CHAPTER IV

LAND USE IN THE BASIN

INTRODUCTION

The concept of 'land use' is often considered a relatively stable subject, related mainly to the use to which the land in certain region at a certain time is put (Viale, 1975). There are several general definitions of land use, the earliest of which was given in connection with the first land utilization survey of Britain from 1931 onwards. It stated quite simply that the object of survey was to discover 'for what purpose the surface of the country is used' (Stamp, 1948). According to Vink, 'the use of land is the result of a continuous field of tension created between available resources and human needs and acts by human efforts'. By land use it is implied that it is mankind's adaptation of land surface and man's need of different magnitudes for space for different uses (Northam, 1979). Thus, land must be carefully utilized, so that it may fulfill our various needs. The best use of each parcel of land requires a scientific and methodically appreciable classification of the present land use, which may help in investigating the best use of land after considering the major land use categories (Mondal, 1982).

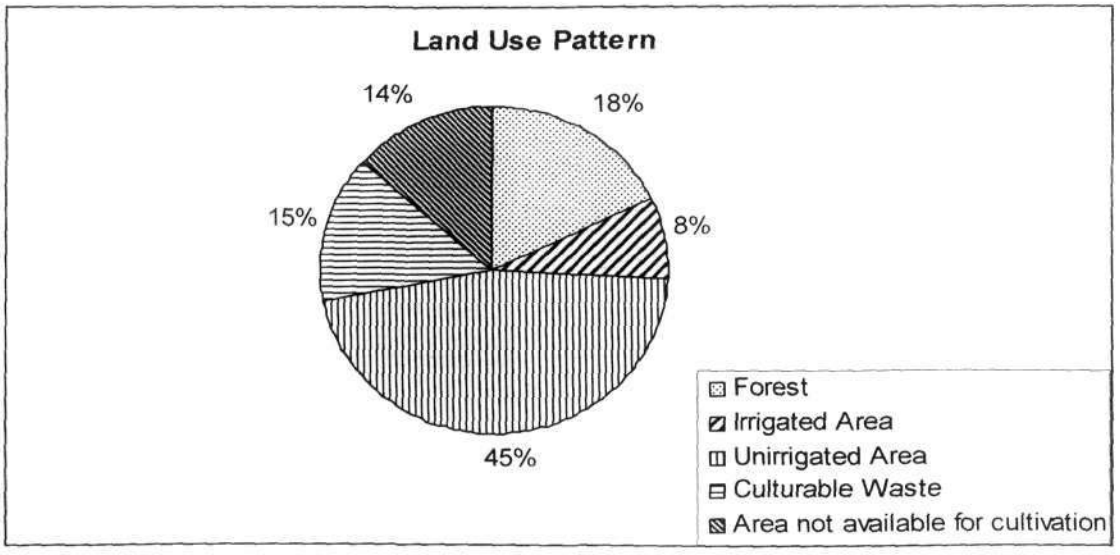

Fig. 4.1

4.1. GENERAL LAND USE

Land resource forms the most important natural wealth of the state and their proper utilization is a matter of concern to its people. Utilization of the land according to its capability ensures that this resource is utilized to the best extent. Its improper use leads to wastage and can lead to progressive deterioration and loss of productivity of this vital resource. One of the most significant features of land use in the study area is that only a small portion of land is suitable for agriculture due to the presence of steep slope and rocky terrain. Huge areas of the hill slopes are occupied by tea gardens, which provide employment to the people of the Balason basin.

Classification of land is a process, which assigns each part or tract of land in an area to its proper class in a system of classes. The classes in the system are determined in terms of the qualities of characteristics with which the classification is concerned. In India, the classification of land use has its root in agricultural statistics. The land use in India was broadly classified into five categories. 1. Area under forest, 2. Area irrigated by source, 3. Area unirrigated, 4. Area under culturable waste (including gaucher and groves) and 5. Area not available for cultivation (Fig. 4.1).

4.1.1. Area Under Forest

Forest is an important source of livelihood in the study area. Apart from extraction of timber, forest is also a source of fodder, fuel wood, medicinal plants and herbs. In the early stages, forests were considered as timber producing agencies without any reference to the role that they can play in watershed protection. While the forest cover ensures an optimum condition for infiltration, percolation and subsequent storage and discharge of water, the removal of vegetation tends to initiate a progressive chain of deterioration affecting the water regime in the end. Forestry also provides endless opportunities for research in crop physiology (Gazetteer, 1980).

All the forested villages have above 45% of land under forest. Among the tea gardens, New Fallodi has highest land under forest cover

i.e. 47.94%. In the study area, forest ranges from 91.49% in Phuguri Forest to 0.25% in Moolatey. In the northern part of the Balason basin, near the source of the river, vast stretches of land are covered by forest i.e. Mim Nagri Range (53.19%) and Ghoom Pahar Forest (46.48%). Phuguri Forest shows a remarkable increase in the amount of forest cover. It increased from 48.97% in 1991 to 91.49% in 2001. This clearly indicates that large-scale afforestation took place in the region. Forest cover also increased in 10 more villages out of which many lies along the right bank of the Balason river (Fig 4.2).

Table: 4.1. Percentage of villages having percentages of area under forest.

Forest %	Category	No. of Villages	Village %	Village area to total area in %
> 45	Very High	6	9.52	55.99
45 - 35	High	1	1.59	44.00
35 - 25	Moderate	2	3.17	27.12
25 - 15	Low	5	7.94	20.46
< 15	Very Low	24	38.10	6.57
Nil		25	39.68	0.00
Total		63	100.00	17.69

Source: DFO, Kurseong.

Table 4.1 indicates that number of villages having forest areas below 15% is highest in the study area and its percentage has increased through the last three decades. Out of 63 villages, the number of villages having below 15% forest area has increased at the rate of 16 to 19 to 24 villages from 1981 to 1991 to 2001 respectively. At the same time, the number of villages without forest cover has decreased from 34 to 30 to 25 from 1981 to 1991 to 2001 respectively. That means from 1981 to 2001 almost 9 villages added to there land some percent of forest by planting new trees. Since most of the villages are tea gardens, their share of forested land is quite less. Large-scale deforestation took place in 4 villages. Among these Rangbul shows a striking decrease in the forest cover, which is from 26.41% to 1.15%. Other villages, which show similar decline in forest cover, are Marma, Bukim and Longview T.G.

