and marginality constraints and was instrumental in accelerating the pace of overall economic development in the state.

A break up of the total outlay into plan and non-plan expenditure (Table 2.23 and Figure 2.8) shows that, over the period since 1979-80, nearly half of the total expenditure was non-plan. The burgeoning non-plan expenditure could mainly be explained in terms of ever-expanding service and public administration sectors in the state. Figure 2.9 depicts a very high dependence of the state on central grants to finance its plan and non-plan expenditures. For example, the contribution of tax and non-tax sources of revenue to total state revenue has remained around one-fourth, with the remaining three-fourths coming from central grants.

The very high dependence of the state on central grants to finance its development plans may indicate unsustainability of the whole process of development. However, Sikkim has enjoyed a special category status, the funds from the central government of India are likely to continue for some time into the future. By that time, the state might be able to harness its abundant resources such as hydro-electricity. Large cardamoms, which at present account for around three to four per cent of the total non-tax revenue, and other high-value cash crops also have a potential to contribute to the state exchequer.

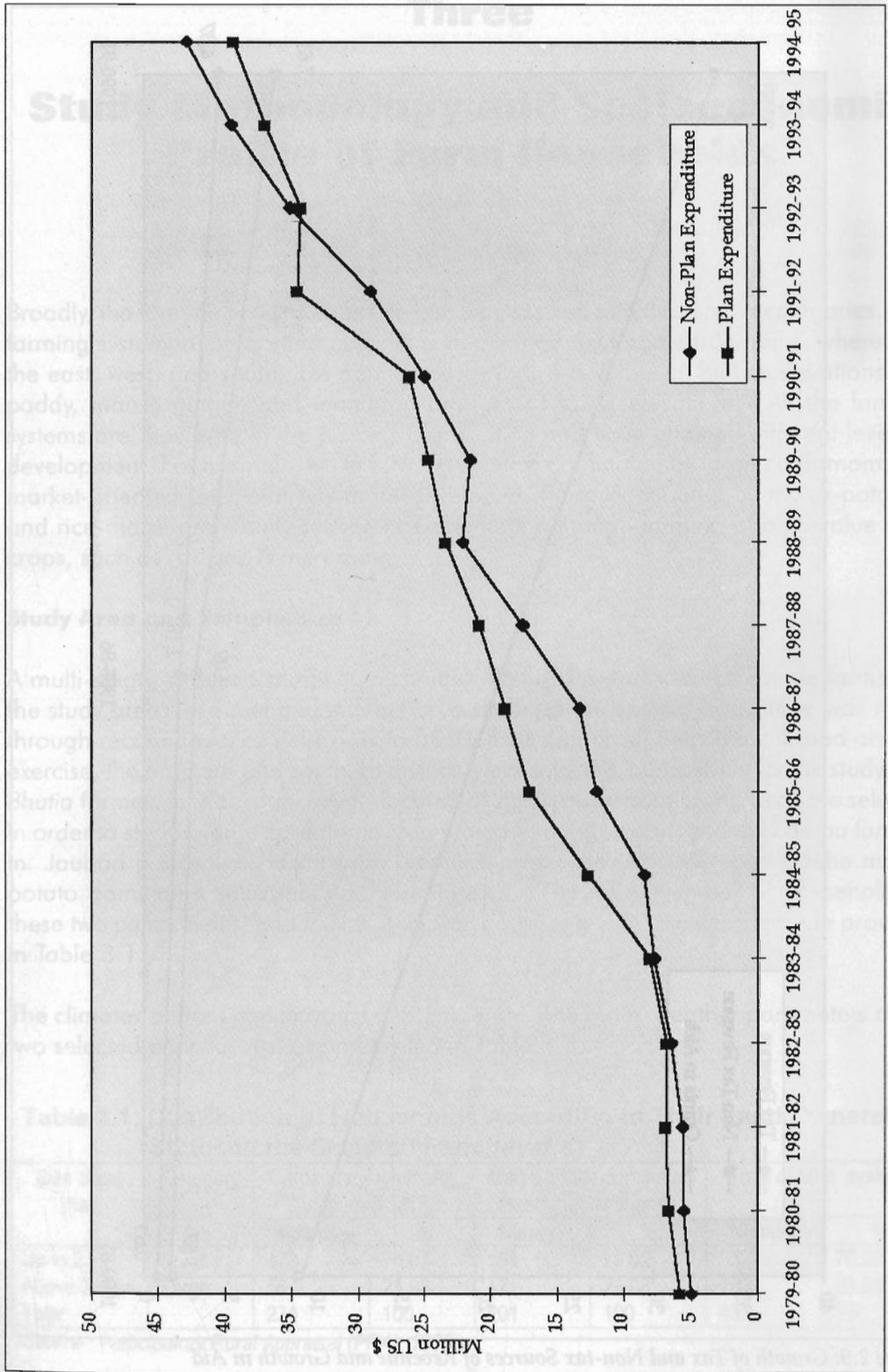


Figure 2.8: Growth of Plan and Non-Plan Expenditure

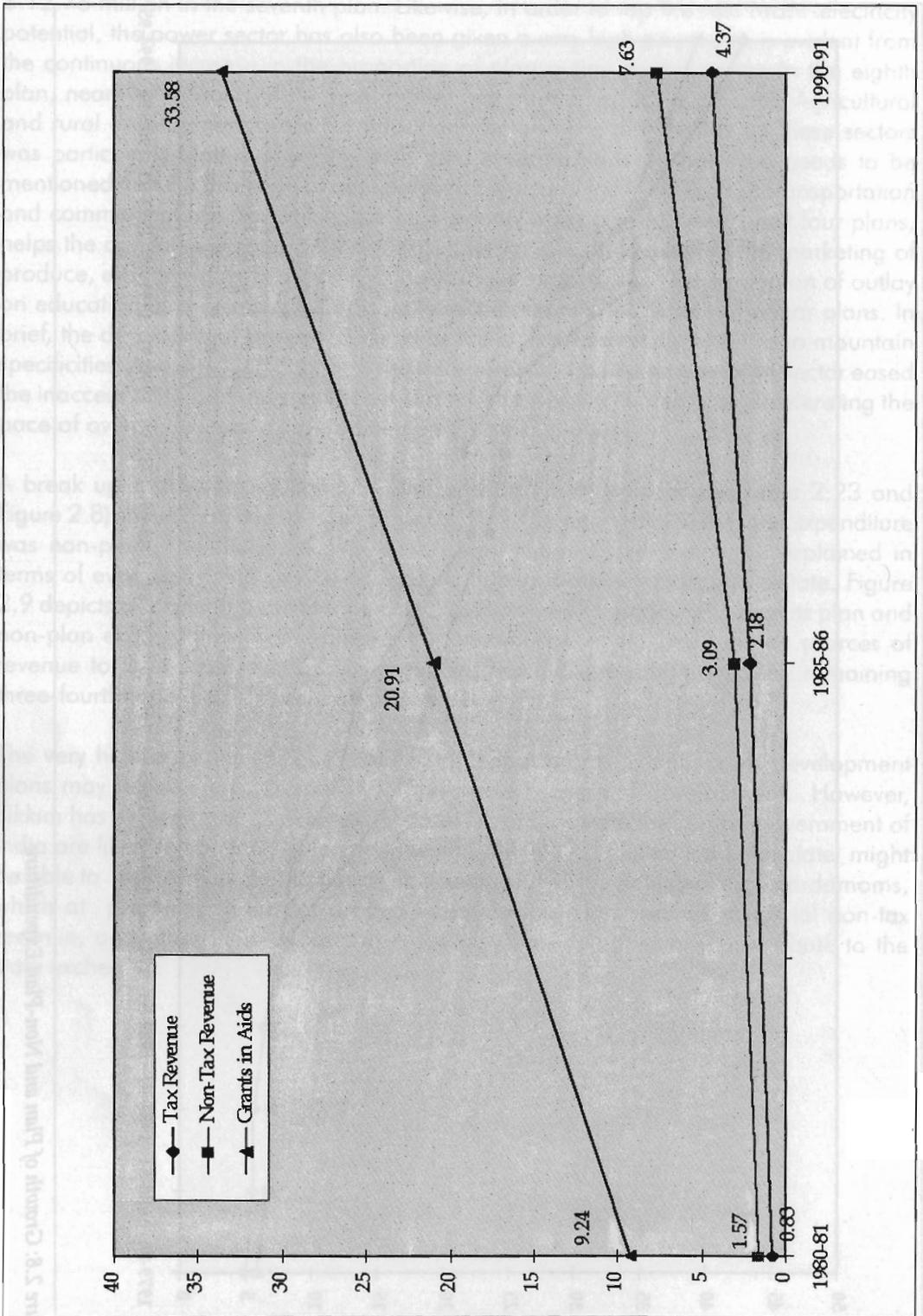


Figure 2.9: Growth of Tax and Non-tax Sources of Revenue and Growth in Aid