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IMPACT OF DEVELOPMENT PROGRAMMES ON ENVIRONMENT AND DEMOGRAPHIC PHENOMENA OF THE ETHNIC MINORITIES OF CHITTAGONG HILL TRACTS

Jyoti Prakash Dutta

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Centre for Policy Dialogue

House No 40/C, Road No 11, Dhanmondi R/A, GPO Box 2129, Dhaka-1205, Bangladesh
Tel: 8124770, 017521580; E-mail: cpd@bdonline.com
Website: www.cpd-bangladesh.org

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It is now widely recognised that there is a need to take the scope of the population policy in Bangladesh beyond the confines of achieving population stabilisation through reduction of fertility. Although in recent years the approach to reduction of fertility has changed from narrow family planning to a broad based reproductive health approach, it is being increasingly felt that Bangladesh's population policy should encompass other equally important issues which have wide implications for the development process and the quality of life of people of Bangladesh. To address some of the related pertinent issues the Centre for Policy Dialogue has initiated a programme which aims at undertaking a series of studies covering the broad area of **Population and Sustainable Development.** The major objective of these studies is to enhance national capacity to formulate and implement population and development policies and programmes in Bangladesh, and through close interaction with the various stakeholder groups, to promote advocacy on critical related issues. The programme which is scheduled to be implemented by the CPD between 1999 and 2002 shall address, *inter alia,* such issues as population dynamics and population momentum and their implications for education and health services, the nexus between population correlates, poverty and environment, impacts of urbanisation and slummisation and migration, as well as human rights. The study has benefited from generous support provided by the United Nations Population Fund (UNFPA). The programme also envisages organisation of workshops and dialogues at divisional and national levels and also holding of international thematic conferences.

As part of the above mentioned CPD-UNFPA collaborative programme the CPD has planned to bring out a series of publications in order to facilitate wider dissemination of the findings of the various studies to be prepared under the aforementioned CPD-UNFPA programme. The present paper on the theme of ***Impact of Development Programmes on Environment and Demographic Phenomena of the Ethnic Minorities of Chittagong Hill Tracts*** has been prepared by Dr Jyoti Prakash Dutta, Department of Economics, University of Chittagong. The paper was presented at the Local Level Dialogue on ***Population and Sustainable Development: Selected Issues of Greater Chittagong*** which was organised by the Centre in association with Department of Economics, University of Chittagong at *Chittagong Institute of Engineers*, Bangladesh (IEB), on May 6, 2000.

Assistant Editor: *Ms Ayesha Banu*, Coordinator (Dialogue & Communication), CPD
Series Editor: *Professor Mustafizur Rahman*, Research Director, CPD

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Executive Summary

The present study intends to investigate the impacts of development programs on the natural environment, demographic phenomena and quality of life of the ethnic minorities of Chittagong Hill Tracts (CHT) at a general level. The study is undertaken on the basis of both secondary and primary data, and the data collected from 400 sample households through administering a structured questionnaire.

The topography, people, economy and above all the civil, revenue, judicial and development administration of CHT are quite different from those of the rest of the country. About 96 percent of the lands of CHT are either hilly or bumpy on which agriculture and other land-based activities as carried out in the plain districts are not feasible. The region is inhabited by more than a dozen of ethnic groups or tribes whose proportion in the total population of CHT decreased from more than 65 percent in 1974 to less than 50 percent in 1991. The economy is predominantly based on subsistence agriculture where *Jhum* cultivation or 'slash and burn' or 'swidden' agriculture plays a significant role. The three circle chiefs or *Rajas* of CHT also play an important role particularly in civil and revenue administration vis-à-vis other apparatuses of the government which is totally absent in other parts of the country. In respect of development administration as well, two bodies, viz., Chittagong Hill Tracts Development Board (CHTDB) and Local Government Council(s) – one for each of three hill districts, especially created for CHT, play a dominant role.

Consideration of the impact of development program on the natural environment of a region like CHT is, therefore, of crucial importance for ensuring sustainable development of the country. Environmental Impact Analysis (EIA) which is essentially an identification and study of environmental repercussions stemming from a development program or a project, although is largely the work of natural scientists; economists also have a distinct role to play. Because, development programs not only spread impacts on environment through ecological linkages, theses programs also create many important environmental impacts that spread through economic linkages. Thus to study full range of environmental impacts of any development program, it is essential to include not just physical impacts, but also the ways in which people react and adapt to this new facility.

But in the case of CHT, it is observed that for none of the major development programs undertaken in the past, EIA whatsoever has been carried out. One of such major projects is Karnafuli Multipurpose Project. Consequently, the project resulted in wide-ranging and far-reaching environmental havocs in CHT. The immediate fallout of the project was the creation of a reservoir comprising a huge area of 663 square kilometers that submerged not only 40 percent of total arable lands of CHT, it also uprooted about 0.1 million tribal people from their hearth and home, submerged thousands of forest lands, accelerated deforestation through enhancing navigation facilities and implementation of rehabilitation and settlement programs for the tribal displaced by the project. Programs like horticulture development and afforestation particularly through monospecies plantation of teaks also had serious environmental impacts. However, the initiative of undertaking EIA in CHT is recently being taken by international donor agencies like International Centre for Integrated Mountain Development (ICIMOD) and UNDP.

The overall impact of development programs on the demographic phenomena and quality of life of the ethnic minorities of CHT is not also encouraging. The basic demographic characteristics and vital demographic processes observed for the ethnic minorities of CHT indicate that tribal population is growing overtime like that of other parts of Bangladesh which otherwise has profound implications for the natural environment of CHT so far as its sustainability of development is concerned. Likewise, the quality of life of the ethnic minorities of CHT as compared to that prevailing in rural Bangladesh also portrays a very gloomy picture, which also exerts adverse impacts on otherwise susceptible natural environment of the region. All these trends call for immediate measures to be adopted both by government and donor agencies so that an optimum size of population and a good quality of life of that population are ensured for the sustainable development of Bangladesh.

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Impact of Development Programmes on Environment and Demographic Phenomena of the Ethnic Minorities of Chittagong Hill Tracts

1. Introduction

1.1 Statement of the Problem

The present study deals with the impacts of development programs on overall natural environment and major demographic phenomena or characteristics of the ethnic minorities of Chittagong Hill Tracts (CHT) as a whole. For many a reasons, the area comprising three administrative districts, namely, Rangamati, Bandarban and Khagrachari of southeastern Bangladesh collectively known as CHT, has been a focus of attention equally of researchers, politicians, government, development partners and human rights activists especially since liberation in 1971. The construction of Karnafuli Multipurpose Project in the early 60s, failure of resettlement and rehabilitation programs for the ethnic minorities who were rendered homeless by the dam, denial of constitutional recognition of the minorities of their separate national entities by the first government of independent Bangladesh in 1972, establishment of Chittagong Hill Tracts Development Board (CHTDB) in February 1976 under Special Affairs' Division (SAD)[1] and later putting it under the chairmanship of G. O. C. of 24 Infantry Division, Chittagong (under an ordinance of 1983), government-sponsored transmigration program as a counter-insurgency measure, increased militarization of CHT, etc.-all together contributed towards political and economic chaos in the region frequently stained by bloodshed. However, after a prolonged bilateral talks between successive governments and PCJSS (Parbatya Chattagram Jan Samhati Samity) the political wing of Shanti Bahini (the name of armed rebel group of ethnic minorities), a peace accord was signed on December 2, 1997, by the present government led by Awami League. The accord, among others, has been able to make the dissatisfied and aggrieved hillpeople surrender their arms and contributed to a great extent in obliterating the disbelief and mistrust that had been accumulating since the construction of Karnafuli project. Apparently, therefore, the accord can be considered as a great leap toward establishing peace in the region which may also work as an springboard for boosting up development activities suitable for the land and people of the region if, however, the terms and conditions of the accord are properly honoured by both the parties.

Between the period of early 60s and the signing of accord in 1997, successive governments, different donor countries, institutions and UN agencies adopted a good number of development programs or projects pertaining to infrastructure, agriculture, cottage industry, agroforestry, afforestation, education, health, population control, etc. In February, 1976, government established CHTDB primarily to formulate development policy and implement multi-sectoral programs for socio-economic upliftment of the region, particularly the ethnic minorities of CHT. Again in 1989, government enacted a law to create three "local government councils" for three hill districts to coordinate the development activities pursued by various government departments and agencies and also to implement government financed development programs at district level. Some of these development programs and projects undertaken by government and other donor agencies may have impacts on the natural environment and demographic processes

of the ethnic minorities an investigation of which from the perspective of sustainability of development seems to be pertinent for determining future course of action.

1.2 Objectives of the Study

The objective of the present study is, however, not to evaluate the impacts of each and every development project undertaken for CHT during the period mentioned above. To be very specific, the objective is to investigate the impacts of only those development programs or projects undertaken by different government and non-government organizations (GOs and NGOs) and donor agencies which had implications for the overall natural environment and demographic phenomena and the quality of life of the ethnic minorities of CHT. The question of environment is of utmost importance in the present national context because of the obvious reason that CHT alone forms the single largest forest area (over one-third) of Bangladesh the sustenance of which is of crucial importance for sustainable development of the country as a whole. Consideration of demographic phenomena and the quality of life of the hillpeople also deserve special attention in this regard due to, apart from humanitarian and human rights questions, the fact that an optimum size of hill population with a good quality of life is of great importance for the best up keep of the environmental and ecological balance of the region. Since, both population and environment are inexorably related with each other, sustainable development particularly in the context of a hilly region like CHT, therefore, requires the size of population to be within the limits set by the broad parameters of environment so that both population and development can be helpful for each other in the process of overall development and its sustenance. By demographic phenomena, we mean primarily the dynamics of ethnic composition in terms of the major characteristics of tribal population like age and sex composition, marital, occupational and educational status and some vital demographic processes like population growth, fertility and mortality levels, reproduction rate, child-women ratio, crude birth rate, etc. The quality of life on the other hand is, however, basically a subjective one the implications of which vary greatly in time and space, although it can be indirectly measured by some proxy variables like per capita income, access to health, sanitation, maternity and child care, prevalence of social security and the degree of enjoyment of traditional land rights that are very relevant in the context of tribal people of CHT.

1.3 Research Methodology and Data Collection

A combination of various methodologies has been adopted to collect necessary data and information for the present study. First, the environmental impact analysis (Chapter III, Section: 3.1) has been carried out mostly by secondary data published in various Statistical Yearbooks of Bangladesh and Plan documents and the data collected from Bangladesh Forest Industrial Development Corporation (BFIDC), Bangladesh Fisheries Development Corporation (BFDC), CHTDB, etc. and also on the basis of findings of some relevant studies undertaken by natural scientists in this regard. Some qualitative information collected from primary source through participatory observation method and administering the structured questionnaire, will also be presented in the context of environmental impact analysis.

The other part of the study which relates to the demographic phenomena and quality of life of the ethnic minorities of CHT is based basically on primary data collected through administering a

pretested structured questionnaire. The questionnaire is designed in such a way that important variables pertaining to demographic phenomena and quality of life of ethnic minorities are covered. Since, most of the household heads are illiterate and eke out a living through exerting manual labour for which they need to stay out of their places of residence during daytime, they often hesitate to provide any information to the investigators after coming back from work at dusk getting totally exhausted and even sometimes decline to respond. Moreover, due to their ignorance, they most often provide contradictory information. Hence, participatory observation method also forms an integral part of our study on demographic process and quality of life of the ethnic minorities of CHT.

1.4 Designing the Sample

The sample size of households (the unit of study) is determined in such a way that the ethnic minorities of representative groups inhabiting in the three districts of CHT are covered. Since the study area constitutes about 9 percent of total land area of Bangladesh, relatively a large size of samples consisting of 400 households has to be selected for study of which 134 each from Rangamati and Bandarban districts and the remaining 132 households from Khagrachari district are selected. This size of sample has to be determined so that the characteristic features of the representative number of households from each districts could be observed and compared with those of other districts. In selecting the samples, we have tried to follow the existing composition of the ethnic minorities across the board. However, within each group, the samples are selected on random basis. Thus the overall sampling technique followed in the study may be considered as one of stratified random sampling. Moreover, all the sample households are selected from such rural areas which are accessible but where transport and communication facilities and other urban amenities are not easily available. Here, accessibility should be understood in a relative sense because there are some areas, which although accessible, are quite difficult to visit because at least two reasons. First, there is no transport (either road or river) availing which one can reach these areas directly (e.g., Ruma, Thanchi under Bandarban district, Langadu and Laxmichari under Rangamati and Khagrachari district respectively). Second, sporadic terrorist activities like looting, abduction, murder etc. discourage outsiders to visit these interior parts of CHT.

2. Characteristics of the Study Area

2.1 Topography of the Study Area

The region of Chittagong Hill Tracts (CHT) spreads itself from the borders of Myanmar (Burma) and the far off Lushai Hills (Mizo Hills) to the boundaries of Tripura state of India and those of Chittagong district. It comprises a total area of 13,245 sq. kilometres (about 9% of total area of Bangladesh) and has a total population of 1.041 million (about 1% of total population of Bangladesh as shown in Table: 2.1). Bangladesh District Gazetter on Chittagong Hill Tracts describes the topography of CHT as that of "a tangled mass of hill, ravine and cliff covered with dense trees, bush and creeper jungle."[1]

[1] *Bangladesh District Gazeter: Chittagong Hill Tracts*, Ministry of Cabinet Affairs, Establishment Division, Government of the People's Republic of Bangladesh, Dhaka, 1975, p. 1.

The soils of CHT were surveyed by a Canadian company named Forestral Forestry and Engineering International Limited during 1964-65 under the Canadian Colombo Plan on behalf of East Pakistan Agricultural Development Corporation (EPADC) in order to prepare a comprehensive program for agricultural development in the region.[2] According to the report of the forestal, the soils of CHT are generally unsuitable for arable crop due to their strong acidic character and will, therefore, require relatively heavy use of fertilizers for sustained crop production. On the basis of the quality of the soils (e. g., water holding capacity and fertility), forestal divided all lands of CHT into five grades - A, B, C, C-D, and D which respectively form 3.2%, 2.9%, 15.5%, 1.4% and 77% of total land area of the region. Grade A is considered to be suitable for all-purpose agriculture. Grade B lands are almost bumpy and are suitable for hill-slope cultivation. Grade C consists of mainly bumpy lands, but of slightly inferior quality some

Table 2.1: Chittagong Hill Tracts (CHT) At a Glance

No.	Items	Rangamati	Bandarban	Khagrachari	Overall CHT
1.	Area				
	(Square Kilometre)	6116	4479	2700	13295
	('000' acres)	1511	1107	667	3285
2.	Thana	10	7	8	25
3.	Union	47	29	34	110
4.	Mouza	136	93	127	356
5.	Household (in '000')	79	48	74	201
6.	Population				
	(in '000')	430	246	365	1041
	a. Male	236	134	192	562
	b. Female	194	112	173	479
7.	Size of Household	5.4	5.2	4.9	5.2
8.	Sex Ratio (Male/Female)	121	120	111	117
9.	Tribal/Non-Tribal Ratio	108	81	85	93
10.	Leteracy Rate	36.48	23.82	26.32	28.87
	a. Male	45.82	32.19	34.64	37.55
	b. Female	24.68	13.46	16.86	19.67

Source : *Statistical Yearbook of Bangladesh*, 1997 and *Stastical Pocketbook*, Bangladesh, 1998, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka.

of which may be used for hill-slope cultivation. The C-D category contains some bumpy as well as hill-slopes part of which may be suitable for terraced agriculture. Grade D includes steep slopes most of which are inferior quality in which only afforestation is suitable. Thus, following forestal, if we consider Grade A lands as the only arable lands available in CHT, then the land-man ratio of CHT becomes 0.10 acres (3.2 % of total area of 3285 thousand acres with a population of 1.041 million). But the land utilization data provided by BBS (Table: 2.2) show that the land-man ratio of CHT is 0.73 acres,[3] while that for Bangladesh is 0.20 acres.[4] Thus, the

[2] *Chittagong Hill Tracts Soil and Land Use Sarvey Report*, 1964-66, Forestal Forestry and Engineering International Limited, (in Nine Volumes).

[3] Here Land is considered as the total area excluding the lands not available for cultivation and forests.

general belief that lands are quite in abundance in CHT is, therefore, ill-founded if the topographical conditions of CHT are taken into consideration.

Table 2.2: Change in Land Utilization of CHT and Bangladesh, 1974/75 – 1994/95

(in '000' acres)

		CHT		Bangladesh	
		1974/95	**1994/95**	**1974/75**	**1994/95**
1.	Total Area	3260	3285	35280	36669
2.	Not Available for Cultivation	67	466	6576	10128
3.	Forests	3001	2063	5466	4861
		(92.06%)	(62.80%)	(15.5%)	(13.26%)
4.	Culturable Waste	10	454	670	1547
5.	Current Fallows	7	96	2009	1000
6.	Net Crooped Area	173	206	20559	19133
	a. Single	83	136	12481	7228
	b. Double	81	56	6711	9530
	c. Triple	9	14	1279	2375
7.	Total Cropped Area	273	290	29916	33416

Note: Figures in parenthesis indicate percentage of total area.
Source: *Statistical Yearbook of Bangladesh,* 1979 and 1997.