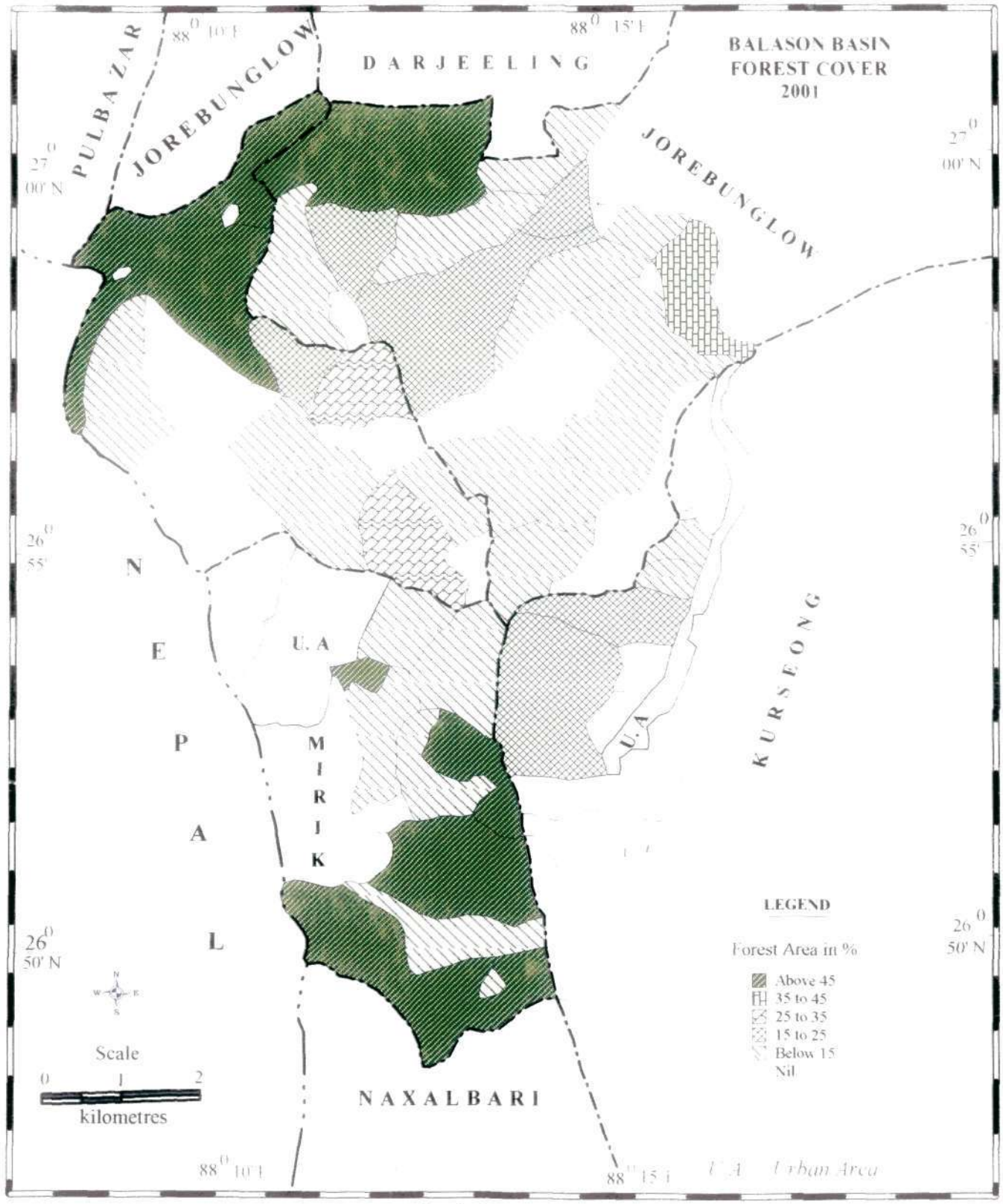
BALASON BASIN
FOREST COVER
2001
PULBAZAR
JOREBUNGLOW
DARJEELING
JOREBUNGLOW
KURSEONG
NEPAL
MIRIK
NAXALBARI
U.A
U.A
88° 10' E
88° 15' E
27° 00' N
26° 55'
26° 50' N
LEGEND
Forest Area in %
Above 45
35 to 45
25 to 35
15 to 25
Below 15
Nil
Scale
0 1 2
kilometres
U.A Urban Area

Fig. 4.2

Field observations revealed that though the forest cover has been increased but there is large-scale deforestation and degradation of forest due to high pressure of population on forestland for settlement, developmental activities and other anthropogenic acts. In the tea gardens, there are supposed to be some forestland in the past but in the course of time most of the tea gardens do not have any forest to supply fodder and fuel wood to the worker of the teagardens. As a result these workers are forced to collect their daily requirements of fodder and fuel wood from the nearby forest areas illegally or legally. It is also noticed that large scale grazing in the forest causing high rate of deforestation consequently increases soil erosion and over land flow. The depletion of forest resources has a wide-ranging impact on ecological balance ranging from the extinction of rare flora and fauna, to changes in climatic condition and lack of natural attraction of the area.

4.1.2. Cultivated Area

Percentage of cutivated land is high in the study area. Among the villages, the percentage of cultivated land ranges from 86.69% in Mangarjung T.G. to 14.42% in Sukhiapokhri. Percentage of villages within high range (60% - 70%) of cultivated land has increased from 1981 to 2001. there were 23.81% of villages under this high category in 1981, which became 36.51% in 2001. Villages having below 50% cultivated land also increased from23.81% in 1981 to 25.40% in 1991 to 30.16% in 2001. Percentage of villages in the moderate group (50% - 60%) decreased through the last three decades. In 8 villages cultivated land has increased between 1991 and 2001. During the same period, 13 villages showed decline in the percentage of cultivated land due to lack of irrigation facilities, poor production and uneconomic land holdings (Fig 4.3).

As there is no scope for other type of occupation, people try to convert the cultivable land into cultivated land by applying certain measures. Tea gardens occupy high share of cultivated land in the study area. Though irrigation facilities are less even then tea

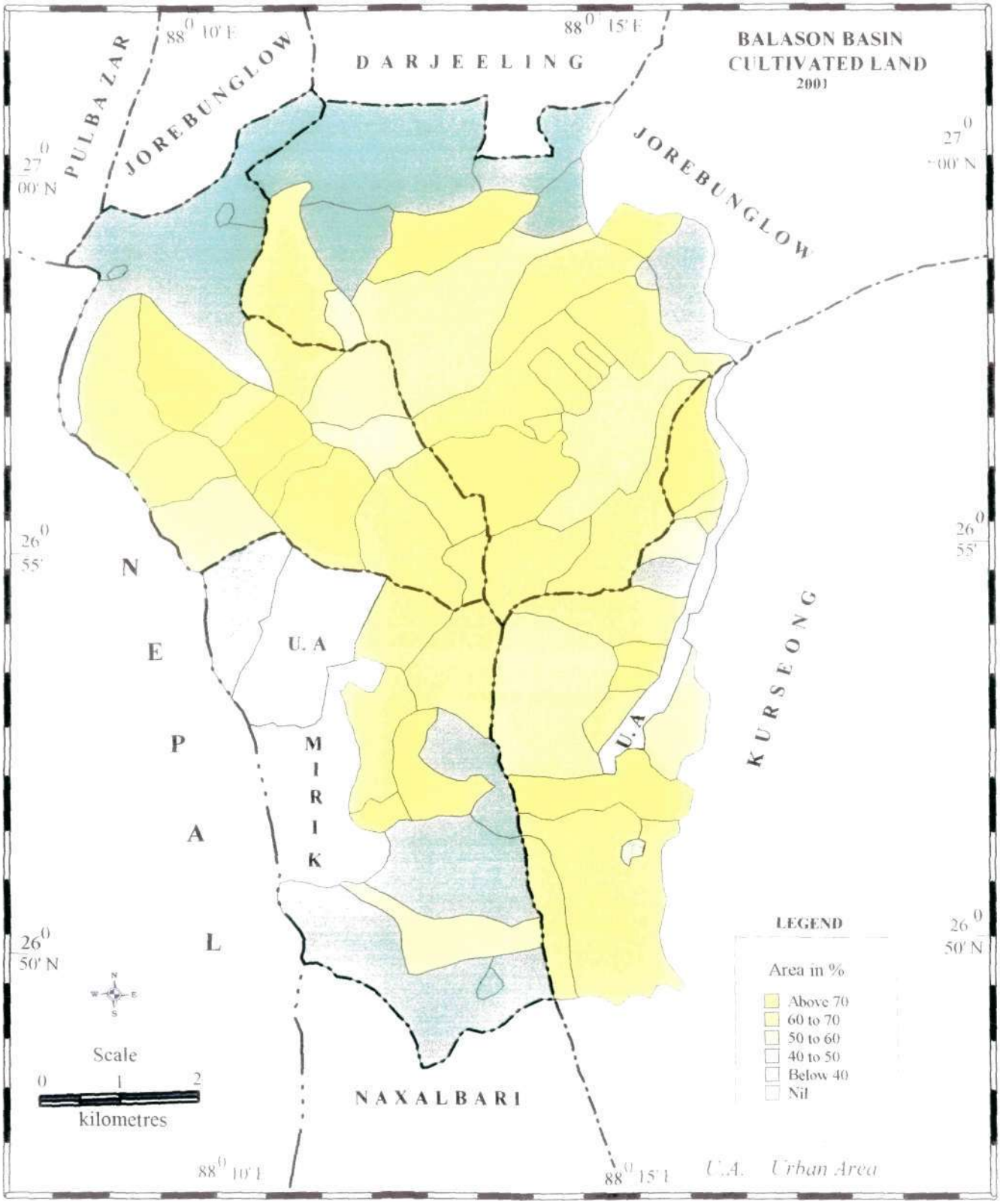
BALASON BASIN
CULTIVATED LAND
2003
DARJEELING
JOREBUNGLOW
PULBA ZAR
JOREBUNGLOW
88° 10' E
88° 15' E
27° 00' N
26° 55'
26° 50' N
N E P A L
U. A
MIRIK
U. A
KURSEONG
NAXALBARI
LEGEND
Area in %
Above 70
60 to 70
50 to 60
40 to 50
Below 40
Nil
Scale
0 1 2
kilometres
U.A. Urban Area

Fig. 4.3

plantations have developed depending upon monsoon rainfall. Moreover the tea gardens arrange for their own irrigation system during the dry season to save plants and production. Pruning is done in the dry season to save irrigation water.