The whole area of CHT is usually divided by four valleys formed by Feni, Karnafuli, Sangu (Shankha) and Matamuhuri rivers and their tributaries. These valleys are covered by thick forests interspersed with small water courses and swamps of all sizes and descriptions. The main feature of vegetation of CHT is semi-evergreen (deciduous) to tropical evergreen, dominated by tall trees, belonging to various species, weeds, canes, bamboos, etc. According to the District Gazetter of CHT, 1975, the overall flora and fauna of the region was observed to be very rich with at least 55 species of fishes available in Karnafuli river as reported by Department of Fisheries and a mean annual rainfall of around 100 inches.[5]

2.2 People and the Economy of CHT

Historically, the land of CHT has been inhabited by more than a dozen of tribes of Mongoloid race mostly of Arakanese orgin. From the later part of the 19th centuring, Bangalees from the plains of Chittagong started settling on the lower parts of the hills at the invitation of tribal 'Rajas' for introducing plough-cultivation since plough-cultivation was not indigenous to CHT. This initiative was taken by the 'Razas' in consequence of the introduction of Forest Conservancy rule passed by the then colonial government which discouraged 'Jhum' cultivation ('slash and burn' or 'swidden' agriculture) as being detrimental to both forests and fertility of the soil. From then onwards, 'plainsmen' and 'hillmen' started living together in CHT, although the latter always formed the overwhelming majority.

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[4] Adjusted size of population of Bangladesh in 1991 was 11,14,55,000 (Source: *Statistical Pocketbook, Bangladesh,* 1998).

[5] *Bangladesh District Gazetter: Chittagong Hill Tracts,* op. cit., pp. 10-17.

Table 2.3: Growth of Population in CHT, 1901-1991

Year	Population	Growth Rate (over preceding year)
1901	1,24,762	-
1911	1,53,830	2.12
1921	1,73,243	1.20
1931	2,12,922	2.08
1941	2,47,053	1.50
1951	2,87,274	1.52
1961	3,85,079	2.97
1991	10,41,000	3.37

Note: Figures in parenthesis indicate percentage of total area
Source: *Statistical Yearbook of Bangladesh,* 1979 and 1997

Table 2.3 shows that between 1901 and 1991, the compound or actual growth of population of CHT was 2.39 per cent per annum. What is relevant to note here is that while during a long 60-year period (1901-1961), the growth rate was 1.9 per cent per annum, in the following 30 years (1961-1991), the growth rate of population of CHT surpassed all the previous records registering an annual rate of 3.37 per cent. This was primarily due to immigration of Bangalee settlers into the region especially between the period 1975 and 1991 which contributed to a radical change in the composition of population in CHT. One study shows that during Pakistan, Mujib, Zia and Ershad periods, 60000, 50000, 150000 and 241000 Bangalees respectively settled in CHT.[6] The changed composition of population of CHT is shown in Table 2.4 which indicates that due to the settlement of Bangalees, size of tribal population came down to even below 50 per cent in 1991 from over 65 per cent in 1974.

Table 2.4: Change in the Composition of Population of CHT, 1974-1991

(in '000')

Year	Tribal	Non-Tribal	Total
1974	354 (65.56%)	186 (34.44%)	540 (100%)
1991	501 (48.13%)	540 (51.87%)	1041 (100%)

Note: Figures in parentheses indicate percentage of total
Source: *Statistical Yearbook of Bangladesh*, 1979 and 1997

[6] Mohammad, Anu: 'Agression of Development and the Hill Economy' in Dr. Jyoti Prakash Dutta (ed.), *The Hill Economy and Environment*, Bangladesh Economic Association, Dhaka, December, 1999, p. 100.

This change, also indicated by tribal - nontribal ratio (Table 2.1), has had profound implications for the overall natural environment of the region not only because of acceleration of land-based activities like cropping, grazing etc. by the Bangalee settlers, they also induddged in reckless logging and deforestation in the absence of A and B grade lands which were already under cultivation before 1974.[7]

The distribution of ethnic minorities of CHT across the board is shown in Table 2.5 in terms of number households. Table 2.5 shows that Chakma, Marma (Mugh), Tripura, Murang (Mro) and Tanchaynga - these five tribes or ethnic groups together form more than 96 per cent of all tribal households of CHT. Another important feature that can be observed from Table 2.5 is that, while almost all the ethnic groups more or less inhabitate in Rangamati and Bandarbam, in Khagrachari, except Chakmas, Marma and Tripura, all other groups are virtually non-existent. Table 2.6, showing the distribution of tribal population by sex and district is, however, self-explanatory from which it can be observed that khagrachari, having one-fifth of total land area of CHT (Table 2.1), accommodates more than one-third of tribal population of CHT resulting in the highest density of tribal population in the district which is about 62 persons per square kilometre. The corresponding figures for Rangamati and Bandarban are 36 and 25 respectively. The comparative positions of three hill districts with respect to population density remain unchanged it total population (tribal and non-tribal) is taken into consideration. In any case, the density of population of CHT (about 78 persons per square kilometre) is much lower that of Bangladesh as a whole which is more than 755 persons per sq. km.[8]

Table 2.5: Distribution of Tribal Households by Ethnic Group in CHT, 1991

No.	Ethnic Group	Rangamati	Bandarban	Khagrachari	CHT
1	Chakma	27824	831	15544	44199 (46.19%)
2	Marma	7774	11755	8357	27885 (29.14%)
3	Tripura	1133	1690	9629	12452 (13.01%)
4	Murang	9	4225	9	4243 (4.43%)
5	Tanchaynga	2647	1061	-	3708 (3.87%)
6	Bawm	96	1253	-	1349 (1.41%)
7	Pankue/Panko	570	18	-	588 (0.61%)
8	Khyang	102	265	-	367 (0.38%)
9	Chak	66	306	-	372 (0.39%)
10	Khumi	16	222	-	238 (0.25%)
11	Lushai	83	41	-	124 (0.13%)
12	Mroo	18	-	-	18 (0.018%)
13	Rakhain	15	-	-	15 (0.015%)
14	Others	34	37	69	140 (0.15%)
	All	40387	21704	33608	95699

Note: Figures in parentheses indicate percentage of total

Source: *Statistical Yearbook of Bangladesh*, 1997

[7] *Bangladesh District Gazetter: CHT*, op. cit., p. 6.

[8] *Statistical Pocketbook, Bangladesh*, 1998, pp. 101-102.

Like Density of population, the average size of tribal household of CHT is also lower than those of overall Bangladesh. While the average size of tribal household of CHT is observed to be 5.23 (Table: 2.5), for overall Bangladesh it is estimated at 5.6.[9] The average size of household of CHT remains almost the same if the non-tribal population is included (Table: 2.1). The sex ratio (male/female ratio) of the ethnic minorities is also exactly the same as that of overall Bangladesh (106).[10] But the ratio for CHT rises to 117 if total population is taken into account because the non-tribal population of CHT has a sex-ratio (129) much higher than that of tribals (Tables 2.1 and 2.6).

Table 2.6: Distribution of Tribal Households by District and Tribal Population by Sex and District, 1991

District	Number of Household	Number of Male Population	Number of Female Population	Total Population
Rangamati	40387	115419	107801	223292
	(51.12)[a]	(51.7)[b]	(48.3)[b]	(51.93)c
Khagrachari	21704	57203	53130	110333
	(45.22)[a]	(51.8)[b]	(48.2)[b]	(44.85)[c]
Bandarban	33608	85378	82141	167519
	(45.42)[a]	(51)[b]	(49)[b]	(45.9)[c]
CHT	95699	258072	243072	501144
	(47.61)[a]	(51.5)[b]	(48.5)[b]	(48.14)[c]

Note: a.) Percent of total number of household in the District (tribal and non-tribal)
b) Percent of total tribal population (male and female) in the District
c) Percent of total Population (tribal and non-tribal) in the District

Source: *Statistical Yearbook of Bangladesh,* 1997 and *Statistical Pocketbook, Bangladesh,* 1998

The overall economy of CHT is basically based on subsistence agriculture although some degree of 'commercialization' and 'monetization' have penetrated the economy since the mid 60s. Nonetheless, more than 60 percent of regional GDP of CHT originates from agriculture in which the lion's share (about 77 per cent) is contributed by forestry as shown in Table 2.7. Majority of the ethnic minorities depend on agriculture for their livelihood in which 'jhumming', hunting, fishing, food gathering, plough cultivation, plantation etc. are included. The second largest sector after agriculture is the trade services which is, however, completely dominated by Bangalee settlers. The contributions of transport, storage, communication and large scale industry are quite significant in CHT in which also preponderance of non-tribals is spectacular. It is observed that out of 6000 employees of Chandraghona Paper Mills, only 40 hillmen are employed".[11] However, amongst the tribals, very few persons mainly from Chakma and Tripura

[9] Ibidem.
[10] Ibidem.
[11] Mohammad, Anu: op. cit., p. 104.

Table 2.7: Gross District Product of CHT at Constant Prices, 1996/97

(Base : 1984/85 = 100)

No.	Activity/Sector	(in Million Taka)	% of total
1	Agriculture	10,835	60.27
	a. Crops	2103	11.70
	b. Forestry	8350	46.45
	c. Livestock	272	1.51
	d. Fisheries	110	0.61
2	Industry	1184	6.59
	a. Large Scale	767	4.27
	b. Small Scale	417	2.32
3	Construction	323	1.80
4	Power, Gas, Water & Sanitory Services	340	1.89
5	Transport, Storage and Communication	944	5.25
6	Trade Services	2745	15.27
7	Housing Services	377	2.10
8	Public Administration and Defence	322	1.79
9	Banking & Insurance	159	0.88
10	Professionals & Miscelleneous Services	747	4.16
	GDP of CHT	17976	100
		(2.64)[a]	
	GDP of Bangladesh	680206	

Note: 'a' = percent of GDP of Bangladesh

Source: *Statistical Yearbook of Bangladesh*, 1997

families have been able to improve their economic condition through education and their number in professions and government service has increased in the post-independence period, although they form a very small percentage of the ethnic minorities of CHT. In the rural areas, the tribal people once used to produce everything to satisfy their needs. They used to build their own houses, make their own looms, weave their own dresses, apply local (herbal) medicines and methods in the treatment of all types of ailments and diseases, make their own buskets, manufacture their household utensils, agricultural implements and so on. Although, this scenario has not undergone any fundamental change for a majority of tribal people till today, yet it has been observed by us that they are increasingly becoming dependent on market for their daily necessities like food, clothes, medicines, etc. and to sell their products either produced or collected from forests. This is quite indicative increasing penetration of market economy into the age-old subsistence agrarian economy of CHT.

The cereals grown in CHT are rice and corn (makka or bhutta), but rice is the staple crop of the district. Most of the tribal families take three square meals in a day. The other crops grown in CHT are til (seasame), cotton, tobacco, potato, melon, pumpkin, brinjal, cucumber, banana, papya, millet, ginger, turmeric etc. Some other vegetables and spices are also produce. The major limitations to agriculture in CHT are the steep slopes, heavy monsoon rainfall and dry season drought. Slopes are generally too steep for clear cultivation of arable crops in which tree crops

are usually recommended. It is also observed by the experts that terracing is also not feasible in CHT. "The hills are composed of soft and poorly consolidated sandstone, mudstones, shales with conglomerates, limestones and secondary rocks. Because of the uncosolidated nature of the materials, terracing is not feasible in most parts. A slight error in contour level and appropriate slope inward, without stablizing the edge by application of appropriate technique, may result in collapse of terracing through erosion and landslides and even displacement of crops in heavy rain".[12] Some experts, therefore, are of the opinion that zero tollage provides better yields on hill slopes than conventional tillage since the latter method is detrimental because of soil erosion.[13]

In CHT, a primitive form of agriculture known as 'Jhuming' is widely practised, although it is never considered by experts as an environment friendly form of agriculture. 'Jhum' is carried out on hill slopes where the tribals first clear the plots and then burn the weeds before the seeds are sown. There are two special characteristics of 'Jhum' cultivation which make this type of agriculture totally different from all other forms. First, seeds of various crops are sown at a time in 'Jhum' area but harvested at different times of the year. Second, once a plot is used for 'Jhum', it is left fallow for 5 to 6 years (the standard fallow period is 12 to 15 years) so that the plot can recuperate its fertility. Although some quarters argue that 'Jhuming' is a sound system of agriculture because it does not involve conventional tillage, artificial irrigation and extra fertilization and avoids monoculture, yet for a good number of reasons experts consider 'Jhuming' to be detrimental for natural environment. First, because of leaching by heavy rains, the soil fertility of 'Jhum' generally drops rapidly and additional lands must be cleared to avoid drastic reduction in technoenvironmental efficiency.[14] Thus, 'slash and burn' or shifting cultivation accelerates the pace of deforestation. Secondly, since the abandoned pots cannot be used again until a substantial secondary growth of trees has sprung up, thus ensuring the production of ample wood-ash fertilizer during the burning phase, 'slash and burn' agriculture requires a considerable amount of land per capita. Third, long cycle of burning-planting-secondary-growth-burning which usually takes twelve to fifteen years for recuperation, 'Jhumming' cannot sustain a dynamic population with high density level characteristic of irrigated or industrial systems. Fourth, it destroys the bio-diversity of the area where burning is carried out. In spite of all there negative aspects, 'Jhumming' is still widespread in regular and inacessible areas of CHT.

2.3 Administration of CHT

The overall civil, revenue and development administration of CHT is somewhat different from that of the rest of the country. To understand the present structure of administration of CHT, its evolution at least from the time of British is to be reviewed briefly.

The CHT remained in Arakanese possession till 1666 A. D. when Shaista Khan, the Mughul Governor of Bengal under emperor Aurangzeb Alamgir, taking advantage of dispute between the Protuguese and Arakanese court, conquered the district and the name of Chatgaon was changed

[12] ICIMOD: *Hill Districts of Bangladesh: Experiences in Development,* Report of the National Workshop, held in Rangamati, Bangladesh; Kathmandu, Nepal, 1995, p. 11.
[13] Ibidem, p. 27.
[14] Harris, Marvin: *Culture, Man and Nature,* Thomas Y. Crowell Company, New York, 1971, pp. 207-214.

to Islamabad by the order of emperor.[15] The district of Chittagong and CHT remained undisturbed in Mughul possession until 1760 A. D. when it was ceded to the East India Company by Mir Quasim Ali Khan, the semi-independent Governor under the Mughuls.[16]

The CHT was separated from the district of Chittagong and constituted into a separate district by the Act of XXII of 1860. The new district was placed under the control of an officer with the designation of Superintendent and a few rules were framed for the administration of civil and criminal justice and collection of revenue. In 1867, the rank of Superintendent was upgraded to Deputy Commissioner and in the following year the district headquarters were transferred from Chandraghona to Rangamati. In 1891, the status of district of CHT was reduced to a sub-division and was placed in charge of an Assistant Commissioner subordinate to Divisional Commissioner, and was administered under the rules of 1892. The most important administrative reform took place in 1900 when Chittagong Hill Tracts Regulation I, popularly known as Hill Tracts Manual, was passed which repealed all previous acts and rules and the status of CHT was again upgraded to a district and the old designation of Superintendent was restored to officer-in-charge.[17] The regulation of 1900 was amended in 1920, redesignating Superintendent as Deputy Commissioner. Under the diarchy system of administration, the district of CHT was retained as exclusive responsibility of the Governor assisted by the Executive Council as an excluded area.[18]

The Hill Tracts Manual of 1900 also recommended a dual form of administration at the district level. According to the Manual, the three circles administered by three tribal chiefs (Rajas), viz., the Maung Circle in the north under the Maung chief at Manikchari, the Chakma Circle under the Chakma chief at Rangamati and Bhomang Circle in the south under Bhomang chief at Bandarban; would be treated as sub-divisions and each sub-divisions would be divided into mouzas (Table 2.1). The person entrusted with running the administration and collecting revenue from 'Jhum' and other lands in each mouza would be known as 'head man' and be appointed by the Deputy Commissioner in consultation with the chief of each circle. In the absence of any court, the Deputy Commissioner was to settle all matters of civil nature and Commissioner of Chittagong Division was to act as Session Judge. The manual also restricted leasing out of any land to any outsider and the Deputy Commissioner had the sole authority to regulate such bares. Thus, on the one hand, the Deputy Commissioner, in addition to discharging executive functions, looks after the judicial and land-related matters ; the Chiefs of the circles, on the other hand, with 'head man' and 'karbari' at 'mouza' and 'para' levels respectively collect revenue and administer 'indigenous' personal law.[19] After collection of revenues, the amount is distributed among three partners in a proportion mentioned in the manual which is as follows: Chiefs (42%), Headmen (37%) and Government (21%).[20] In addition, government regularly pays fixed

[15] *Bangladesh District Gazetter,* op. cit., p. 28 and pp. 251-277
[16] Ibidem, p. 28.
[17] Ibidem, p. 252.
[18] Ibidem.
[19] Dr. Dutta, Jyoti Prakash and Rahman, Md. Mafizur: 'Insurgency in CHT: Its origin and impact on economy and environment' in Dr. Jyoti Prakash Dutta (ed.), *The Hill Economy and Environment,* Bangladesh Economic Association, Dec. 1999, p. 53.
[20] Quddus, Md. Abdul (et at): An Evaluation of UNICEF-Assisted Integrated Community Development Programme For the CHT – 1985-1995. BARD, Comilla, May, 1996, p. 5.

allowances to the Chiefs (Tk. 5000.00), Headmen (Tk. 300.00) and Karbari (Tk. 200.00) as honorarium on monthly basis from the national exchequer.[21]
Thus, the colonial administration played a very significant role in determining the social, political, economic and judicial structure of CHT. This was particularly true for 1900 Hill Tracts Manual which is still considered by the ethnic minorities of CHT as a source of their overall rights and a firm basis to challenge the legality of the pssence of Bengali settlers in CHT, although it is true that the very objective of the British to introduce the Manual was not benevolent rather strategic, i.e., the classic colonial strategy of "divide and rule". Since 1900, the Manual has been the basis of civil, revenue and judicial administration of CHT, although several amendments have been made and new laws have been enacted to supplement the Manual.