Table: 4.2. Percentage of villages having percentages of area under cultivation.

Cultivated area %	Category	No. of villages	Village %	Village area to total area in %
> 70	Very High	12	19.05	81.93
70 – 60	High	23	36.51	65.26
60 – 50	Moderate	8	12.70	54.97
50 – 40	Low	3	4.76	48.98
< 40	Very Low	16	25.40	29.39
Nil		1	1.59	0
Total		63	100.00	54.17

Source: Census of India, 2001.

4.1.2a. Area Irrigated By Source

Irrigation in the study area is limited due to topographical conditions and remoteness of the cultivated land from the sources. The Balason basin lies in high rainfall zone. The sources of irrigation are rivulets and *jhoras* by diversion channels and over flooding. As the entire area is hilly so canal, wells, tanks and tube wells are not available. The only source of irrigation is the rainwater. The rivers and *jhoras* swell up with the onset of the monsoons and dries down with the lapse of monsoon. The practice of irrigating the crops is mostly confined to paddy, large cardamom and vegetables. The tea gardens maintain their own system of irrigation.

Irrigation of paddy has been done by rainwater and run off water from the hill slopes. Almost all paddy fields are irrigated at the time of planting and growing seasons. Large cardamom is normally grown at the hill slopes and the water from the *kholas* and *jhoras* are allowed to flow along the slope of the hills through the large cardamom fields. Intensive irrigation affects the soil and enhances soil erosion in well irrigated fields (Jana, 1994). Some crops like maize, wheat, barley and millets are grown in the soils where terraces are not required because these crops are grown in an unirrigated area. In tea gardens, pipes and

sprinklers are mostly used for irrigation.

Table: 4.3 Percentage of villages having percentages of area under irrigation.

Irrigated area %	Category	No. of villages	Village %	Village area to total area in %
> 40	Very High	1	1.59	50.00
40 - 30	High	5	7.94	36.74
30 - 20	Moderate	5	7.94	23.59
20 - 10	Low	4	6.35	15.99
< 10	Very Low	6	9.52	7.07
Nil		42	66.66	0
Total		63	100.00	8.23

Source: Census of India, 2001.

Percentage of irrigated land is low in the study area. There is a decreasing trend in the number of villages under irrigation in the last three decades. Percentage of villages under irrigation decreased from 38.10% in 1981 to 36.51% in 1991 to 33.33% in 2001 (Fig 4.4). among the villages, percentage of irrigated area ranges from 50.16% in Pokhribong Khasmahal to 1.81% in Mangarjung T.G. Villages, where land under irrigation increased from 1991 to 2001 are Dhajea T.G., Singbulli T.G., Longview T.G., Pokhribong Khasmahal and Pulungdung Khasmahal. On the other hand percentage of irrigated land has declined in three villages of Saurini Basti, Mirik Khasmahal and Nahori T.G. According to the table 4.3, 9.52% villages have above 30% irrigated land and 23.81% villages have less than 30% irrigated land. The hill slopes provide no facility to store water for irrigation. Rivers swell up during rainy season but this excess water cannot be stored due to lack of infrastructural facilities. Construction of reservoirs is risky unless proper engineering techniques are applied. Less irrigation facilities affect not only agriculture and tea plantations but also their production figures.

In the study area 9 tea gardens and 7 khasmahals enjoy the facility of irrigation by Government canals. Rest 4 tea gardens and 1 khasmahal has private source of irrigation. An area of 17.99 km^2 is irrigated by Government canals which is 73% of the total irrigated area. Rest 6.69km^2 area i.e. 27% is irrigated by private source. Longview T.G.

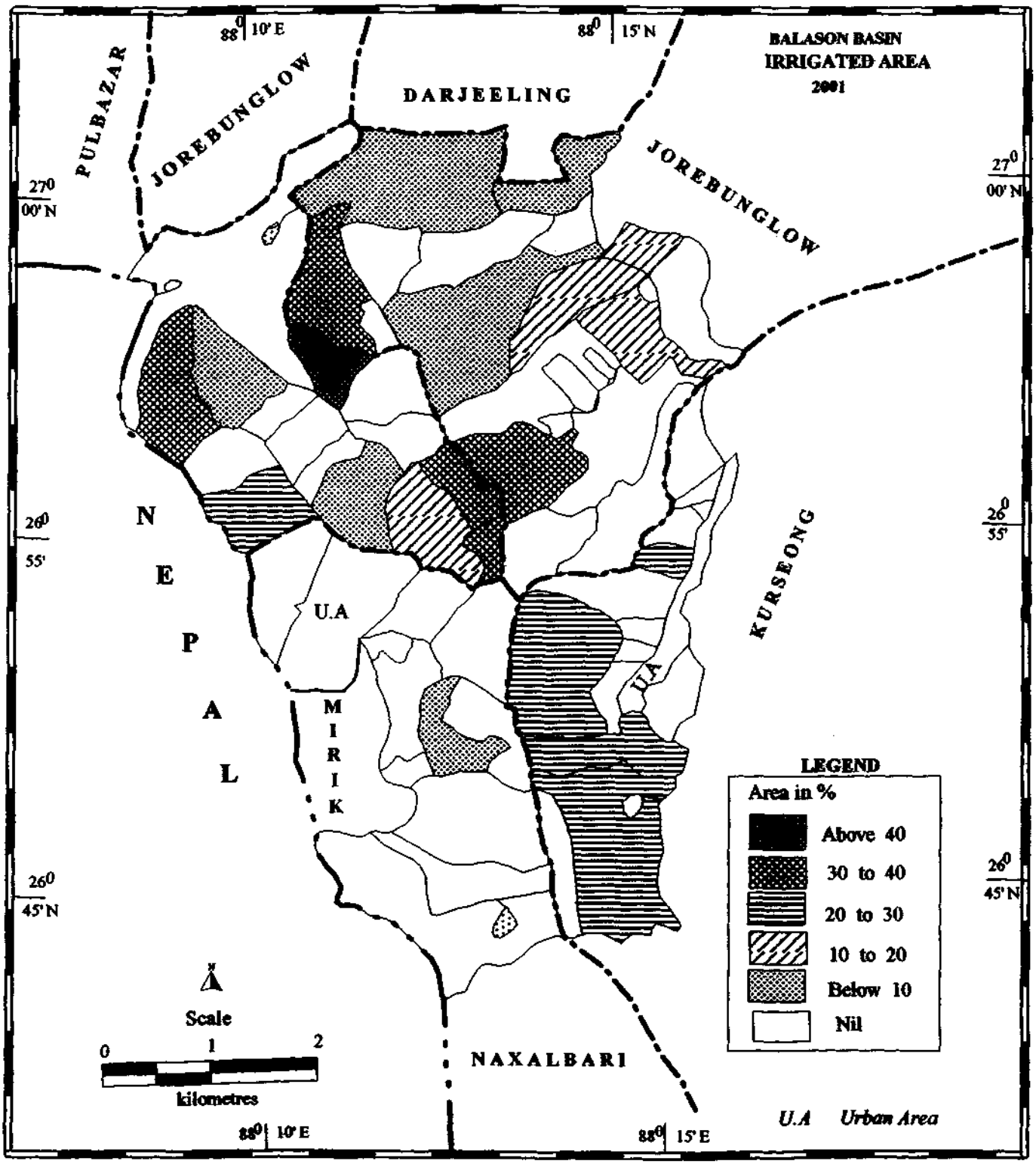
BALASON BASIN
IRRIGATED AREA
2001
88° 10' E
88° 15' N
PULBAZAR
JOREBUNGLOW
DARJEELING
JOREBUNGLOW
27° 00' N
26° 55'
26° 45' N
N E P A L
U.A
MIRIK
KURSEONG
U.A
NAXALBARI
LEGEND
Area in %
Above 40
30 to 40
20 to 30
10 to 20
Below 10
Nil
Scale
0 1 2
kilometres
U.A Urban Area

Fig. 4.4

is the only village which has both Government canal and private source, as means of irrigation.

Due to high cost of maintenance and management, the existing irrigation channels or *jhoras* have been blocked by soil erosion and land slides. There is a little probability of constructing new channels because almost all *jhoras* and streams become dry during dry period due to low rainfall and poor seepages for low vegetation cover. As a result the area under irrigation in majority of the villages having irrigation in the past has been declined during the last few years. This affects the crop production and net sown area severely in the study area.

4.1.2b. Unirrigated Area

With the ephemeral character of streams, highly concentrated rainfall for few months accentuated by the physiographic diversities are rendered in the Balason basin's cropped area devoid of adequate irrigation facilities. As a result percentage of unirrigated land is high in the study area. But the percentages of villages having more unirrigated area are gradually declining in the Balason basin through the last three decades. Among the villages the percentage of unirrigated land ranges from 85.51% in Tarzum T.G. to 5.36% in Kharia Basti. Percentage of villages having less than 40% unirrigated area decreased from 69.84%

Table: 4.4. Percentage of villages having percentages of area un-irrigated.

Un-irrigated area %	Category	No. of villages	Village %	Village area to total area %
> 80	Very High	4	6.35	82.88
80 – 60	High	21	33.33	65.08
60 – 40	Moderate	14	22.22	49.09
40 – 20	Low	17	26.98	30.75
< 20	Very Low	6	9.52	17.48
Nil		1	1.59	0
Total		63	100.00	45.94

Source: Census of India, 2001.

to 68.25% to 61.90% in between 1981, 1991 and 2001 respectively. Percentage of unirrigated area has increased in many of the villages due to lack of irrigation facilities. However it is revealed from the field

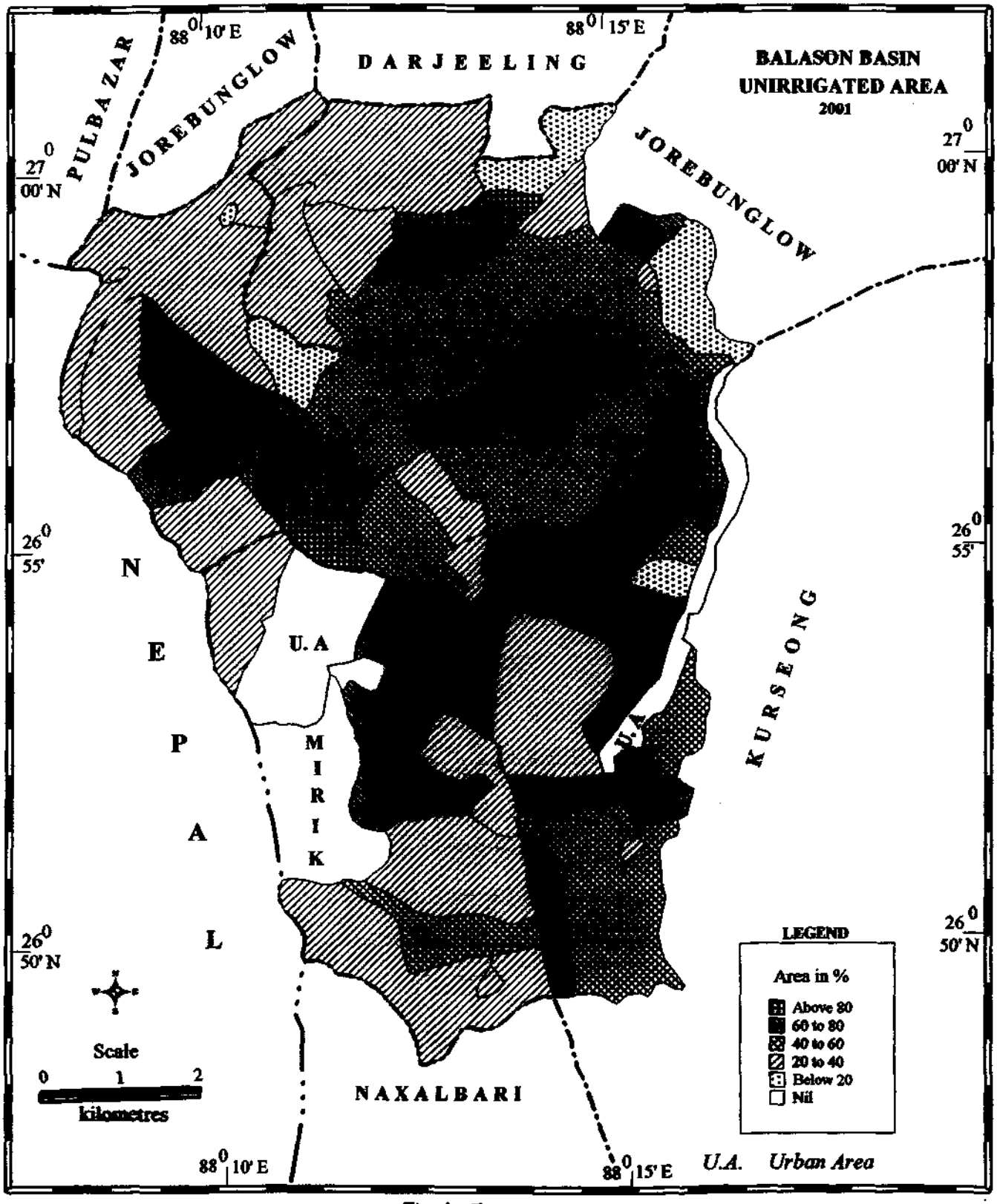
BALASON BASIN
UNIRRIGATED AREA
2001
DARJEELING
PULBA ZAR
JOREBUNGLOW
JOREBUNGLOW
KURSEONG
MIRIK
NAXALBARI
U.A
U.A
U. A
N
E
P
A
L
88° 10' E
88° 15' E
27° 00' N
26° 55'
26° 50' N
Scale
0 1 2
kilometres
LEGEND
Area in %
Above 80
60 to 80
40 to 60
20 to 40
Below 20
Nil
U.A. Urban Area

Fig. 4.5

study that the unirrigated area has been declined in certain villages due to increase in irrigational facilities and nearness to the *jhora* and streams (Fig 4.5).

4.1.3. Culturable Waste

Culturable waste includes fallow lands or lands covered with shrubs and jungles, grazing lands and meadows. Such lands are available only along the rocky, steep slopes of the Balason basin. The reason for having such lands may be one or more of the following reasons:

1. Poverty of the cultivators,
2. Paucity of irrigation water and
3. Non-profitable nature of farming.

Table: 4.5. Percentage of villages having percentages of area under culturable waste.

Culturable waste %	Category	No. of villages	Village %	Village area to total area in %
> 35	Very High	4	6.35	41.29
35 – 25	High	8	12.70	28.73
25 – 15	Moderate	11	17.46	18.10
15 – 5	Low	20	31.75	10.67
< 5	Very Low	15	23.81	3.18
Nil		5	7.94	0.00
Total		63	100.00	14.62

Source: Census of India, 2001.

In the study area, percentage of land under culturable waste is low. The percentage of land under culturable waste ranges from 57.01% in Jorebunglow to 0.79% in Makaibari T.G. (Fig 4.6). Thus Jorebunglow has very high density of population and the area is expanding vertically because above 50% of the land is culturable waste. Areas having above 5% culturable waste have increased by 38.09% between 1991 and 2001. Area under culturable waste increased in 7 tea gardens because landslide, soil erosion and natural calamity made the land unfit for economic use. On the other hand, percentage of culturable waste has decreased in 5 villages because of construction of houses, roads and modern developmental activities.