During Pakistan period, two constitutions were enacted - one in 1956, the other one in 1962. In the constitution of 1956, the status of CHT as "excluded area" was preserved and CHT Manual was also upheld. But, in the constitution of 1962, the status of CHT was changed from "excluded area" to "tribal area". Two years later, i.e., in 1964, the constitution was amended by which the "tribal area" status of CHT was dropped and CHT Manual was prorogued. It is to be mentioned here that following the order of Basic Democracy in 1959, 39 Union Councils (also 11 Thana Councils) came into existence which, however, did not enjoy the same power and perform the same function like other Union Thana Councils of the Country because the Circle Chiefs, Headmen and Karbaris were to play a significant role in almost all the matters pertaining to civil, criminal and revenue administration.

In January, 1976, Chittagong Hill Tracts Development Board (CHTDB) was established (with three branches at three sub-divisional/Circle headquarters) with the objectives of formulating development policy and implementing multi-sectoral development program for the CHT as a whole. The CHTDB, headed by G. O. C. of 24 Infantry Division and Commander of Chittagong Region, is assisted by a Consultative Committee and is represented by tribal and non-tribal leaders.

In 1981, the Bandarban sub-division in the south and in 1983 the Khagrachari sub-division in the northeast were upgraded into districts. As a result, three separate administrative districts, viz. Rangamati, Bandarban and Khagrachari, emerged in CHT since 1983.

Again in 1989, the government of Bangladesh passed three Acts to establish three Local Government Councils for three Hill Districts (District Councils), the formation, powers and function of which are not similar to those of the rest of the country. While the Local Govt. Councils and CHTDB are directly controlled by Special Affairs Division (converted into a full-fledged Ministry called Ministry of CHT Affairs, after the signing of Peace Accord), Union Councils, Thana Parishads, Poura Savas, Bazar Fund, etc. are under the control of Ministry of L. G. R. D. and Cooperative. In 1998, in consonance with the Accord, a Regional Council for CHT region was created to coordinate the activities of three Local Govt. Councils. Thus, the overall civil, revenue and development administration of CHT has assumed a very intricate shape in which, vis-a-vis many government, autonomous and semi-autonomous bodies like rest of the country, a few other bodies (Local Govt. Councils, Regional Council, CHTDB, etc.) especially created for CHT who play their respective roles.

[21] Ibidem.

3. Impact of Development Programs on Environment

3.1 Environmental Impact of Development Program

A Theoretical Note

By the term 'environment' or natural environment we mean the natural world consisting of land, water and air which are popularly known as environmental media. An economy which operates under certain technological, legal and social arrangements is encompassed by natural environment. Economic activities like production and consumption not only use raw materials and energy inputs from the natural environment without which, however, production and consumption would be impossible, these activities also produce some leftover waste products, called 'residual', which sooner or later find their way back into the natural world causing pollution or environmental degradation, e.g., emission of carbon dioxide (CO_2). Economic activities may also damage natural environment without directly discharging residual materials, e.g., deforestation. In the former care, cumulative or non-cumulative pollutants either from point or non-point sources damage environmental quality, in the latter, the bio-diversity or the ecosystem is adversely affected. In any case, economic activities may cause environment to degrade. This, however, does not lead us to the absurd conclusion that economic activities should be stopped. This simply implies that natural resources - both non-renewable (e.g., gas deposits) and renewable (e.g., forest cover), should be used in such a way that the assimilative capacity of nature or the biological diversity is not hampered. In popular terminology, it is known as 'sustainability'. A resource use rate is 'sustainable' when it can be maintained over the long-run without be maintained over the long-run without imparing the fundamental ability of the natural resource base to support future generations. In the case of non-renewable resources, this implies the use of extracted resources in such a way that it contributes to the long-run economic and social health of the population. For renewable resources, it means establishing the rates of use that are coordinated with the natural productivity rates affecting the way the resource grows or declines.

Development interventions in any form meaning buoyant economic activities therefore, exert influence not only on the socio-economic and political environment of a country or a region, these also affect the environmental quality of the area for which development interventions are taking place. That is why it is imperative to have through and multi-dimensional impact analysis before the development programs are executed.

Impact is a very general term, meaning the effects of any actual or proposal action or policy. Since, there are many types of effects, there are many different types of impact analysis. Most important of these impact analyses is environmental impact analysis (EIA). EIA is essentially an identification and study of all significant environmental repercussions stemming from a course of action. These are largely the work of natural scientists, who focus on tracing out and describing the physical impacts of any development program or project, through the complex linkages that spread these impacts through the ecosystem. Any development program, private or public,

industrial or domestic, local or national, must therefore, conduct an environmental impact assessment and prepare an environment impact statement (EIS) which should contain: (a) a description of the possible environmental impacts of the proposed program, (b) any adverse environmental impacts that cannot be avoided should the program be implemented, (c) alternatives to the proposed program, (d) the relationship between short-run uses of man's environment and maintenance and enhancement of long-run productivity and (e) any irreversible and irretrievable commitment of resources that would be involved in the proposed program should it be implemented.[22]

Although the preparation of environmental impact statement is primarily the task of natural scientists as mentioned earlier, economists also have a distinct role to play because the development programs not only spread environmental impacts through ecological linkages, these programs also spread many crucial environmental impacts through economic linkages. Thus, to study the full range of environmental impacts of a particular development program, it is essential to include not just the physical impacts, but also the ways the people will react and adopt (e.g., new economic and social activities) to this new facility. Thus, economic impact analysis forms an important part of total environmental impact analysis (EIA) of a development program. Another integral part of EIA is the benefit-cost analysis, which aims primarily to evaluate the impact on environmental resources. The benefit-cost analysis involves measuring, adding up and comparing all the benefits and costs of a particular development program.

In the context of CHT, we would basically concentrate on environmental impacts that spread through economic linkages because the impacts that spread through the ecosystem fall outside our purview. We would not also employ any benefit-cost analysis of the host of development programs undertaken for CHT since 1960s because is too falls outside our present study. However, from the studies conducted by different natural scientists on the environmental impacts of some development programs of CHT, we will quote their findings in support of our observations regarding impacts stemming from economic activities.

3.2 Impacts of Major Development Programs on Environment of CHT

Between the period 1962 (construction of Karnafuli Multipurpose Project) and 1997 (Signing of Peach Accord), a good number of development programs/projects were under taken both by government as well as donor agencies and NGOs pertaining to overall socio-economic development of the region. In this study, however, we will consider only those programs/projects which exerted significant impacts on environmnet.

3.2.1 Karnafuli Multipurpose Project and its Impact on Environment

In October, 1957, construction of a dam over Karnafuli river at Kaptai village of Chandraghona Thana under Rangamati district was started, which was completed in January, 1962. The dam is 666 meters long and 43 meters high.[23] It started commissioning after being formally inagurated

[22] Field, Barry C.: *Environmental Economics : An Introduction,* McGraw-Hill International Editions, 1997, pp. 21-62.

[23] Chakma, Hari Kishore (et al): *Bara Parang*, The Tale of Development Refugees of CHT, Centre for Sustainable Development (CFSD), Dhaka, Bangladesh, October, 1995. pp. 16-19.

by the President of Pakistan on March 31, 1962.[24] Initially, the dam envisaged five types of benefit. These were: (a) power generation, (b) irrigation and drainage, (c) flood control, (d) enhancement of the navigability of the rivers and (e) exploitation of forest resources from inaccessible part of CHT. Later, pisiculture in the lake was added to the list of benefits. The project was implemented under an USAID program at the cost of about Rs. 49 crore without carrying out any EIA whatsoever. Consequently heavy toll had to be paid both in terms of property and environmental resource losses. Because, the socio-economic condition of a large section of people of CHT and the natural environment of the whole area were adversely affected by the Karnafuli Multipurpose project.

The immediate fallout of the project was that an artificial reservoir (known as Kaptai Lake) covering a huge area of 663 square kilometers came into being submerging 125 mouzas, dwelling houses of 18,000 tribal families ad displacing approximately 100000 people (more than 25% of the tribal population of CHT) from their hearths and homes many of whom first migrated to Mizoram, Tripura and Assam and then were transferred to Arunachal Pradesh of India.[25] This artificial reservoir also submerged 54,000 acres of arable lands which were about 40% of Grade A lands in the region. Besides, the reservoir submerged many establishments like school, market, hospital including the original palace of Chakma Raja and about 689 square kilometres of forest area which included the fertile valleys of Karnafuli, Heingkhong, Chengri, Kassalong and Maini rivers.[26]

Although the then government adopted a number of rehabilitation programs for the families displaced by the project, the distress and miseries of the uprooted tribals were never mitigated because the coverage of the programs was quite insufficient in proportion to the loss they incurred. A majority of the displaced families was rehabilitated on the upper reaches of rivers Kassalong and Chengri. Another small percentage of displaced families was asked to settle in Bandarban and Ramgarh (Khagrachari district) areas. But the lands alloted for rehabilitation were too scanty to serve the actual needs of the displaced families. For example, only 13,000 acres of reserved forests at Kassalong were dereserved and deforested to rehabilitate majority of the displaced families. The compensation given in cash was also equally insufficient. It was disclosed by Mr. Charu Bikash Chakma (the Awami League nominee for Pakistan National Assembly in 1970 general election who was defeated by independent candidate Raja Tridib Roy, the then Chakma chief) that only Rs. 250 per acre of arable land and Rs. 400 per acre of homestead were distributed to the displaced families as a perfunctory duty of the government which were hardly commensurate to the actual market value of lands lost by them.

The impacts on Karnafuli Multipurpose Project on environment were diverse, the gravest of which was deforestation that severely effected the bio-diversity and ecosystem of the area. First, the construction of dam itself required deforestation for road and other infrastructural facilities to be created for the whole project. Second, the reservoir created by the dam submerged huge reserved and unclassed state forests (USF) in which the southern and most accessible portion of Kassalong, Mainimukh, Rangamati and Barkal reserved forests were included. Third, a large

[24] *Bangladesh District Gazetter: CHT,* op. cit., p. 273.
[25] Ibidem, p. 99.
[26] *Bangladesh District Gazetteer,* op. cit., p. 100.

area of forests was also deforested to settle the people displaced by the dam. Fourth, the displaced persons themselves carried out large-scale deforestation for their livelihood and 'jhum' cultivation. Fifth, the forest resources like wood, timber, bamboo, cane, etc. of the inacessible regions of CHT became easily available for exploitation after the construction of dam because the lake water enhanced the navigation facilities to these areas, which ultimately led to rampant and unbridled deforestation.

Deforestation at this alarming rate naturally has brought in its trail all the negative impacts on environment. It has led to land degragation, e.g., soil erosion, loss of nutrients and organic matter depletion.[27] Again, as a result of soil erosion, landslides, mass movement, siltation, flash floods, and so on have become regular phenomena in CHT.[28] Deforestation also has led to many short-run and long-run negative impacts on bio-diversity and ecosystem of the region.

Karnafuli Multipurpose Project also changed the occupational pattern of the people of CHT, particularly of those displaced by dam. The dam, which submerged 54,000 acres of arable land as mentioned before, created a serious crisis of arable lands in the region which compelled the displaced tribal families to resume 'Jhum' cultivation in lieu of plough cultivation, thereby further enhancing the rate of deforestation and soil erosion of CHT. An estimate reveals that there were a total of 14,000 'Jhumia' families in the region in 1901 and the 'Jhum' cycle spread over 10 to 12 years.[29] In 1961, the number of families went up to 21,632 while the cycle declined to 3 to 5 years.[30] Moreover, many of the displaced families were also forced to take up the activities for survival which were alien to their culture and traditional mode of livelihood, such as, fishing, fruit plantation, extraction wild bamboos and felling of trees for sale, etc. Before the construction of dam, tribals usually did not practise any of these occupations, but the loss of land coupled with the rise in population left no options for them.

The principal objective of Karnafuli Multipurpose Project was to generate electricity. But large scale deforestation in the last 37 years has contributed to reducing the volume of rainfall in the region to an extent that the primary objective of electricity generation now at sake. It should be mentioned here that in addition to normal process of deforestation, large scale deforestation in CHT was carried out in two separate waves. The first one took place during the 60s following construction of the dam and rehabilitation program for the tribal families as discussed before. The second wave began in the second half of the 70s following militarization and government-sponsored transmigration program in the area and continued till the signing of the peace accord in December 1997. The data on land utilization of CHT (Table: 2.2, Chapter Two) show that, in 1974/75, forest area of CHT was about 55% of total forest area of Bangladesh which came down to 42.2% in 1994/95 - a clear reduction of forest area of CHT by more than 31% within a period of only 20 years. Another estimate made by a Canadian consulting firm in 1990 indicates that

[27] ICIMOD: *Hill District of Bangladesh: Experiences in Development,* op. cit., p. 24.
[28] Ibidem.
[29] Chakma, Hari Kishore (et al).; op. cit., p. 51.
[30] Ibidem.

750,000 acres have been deforested in CHT in the past several years.[31] According to Water Development Board, a minimum of 120 inches of rainfall is required annually for the normal functioning of the generation plant. But the experience of last 15 years indicates that rainfall in the catchment area of the lake hardly can meet this minimum requirement. On June 4, 1986, for example, water level of the reservoir came down to the ever lowest level of 63 feet as against the minimum requirement level of 109 feet, as a result of which more than 30 mw. of electricity could not be produced by two generators.[32] Table 3.1 shows the performance of Karnafuli Multipurpose Project with respect to electricity generation in the last 28 years. It shows that during the period between 1968/69 and 1996/97, while the installed capacity of Karnafuli Multipurpose Project increased by 187.5 percent, actual production increased only by 27.7 per cent during the same period. Besides, in 1968/69, the project contributed about 60 per cent of total power generated in Bangladesh. But this share came down to only 17 and 6 per cent in 1981/82 and 1996/97 respectively. It means that the role of the project with respect to power supply of the country has been reduced to a marginal position within a short period of 34 years. This reduction in rainfall also has contributed to reducing the navigability of Karnafuli river in the down stream.

Table 3.1: Actual Production and Installed Capacity of Karnafuli Multipurpose Project

	Installed Capacity (mw.)	Actual Production (kwh.)	Total Production of Electricity in Bangladesh (kwh.)
1968/69	80	563	950
1981/82	130	523	3026
1996/97	230	719	11858

Source: *Statistical Yearbook of Bangladesh*, BBS, 1979, 1989 and 1997

We inquired 400 sample respondents of CHT about their opinions regarding the availability of forest products and the volume of rainfall in the area. All of our respondents have replied that forest products have become quite scarce now-a-days. Regarding rainfall, however, their reactions were mixed. More than 80 per cent of the respondents has opined that volume of rainfall has certainly declined in CHT, while others have observed rainfall either to have increased or remained the same.

Although flood control was one of the objectives of the project, sometimes the dam itself creates occasional flooding in the lake area. As mentioned earlier, majority of the disposal families rehabilitated in the Kassalong area was given 10,000 acres of arable land. But, in course of time, it has been observed that farmers cannot harvest the crop (especially Aman) when the water level in the lake rises up to 109 feet (the minimum required level). Because, at this water level, 70 percent of these lands (known as 'fringe lands') goes under water and remains submerged for

[31] Gain, Philip.: 'Forest and Forest People of Bangladesh' in Philip Gain (ed.): *Bangladesh: Land, Forest and Forest People*, Society of Environmental and Human Development (SHED), Dhaka, October, 1995, p. 30.

[32] Chakma, Gyanendu Bikash: *Hill Tracts Local Government Council in Historical Perspective* (in Bengali), Local Govt. Council, Rangamati Hill District, February, 1993, pp. 31-35.

several months, which frequently leads to conflict between lake authority and the farmers.[33] This problem has taken a very serious turn this year according to a report published in a national daily.[34]

One of the secondary benefits expected to be reaped from the Karnafuli Multipurpose Project was fish culture. But, in course of time, it is also observed that the proportion of most desirable species like major carps (i.e., Ruhi, Katla, Mrigal, Kalibaush, etc.) in the total catch of Kaptai lake has drastically declined. While in 1964/65, the share of major carps in the total catch was 78 percent,[35] in 1994/95, it has come down to a meagre level of 3.4 per cent as shown in Table 3.2. The Aquatic Research Group (ARG) of Chittagong University, on the basis of data supplied by Bangladesh Fisheries Development Corporation (BFDC) and Freshwater Research Substation, observed that landings of major carps decreased drastically even in 1985.[36] The group, in addition to overfishing, attributed environmental perturbations as the prime cause of this change in the pattern of catch.

Finally, the water of Kaptai reservoir itself has become a constant point-source of environmental and health hazards in the region especially for the people living around the lake 85 per cent of whom depends on lake water. Water of the lake has become increasingly polluted by chemical fertilizer and pesticides used in the surrounding crop fields, human excrement and other wastes carried down by the rain water, dumping of animal carcasses, etc. It is estimated that about 5 tons of waste are usually dumped in the lake everyday.[37] Another study shows that 100 ml. of lake water contains 7500 coliform bacteria whilst the acceptable level is only 2 bacteria per 100 ml.[38] As a result, lake water has become the source of all water borne diseases including malaria.

Thus, Karnafuli Multipurpose Project has changed not only the entire flora and fauna of the region, it has also changed the occupational structure of the hillpeople and helped proliferate economic, social and political problems of the region.