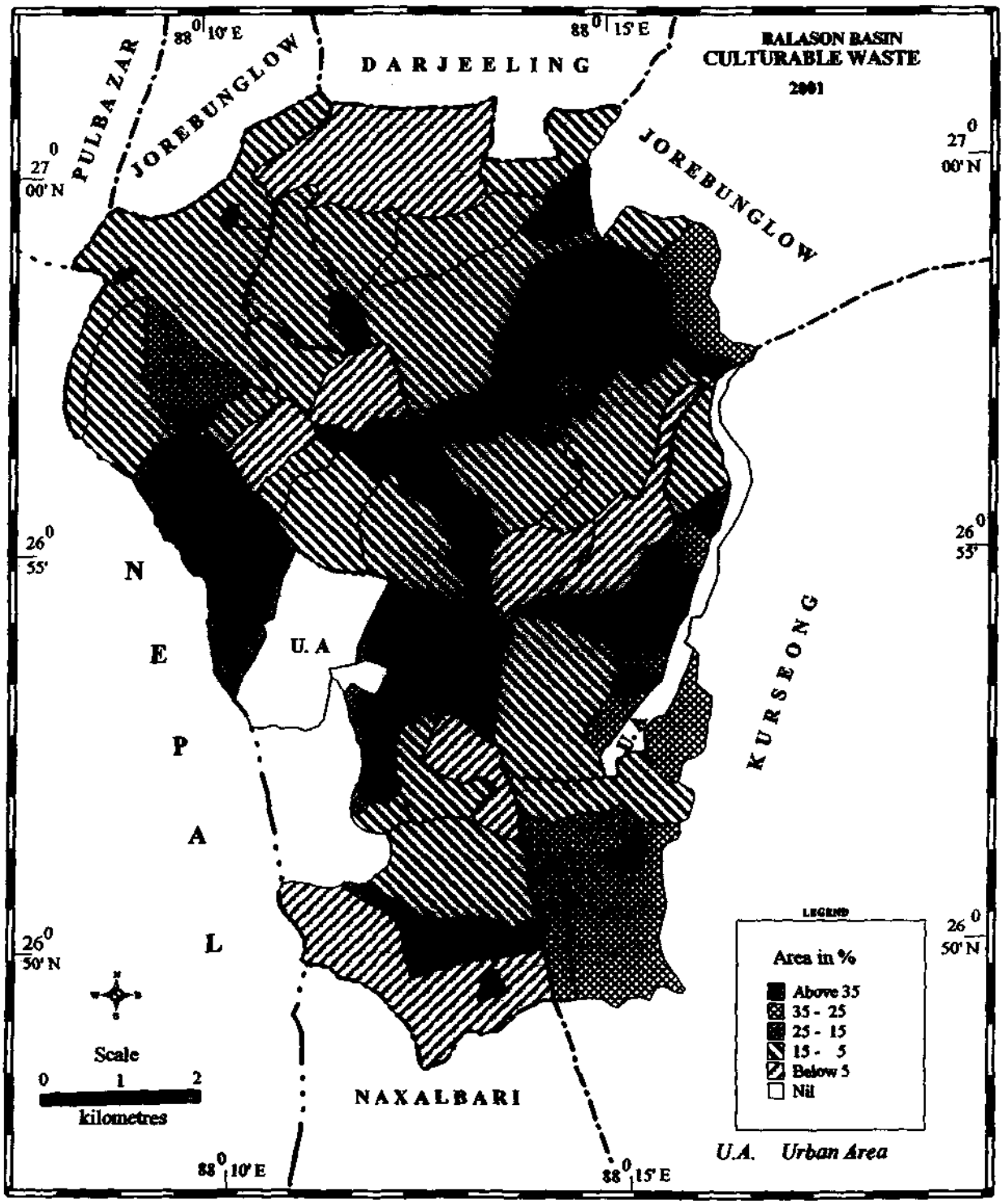
BALASON BASIN
CULTURABLE WASTE
2001
88° 10' E
88° 15' E
27° 00' N
26° 55'
26° 50' N
PULBA ZAR
JOREBUNGLOW
DARJEELING
JOREBUNGLOW
N
E
P
A
L
U.A
KURSEONG
NAXALBARI
LEGEND
Area in %
Above 35
35 - 25
25 - 15
15 - 5
Below 5
Nil
U.A. Urban Area
Scale
0 1 2
kilometres

Fig. 4.6

4.1.4. Area Not Available For Cultivation

According to table 4.6, area not available for cultivation is less in the study area. It ranges from 85.58% in Sukhiapokhri to 1.09% in Manjha Forest (Panighata F.Rly.). Area under very high (>35%) percentage has decreased whereas area under high (35%-25%) and moderate (25%-15%) percentage has increased from 1991 to 2001. Much of this land is utilized for road and building construction (Fig 4.7).

Table: 4.6. Percentage of villages having percentages of area not available for cultivation.

Area not available for cultivation %	Category	No. of villages	Village %	Village area to total area in %
> 35	Very High	7	11.11	50.72
35 – 25	High	9	14.29	52.30
25 – 15	Moderate	17	26.98	19.40
15 – 5	Low	21	33.33	9.61
< 5	Very Low	8	12.70	2.97
Nil		1	1.59	0.00
Total		63	100.00	13.52

Source: Census of India, 2001.

Sukhiapokhri is densely populated, so, the requirement for this type of land is more here. Other village where percentage of area not available for cultivation is high is Kharia Basti, Punkhabari, Hill Cart Road and Simana Basti. Among the tea gardens, percentage of this area is highest in Gopaldhara (44.02%) and lowest in Nahori (1.26%). In 11 villages, percentage of land under area not available for cultivation has increased from 1991 to 2001 due to high pressure of population, for construction of houses, roads and other constructional works. In 8 villages the percentage of this land use decreased.

4.2. LAND TENURE SYSTEM

Land reform involves an alteration to the nature of land tenure by direct intervention by the planners or the government. Land tenure is the system of ownership of land and of title to its use. Rights to land use are complex and varied especially in a large and diverse country like India. They involve various aspects of security, legality and variety

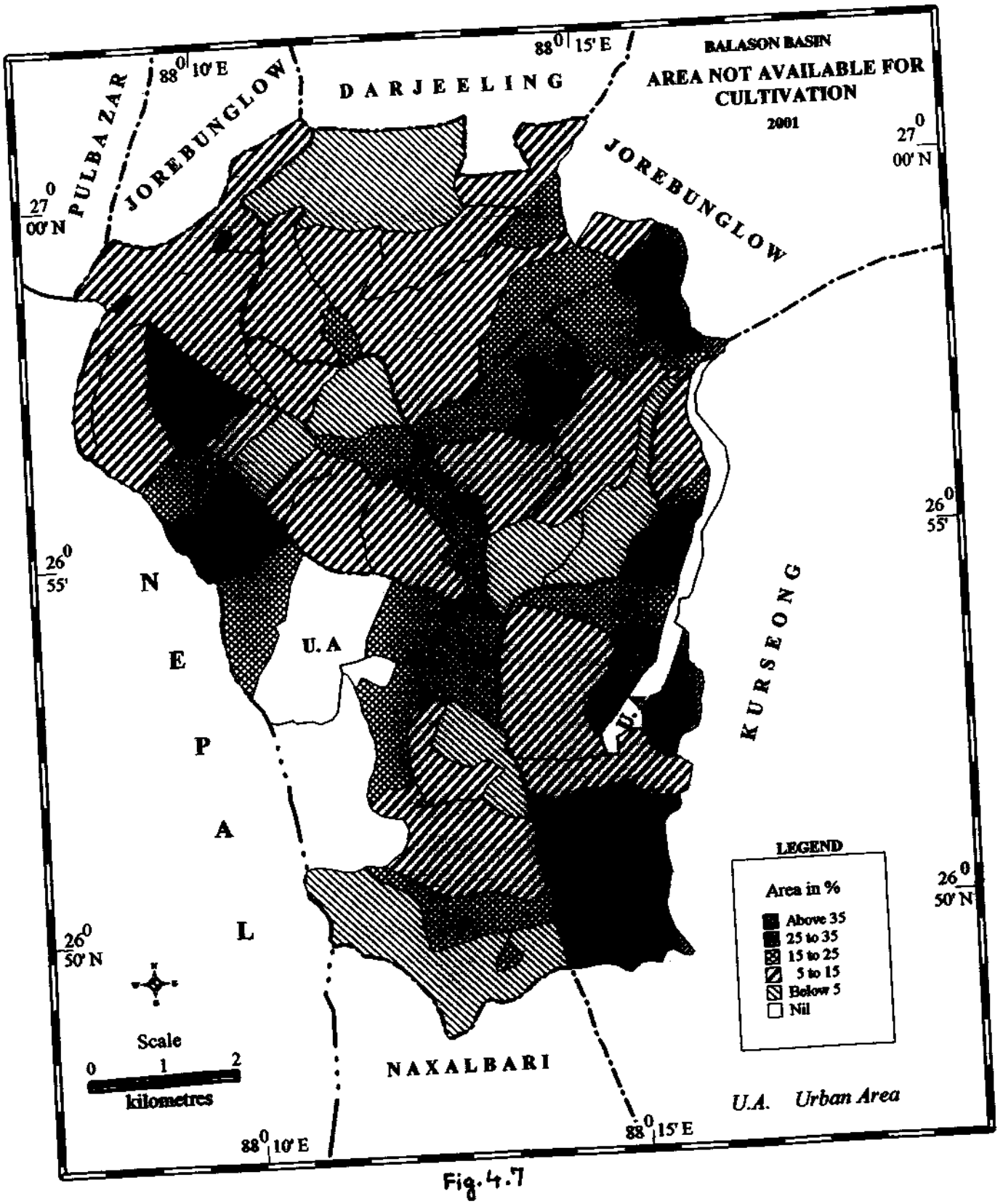
BALASON BASIN
AREA NOT AVAILABLE FOR CULTIVATION
2001
88° 15' E
88° 10' E
DARJEELING
PULBA ZAR
JOREBUNGLOW
JOREBUNGLOW
27° 00' N
26° 55'
26° 50' N
N
E
P
A
L
U. A
KURSEONG
NAXALBARI
LEGEND
Area in %
Above 35
25 to 35
15 to 25
5 to 15
Below 5
Nil
Scale
0 1 2
kilometres
U.A. Urban Area

Fig. 4.7

of relationships between the user and the owner (especially with reference to the mode and amount of payment). The following are the most important types of land tenure which have been prevalent in different parts of the world as well as India.

i) Owner occupation.
ii) Tenancy
iii) Use Right
iv) Institutional with Wage Labour
v) Collectivism.

The concept of 'collectivist' tenure is being applied to the promotion of joint forest management, whereby village communities located on the fringes of the government owned forest land are being involved in the protection of forest areas, in return for which they are to get 25% of the share of the proceeds of the sale of timber, the rest being revenue of the forest department of the government. The villagers (the members of the Forest Protection Committees) also have the right to collect and use fuelwood (without felling trees) and non-timber forest products free of cost. This is a method of harnessing private potential for higher and sustainable production from an environmental system.

While tea plantations have been introduced and developed during the British rule, shares and bonds are currently being floated by private companies for various types of timber plantations, indicating a change in the ownership and development of arboreal production system (Choudhuri, 2001).There types of land tenure systems prevailed in India at the time of Independence. The basic difference between them was the mode of payment of land revenue. West Bengal had a land tenure system known as Permanent Settlement which promoted landlords called Zamindars. In the Zamindari system the land revenue was collected by the Zamindars from the farmers. The revenue collection pressure created a layer of intermediaries. The lowest strata of actual cultivators were the share croppers, known mainly as Bargadars. After Independence in 1947, Zamindars were replaced by new landlords called Jotedars. The Jotedars, mainly rentiers from the

erstwhile Zamindar, again turned out to be not the actual cultivators in general and many of them were absentees. The West Bengal Bargadars Act of 1950 was abolished by the West Bengal Land Reforms Act, 1955. in order to protect the interest of the bargadars, it has been laid down that the landowner will be entitled to terminate cultivation by a bargadar on the following four cases:

(a) When the bargadar fails to cultivate the land or uses it for non-agricultural purposes,

(b) When the land is not cultivated by the bargadar personally,

(c) Where the bargadar fails to tender the share of the produce to the land owner, and

(d) Where the land-owner requires the land for bringing it under personal cultivation.

Normally bargadars are evicted on the plea that the land would be used for "personal cultivation". "Personal cultivation" means cultivation by a person of his own land on his own account---

(a) by his won labour, or

(b) by the labour of any member of his family or

(c) by servants or labourers on wages payable in cash or in kind, or both.

The West Bengal panchayat system in its structural form came into being in 1978 after the panchayat election. The rural political leadership which led the widespread peasant movement culminating in forced land refer and a sizeable percentage of the small and marginal farmers and bargadars found a platform in the newly set up panchayat system. The panchayats in West Bengal may, therefore, be called a product of land reforms.

Teagardens, mills, factories: Lands held by an intermediary in the capacity of a tea garden, mill or factory could be retained up to a certain limit, the state Govt. deciding how much land was required for the purpose of the tea garden, mill or factory as the case might be. It was further laid down that the non-agricultural lands of an intermediary comprised in his homesteads, buildings and structures in

khas possession should not exceed 20 acres as might be chosen by him. Thus in effect, as a consequence of abolition of Zamindari, intermediary could retain more than 20 acres of non-agricultural land and 25 acres of agricultural land in his possession. There was no limit to the land held by him as tank fishery or as a trustee in respect of an exclusively religious or charitable trust or land comprised of orchards or used for the purpose of livestock breeding, poultry farming or dairy. As a result the vesting of the lands of the intermediaries in the state, the collectors of the districts were authorized to take charge of all estates and rights of intermediaries which had vested in the state.

In the period between 1835-1881 may be called as the period of 'introduction' of agriculture in a land full of forest and wasteland in Darjeeling hill area, the period between 1881-1951 may be called as the period of 'consolidation' through different experiments of Land Tenure system. In the hill area, agriculture competes with tea for land and tea competes with agriculture for plantation. Both can only increase at the cost of forest. The land tenure system which the British Govt. introduced in the area is very novel. When whole of India had Zamindari system, in Darjeeling the British introduced a raiyotwari tenurial system. The only 'Zamindar' was Chebu Lama, who helped the British in the Anglo-Sikkim wars. But his Zamindari was not in any sense 'permanent'. Ultimately after the death of Chebu Lama, land was taken away by the Govt. and it was removed as 'Relling Estate Khasmahal' it is a novel system in Darjeeling that Zamindari system was not prevalent in this area.

The system that existed in this area is a mixture of mandal system and raiyatwari system to start with. The mandals in one period of history had immense power of rural people. They were keepers of law and dispenser of justice and acted as intermediary between Govt. and the tiller. But gradually the mandal system faded away and Govt. had to deal with raiyots directly.

The raiyotwari system had various evolutionary phases but the main point to note is that, in between Govt. and the raiyot, there was

no intermediary. Alienation of land from Nepali farmers to plainsman was legally prohibited and the Govt. controlled the optimum size of holdings. Transfers, which increase the size above 20 acres or reduce it below 5 acres, were not sanctioned. The average size of holding was about 5 acres and most of the farmers were owner cultivators. The incidence of rent was tolerable. Apart from that the land was given to the Buddhist monasteries nearly without rent to satisfy the sentiment of Lamas and local tradition. Alienation of land was not rampant but there were cases when Lepcha land was taken by Nepalis.

4.3. AGRICULTURAL PRACTICES

The agricultural pattern in Darjeeling hill area is somewhat different from that of the plains mainly due to the physical constraints in the area.

(i) The landscape consists of rugged terrain, full of ridge and spur topography of rather sharp incline and deep riverine valley. This reduces the scope of agriculture in the region.

(ii) Due to steep slope accompanied by high rainfall, it becomes difficult to channelise the excess water in the agricultural fields in any systematic manner. Though high land (lekh) is considered to be 'healthier' than the low land (awal) for cultivation, but high land is less sought for. This is due to water scarcity on the high lands and crops also ripen later due to less temperature.

(iii) The cropping pattern has a bias for food crops.

(iv) Land available for cultivation is extremely low.

(v) The best quality of land is occupied by the tea gardens in the study area.

(vi) Agricultural labourer is a new concept and their percentage is very low. The prevailing form of cultivation here is family ownership or owner-cultivator type.

(vii) Crop items like oranges, potatoes and spices are more implant than rice.

4.4. PROBLEMS OF AGRICULTURAL SECTOR

i) Extreme poverty of the farmers.

ii) Excessive dependence on the private money lenders cum traders.

iii) High degree of illiteracy.

iv) Remoteness of some agricultural villages.

(v) Farmers' ignorance of the changing world and market conditions.

(vi) Corruption in the administrative system.

(vii) Constant fall in average holding of agricultural land due to the laws of inheritance.

(viii) Growing unemployment in the agricultural sector.

(ix) Political instability in the area, hinders, the proper running of the agricultural schemes.

(x) Introduction of Panchayati system without adequate sincerity.

(xi) There are examples where the utilization of money was not in conformity with the sanctioned allotment.

(xii) In many cases fund sanctioned for a particular project had been diverted to other projects.

(xiii) The absence of any co-ordination between various Govt. departments, public sector undertaking and banks, made matters even worse.

(xiv) Fund allotted is very less compared to the requirement.