3.2.2 Impact of monospecies plantation on environment

The environmental impact of monospecies plantation like teak (Tectona Grandis Linn. f.) on land, forest and environment has also been observed to be negative in CHT. Teak is an exotic species whose seeds were brought from Myanmar (Burma) in 1871 and were first planted at Sitapahar (under Rangamati district).[39] In course of time, teak has gained wide reputation for its high quality timber in the region. But literature indicates that it has taxed land, forest and environment of CHT quite significantly.[40] Most of the pure teak plantations in CHT were

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[33] Ibidem.
[34] *Prothom Alo,* Year 2, No. 82, Dhaka, 2000, p. 1.
[35] Prof. Chowdhury, Nuruddin, (et al): *Hydrobiology of Kaptai Reservoir,* Chittagong University (mimeo), October, 1985, p. 163.
[36] Ibidem, p. vi.
[37] Chakma, Harikishore: *Bara Parang,* op. cit., p. 61.
[38] Ibidem.
[39] Bangladesh District Gazetteer, op. cit., p. 107.
[40] Osman, K. T.: *Growth of Teak (Tectona Grandis Linn. f.) in Relation to Soil Fertility in South-Eastern Hills of Bangladesh,* (unpublished Ph. D. Thesis), Department of Botany, University of Chittagong, January, 1996, pp. 1-40.

established after clear felling and burning natural forests, which not only destroyed the organic matter of the soil, it also eliminated undergrowth and thereby destroyed groundflora. Moreover, teak tends to be a poor shelter of the soil it standson. After shedding leaves in the dry season, the forest floor is exposed to sun and early rain which leads to leaching and erosion. The teak plantations are also prone to forest fires because of abundant litter in the dry season. Teak is also observed to be usually exacting on soil nutrients and continued rotation of the same species (monoculture) on the same site causes deterioration of soil quality considerably. That is why strict fire protection, mixed cropping, underplanting with legumes and strip cropping are usually suggested to guard against soil degradation by teak monoculture. With this end in view, a system called Natural Regeneration Plot (NRP) system was developed in CHT for mixed and strip cropping.[41]

Table: 3.2 Annual Catch of Major Carps in Kaptai Lake

(in metric ton)

Major Carps	1985/86	1991/92	1994/95
Ruhi	79	51	42
Katla	153	36	32
Mrigal	52	21	37
Kalibaush	58	49	80
Total	342	157	191
	(14.06%)	(3.73%)	(3.4%)
Overall CHT	2433	4216	5556

Note: Figures in parenthesis indicate percentage of overall CHT
Source: *Statistical Yearbook of Bangladesh,* 1989 and 1997

The history of cultivation of rubber as an agro-industrial plantation is much newer than teak that was started in CHT in the 60s. So far Chittagong Hill Tracts Development Board (CHTDB) has raised 8000 acres around Khagrachari and private block planters have raised another 6000 acre in Bandarban.[42] Monoculture of rubber, however, has not been observed to be detrimental for land, forest and environment. Because, as a quick growing species, rubber plantations carried out mostly in denuded forests and unutilized fallow lands create rapid forest cover and thus help maintaining ecological balance. Moreover, the conversion of carbon dioxide (CO_2) to polymer compounds is higher in rubber trees than any other trees as latex is an extra-product of photosynthesis processes.[43] Besides, wood of rubber trees is of medium is of medium hard nature that can be used for wood bared industries. But, in CHT, production of rubber has been observed to be very expensive and the rate expansion of its plantation area has been very slow. Secondly, rubber factory effluent (RFF) released untreated may create serious environmental problems if its volume is increased with the increase in rubber plantation. Because, the rubber processing

[41] Bangladesh District Gazetteer, op. cit., p. 106.
[42] Majumder, Md. Abdul Hai: 'Land for Rubber Cultivation in Bangladesh – Consideration from Resource and Environmental Point of view', in Zahir Sadeque (ed.), *Environment and Natural Resource Management in Bangladesh,* Bangladesh Sociological Association, Dhaka, 1992, p. 162.
[43] Ibidem, p. 165.

factories require around 10 times water for processing latex (the milk white fluid oozed out from rubber trees) which contains 33 percent rubber, the rest being water.[44] Naturally, therefore, rubber processing factories generate huge amount of waste water known as RFF which is a dangerous polluting substance since its Biological Oxygen Demand (BOB) and Chemical Oxygen Demand (COD) are too high.[45] Although, treated RFF is used as a rich liquid fertilizer in Malaysia, in CHT, this RFF is released untreated, which will create negative impact on environment if its volume is increased with the increase in the number of processing factories and plantation areas.

3.2.3. Impact of Horticulture Development Program on Environment

In order to ensure the economic security of the ethnic minorities displaced by Karnafuli Project through engaging them in an occupation other than 'Jhuming', a Jhum Control Division was established as per government notification No. XIV-107/61/31 on January 11, 1962. The objectives of Jhum Control Division were as follows:

a) To grow fruit orchards in accessible and suitable areas.
b) To undertake cultivation on suitable terraces, followed by permanent settlement.
c) To grow permanent tree cover on the hillsides and slopes to conserve water for the healthy growth of orchards and other vegetables on lower slopes.
d) To encourage the plantation of species to be used as industrial raw materials, e.g., the match industry, plywood, Kapok (cotton)
e) To manage the area on a commercial basis as long as it is not contrary to the objectives mentioned above.

In conformity with the objectives of Jhum Control Division, East Pakistan Agricultural Development Corporation (EPADC) formulated a master-plan in 1968-69 to rehabilitate 11,000 tribal families on an area of 66,000 acres at the cost of Rs. 881,96,000.[46] The aim of this master-plan was, among others, to create fruit gardens on a commercial basis so that each family with an area of 6 acres could produce fruits like lemon, orange, guava, papya, jackfruit, pineapple, banana, cashew nuts, etc. and earn sufficient income for their livelihood. In order to create a model orchard within two years, a loan of Rs. 5500 was also sanctioned so that farmers can buy saplings and fertilizer for their gardens. This interest-free loan was payable in ten equal installments with a moratorium of three years.

Initially, the program was launched in 45 mouzas around Kaptai reservoir. After independence in 1971, the program was taken over by BADC, which was again transferred to newly created Horticulture Development Board in 1974. Between the period 1968-69 and 1972-73, 1702 families were rehabilitated on 10,061 acres of land for which an amount of about Tk. 7.16 million was spent.[47]

A number of EPADC-assisted fruit gardens were quite successful because of the then favourable soil condition, better credit facilities, easily arranged land bares, etc. But from the later half of

[44] Ibidem.
[45] Ibidem.
[46] Chakma, Gyanendu Bikash, op. cit., p. 41.
[47] Ibidem, p. 42.

70s, fruit production in general started declining mainly due to soil erosion and credit facilities. The prices of fruits also revealed a dwindding trend due to lack of marketing and storage facilities, appearence of unscrupulous intermediaries, lack of transport facilities and political unrest. Many farmers started abandoning their gardens. Consequently, the hillpeople who undertook fruit gardening as their principal occupation soon because disillusioned as their volume of outstanding and bad debts increased overtime. The whole program of horticulture development ultimately slowed down and finally ended in ehancing soil erosion and deforestation of about 6000 acres of forests around Kaptai reservoir.[48]

In the backdrop of failure of horticulture development program and its negative impact on environment, CHTDB again undertook another program for planting horticultural crops through Joutha Khamar (Collective Farming) scheme in 1978. Under the scheme, farmers were given 5 acres of hilly land and a grant of Tk. 1500 per family to buy saplings, seeds, etc. Accordingly, a few collective farms were established in Rangamati (Balukhali and Maghban Unions) and Khagrachari districts. But, after two years, it was observed that all the farmers of Rangamati left their farms one by one and CHTDB itself had to abandon the program.[49] Like the previous one, the net result of this horticulture development program was, apart from financial losses, deforestation and consequent soil erosion.

3.3 Overall Development Programs of CHT and their Impacts on Development

So far we have discussed major development programs undertaken during Pakistan period and the period immediately after independence of Bangladesh which are usually considered to have impacted natural environment. However, since 1976, CHTDB and since 1989, Local Government Council (one for each district), have also been playing significant roles in the overall socio-economic development of CHT. In this section, we will look at the nature of development interventions made by these two bodies and try to find out whether any of there interventions have impacts on the environment of CHT.

Since its inception in January, 1976, CHTDB, assisted by a Consultative Committee and represented by tribal and non-tribal leaders, has been entrusted with the responsibility of formulating development policy, planning, coordination and implementation of multi-sectoral development programs. These programs are usually financed by the agencies like ADB, UNDP, FAO, UNICEF, SIDA, IFAD, ICIMOD (International Centre for Integrated Mountain Development), etc. These multi-sectoral development programs mostly are related to the sectors like infrastructure, agriculture, rural development, cottage industry, education, health, sanitation, family planning etc. The local government councils, on the other hand, created in 1989 and also represented by tribal and non-tribal leaders, are primarily entrusted with coordinating the development activities of different government departments and agencies belonging to different ministries and implementing development programs at the district level pertaining to infrastructure, social welfare, education, health, sports and culture, fishery, livestock, cottage industry, etc. undertaken by the government. For our purpose, however, the development

[48] Khisa, Bhagadatta: 'Deforestation and Reforestation in CHT' (in Bengali), in *Padaskhep,* Local Govt. Council, Rangamati Hill District 1995, p. 63.
[49] Chakma, Gyanendu Bikash, op. cit., p. 13.

programs and projects of CHTDB are more relevant than those of the local government councils (District Councils) because the activities of the latter mostly are localized and small in scale. For example, between 1989/90 and 1997/98, Khagrachari District Council has spent Tk. 11.22 crore (about Tk. 1.4 crore per annum) on 506 projects more than one-third of which was utilised for the development of physical infrastructure, education religion, sports and culture, relief and rehabilitation.[50] Again, between 1989/90 and 1993/94, Rangamati District Council has spent about Tk. 9.95 crore (about Tk. 2 crore per annum on 485 projects of which about 50 percent was spent for transport and housing, relief and rehabilitation, education, religion, sports and culture etc.[51] The CHTDB, on the other hand, has spent more than Tk. 456 crore upto 1993/94 on 1007 projects in which government development allocation was about 58 percent, the rest being the contribution of donors.[52] Amongst these programs and projects, undertaken by CHTDB, those having some implications for the natural environment of CHT, are discussed below.

The biggest project so far undertaken by CHTDB was Asian Development Bank financed CHT Development Project (Multipurpose) comprising of eleven components. The project was started in 1979/80 at an estimated cost of US$ 41.86 million of which $ 28.85 and $ 12.28 million were the contributions of ADB and Bangladesh Government respectively, the rest was to be provided by UNDP as grant.[53] The components of the project were as follows: (a) Upland Settlement, (b) Afforestation and Rehabilitation, (c) Development of Road Network, (d) Agricultural Research, (e) Agricultural Extension, (f) Nursery Development, (g) Construction of Godowns for fertilizer and Seed, (h) Development of Cottage and Rural Industries, (i) Construction of Health Centres, (j) Public Health and Population Control and (k) Development of Physical Infrastructure and manpower expansion for CHTDB. According to the annual report of CHTDB for the year 1990-91, except the first two components for which about 40% of total budget was earmarked, the entire project has been successfully implemented. The upland Settlement component of the project included settlement of 2000 landless Jhumia families, creation of rubber and fruit gardens on 8000 and 4000 acres of hilly lands respectively and provision of various other facilities for the settled families. The second component i.e., afforestation and rehabilitation included settlement of 300 Jhumia families and afforestation of 9000 acres of forest lands. Of there two components, creation of rubber and fruit gardens and afforestation programs, although have made significant progress, the settlement programs, according to CHTDB, could not be fully materialized primarily due to failure of ensuring water for the settled families by CHTDB. No paper, however, is available with the CHTDB regarding the fate of this settlement program. The informed quarter suspects that like all other previous rehabilitation and settlement programs in CHT, this settlement program has come to an end after deforestation of several thousand acres of forests and thereby creating environmental degradation.

In 1984, government adopted a special Five-Year Plan for all-round development of CHT for the period 1984/85 to 1989/90. Later the time frame of the plan was extended by one year due to political unrest in the region. The total allocation of the plan was Tk. 263.13 crore. According to the annual report of CHTDB for 1990/91, the actual cost of the project was Tk. 280.37 crore.

[50] Statement supplied by Khagrachari Hill District Council on December 6, 1999.
[51] *Padaskhep*, op cit., pp. 7-24
[52] Various annual reports of CHTDB, Rangamati.
[53] Chakma, Gyanendu Bikash, op. cit., p. 134.

One of the projects of this special Five-Year Plan was 'integrated jhumia settlement and afforestation program'. This scheme envisaged to settle 4000 Jhumia families on 20,000 acres of hilly lands and undertake afforestation on 53,000 acres of Unclassed State Forests (USF). Forest Department, Pulpwood Plantation Department and Jhum Control Division together were responsible for implementing the project. According to CHTDB, the project has been partially successful. Because, only 1730 Jhumia families were settled and afforestation was carried out only on 13,196 acres. Like all other settlement programs, this one also has contributed to environmental degradation through accelerating the pace of deforestation. Because, rehabilitation and settlement programs in CHT have always been accompanied by deforestation of new USF. Deforestation becomes necessary for the settled families for carrying out all of their land-based activities such as cropping, horticulture, livestock-rearing, etc. which involve concommitant deforestation.

A project first of its kind undertaken by CHTDB in 1992 in order to evolve an agricultural technology suitable for hilly areas that would help develop an economically and environmentally sound mountain ecosystem, was Sloping Agricultural Land Technology (SALT) and Appropriate Technologies for Soil Conserving Farming System (ATSCFS), which consisted of agroforestry-based land husbandry of the uplands with soil conservation and flood production measures. The project is financially and technically assisted by International Centre for Integrated Mountain Development and Mountain Environment and Natural Resources Information Service (MENRIS). Under this program, two SALT demonstration projects have been completed one at Lama under Bandarban district, the other one in Khagrachari district. The Soil Conservation Station in Bandarban, and Agricultural Research Institute in Khagrachari are also involved with this project. As a follow up of this program, a Geographical Information System (GIS) has been established at CHTDB office at Bandarban with the financial assistance of ICIMOD and MENRIS. The impact of SALT and ATSCFS on the overall agriculture of CHT is very poor because replication of demonstration projects by the farmers has not been observed anywhere in CHT.

In January, 1995, ICIMOD, BIDS, Special Affairs Division and CHTDB jointly organized a national workshop in Rangamati on experiences of development in the hill districts of Bangladesh. The workshop was participated by 25 organizations - mainly national ones, working in CHT, and made a comprehensive review of development programs, identified critical areas of change and problem, and also made some recommendations regarding future priorities. One of the recommendations of the workshop was that development programs to be undertaken for CHT must have EIA before final approval. According to the participated the workshop, the overall bio-diversity, ecosystem and resource bare of CHT have degrade substantially over the last three decades because major development programs in CHT were not undertaken after EIA whatsoever. Very recently, UNDP has lanched program of holding workshops in CHT in order to sensitize the issues pertaining to sustainable development and formate an action plan in this regard.

4. Impact of Development Programs on Demographic Phenomena

4.1 Introduction

We know that development, population and environment are inexorably related with each other. This relationship is, however, more pronounced in underdeveloped countries like Bangladesh, particularly in a region like CHT where the natural environment is more suscestiple to population characteristics and development interventions. Since development programs also directly influence population characteristics which in turn influence environment, it is important to analyse the impacts of development programs on demographic phenomena of any population. In this chapter, we will try to find out the tribal population of CHT on the basis of data collected from 400 sample households and situate these characteristics in the broader perspective of environment and sustainable development of the region.

In CHT, different government agencies including Local Government Councils, CHTDB, NGOs, etc. and other donor and UN agencies, usually undertaken many development programs pertaining to population control, health, sanitation, education, mother and child care, etc. in order to improve the socio-economic condition of tribal population. The biggest of such programs is the Integrated Community Development Project (ICDP) implemented by CHTDB with the financial assistance of UNICEF. The general objectives of the project are:

1. to promote self-relient community development efforts of the people through mobilization of community resources and access to government services;
2. to promote social mobilization of the poor tribal women and youth to enable them to become the agents of change and implementors of programs and
3. to improve the nutrition and the health conditions of tribal children and women through the provisions of integrated basic services package including income generation, household food production, health and nutrition education which will be supplemented by promoting access to the existing health services, safe water supply and environmental sanitation programs.[54]

Table 4.1: Distribution of Households by District and Thana

Rangamati			Bandarban			Khagrachari		
Rangamati (Sadar)	=	26	Bandarban (Sadar)	=	58	Khagrachari (Sadar)	=	40
Baghaichari	=	27	Lama	=	16	Panchari	=	30
Jurachari	=	27	Alikadam	=	17	Dighinala	=	29
Kawkhali	=	27	Naikhyanchari	=	43	Mohalchari	=	31

Barkal	=	27				Matiranga	= 2
Total (33.5)	=	134	Total (33.5)	=	134	Total (33)	= 132
Grand Total = 400							

Note: Figures in parentheses indicate percentage of grand total
Source: Field Survey

The project initially came into function on experimental basis in 1980. By 1995, it covered 75 mouzas with a total financial outlay of Tk. 27 crore.[55] Inspired by the success of the program, it was decided to extend the project in the rest of CHT with an outlay of Tk. 34.45 crore.[56] The second phase of this project is supposed to be completed by 2000 A.D. Two evaluation assessment reports prepared by BARD, Comilla, on this project indicate its fare success.[57] We will, however, cross examine the results of this and other similar projects in the next chapter on the basis of our sample data. In this chapter, we will only look at the demographic aspects of the impacts of development programs in CHT.

4.2 Distribution of Sample Households

As mentioned in earlier, 400 sample households are selected for the present study from three districts of CHT, viz., Rangamati, Bandarban and Khagrachari. Table 4.1 shows the distribution of sample households by district and thana. In selecting the size of samples from each ethnic group, we have followed the actual pattern of distribution of minorities across the board in CHT as shown in Table 2.5. Accordingly, Chakma, Marma, Tripura, Murang and Tanchyanga together form about 92 percent of our sample households, the largest being Chakma (47.75%) followed by Marma (26.75%) and Tripura (10.75%) as shown in Table 4.2. However, the interesting feature that comes out from Table 4.2 is that inter-group or inter-caste marriage is not practised by the ethnic minorities of CHT. Because all of 397 married household heads (3 being unmarried, one each from Chakma, Marma and Tanchyanga) of our sample have married from the groups they belong. Table 4.3 is self-explanatory which shows the distribution of households by district and ethnic group.

Table 4.2: Distribution of Household Heads and their Wives by Ethnic Group
No. of Household Heads

		Number	Percent of Total	
1	Chak	34	8.50	34
2	Chakma	191	47.75	190
3	Marma	107	26.75	106
4	Murang	5	1.25	5

[54] Quddus, Md. Abdul (et al): *An evaluation of Integrated Community Development Programme for the CHT*, BARD, Comilla, May 1996, p. 14.
[55] Ibidem, p. 13.
[56] CHTDB: *Integrated Social Development Project in CHT - Second Phase*, Project Concept Paper, January 1996, p. 5.
[57] (a) Quddus, Md. Abdul (et al), op cit.
(b) Khan, Mr. Akhtar Hossain (et al): *Assessment of Integrated Community Development Project in the Hill Districts*, BARD, Comilla, September, 1999.

5	Tanchyanga	20	5.00	19
6	Tripura	43	10.75	43
	Total	400	100	397

Source: Field Survey

Table 4.3: Distribution of Households by District and Ethnic Group

Rangamati		**Bandarban**		**Khagrachari**	
Chakma	= 116	Chak	= 34	Chakma	= 75
Marma	= 18	Marma	= 65	Marma	= 24
		Murang	= 5	Tripura	= 33
		Tanchyanga	= 20		
		Tripura	= 10		
Total	= 134	Total	= 134	Total	= 132

Source: Field Survey

Table 4.4: Selected Statistics of Sample Households

Statistics	**Rangamati**	**Bandarban**	**Khagrachari**	**CHT**
N	134	134	132	400
Minimum size of Household	2	2	2	2
Mazimum size of Household	9	12	9	12
Sum	728	771	708	2207
Average size of Household	5.43	5.75	5.36	5.52
	(5.4)a	(5.2)a	(4.9)a	(5.6)b
Standard Deviation	1.60	2.01	1.30	1.67
Mode	5	5	5	5
Median	5	5	5	5

Note: i.) 'a' stands for figures reported by BBS

ii) 'b' stands for national average

Source: *Statistical Yearbook of Bangladesh,* 1997, pp. 24-25

Source: Field Survey

4.3 Demographic Characteristics of Sample Households

Table 4.4 shows the average size of sample households alongwith minimum and maximum size in each of three hill districts. The observed average size of household for each district is almost similar to that reported by BBS (Bangladesh Bureau of Statistics). The national average in this respect is also quite closer to that observed for the CHT as a whole. As far as the distribution of

households by person is concerned, it can be observed that the frequency distribution of sample households by the number of persons has good resemblance with that of national having a model size of 5 in both the cases as shown in Table 4.5

The age composition of the population of sample households in three hill districts, however, indicates that the percentage of economically active population is much higher than that of rural Bangladesh. Table 4.6 shows that, while the crude activity rate of the ethnic minorities defined as the ratio of population of 10 years and above to total population is 74.81, the corresponding figure for rural Bangladesh (both sex) is 65.34,[58] which otherwise implies a lower dependency ratio for CHT than that for rural Bangladesh. But the ethnic minorities of CHT, both male and female, are observed to have preference for early marriage if national mean age at marriage is taken into account. Table 4.7 shows that mean age at marriage for male and female of CHT are 23.6 and 18.75 respectively. But the corresponding figures for Bangladesh are 27.8 and 20.1.[59]

Table 4.5: Distribution of Households by Person

Person Per Household	Number of Household	(%)	National (in %)[b]
1	0	0	2.5
2	7	1.8	7.4
3	36	9.0	12.7
4	64	16.0	16.6
5	105	26.3	17.0
6	85	21.3	14.4
7	59	14.8	10.6
8	24	6.0	7.1
9	14	3.5	4.4
10+	6	1.6	7.2
Total	400	100%	100%

Source: 'a' Field Survey
'b' *Statistical Yearbook of Bangladesh,* BBS, 1997, p. 45

Table 4.6: Age Composition of the Population of Sample Households

Age Group	Rangamati	Bandarban	Khagrachari	CHT
upto 4 years	83 (11.40%)	86 (11.15%)	98 (13.84%)	267 (12.1%)
5 - 9 years	81 (11.13%)	91 (11.80%)	117 (16.53%)	289 (13.09%)
10 - 14 years	75 (10.30%)	92 (11.93%)	90 (12.71%)	257 (11.64%)
15 - 24 years	183 (25.14%)	141 (18.29%)	123 (17.37%)	447 (20.25%)
25 - 34 years	111 (15.25%)	108 (14.00%)	122 (17.23%)	341 (15.45%)
35 - 44 years	83 (11.40%)	93 (12.06%)	86 (12.15%)	262 (11.87%)
45 - 49 years	33 (4.53%)	42 (5.45%)	23 (3.25%)	98 (4.44%)

[58] *Statistical Pocketbook, Bangladesh,* 1998, BBS, p. 150.
[59] *Statistical Yearbook of Bangladesh,* 1997, BBS, p. 31.

50 - 59 years	38 (5.22%)	52 (6.74%)	40 (5.65%)	130 (5.89%)
60 and above	41 (5.63%)	66 (8.56%)	9 (1.27%)	116 (5.26%)
Total	728 (100%)	771 (100%)	708 (100%)	2207 (100%)

Note: Figures in the parentheses indicate percentage of total
Source: Field Survey

Table 4.7: Mean Age of the Respondent and Wife at Marriage

Items	Rangamati	Bandarban	Khagrachari	CHT
	22.92	23.48	24.42	23.60
	17.23 16	19.32 17	19.72 17	18.75 16
	13	13	15	13
	36	38	33	38
	27	33	28	33
	3.79	4.03	2.68	3.59
	2.90	3.39	2.04	3.03

Source: Field Survey

Table 4.8: Sex Composition of Households

Items	Rangamati	Bandarban	Khagrachari	CHT
Male	380 (52.2)	403 (52.27)	361 (51)	1144 (51.84)
Female	348 (47.8)	368 (47.73)	347 (49)	1063 (48.16)
Total	728	771	708	2207
Male/Female Ratio	109.2	109.5	104.03	107.62

Note: Figures in parentheses indicate percentage of total.
Source: Field Survey

Another basic demographic characteristic is expressed by male/female ratio or sex composition. Here our sample data reveal that male/female ratios at district level are much lower than those reported by BBS.[60] While BBS reports male/female ratios to be 121, 120 and 111 for Rangamati, Bandarban and Khagrachari districts respectively, the corresponding figures for our sample are 109.2, 109.5 and 104.03 as shown by Table 4.8. However, male/female ratio observed for CHT as whole (107.62) is quite closer to that reported by BBS for Chittagong division and for overall Bangladesh which is 106 in both the cases.

[60] Ibidem, p. 24.

Table 4.9: Educational Status of the Population of Households of Rangamati

Educational Status	Respondent	Respondent's Wife	Other Members
Illiterate	65 (48.51)	99 (78.57)	155 (33.12)
Class I	8 (5.37)	1 (0.79)	42 (8.97)
Class II	10 (7.46)	3 (2.38)	17 (3.63)
Class III	7 (5.22)	4 (3.17)	22 (4.7)
Class IV	4 (3)	1 (0.79)	18 (3.85)
Class V	17 (12.69)	4 (3.17)	31 (6.62)
Class VI	2 (1.5)	3 (2.38)	13 (2.78)
Class VII	3 (2.24)	1 (0.79)	20 (4.27)
Class VIII	3 (2.24)	2 (1.59)	12 (2.56)
Class IX	4 (3)	1 (0.79)	2 (0.43)
S.S.C.	6 (4.48)	6 (4.76)	41 (8.76)
H.S.C.	3 (2.24)	1 (0.79)	11 (2.35)
Graduation	2 (1.5)	-	2 (0.43)
Post-Graduation	-	-	-
Below 5 years	-	-	82 (17.52)
Total	134	126	468

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

As for the educational status or overall literary rate in CHT, it is observed that the performance of hill districts is quite satisfactory, although we do not have any other set of data to cross check our observation in this respect.[61] Table 4.9, 4.10, 4.11 and 4.12 show the educational status of the population of sample households in Rangamati, Bandarban, Khagrachari and CHT respectively. Overall literacy rate (5 years and above) is observed to be 50.62, 53.87, 58.12 and 54.12 respectively for Rangamati (Table 4.9), Bandarban (Table 4.10), Khagrachari (Table 4.11) and CHT (Table 4.12). Literacy rates of the respondents also seem to be quite high which are 51.5 for Rangamati, 61.2 for Bandarban, 53 for Khagrachari and 55.25 for CHT as a whole. Of the literate persons, however, a majority has not been able to go beyond primary level. The data show that of all the literate persons, 57.8% in Rangamati, 50% in Bandarban, 66.38% in Khagrachari and 58% in CHT as a whole have not crossed primary level. Our observations on literacy cannot be compared with the data reported by BBS because of two reasons. First, the latest literacy data made available by BBS stand for 1991. But our data relate to end of 1999 – a clear gap of eight years within which the rate might have improved. Secondly, we have followed

[61] The fifth five-year plan document, however, reports that literacy rate of CHT is lower than the national average of 47.3 percent (*The Fifth Five-Year Plan*, 1997-2002, Planning Commission, Government of the People's Republic of Bangladesh, Dhaka, March 1998, p. 68).

a definition of literacy (5 years and above) which is different from that followed by BBS (7 years and above) because we have been informed by the respondents that their children between 5 and 7 years also go to school. In any case, it can safely be concluded that in the last 8 years after the population census of 1991, the overall literacy rate in CHT has improved although it is very difficult for us to say anything about its position relative to national average. This improvement may also be attributed at least to two reasons. First, expension of formal and non-formal education programs of various GOs, NGOs and UN agencies particularly UNICEF, in the last decade. Second, restoration of peace in the area following the signing of accord in 1997 which has created a favourable atmosphere for the ethnic minorities to utilize already existing better educational facilities of the area.[62]

4.4 Behaviour of Vital Demographic Processes

The behaviour of vital demographic processes indicated by relevant rates and ratios are presented in Table 4.13. It is shown in Table 4.13 that child-women ratio defined as the number of children under 5 years of age per 1000 women of child-bearing age (between ages 15 and 49 as followed by both World Bank and BBS) is lower for all three districts and CHT than the corresponding ratios reported by BBS. But the total fertility rate (TFR) interpreted as the number of children born alive in a given year per couple (or number of marriages shown in Table 4.14) is higher for CHT than the national average. Thus, the child-women ratio as a rough indicator of fertility although is lower, higher TFR is quite indicative of growing population. Crude Birth Rate (CBR) defined as number live births in a given year per 1000 population, Crude Death Rate (CDR) defined as number of deaths in a given year per 1000 population and natural growth rate of population (NGRP) defined as the CBR minus CDR expressed in percentage, all are observed

Table 4.10: Educational Status of the Population of Households of Bandarban

Educational Status	Respondent	Respondent's Wife	Other Members
Illiterate	52 (38.8)	99 (77.95)	165 (32.35)
Class I	3 (2.24)	-	25 (4.9)
Class II	1 (0.75)	6 (4.72)	25 (4.9)
Class III	10 (7.46)	2 (1.57)	26 (5.1)
Class IV	8 (5.97)	1 (0.79)	15 (2.94)
Class V	20 (14.93)	6 (4.72)	36 (7.06)
Class VI	4 (2.99)	1 (0.79)	17 (3.33)
Class VII	3 (2.24)	1 (0.79)	12 (2.35)
Class VIII	8 (5.97)	1 (0.79)	16 (3.14)
Class IX	2 (1.49)	1 (0.79)	18 (3.53)
S.S.C.	16 (11.94)	7 (5.51)	48 (9.41)
H.S.C.	5 (3.73)	2 (1.57)	15 (2.94)
Graduation	2 (1.49)	-	6 (1.18)
Post-Graduation	-	-	-
Below 5 years	-	-	86 (16.86)
Total	134	127	510

[62] The fifth five-year plan document mentions that in 1992/93, there were 91 primary schools in CHT per 100 thousand population against 46 on average in the country (*The Fifth Five-Year Plan*, 1997-2002, op cit. p. 68)

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

to be higher for the tribal population of CHT than the national averages as shown in Table 4.13. The most important demographic process indicated by gross reproduction rate (GRR) defined as the number of daughters born alive in a given year per 1000 women of child-bearing age, as observed for three hill districts and CHT (Table 4.13) show that tribal population will keep on growing in future like that of Bangladesh as a whole. All these demographic processes indicate that if unchecked, the size of tribal population of CHT will be doubled in the next 32 years (NGRP being 2.18 as shown in Table 4.13).

For a region like CHT, these behavioural pattern of demographic processes observed for the tribal population has profound implications for its sustainable development. Because, in CHT, where arable lands are quite scarce and area of unclassed state forests is alarmingly shrinking and also where any sort of tillage and land-based activities result in erosion and degradation of soil fertility, expansion of population will just exacerbate the natural environment.

Table 4.11: Educational Status of the Population of Households of Khagrachari

Educational Status	Respondent	Respondent's Wife	Other Members
Illiterate	62 (46.97)	88 (66.67)	105 (23.65)
Class I	0	6 (4.55)	40 (9.01)
Class II	15 (11.36)	11 (8.53)	49 (11.04)
Class III	7 (5.3)	5 (3.79)	27 (6.08)
Class IV	3 (2.27)	6 (4.55)	12 (2.7)
Class V	14 (10.61)	7 (5.30)	33 (7.43)
Class VI	8 (6.06)	1 (0.76)	13 (2.93)
Class VII	7 (5.30)	6 (4.55)	18 (4.05)
Class VIII	8 (6.06)	1 (0.76)	11 (2.48)
Class IX	5 (3.79)	1 (0.76)	8 (1.8)
S.S.C.	3 (2.27)	0	14 (3.15)
H.S.C.	0	0	11 (2.48)
Graduation	0	0	3 (0.68)
Post-Graduation	0	0	1 (0.23)
Below 5 years	-	-	99 (22.30)
Total	132	132	444

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Thus, implementation of policies and programs for sustainable development in CHT requires population control not only of ethnic minorities but also of non-tribals who permanantly live in CHT. This, however, calls for huge public investment in family planning and social welfare so

that TFR and NGRP are substantially reduced and the size of population of CHT is kept to the level that its environment can support and sustain.

Table 4.12: Educational Status of the Population of Households of Chittagong Hill Tracts

Educational Status	Respondent	Respondent's Wife	Other Members
Illiterate	179 (44.75)	286 (74.29)	425 (29.89)
Class I	11 (2.75)	7 (1.82)	107 (7.52)
Class II	26 (6.5)	20 (1.19)	91 (6.4)
Class III	24 (6)	11 (2.86)	75 (5.27)
Class IV	15 (3.75)	8 (2.08)	45 (3.16)
Class V	51 (12.75)	17 (4.42)	100 (7.03)
Class VI	14 (3.5)	5 (3)	43 (3.02)
Class VII	13 (3.25)	8 (2.08)	50 (3.52)
Class VIII	19 (4.75)	4 (1.04)	39 (2.74)
Class IX	11 (2.75)	3 (0.78)	28 (1.97)
S.S.C.	25 (6.25)	13 (3.38)	103 (7.24)
H.S.C.	8 (2)	3 (0.78)	37 (2.6)
Graduation	4 (1)	-	11 (0.77)
Post-Graduation	-	-	1 (0.07)
Below 5 years	-	-	267 (18.78)
Total	400	385	1422

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 4.13: Behaviour Vital Demographic Processes

No.	Indicators	Rangamati	Bandarban	Khagrachari	CHT
1	Child/Women	456.04	467.39	541.44	488.12
	Ratio	(696)[a]	(645)[a]	(659)[a]	(683)[a]
2	Crude Brith	28.85	20.75	46.61	31.72
	Rate				(25.6)[b]
3	Crude Death	6.9	6.5	16.99	9.97
	Rate				(8.1)[b]
4	Natural Growth Rate	2.2	1.43	2.96	2.18
	of Population				(2.17)[b]
5	Total Fertility	3.73	3.62	3.40	3.59
	Rate				(3.41)[b]
6	Gross Reproduction	1.73	1.72	1.65	1.7
	Rate				(1.7)[b]

Note: 'a' represents data reported in *Statistical Yearbook of Bangladesh,* 1997, for respective districts
'b' represents data reported in *Statistical Yearbook of Bangladesh,* 1997, for the whole Bangladesh (Source: Field Survey)

Table 4.14: Number of Marriages and Number of Children Born Alive

No.	Items	Rangamati	Bandarban	Khagrachari	CHT
1	Single Marriage	129 (92.80)	108 (65.45)	127 (92.7)	364 (82.54)
2	Double Marriage	2 (2.88)	18 (21.82)	5 (7.3)	25 (11.34)
3	Treble Marriage	2 (4.32)	4 (7.27)	0	6 (4.08)
4	Quadruple Marriage	0	1 (2.42)	0	1 (0.91)
5	Pentadactyl Marriage	0	1 (3.03)	0	1 (1.13)
	Total	139	165	137	441
	Number of Children				
	born alive				
a.	Male	278 (53.56)	315 (52.68)	240 (51.5)	833 (52.62)
b.	Female	241 (46.44)	283 (47.32)	226 (48.5)	750 (47.38)

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

5. Impact of Development Programs on the Quality of Life

5.1 Introduction

As mentioned before, measuring the quality of life of a population is rather a very difficult job because of at least two reasons. First, the concept involves both subjective and objective elements proper measurement of, which is not always possible. Secondly, the implications of quality of life vary greatly in time and space. These problems become more acute in respect of a population like the ethnic minorities of CHT because the society, people, economy, topography and above all the politics of CHT are quite different from those of the rest of the country. In spite of all these difficulties, we will try to measure the quality of life of the ethnic minorities of CHT in the light of some objective criterion, although a few indicators of subjective nature will be reported.