(xv) Very few producing villages are connected with the markets by all – weather roads. Absence of motorable roads has forced the producers either to sell their produce at the village level itself at low price or to pay a considerable amount of money for carrying the produce from the farm to the market, making higher marketing cost.

(xvi) The price difference between the producing centers and the wholesale market is often very large.

(xvii) Farmers are too poor and to understand the ideas of cooperative movement.

(xviii) A balanced growth among consumers' marketing and credit societies are not well maintained.

(xix)Most of the credit societies are controlled directly or indirectly by

local political leaders.

The commercial banks prefer financing the wholesalers and tea sector rather than the rural farmers. This is mainly due to unforeseen complications and lack of securities. The general shortage of trained man power, poor quality of financial management, marketing difficulties etc. are notable factors for the slow growth of commercial banking business in the study area. This is further compounded by political pressures of different kinds.

4.5. CHARACTERISTICS OF CROPPING PATTERN

Maize occupies the topmost position in respect of area under individual crop. Land, that remains moist and situated in low elevation and blessed with relatively sunny atmosphere, provides ideal condition for growing maize. In the study area maize is grown on any soil, at any altitude between 1000m to 1500m in both panikhet as well as sukhakhet. Millet is another important crop in the study area, locally known as kodo. It is grown at a relatively lower altitude, mostly in dry land (sukhakhet) and yields less income. It is sown in April-May and harvested in October-November. It is not only consumed by poorer people but is also used to prepare local liquor. Aman paddy or winter rice is grown on terraced and irrigated land applying organic manure. This crop occupies less land in the study area. Wheat is a super cereal crop grown in the hills. Black wheat is cultivated in dry land up to a height of 2350m. The yield of wheat falls with the increase in altitude. Barley is another cold weather crop cultivated in the study area. Its cultivation remains confined within 1600m. altitude. It is sown in September and harvested in winter. Its cultivation fetches a higher income to the farmer. Potatoes and vegetables are important crops of the study area. These are grown in many parts of the study area like Sonada, Rangbul, Sukhiapokhri, at an altitude between 1300m. and little higher than 26660m. Potato is grown plentifully and is generally harvested twice in a year, once in summer and once in winter. There is great demand of local seed potato, specially the variety which is

Photograph 4.1 Cultivation of Potatoes

Photograph 4.2 Sprinkler Irrigation

Photograph 4.3 Cultivation of Vegetables

harvested in summer. The demand comes not only from the plains of West Bengal but from other parts of India too. The average yield varies depending upon weather conditions. Vegetables like beans, carrot, asparagus, broccoli, cabbage, cauliflower sprouts, spinach, peas, radish, tomatoes etc. grow in plenty.

Cardamom, locally known as elaichi (a scented spice) is very valuable cash crop in the study area. It occupies top position in terms of yield, produced per unit of land. This crop grows at an altitude varying from 3330m. to 1600m. along the *jhoras*, in a rich soil which must have a shade and retain moisture. New cardamom fields need to be thoroughly weeded. No crop is obtained in the first two years. Only halt-crop is harvested in the third year followed by full crop during the next eight years. Plants loose vitality after the tenth year and continue to produce at a diminishing rate up to the fifteenth year. New plantation seedlings are transplanted in May-June, two to three feet apart. Ginger is another special agricultural product of the study area. Land situated between 330m. and 1300m. height, is suitable for its cultivation. Reasonable quantity of output can be obtained continuously for 4 to 5 years from the same plants but for maintaining quantity and quality, replication is necessary at the expiry of every 4 to 5 years. Farmers generally prefer dry land for its cultivation. Low cost of production and relatively inferior quality land required for its cultivation are some of the added advantages. Ginger, like cardamom has a wide market throughout the country. Oranges are the most popular, prestigious and profitable fruit grown in many parts of the study area. Just like Darjeeling tea, Darjeeling orange is famous for its taste and quality.

There are two broad varieties of orange, small and light ones and bigger ones with loose casket. The better quality oranges are generally grown in rich black soil at elevations of 670m. to 1300m. Plants in the orangeries grow on terraces. Two acres on an average, is the size of an orange orchard. One acre of land accommodates 120 to 125 trees and each tree gives 500 to 3000 fruits per annum, depending on various

factors including the age of the tree. Under the old method of cultivation, one acre of land contains even 200 treas. Transplantation of the seedlings take place in the months of May and June and generally 4m. to 6m. distance is maintained between the seedlings. Distance kept between the seedlings or tree is one of the factors determining the size of the fruits. The more the distance, the larger is the size of the fruit. Generally seedlings of 4 years maturity are used for replantation, when these are raised from seeds. The trees from these seedlings begin to bear fruits from their seventh or eighth year. But this gestation period can be reduced, 3 to 4 years, if seedlings made by grafting are replanted as per modern technology. A fully grown up orange tree attains the height from 5m. to 6.5m. in the study area. Since 1965, there is a constant extension of area under orange cultivation but the rate of extension achieved so far is not satisfactory. Oranges grown in and around Mirik subdivision is mostly exported to Bangladesh. Oranges are also grown in the tea garden area of Moondakotee, Avengrove, Nagri, Dhajea, Singbulli Seyok and many others. Oranges grown in the entire study area are send to Siliguri, from where these are send to Bangladesh, Kolkata and Delhi.

Marketing of cash crops in the study area is still strongly influenced by money lenders cum traders. They exploit the farmers. A group of middle men residing at the important collection centers, control more or less the entire marketing system. The farmers are forced to bend in front of the local money lenders because of lack of institutional credit systems. Factors like indefinite delay in getting the loan sanctioned from the lending institutions, the necessity of complying with numerous formalities etc. are equally responsible for the exploitation, the farmers are going through. Important features regarding the unsatisfactory growth of orange cultivation, in the study area, are as follows:

(i) Orchards are mostly occurring in homesteads and have less then 50 plants.

(ii) The locations of orchards are mostly above 800m. High altitude makes it difficult to harvest and market the crop.

(iii) Orange plants are mostly 20 years old.

(iv) A large number of orchards have no irrigation facilities which reduce production.

(v) Fertilizer is hardly used in the orchards.

(vi) Many of the orchards are mixed having maize, ginger, millets, soyabean, cabbage or potatoes as the second corp.

(vii) Lack of use of insecticides and pesticides, affects the rate of production.

Measures to improve orange cultivation:

(i) Short term & long term measures has to be implemented.

(ii) Use of fertilizer, pesticides etc. are recommended.

(iii) BDO will supply seedling and pruning material at 50% subsidy.

(iv) Marketing system has to be improved.

(v) Regulated markets are started.

(vi) Food processing units are opened to diversity the product potential.

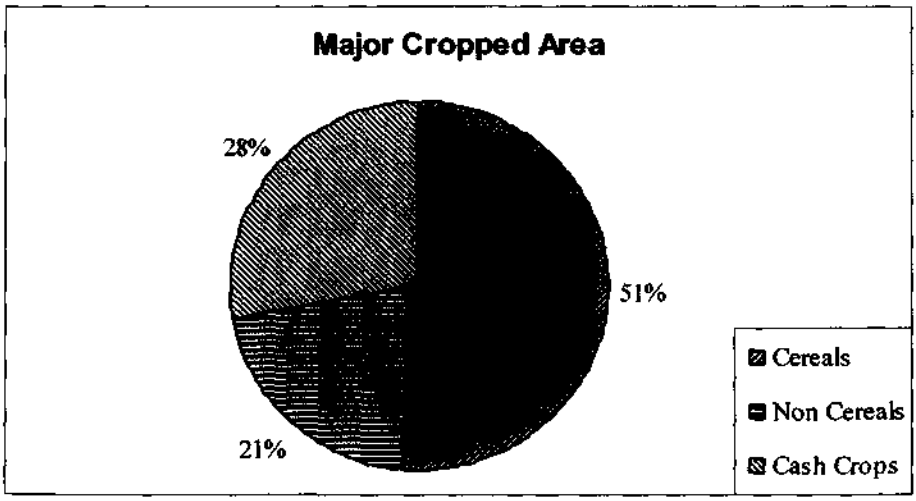

Fig. 4.8

The crops of the study area are broadly divided into three groups. These are:

i) cereals including paddy, wheat, maize and millets;

ii) non cereals including potato, vegetables, mustard, pulses, soyabean; and

iii) cash crops including ginger, cardamom, orange.