As also mentioned earlier, side by side with many government, donar and UN agencies, many NGOs like BRAC, Caritas, Proshika, Integrated Development Foundation (IDF), Green Hill, World Vision, etc. are also implementing in CHT a good number of programs that include health, sanitation, education, environment, income generation activities, etc. There programs certainly have had some positive impacts upon the quality of life of ethnic minorities of CHT. In

this chapter we will evaluate the overall impacts of these programs on the quality of life of the ethnic minorities on the basis of the data collected from 400 sample households.

5.2 Economic Condition of the Ethnic Minorities

The main study of the ethnic minorities of CHT is agriculture as reflected in the occupational status of the respondents shown in Table 5.1. It can be seen from Table 5.1 that 83.7 percent respondents of CHT are directly dependent on agriculture as owner-operator, tenant-farmer, agricultural labour and fishermen. This massive dependence ethnic minorities on agriculture is not reflected in the sectoral share of agriculture in the regional GDP of CHT which is around 60 percent (Table 2.7) implying a poor per capita agricultural income as compared to those of other sectors of the region. Of the three districts Khagrachari, however, has the highest proportion of households (28.8%) who are not directly dependent on agriculture, which could be due to shortage of per capita land in the district as mentioned in chapter two.

Table 5.1: Distribution of Households by Occupational Status of the Respondents

	Name of the Major Occupation				
1	Agriculture	90 (67.2%)	102 (76.1%)	64 (48.5%)	256 (64%)
2	Business	5 (3.7%)	3 (2.2%)	26 (19.7%)	34 (8.5%)
3	Service/Professional	2 (1.5%)	17 (12.7%)	12 (9.1%)	31 (7.8%)
4	Agricultural Labour	24 (17.9%)	11 (8.2%)	15 (11.4%)	50 (12.5%)
5	Tenant Farmer	7 (5.2%)	1 (0.7%)	2 (1.5%)	10 (2.5%)
6	Fishing	6 (4.5%)	-	13 (9.8%)	19 (4.8%)
	Total	134	134	132	400

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 5.2, showing distribution of households of CHT by monthly income and expenditure, indicates that more than 68 percent households has monthly income less than Tk. 3000 and more than 69 percent households can not spend more than Tk. 3000 per month. On average, the monthly income and expenditure of the households of CHT are observed to be Tk. 2881.19 and Tk.2848.56 (Table 5.3) respectively which are lower than those reported for rural Bangladesh (Tk. 3658.15 and Tk. 3472.73).[63] Moreover, this monthly household income of CHT is even lower than what a household head in rural Bangladesh earns per month which is reported to be

[63] *Statistical Yearbook of Bangladesh,* 1997, BBS, p. 126.

Tk. 3230.80.[64] Another feature of income distribution of overall CHT is that it is highly dispered and positively skewed (Table 5.3) implying that a few households enjoy very high income.

Table 5.2: Distribution of Households by Monthly Income and Expenditure

Income	Rangamati	Bandarban	Khagrachari	CHT
Upto Tk. 1000	4 (2.99)	10 (7.46)	13 (9.85)	27 (6.75)
1000 – 2000	35 (26.12)	37 (27.61)	77 (58.33)	149 (37.25)
2000 – 3000	43 (32.09)	31 (23.13)	25 (18.94)	99 (24.750
3000 – 4000	27 (20.15)	27 (20.15)	16 (12.12)	70 (17.5)
4000 – 5000	15 (11.19)	13 (9.7)	1 (0.76)	29 (7.25)
5000 – 6000	4 (2.99)	6 (4.48)	-	10 (2.5)
6000 – 7000	1 (0.75)	2 (1.49)	-	3 (0.75)
7000 – 8000	2 (1.49)	5 (3.73)	-	7 (1.75)
8000 – 9000	1 (0.75)	2 (1.49)	-	3 (0.75)
9000 – 10000	1 (0.75)	-	-	1 (0.25)
10000 above	1 (0.75)	1 (0.75)	-	2 (0.5)
Total	134	134	132	400
Expenditure	**Rangamati**	**Bandarban**	**Khagrachari**	**CHT**
Upto Tk. 1000	4 (2.99)	8 (5.97)	5 (3.79)	17 (4.25)
1000 – 2000	36 (26.87)	39 (29.1)	86 (65.15)	161 (40.25)
2000 – 3000	43 (32.09)	30 (22.39)	26 (19.7)	99 (24.75)
3000 – 4000	26 (19.4)	24 (17.91)	15 (11.36)	65 (16.25)
4000 – 5000	19 (14.18)	13 (9.7)	-	32 (8)
5000 – 6000	1 (0.75)	5 (3.73)	-	6 (1.5)
6000 – 7000	1 (0.75)	10 (7.46)	-	11 (2.75)
7000 – 8000	3 (2.24)	3 (2.24)	-	6 (1.5)
8000 – 9000	-	2 (1.5)	-	2 (0.5)
9000 – 10000	-	-	-	-
10000 above	1 (0.75)	-	-	1 (0.25)
Total	134	134	132	400

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 5.3: Selected Statistics of Households Monthly Income and Expenditure

	Minimum (in Taka)	Maximum (in Taka)		Standard Deviation	
Income	600	12000	2881.19	1721.83	1.786
N = 400			(86.09%)		(0.122%)
Expenditure	600	11000	2848.56	1605.99	1.431

[64] Ibidem, p. 627.

N = 400	(80.30%)	(0.122%)

Note: Figures in parentheses indicate standard error
Source: Field Survey.

Like the housewives of rural Bangladesh, almost all the housewives of CHT can be considered as an earning member of the family because all of them are engaged in housekeeping, household agriculture, poultry and cattle raising, sowing, harvesting, threshing, gardening etc. which are considered as economic activities. Table 5.4 shows that about 84 percent of respondent wives is engaged in there activities, although their monthly income turns out to be very poor. Out of 385 housewives (12 respondents being widowed and 3 unmarried) only 166 respondents have been able to report their wives yearly income as shown in Table 5.5. It is shown by Table 5.5 that 82.53 percent of the wives earn an income of Tk. 5000 or less per annum. Although this amount to a very poor monthly income, its contribution to household income is certainly positive which means a reduction in the contribution of respondents to overall household income.

Table 5.4: Distribution of Households by the Type of Economic Activity of Housewives

No.	Name of Activity	Number
1	Housekeeping, Assisting Household	
	Agriculture, Gardening, Poultry and	323 (83.9)
	Cattle raising etc.	
2	Agricultural labour	29 (7.53)
3	Collecting firewood for sale	7 (1.82)
4	Cottage Industry (mainly weaving)	16 (4.16)
5	Service	10 (2.6)
	Total	385

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 5.5: Distribution of Households by Yearly Income of Housewives

Name of Activity	Number
Taka 1,000 – 5,000	137 (82.53)
6,000 – 10,000	17 (10.24)
11,000 – 15,000	3 (1.81)
16,000 – 20,000	1 (0.6)
20,000 above	8 (4.82)
Total	166

Note: Figure in parenthesis indicates percentage of total
Source: Field Survey

Distribution of tribal households by homestead area and land ownership by the size of owned land (Table 5.6 and 5.7) show that more than 52.5 percent of tribal holdings have an area of homestead (0.05 acres or less) much less than the national average of homestead area per farm

holding (0.09 acres)[65] as shown in Table 5.6. Of three hill districts, the situation in Bandarban is the worst one followed by Khagrachari and Rangamati where the percentage of tribal holdings having a homestead area of 0.05 acres or less is 64.2, 56.06 and 37.3 percent respectively.

Table 5.6: Distribution of Households by the Size of Homestead Area

Area of Homestead	Rangamati	Bandarban	Khagrachari	CHT
Upto 0.05 acres	50 (37.31)	86 (64.18)	74 (56.06)	210 (52.5)
0.06 – 0.10 ,,	24 (17.91)	20 (14.93)	29 (21.97)	73 (18.25)
0.11 – 0.15 ,,	11 (8.21)	2 (1.49)	1 (0.76)	14 (3.5)
0.16 – 0.20 ,,	13 (9.7)	16 (11.94)	12 (9.09)	41 (10.25)
0.21 – 0.25 ,,	3 (2.24)	1 (0.75)	1 (0.76)	5 (1.25)
0.26 – 0.30 ,,	15 (11.19)	3 (2.24)	2 (1.52)	20 (5.0)
0.31 – 0.35 ,,	-	1 (0.75)	-	1 (0.25)
0.36 – 0.40 ,,	8 (5.97)	1 (0.75)	5 (3.79)	14 (3.5)
0.41 – 0.45 ,,	-	-	-	-
0.46 – 0.50 ,,	4 (2.99)	-	6 (4.55)	10 (2.5)
0.51 and above	6 (4.48)	4 (2.99)	2 (1.52)	12 (3.0)
Total	134	134	132	400

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

With regard to owned land, it can be observed that about one-fourth of tribal households has no land, either hilly or arable, and about one-third has no arable land in CHT. Thus, the impression that tribal households have plenty of lands in CHT is ill-founded because landlessness is more acute in CHT than that prevailing in Bangladesh where only 10.18 percent of all households is purely landless.[66] Again, whatever lands (hilly and arable) the tribal holdings have, about 47

[65] *Statistical Pocketbook*, Bangladesh, 1998, p. 183.

[66] On the basis of ownership, all lands of CHT can be divided into three categories, viz., public or government-owned lands, private lands and common lands. Almost one-third of entire lands in CHT fall within the category of public lands which are marked as government forests under the control of Forest Department either as "reserved" or "protected" forest. The public lands include both natural tropical forests as well as single-species plantations of teak and rubber along with other costly varieties. Private lands are duly registered and clearly demarcated plots either freehold (with rights in perpetuity) or leasehold (with rights for a specified period). There are, however, unregistered non-urban homestead plots the rights to occupy those are specially reserved for the hillpeople. On the basis of land use, the private lands can be classified into four categories. These are: (a) Plots used for commercial purposes in urban center, (b) "ploughlands" which are suitable for cultivation with the plough for the production of rice and

percent of them has lands of 2 acres or less which can safely be termed as small farm holdings. If the standard definition of small farm holdings is taken into consideration (0.05-2.49 acres), then this percentage rises to about 51 percent which is, although still less, quite closer to national average of 52.85 percent of all holdings.[67] Moreover, like monthly income, distribution of homestead area, size of owned land - both hilly and arable, is also positively skewed and highly dispersed as shown in Table 5.8.

Table 5.7: Distribution of Households by Ownership of Owned Land

All lands (Arable and Hilly)	**Rangamati**	**Bandarban**	**Khagrachari**	**CHT**
Upto 2 acres	47 (44.34)	28 (30.11)	67 (63.2)	143 (46.89)
2 – 4 ,,	31 (29.25)	8 (8.6)	28 (26.42)	67 (21.97)
4 – 6 ,,	9 (8.49)	18 (19.35)	7 (6.6)	34 (11.15)
6 – 8 ,,	4 (3.77)	16 (17.2)	3 (2.83)	22 (7.21)
8 – 10 ,,	8 (7.55)	8 (8.6)	1 (0.94)	17 (5.57)
10 – 15 ,,	5 (4.72)	12 (12.9)	-	17 (5.57)
15 – 20 ,,	1 (0.94)	3 (3.23)	-	4 (1.31)
20 above	1 (0.94)	-	-	1 (0.33)
Total	106	93	106	305
Arable Lands	**Rangamati**	**Bandarban**	**Khagrachari**	**CHT**
Upto 2 ,,	77 (78.57)	46 (56.1)	80 (89.89)	203 (75.46)
2 – 4 ,,	16 (16.33)	22 (26.83)	5 (5.62)	43 (15.99)
4 – 6 ,,	5 (5.1)	9 (10.98)	3 (3.37)	17 (6.32)
6 – 8 ,,	-	3 (3.66)	1 (1.12)	4 (1.49)
8 – 10 ,,	-	2 (2.44)	-	2 (0.74)
Total	98	82	89	269
Hilly Lands	**Rangamati**	**Bandarban**	**Khagrachari**	**CHT**
Upto 2 acres	40 (56.34)	8 (12.9)	72 (94.74)	120 (57.42)
2 – 4 ,,	13 (18.31)	11 (17.74)	1 (1.32)	25 (11.96)
4 – 6 ,,	9 (12.68)	29 (46.77)	3 (3.94)	41 (19.62)
6 – 8 ,,	4 (5.63)	2 (3.23)	-	6 (2.87)
8 – 10 ,,	1 (1.41)	10 (16.13)	-	11 (5.26)
10 – 15 ,,	3 (4.23)	2 (3.23)	-	5 (2.39)
15 above	1 (1.41)	-	-	1 (0.48)
Total	71	62	76	209

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

other commercial crops, (c) "fringelands" which are available only in the dry season when the water level of Kaptai lake recedes and (d) "grovelands" used for private forests and fruit gardening. The most important type of land in CHT is the common lands the common rights to which are based on the century-old customs and tradition of hillpeople. These rights include the rights to "swidden" or "slash-and-burn" agriculture or *Jhum* cultivation, common pasture lands, forest lands used for domestic purposes, lands for homesteads, etc. (Source: Dutta, Dr. Jyoti Prakash and Rahman, Md. Mofizur, 'Insurgency in CHT: its Origin and Impact on Economy and Environment' in *The Hill Economy and Environment*, Bangladesh Economic Association, Dhaka, December 1999, pp. 54-55).

[67] *Statistical Pocketbook, Bangladesh*, 1998, p. 183.

Table 5.8: Selected Statistics of Land ownership in CHT

No.	Types of Lands	Mean	Standard Deviation	Skewnes	Minimum	Maximum
1	Homestead land	0.1317	0.1842	2.989	.00	1.00
	N = 400			(.122%)		
2	Land other than					
	homestead (arable	3.8919	3.7858	1.907	.04	23.70
	and hilly) N = 305			(.140%)		
3	Arable land	1.8794	1.5364	1.987	.04	10.00
	N = 269			(.149)		
4	Hilly land	3.2605	3.1327	1.875	.06	20.00
	N = 209			(.168)		

Note: Figures in parentheses indicate standard error
Source: Field Survey

The overall living condition of the ethnic minorities of CHT considered in terms of the type of houses they live in is also observed to be worse than those living in the rural areas of Bangladesh. If the houses are categorised on the basis of the materials used for constructing the main structure of houses (i.e., wall and roof), then it is observed that (Table 5.9) 71.25 percent of the tribal households lives in the houses made of bamboo with hempen roof (or straw). The corresponding figure for rural Bangladesh is, however, 59.29 percent.[68] Moreover, more than 60 percent of tribal households does not have any separate kitchen and 71.5 percent does not have any official paper or document of the homestead (Table 5.9) lands they live on.

Table 5.9: Distribution of Households by Type of Dwelling Houses, Separate Kitchen and Official Documents of Homestead

Items	Rangamati	Bandarban	Khagrachari	CHT
Types of Houses				
Mud-wall with CI sheet	6 (4.48)	14 (10.45)	6 (4.55)	26 (65.0)
Mud-wall with hempen roof	18 (13.43)	9 (6.72)	15 (11.36)	42 (10.5)
Bamboo wall with CI sheet	10 (7.46)	9 (6.72)	26 (19.7)	45 (11.25)
Bamboo wall with hempen roof	100 (74.63)	100 (74.63)	85 (64.39)	285 (71.25)
Wooden wall with hempen roof	-	2 (1.49)	-	2 (0.5)
Total	134	134	132	400
Do you have separate kitchen?				
YES	59 (44.03)	33 (24.63)	67 (50.76)	159 (39.75)
NO	75 (55.97)	101 (75.37)	65 (49.24)	241 (60.25)

[68] Ibidem.

Total	134	134	132	400
Do you have officials documents of homestead?				
YES	24 (17.91)	59 (44.03)	31 (23.48)	114 (28.5)
NO	110 (82.09)	75 (55.97)	101 (76.52)	286 (71.5)
Total	134	134	132	400

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

It is a popular belief that all the ethnic minorities living in CHT practise 'Jhum' cultivation. This may be true for those living in some inaccessible part of CHT. But in the accessible rural areas of CHT, it is observed that about three-fourth of tribal households does not practise 'Jhum' cultivation (Table 5.10). The reduction in 'Jhum' cultivation has been primarily due to non-availability of hilly lands to be used for 'Jhum'. It can be seen from Table 5.10 that about 80 percent of those practising 'slash and burn' agriculture cultivate only an area of less than 2 acres. The shrinkage of 'Jhum land' also has contributed to reducing the fallow period of 'Jhum'. It can also be seen from Table 5.10 that about 83 percent of the households practising 'Jhum' keeps their lands fallow at best for 3 to 5 years for recuperation.

Table 5.10: Distribution of Households by Practice of "Slash and Burn" agriculture or *Jhum* Cultivation, area used and time gap allotted for the slash and burn agriculture

Items	Rangamati	Bandarban	Khagrachari	CHT
Do you practise				
'slash and burn' agriculture?				
NO	106 (79.1)	90 (67.16)	108 (81.82)	304 (76.0)
YES	28 (20.9)	44 (32.84)	24 (18.18)	96 (24.0)
Total	134	134	132	400
How much area is used for				
'slash and burn' agriculture?				
Upto 1 acre	24 (85.71)	17 (38.64)	1 (4.17)	42 (43.75)
1 – 2 ,,	3 (10.71)	19 (43.18)	12 (50.0)	34 (35.42)
2 – 4 ,,	1 (3.57)	4 (9.09)	5 (20.83)	10 (10.42)
4 – 6 ,,	-	2 (4.55)	3 (12.5)	5 (5.21)
6 – 8 ,,	-	2 (4.55)	3 (12.5)	5 (5.21)
Total	28	44	24	96
How much time gap is usually allotted				
for 'slash and burn' agriculture?				
3 years	24 (85.71)	-	-	24 (25.0)
4 ,,	4 (14.29)	24 (54.55)	2 (8.33)	30 (31.25)
5 ,,	-	20 (45.45)	5 (20.83)	25 (26.04)
6 ,,	-	-	7 (29.17)	7 (7.29)
8 ,,	-	-	8 (33.33)	8 (8.33)
12 ,,	-	-	2 (8.33)	2 (2.08)
Total	28	44	24	96

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

We also tried to know the economic condition of the ethnic minorities of CHT in terms of the extent of self-sufficiency in food. Here it is observed that more than 77 percent of the households suffer from deficiency in their annual food requirement as shown in Table 5.11. Moreover, this deficiency is observed to be quite large in the sense that more than 72 percent of deficient households faces deficiency in the range of 40 to 100 percent every year (Table 5.11). This is quite indicative of the vulnerable economic condition of the ethnic minorities of CHT. As a result, to make up this deficit, the ethnic minorities are increasingly getting involved with such occupations which are alien to their culture and tradition. Table 5.11 shows that 65 percent of the household having deficiency is food either sell labour or forest products or both and some (9.4 percent) have chosen fishing as their alternative occupation.

Table 5.11: Distribution of Households by Self-Sufficiency in Food

Items	Rangamati	Bandarban	Khagrachari	CHT
Do you have				
self-sufficiency in food?				
NO	108 (80.6)	101 (75.37)	100 (75.76)	309 (77.25)
YES	26 (19.4)	33 (24.63)	32 (24.24)	91 (22.75)
Total	134	134	132	400
If deficit, how much?				
10% – 20%	5 (4.63)	6 (5.94)	18 (18)	29 (9.39)
20% – 40%	10 (9.26)	19 (18.81)	27 (27)	56 (18.12)
40% – 60%	28 (25.93)	28 (27.72)	20 (20)	76 (24.6)
60% – 80%	24 (22.22)	21 (20.79)	12 (12)	57 (18.45)
80% – 100%	41 (37.96)	27 (26.73)	23 (23)	91 (29.45)
Total	108	101	100	309
If surplus, how much?				
Upto 10%	-	2 (11.11)	4 (57.14)	6 (20.69)
10% – 20%	1 (25)	4 (22.22)	1 (14.29)	6 (20.69)
20% – 40%	3 (75)	4 (22.22)	2 (28.57)	9 (31.03)
40% – 60%	-	3 (16.67)	-	3 (10.34)
60% – 80%	-	3 (16.67)	-	3 (10.34)
80% – 100%	-	1 (5.55)	-	1 (3.45)
100% above	-	1 (5.55)	-	1 (3.45)
Total	4	18	7	29
How to make up deficit?				
Selling out labour	38 (35.19)	1 (0.99)	12 (12)	51 (16.5)
Selling forest products	29 (26.85)	4 (3.96)	8 (8)	41 (13.27)
Both selling out labour				
and forest products				
Selling Rabi crops				
and fruits				
Service/Petty business	10 (9.3)	14 (13.86)	37 (37)	61 (19.74)

Fishing	14 (12.96)	-	15 (15)	29 (9.39)
Total	108	101	100	309

Note: Figures in parentheses indicate percentage of total
Source: Field Survey.

In respect of ownership of livestock, the ethnic minorities of CHT are also lagging behind the average holdings of rural Bangladesh. Table 5.12 shows that 19.75 percent and 40.25 percent of tribal households own only poultry and both cattle and poultry respectively, whilst the corresponding figures for rural Bangladesh are 76.3 and 45.9.[69] A good number of tribal households, however, is observed to have no livestock at all whose percentage is 12.5 of all tribal households as also shown in Table 5.12.

Table 5.12 Distribution of Households by Ownership of Livestock

Livestock	Rangamati	Bandarban	Khagrachari	CHT
Poultry	23 (21.1)	22 (19.82)	34 (26.15)	79 (22.57)
Goat, Poultry and Pig	32 (29.36)	48 (43.24)	30 (23.08)	110 (31.43)
Cattle, Poultry, Goat and Pig	54 (49.54)	41 (36.94)	66 (50.77)	161 (46.0)
Total	109	111	130	350

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

We also wanted to evaluate the economic condition of the ethnic minorities of CHT in terms of availability of institutional credit to them. In this respect, Bandarban is in the best position as compared to other two districts as shown in Table 5.13. The situation of Khagrachari is the worst of all. However, overall only 36.25 percent of all householdsa are observed to have received credit facilities mainly from the institutions like Bangladesh Krishi Bank, Bangladesh Rural Development Board, Social Welfare Department, UNICEF and some other NGOs.

It should mentioned here that many institutions have special credit programs for CHT. Bangladesh Krishi Bank (BKB), for example, has a special agricultural (comprising 18 sub-sectors) credit programs for the ethnic minorities of CHT the rate of interet of which is only 5 percent. BKB also some other credit programs the rate of interest of which varies from 10 to 16 percent per annum. Bangladesh Rural Development Board has a special credit program for landless ethnic minorities with an interest rate of 5 percent. It has also some other credit programs with interest rates of 17.5 (inclusive of 4.5 percent service charge) and 18 percent. Social Welfare Department of the government also advances short-term credit to the ethnic minorities without any rate of interest although a service charge of 10 percent is added at the time of amotizing the credit in 52 equal installments.

[69] *Statistical Yearbook of Bangladesh*, BBS, 1997, p. 47.

According to Manager, BKB, Rangamati and Regional Manager, BKB, Rangamati, the role of institutional credit in CHT is very limited compared to other district of Bangladesh the coverage of which will not exceed 10 percent of the ethnic minorities of CHT. This is, according to them, primarily due to inaccessibility of the terrain. Consequently, non-institutional credit occupies dominant position in the area the effectivet rate of interest of which sometimes, according to the officials of BKB, stands at an extortionate level of 1000 percent per annum.

Table 5.13: Distribution of Households by Source and Amount of Loan

Items	Rangamati	Bandarban	Khagrachari	CHT
Do you have any loan?				
NO	86 (64.18)	45 (33.58)	101 (96.52)	232 (58.0)
YES	48 (35.82)	89 (66.42)	31 (23.48)	168 (42.0)
Total	134	134	132	400
Source of Loan				
Institutional	40 (83.33)	84 (94.38)	13 (41.94)	137 (81.55)
Non-institutional	8 (16.67)	5 (5.62)	18 (58.06)	31 (18.45)
Total	48	89	31	168
Size of Loan				
Taka 500 – 2500	22 (45.83)	13 (14.61)	20 (64.52)	55 (32.74)
2500 – 5000	17 (35.42)	41 (46.07)	9 (29.03)	67 (39.88)
5000 – 7500	1 (2.08)	4 (4.49)	1 (3.23)	6 (3.57)
7500 – 9000	1 (2.08)	8 (8.99)	-	9 (5.36)
9000 – 11,500	5 (10.42)	7 (7.87)	-	12 (7.14)
11,500 – 15,000	2 (4.17)	7 (7.87)	1 (3.23)	10 (5.95)
20,000	-	3 (3.37)	-	3 (1.79)
30,000	-	3 (3.37)	-	3 (1.79)
35,000	-	1 (1.12)	-	1 (0.60)
40,000	-	1 (1.12)	-	1 (0.60)
70,000	-	1 (1.12)	-	1 (0.60)
Total	48	89	31	168
Rate of Interest				
Not known	-	8 (8.99)	11 (35.48)	19 (11.31)
5%	20 (41.67)	71 (79.78)	-	91 (54.17)
6% – 10%	-	2 (2.25)	1 (3.23)	3 (1.79)
15% – 16%	20 (41.67)	3 (3.37)	1 (3.23)	24 (14.29)
120% – 200%	8 (16.67)	5 (5.62)	18 (58.06)	31 (18.45)
Total	48	89	31	168

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Moreover, the poor credit - worthiness of the ethnic minorities of CHT is also another factor responsible for low coverage of institutional credit. This aspect is nicely depicted by evaluation

report on UNICEF–assisted project.[70] According to the report, a total of Tk. 79.49 lacs was distributed in three hill districts till June, 1995. Of this amount, 58, 30.72 and 11.28 percent were distributed to Bandarban, Rangamati and Khagrachari respectively. But, the repayment performance of the ethnic minorities is quite unsatisfactory because only 37.4 percent of the loanees could repay the credit and only 2 percent earned credibility of getting loans more than once. It is also observed by the report that an amount Tk. 1200.00 is insufficient for undertaking any income generating activities which is usually spend to meet day-to-day family needs resulting in poor realization.

Although the role non-institutional credit is observed by us to be marginal in CHT as a whole (18.45 percent), in Khagrachari it rather plays a dominant role. Table 5.13 shows that more than 58 percent loanee households borrowed from non-institutional (or private) source the rate of interest of which ranges between 120 to 200 percent. However, most of the institutional credits appear to be quite small in size and their rate of interest normally ranges between 5 to 16 percent. Overall, it can be observe that there remains a scope to expand the coverage of institutional credit of micro nature in CHT to ameliorate the economic hardships of the ethnic minorities.

Table 5.14: Distribution of Households by Opinions Regarding the Movement of Shanti Bahini, Causes of Becoming Refugee and Receipt of Compensation

Items	Rangamati	Bandarban	Khagrachari	CHT
Why did Shanti Bahini fight?				
Freedom	125 (93.28)	52 (38.81)	81 (61.36)	258 (64.5)
Autonomy	6 (4.48)	46 (34.33)	50 (37.88)	102 (25.5)
Not Known	3 (2.24)	36 (26.87)	1 (0.76)	40 (10.0)
Total	134	134	132	400
Did any of your family member				
join Shanti Bahini?				
YES	17 (12.69)	10 (7.46)	22 (16.67)	39 (9.75)
NO	117 (87.31)	124 (92.54)	110 (83.33)	361 (90.25)
Total	134	134	132	400
Did you become refugee?				
YES	88 (65.67)	83 (61.94)	49 (37.12)	188 (47.0)
NO	46 (34.33)	51 (38.06)	83 (62.88)	212 (53.0)
Total	134	134	132	400
Why did you become refugee?				
Lake	4 (4.55)	7 (13.78)	5 (10.20)	16 (8.51)
Shanti Bahini	80 (90.90)	42 (82.35)	36 (73.47)	158 (84.04)
Both	4 (4.55)	2 (3.92)	8 (16.33)	14 (7.45)
Total	88	51	49	188
Did you get compensation for lake?				
YES	7 (87.5)	1 (88.89)	-	8 (26.67)
NO	1 (12.5)	8 (11.11)	13 (100)	22 (73.33)

[70] *Statistical Pocketbook, Bangladesh,* 1998, pp. 186-189.

Total	8	9	13	30
Did you get compensation for				
Shanti Bahini movement?				
YES	1 (1.19)	-	23 (52.27)	24 (13.95)
NO	83 (98.81)	44 (100)	21 (47.73)	148 (86.05)
Total	84	44	44	172

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

One of the reasons, as we all know, for the economic backwardness of the hillpeople was prolonged political instability that almost has crippled the economy of CHT. We, therefore, wanted to know the extent of awareness of the respondents about the movement of Shanti Bahini. Of 400 sample households it is observed that 90 percent was aware of the movement who opined that the reason of movement was to protect the existence of *'Jhumias'* living in CHT as shown in Table 5.14. But their participation in the movement was not that much pervasive as can be seen from Table 5.14. It is shown by Table 5.14 that only 9.75 of households actively took part in the movement.

Table 5.15: Distribution of Households by Source of Obtaining General Health Services

No.	Items	Rangamati	Bandarban	Khagrachari	CHT
1	Govt. Health Worker	5 (3.7%)	1 (0.7%)	2 (1.5%)	8 (2.0%)
2	Govt. Health Center/Hospital	17 (12.7%)	61 (45.5%)	23 (17.4%)	101 (25.3%)
3	Local Quack	67 (50.0%)	53 (39.6%)	73 (55.3%)	193 (48.3%)
4	Local Method	23 (17.2%)	18 (13.4%)	29 (22.0%)	70 (17.5%)
5	Private Doctor/Pharmacy	22 (16.4%)	1 (0.7%)	5 (3.8%)	28 (7.0%)
	Total	134 (100%)	134 (100%)	132 (100%)	400 (100%)

Source: Field Survey

Table 5.16: Distribution of Households by Use of ORS

Items	Rangamati	Bandarban	Khagrachari	CHT
Do you take ORS in Diarrhoea?				
NO	12 (9.0)	4 (3.0)	62 (47.0)	78 (19.5)
YES	122 (91.0)	130 (97.0)	70 (63.0)	322 (80.5)
Total	134 (100)	134 (100)	132 (100)	400 (100)
If ORS is taken, what is the				
Source of procurement?				
Govt. Hospital	1 (0.8)	3 (2.3)	-	4 (1.2)
Govt. Health Worker	-	2 (1.5)	4 (5.7)	6 (1.9)
Purchased	121 (99.2)	125 (96.2)	66 (94.3)	312 (96.9)
Total	122 (100)	130 (100)	70 (100)	322 (100)

If ORS is not taken,				
what's the reason?				
Herbal medicine	6 (50.0)	-	-	6 (7.69)
Inability to buy	-	-	1 (1.61)	1 (1.28)
Non-availability	-	-	19 (30.65)	19 (24.36)
Lack of consciousness	6 (50.0)	4 (100)	42 (67.74)	52 (66.67)
Total	12	4	62	78

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

It is also shown by Table 5.14 that those became refugee either because of lak or Shanti Bahini movement or both, have not been properly compensated although government claims that those rendered homeless particularly due to Shanti Bahini movement, have been given sufficient compensation both in cash and kind, for rehabilitation.

To sum up, it can be said that the overall economic condition of the ethnic minorities of CHT is rather disturbing and average tribal household in this respect lags behind their counterpart in rural Bangladesh.

Table 5.17: Distribution of Households by Use of Medicine for Worm

Items	Rangamati	Bandarban	Khagrachari	CHT
Whether medicine for				
worm taken?				
YES	71 (53%)	45 (33.6%)	48 (36.4%)	164 (41%)
NO	63 (47%)	89 (66.4%)	84 (63.6%)	236 (59%)
Total	134 (100%)	134 (100%)	132 (100%)	400 (100%)
If yes, when medicine				
for worm last taken?				
Taken within this year	34 (47.9%)	21 (46.7%)	35 (72.9%)	90 (54.9%)
Taken one year before	22 (31.0%)	5 (11.1%)	7 (14.6%)	34 (20.7%)
Taken two years before	4 (5.6%)	1 (2.2%)	4 (8.3%)	9 (5.5%)
Can'nt be recollected	11 (15.5%)	18 (40.0%)	2 (4.2%)	31 (18.9%)
Total	71 (100%)	45 (100%)	48 (100%)	164 (100%)
Medicine of worm administered				
for all or selected members				
For all	1 (1.4%)	10 (22.22%)	-	11 (6.71%)
Selected	70 (98.6%)	35 (77.78%)	48 (100%)	153 (93.29%)
Total	71 (100%)	45 (100%)	48 (100%)	164 (100%)

Source: Field Survey

5.3 Condition of General Health

Let us now have a look at the general health condition of the ethnic minorities of CHT. Table 5.15 shows that a majority of ethnic minorities still depends on local quacks or local methods (i.e., herbal medicine) for treating their common ailments. At the district level, the situation of Khagrachari is the worst, followed by Rangamati and Bandarban. Overall, it can be observed that about 66 percent of households depends on quacks and local methods of treatment indicating a poor condition of general health in CHT.

Table 5.18: Distribution of Households by Method of Cleaning Teeth

No.	Items	Rangamati	Bandarban	Khagrachari	CHT
1	Nothing	-	8 (5.97)	-	8 (2.0)
2	Paste	4 (2.99)	16 (11.94)	3 (2.27)	23 (5.75)
3	Tooth Powder	81 (60.45)	83 (61.94)	87 (65.91)	251 (62.75)
4	Coal/Ash	45 (33.58)	27 (20.15)	42 (31.82)	114 (28.5)
5	Branch of Neem Tree	4 (2.99)	-	-	4 (1.0)
	Total	134	134	132	400

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 5.19: Distribution of Households by Use of Mosquito Net, Soap (both for bath and washing clothes), Iodized Salt, Containerized Edible Oil

Items	Rangamati	Bandarban	Khagrachari	CHT
Do you use mosquito net?				
YES	118 (88.06)	115 (85.82)	107 (81.06)	340 (85.0)
NO	16 (11.94)	19 (14.48)	25 (18.94)	50 (15.0)
Total	134	134	132	400
Do you use soap?				
i) Bath Soap				
YES	47 (35.07)	43 (32.09)	81 (61.36)	171 (42.75)
NO	87 (64.93)	91 (67.91)	51 (38.64)	229 (57.25)
Total	134	134	132	400
ii) Soap for washing clothes				
YES	130 (97.01)	125 (93.28)	129 (97.73)	384 (96.0)
NO	4 (2.99)	9 (6.72)	3 (2.27)	16 (4.0)
Total	134	134	132	400
Do you use iodized salt?				
YES	31 (23.13)	27 (20.15)	45 (34.09)	103 (25.75)
NO	103 (76.87)	107 (79.85)	87 (65.91)	297 (74.25)
Total	134	134	132	400

Do you use containerized edible oil?				
YES	18 (13.43)	7 (5.22)	24 (18.18)	49 (12.25)
NO	116 (86.57)	127 (94.78)	108 (81.82)	351 (87.75)
Total	134	134	132	400

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Moreover, it is observed that the most common disease from which majority of ethnic minorities suffers is cold and fever, particularly malaria. Another common disease is gastroenteritis, particularly diarrhoea, dysentery and worm infestation. For diarrohoeal treatment, although a majority (about 81 percent) use oral rehydration saline (ORS) purchased from market, quite a good number does not, primarily because of lack of consciousness as shown in Table 5.16. However, there are some conscious tribals who cannot afford it. But, the situation with regard to regular use of medicine for treating worm infestation is very grim in CHT as shown in Table 5.17. A majority of respondents never uses medicine against worm (59 percent). Amongst those use, a large number is observed to be irregular in taking the medicine (one year before or more) and also observed to have administered it for selected members of the family. Whereas from medical point of view, it is recommended that medicine against worm is to be taken at regular interval and also to be administered at a time for all members of the family in the areas like CHT where most of the people usually do not wear any shoes or sandals.