According to Fig. 4.8, the cereal crops occupy the major share (51%) of cropped land in the study area. The cash crops are the second important with 28% of the cropped area under them. Vegetables occupy the lowest percentage of area in the basin.

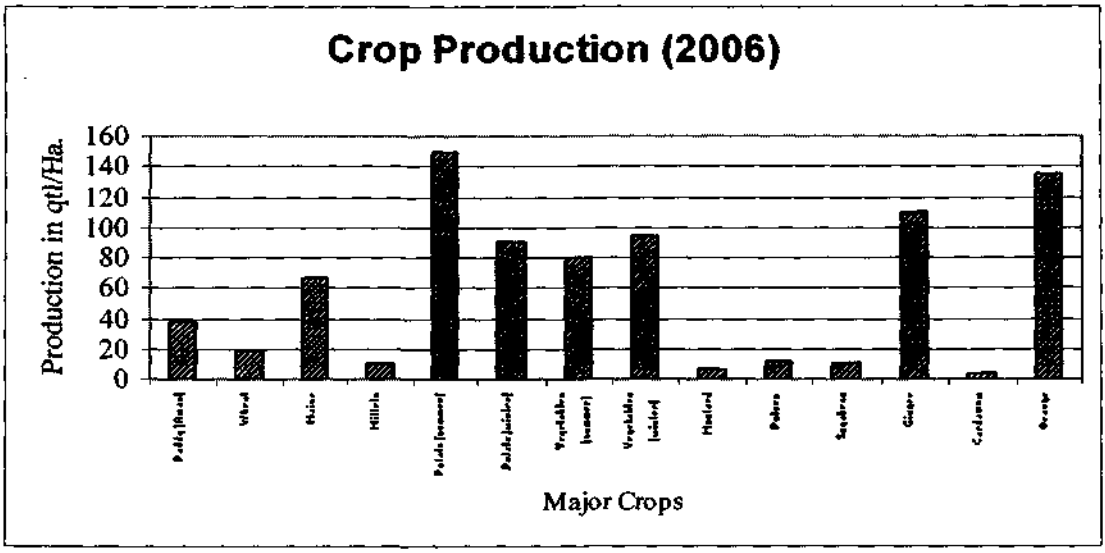

Fig.4.9

From Fig.4.9, it is evident that though vegetables occupy the lowest percentage of area yet its production is the highest (443 qtls/ha). Cash crops are both in the second position in terms of area covered and production. Cereal crops, in spite of occupying maximum land, produce little compared to others. Among all the crops, cropped area under maize is the highest whereas production of potato is highest. Summer potato, which is produced in high quantity, can be used as seed for winter.

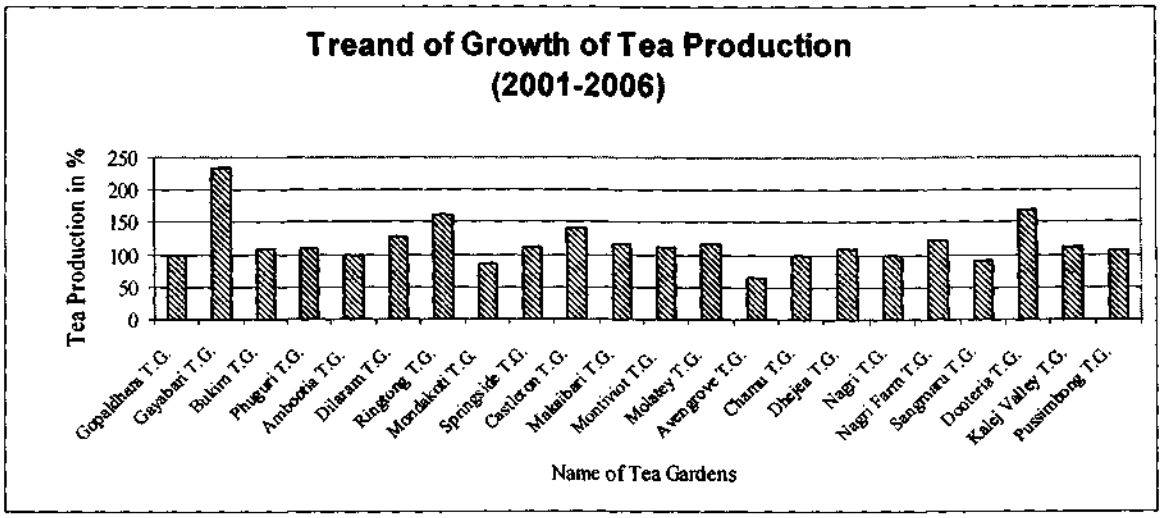

Fig.4.10

Since agriculture is the main occupation of the people and entire study area is covered by tea gardens therefore evaluation of tea production is necessary, to realize how far it will lead to sustainability. Though production figures are not always available even then the trend of growth of tea production can be shown for few tea gardens, for a stretch of six years. Among the tea gardens where there is a consistency in positive trend of growth for the last six years are Dilaram and Kalej Valley. All other tea gardens have a fluctuating nature of production. In Fig.4.10, the Gayabari T. G. has the highest trend of growth. Here production has increased through the last six years due to implementation of organic fertilizers and new techniques of scientific tea cultivation.

CONCLUSION

Land is one of the most important natural resource of the world. Land use is considered as a mirror, which reflects the ecological health and economic potential of an area. Land uses, in the study area, are of five types namely forest area, irrigated area, unirrigated area, culturable waste and, area not available for cultivation. Among all these, unirrigated area occupies the major share of land use because of scarcity of water due to non availability of water storage system. Though rainfall is heavy but it is concentrated only in the monsoon

months i.e. June to September. So cultivation, mainly tea plantation, is to be done without irrigation. Forests occupy the second major share of land use in the study area. Due to afforestation and several other conservation measures, forest cover has increased in Phuguri forest, Manjua forest. Tea garden like Purba Phuguri shows remarkable increase in its forest area. Phulungdung Khasmahal and Saurini Basti also are in favour of forest conservation. But tea gardens like Marma, Bukim and Longview has lost their forest cover. Rangbul shows a major decline in forest area due to increase in population pressure. Loss of forest area in the tea gardens is forcing the workers to encroach into the reserve forest areas for collecting fuel wood and fodder. Similarly, percentage of irrigated land is very less (8.33%) in the study area. Due to mountainous terrain and steep slope, rain water cannot stand on the surface and flows down to the plains. Hard rocky landform do not allow underground recharge neither can underground water be extracted. There is less infrastructure for storing rainwater during limited monsoon months and using it in the dry season. So less irrigation results in poor production of crops and tea leaves. Cultivation is mostly done without irrigation. So, unirrigated land is more in the study area. But this trend is gradually declining and more and more land is coming under the preview of irrigation.

Due to the presence of the tea garden, percentage of cultivated area is high in the study area. Land under culturable waste is low. In Jorebunglow, 50% of the land use is culturable waste. In the study area, only 13.52% of the land is not available for cultivation. Area not available for cultivation is high in Kharia basti, Punkhabari, Hill Cart Road and Simana Basti indicating more constructional work in such villages. Land thus used has certain ownership and title of its use. Land revenue has to be paid to the Govt. for holding such lands. The tea garden lands are taken from the Govt. for a lease period of 99 years. Every time after the span of the lease, it has to be renewed. For holding each acre of land people has to pay land revenues to the Govt., panchayat etc. Khasmahals are Govt. lands and revenue is also

charged on then. Tea garden authorities are regular payees of land revenue whereas farmers are irregular due to their poor economic conditions. Agricultural products like paddy, wheat, maize, vegetables, ginger and cardamom are grown in the study area. Cropped area under cereal crops is the highest in the basin. With respect to production, potato has the highest yield. Application of new techniques, proper flow of funds for agricultural development is very necessary for the agricultural activities to sustain in the study area. Trend of growth of tea is fluctuating in nature in majority of the tea gardens. Gayabari T. G. shows a higher rate of growth with production percentage being highest among all the other T. G's.

Utilization of land depends upon people participation to harness return from different uses in terms of crop, forest, horticulture etc. So people have to be acquainted with knowledge and experiences for optimum utilization of land. So it is necessary to study the different socio-economic functions. These have played an important role in developing the natural and human resources. So their distribution and availability to the inhabitants of the study area, which are to be in the next chapter, is essential.