Overall, ethnic minorities appear to be less conscious about their general health because a large number of them (more than 91%) is still observed to be using unhygenic tooth powder (black powder) and coal or ash for cleaning their teeth (Table 5.18) and a sizeable number (12.5 percent) does not use mosquito nets (Table 5.19). Moreover, more than 57 percent does not use bathsoap, more than 74 percent uses non-iodized salt and about 88 percent buys loose edible oil from the market probability of most of which to be adulterated is very high as shown in Table 5.19.

5.4 Maternal and Child Health

The situation in CHT with respect to maternal and child health care is also grim Table 5.20 shows that out of 388 responding households (12 being either unmarried or newly married presented in Table 5.20 as 'missing' and as 'not applicable' in Table 5.21), about 26 percent does not avail any outside maternity (ante and post-natal) service and 60 percent takes services from local quacks or untrained (quack) midwife. At the district level, the situation of Khagrachari again is the gravest one, followed by Bandarban and Rangamati. For immunizing the pregnant mothers, only 32.75 percent households used TT (Tetanus Toxoid) of whom 34.35 percent went for only single dose which is usually considered to be ineffective for immunizing mother as shown in Table 5.21. Lack of consciousness and nonavailability of vaccine are the two main reasons for which mothers are not being immunized in CHT as also shown in Table 5.21. But, whatever immunization has taken place, it has been carried out by government health workers as reported by the respondents (Table 5.21). Due to limited scale of immunization and topography of the area, people generally believe that the cases of miscarriages and still born are widespread in CHT. But, it is observed by us that out 1723 pregnancies so far in 400 households, 100 (5.83 percent) cases of miscarriages and 40 (2.32 percent) cases of still born are reported as presented

in Table 5.22. We can not, however, comment on this scale of miscarriage and still born because we do not have any corresponding data sets at national level. It is observed that out of 25 cases of deaths of wives, only 2 (8 percent) deaths are reported to have taken place because of post natal complications as shown in Table 5.23. In the light of these observations, we can say that, although immunization of mothers is not widespread in CHT, yet death of mothers due to post-natal complications (particularly Tetanus) can not be said to be correspondingly very high or widespread.

Table 5.20: Distribution of Households by Source of Maternity Services

No.	Source of Service	Rangamati	Bandarban	Khagrachari	CHT
1	No outside service	2 (1.56)	4 (3.08)	94 (72.31)	100 (25.77)
2	Local quacks/quack midwife	99 (77.34)	117 (90.0)	17 (13.08)	233 (60.05)
3	Trained midwife	24 (18.75)	2 (1.54)	0	26 (6.70)
4	Govt. Health Worker	0	2 (1.54)	18 (13.85)	20 (5.15)
5	Govt. Health Centre/Hospital	1 (0.78)	4 (3.08)	1 (0.77)	6 (1.55)
6	Private Doctor/Hospital	2 (1.56)	1 (0.77)	0	3 (0.77)
	Total	**128**	**130**	**130**	**388**
	Missing	6	4	2	12

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 5.21: Distribution of Households by Adoption and Source of Immunization of Mothers

Items	Rangamati	Bandarban	Khagrachari	CHT
Did you take Tetanus Toxoid (TT)?				
NO	79 (58.96)	78 (58.21)	112 (84.85)	269 (67.25)
YES	55 (41.04)	56 (41.79)	20 (15.15)131	(32.75
Total	134	134	132	400
Single Dose	13 (23.64)	12 (21.43)	20 (100)	45 (34.35)
Double Dose	42 (76.36)	44 (78.57)	-	86 (65.65)
Total	55	56	20	131
If not, why?				
Lack of consciouness	58 (73.42)	51 (65.38)	103 (91.96)	212 (78.81)
Non-availability	15 (18.99)	23 (29.49)	7 (6.25)	45 (16.73)
Not applicable	6 (7.59)	4 (5.13)	2 (1.79)	12 (4.46)
Total	79	78	112	269
If yes, what is the source?				
Govt. health worker	49 (89.09)	50 (89.29)	18 (90)	117 (89.31)
Private doctor	-	1 (1.79)	-	1 (0.76)
Govt. Hospital	6 (10.91)	5 (9.93)	2 (10)	13 (9.92)
Total	55	56	20	131

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 5.22: Number of Miscarriages and Still born of Sample Households

No.	Items	Rangamati	Bandarban	Khagrachari	CHT
1	Total Number of pregnancies				
	of all wives				
2	Number of miscarriages	22 (4.01)	13 (2.1)	65 (11.73)	100 (5.8)
3	Number of still born	8 (1.46)	9 (1.45)	23 (4.15)	40 (2.32)
4	Number of Children born alive	519 (94.53)	598 (96.45)	466 (84.12)	1583 (91.87)

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 5.23: Number and Causes of Death of Wives

No.	Causes of Death	Number
1	Post Natal Complication	2 (8.0)
2	Different diseases	19 (76.0)
3	Sucide	1 (4.0)
4	Accident	1 (4.0)
5	Murdered by miscreants	2 (8.0)
	Total	25

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 5.24: Distribution of Households by Adoption of Family Planning Methods and Sources of Family Planning Materials

Items	Rangamati	Bandarban	Khagrachari	CHT
Do you adopt Family Planning ?				
YES	39 (29.1)	41 (30.6)	52 (39.39)	132 (33.0)
NO	95 (70.9)	93 (69.4)	80 (60.61)	268 (67.0)
Total	134	134	132	400
If yes, what method?				
Pill	31 (79.49)	36 (87.8)	40 (76.92)	107 (81.06)
Female Sterilization	6 (15.38)	2 (4.88)	12 (23.08)	20 (15.15)
Male Sterilization	1 (2.56)	-	-	1 (0.76)
Injection	1 (2.56)	2 (4.88)	-	3 (2.27)
Timing	0	1 (2.44)	-	1 (0.76)
Total	39	41	52	132
Years of adoption				
Upto 5 years	17 (43.59)	23 (56.1)	29 (55.77)	69 (52.27)
6 – 10 ,,	8 (20.51)	7 (17.07)	21 (40.38)	36 (27.27)
11 – 15 ,,	11 (28.21)	8 (19.51)	1 (1.92)	20 (15.15)
16 above	3 (7.69)	3 (7.32)	1 (1.92)	7 (5.30)
Total	39	41	52	132
Source of Family				
Planning materials				
Govt. Health Workers	6 (15.38)	25 (60.98)	2 (3.85)	33 (25.0)

Govt. Hospital	9 (23.08)	6 (14.63)	12 (23.08)	27 (20.45)
Privately purchased	24 (61.54)	10 (24.39)	38 (73.08)	72 (54.55)
Total	39	41	52	132

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

With regard to adoption of family planning, it is again observed that only 33 percent households has adopted modern methods of family planning, which is lower than the national average of 42.3 percent.[71] Amongst those adopted family planning most of them (81 percent) use contraceptive pill and procure it mostly (54.5 percent) from market as shown in Table 5.24. Female sterilization appears to be second popular method of family planning (15.15 percent) after pill in which government hospitals and health workers play an important role as shown in Table 5.24.

Table 5.25: Distribution of Households by Application of Vitamin-A capsules and Immunization of Children

Items	Rangamati	Bandarban	Khagrachari	CHT
Did you apply Vitamin-A capsules to the children of below 5 years?				
NO	53 (39.55)	46 (34.33)	39 (29.55)	138 (34.50)
YES	81 (60.44)	88 (65.67)	93 (70.45)	262 (65.50)
Total	134	134	132	400
If yes, what is the				
source of procurement?				
Health Worker	81 (100)	83 (94.32)	93 (100)	257 (98.09)
Govt. Hospital/Health Center	-	5 (5.68)	-	5 (1.91)
Total	81	88	93	262
Did you immunize				
your children?				
NO	61 (45.52)	53 (39.55)	52 (39.39)	166 (41.50)
YES	73 (54.48)	81 (60.45)	80 (60.61)	234 (58.50)
Total	134	134	132	400
If yes, what is the				
source of procurement?				
Health Worker	67 (91.78)	76 (93.83)	77 (96.25)	220 (94.02)
Govt. Hospital/Health Center	6 (8.22)	5 (6.17)	3 (3.75)	14 (5.98)
Total	73	81	80	234

Note: Figures in parentheses indicate percentage of total.
Source: Field Survey.

[71] Quddus, Md. Abdul (et al): *An Evaluation of Integrated Community Development Programme For the Chittagong Hill Tracts*, BARD, Comilla, May, 1996, p. 54.

As compared to the immunization of mothers, the coverage of child immunization seems to be better as shown in Table 5.25. It is shown in Table 5.25 that more than 65 percent households has applied vitamin - A capsules for their children below 5 years of age and 58.5 percent has immunized their children. Here again, we do not have any national data for comparison. However, it should be mentioned here that we could not ascertain whether the children reported to be immunized are done so partially or completely (for all six types of diseases). Two other indices used for measuring the state of child health are the prevalence of nightblindness and use of colostrum (*Shal Dud*). Here we have observed that only less than 2 percent household reported about nightblindness of one of their children as shown in Table 5.26. As for the use of colostrum, however, it is observed that only about 30 percent households apply colostrum. Although, we cannot compare these data with any corresponding national averages, yet it appears that the overall state of health of children is better than their mothers in CHT.

Table 5.26: Distribution of Households by Prevelance of Night-Blindness or Nycrolopia

Items	Rangamati	Bandarban	Khagrachari	CHT
NO	132 (98.5)	133 (99.25)	129 (97.73)	394 (98.50)
YES	2 (1.49)	1 (0.75)	3 (2.27)	6 (1.50)
Total	134	134	132	400

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 5.27: Distribution of Households by Use of Colostrum

Items	Rangamati	Bandarban	Khagrachari	CHT
NO	83 (61.94)	89 (66.42)	110 (83.33)	282 (70.5)
YES	51 (38.06)	45 (33.58)	22 (16.67)	118 (29.5)
Total	134	134	132	400

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

5.5 Water and Sanitation

The most important criterion generally used to investigate the state of health of a population is the source of drinking water. In this respect, the ethnic minorities lag much behind the average household of rural Bangladesh. Table 5.28 shows that only 35.25 percent households uses water of tubewells as drinking water, whilst the corresponding figure for rural Bangladesh is 77.56 percent.[72] Moreover, almost everybody in CHT uses water other than that of tubewell for everyday use. Again, with respect to the availability of toilet facilities, it is observed that only 8.5 percent households uses water sealed toilets (ring) in CHT, compared to 11.83 in rural Bangladesh.[73] The remaining households in CHT either (91.5 percent) use other arrangements

[72] Statistical Yearbook of Bangladesh, 1997, p. 601.
[73] Ibidem, p. 49.

(i.e., *Kutcha*) or none, compared to 84.28 percent in rural Bangladesh.[74] The most alarming aspect of the state of general health in CHT is that only 13.25 percent households uses soap after defecation and 27.5 percent is not even conscious of washing hands as shown in Table 5.29.

Table 5.28: Distribution of Households by Source of Drinking Water and Water for Everyday Use

Items	Rangamati	Bandarban	Khagrachari	CHT
Source of drinking water				
Stream	30 (22.39)	17 (12.69)	19 (14.39)	66 (16.5)
River	15 (11.19)	-	-	15 (3.75)
Lake	18 (13.43)	3 (2.24)	2 (1.52)	23 (5.7)
Pond	32 (23.88)	2 (1.49)	-	34 (8.5)
Well	10 (7.46)	89 (66.42)	22 (16.67)	121 (30.25)
Tubewell	29 (21.64)	23 (17.16)	89 (67.42)	141 (35.25)
Total	134	134	132	400
Source of water for everyday use				
Stream	32 (23.88)	12 (8.96)	23 (17.42)	67 (16.75)
River	36 (26.87)	81 (60.45)	88 (66.67)	205 (51.25)
Lake	26 (19.40)	7 (5.22)	5 (3.79)	38 (9.50)
Pond	35 (26.12)	2 (1.49)	12 (9.09)	49 (12.25)
Well	3 (2.24)	32 (23.88)	4 (3.03)	39 (9.75)
Tubewell	2 (1.49)	-	-	2 (0.50)
Total	134	134	132	400

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

Table 5.29: Distribution of Households by Type of Latrine and Washing Hands After Defecation

Items	Rangamati	Bandarban	Khagrachari	CHT
Types of Latrine				
None	42 (31.34)	72 (53.73)	30 (22.73)	144 (36.0)
Kutcha	85 (63.43)	44 (32.84)	93 (70.45)	222 (55.5)
Ring (Water Sealed)	7 (5.22)	18 (13.43)	9 (6.82)	34 (8.5)
Total	134	134	132	400
Do you wash hands after defecation?				
Not conscious	-	68 (50.75)	42 (31.82)	110 (27.50)
Nothing used	124 (92.54)	59 (44.03)	48 (36.36)	231 (57.75)
Ash/Soil	-	-	6 (4.55)	6 (1.50)
Soap	10 (7.46)	7 (5.22)	36 (27.27)	53 (13.25)
Total	134	134	132	400

Note: Figures in parentheses indicate percentage of total
Source: Field Survey

[74] Ibidem.

We also inquired the ethnic minorities about their social security and traditional rights on the lands of CHT. In this respect, all the tribal households have reacted in the same way and said that their overall social security has been impaired due to increase in theft decoity, murder, etc. mostly committed by the settlers and their traditional ritghts on lands have been encroached upon by the settlers. As a result, their traditional peaceful style of life is no more prevalent. Life, to them, now has become difficult, tough and is full of problems.

Thus the overall impact of development programs on the quality of life of ethnic minorities of CHT can, therefore, hardly be evaluated in positive terms. Considered from the perspectives of economic condition and the state of general health, mother and child care, water and sanitation, etc. it can be said that the ethnic minorities deserve much more attention and care in these respects from government as well as donor, UN agencies and NGOs.

6. Conclusions

The study on the impacts of development programs on the natural environment, demographic phenomena and the quality of life of the ethnic minorities of CHT undertaken on the basis of both secondary and primary data and the data collected from 400 sample households helps identify a number important issues. In this chapter we will present these issues in brief vis-à-vis our opinion regarding future course of actions pertaining to sustainable development of the region.

Major development programs undertaken so far in CHT have been observed to have not gone through proper environmental impact analysis (EIA) before implementation as a result of which these programs or projects have exerted many negative impacts on the natural environment of that area. To name a few of these programs are Karnafuli Multipurpose Project, monospecies plantation particularly of teak, horticulture and fruit gardening, rehabilitation and resettlement programs which have not only impacted the environment adversely, these programs also brought about many irreversible natural resource losses of the area.

Since political unrest persisted in the area for a long time, most of the development interventions were directed primarily towards resolving political problems through economic means. The CHTDB and Local Government Councils were basically created with this end in view. Consequently, in spite of spending huge amount of money every year in the name of development, the activities of these two bodies could not make any significant dent into the massive economic and social problems of the ethnic minorities of CHT. On the contrary, it is observed that although many economic and social infrastructures like roads, schools, health centers, youth training centers, sports and cultural complexes, etc., are constructed in the area in last three decades, most of these have remained virtually unutilized. Because, without resolving the basic political problem that has engulfed the area since independence in 1971, any kind of development intervention was considered by the ethnic minorities as a form of aggression upon their very existence. As a result, development programs in CHT more or less failed to bring about any sort of enthusiasm in economic life of the ethnic minorities. In stead, it was rather observed that thousands of tribal families either migrated to India (many of whom, however, returned after the signing of peace accord) or were forced to settle in different types of *villages*

created by the then administration and became absolutely dependent upon government rations and cash doles. Thus development programs pursued in the area, in nutshell, were nothing more than some counter-insurgency programs, which basically contributed to environmental degradation through deforestation and wastage of public funds. For the same reason, the development programs undertaken by government and different donor agencies also could not impact the demographic characteristics and processes and also the quality of life of the ethnic minorities to the extent warranted by the sustainability of development of the region. Such a development experience of CHT pinpoints one basic weakness of the neoclassical concept of development that usually prescribes development program or project for a particular area or a country based on the theory of production function without either considering the vital question of sustainability or prior ensuring the participation of the people of that area or country. The significance of the questions of sustainability and people's participation and involvement is more pronounced in an area like CHT where natural environment and the demographic characteristics of the population of that area are more susceptible to any kind of development intervention than those of the rest of the country.

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