Nishorgo Support Project

Socio-Economic Field Surveys at Nishorgo Pilot Sites

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Final Report

Socio-Economic Field Surveys at Nishorgo Pilot Sites

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Executive Summary

Socio-economic survey was conducted in five Nishorgo Support Project (NSP) supported Protected Areas (PAs), namely, Lawachara National Park (LNP), Satchuri National Park (SNP), Rema-Kalenga Wildlife Sanctuary (RKWS), Chunati Wildlife Sanctuary (CWS) and Teknaf Game Reserve (TGR). Objective of the survey was to portray the socio-economic context within which the PAs are situated.

With this view, sampling was done to select the 65 villages and from each village, 10 households were selected through systematic random sampling. Samples are small in size, 10 households per village, to balance sampling and non-sampling errors. They are selected to represent the population of the PA as a whole, as well as that of certain subgroups of the population. Two-stage sampling reduces the cost and effort of sampling and of field work compared with single-stage sampling, but at the cost of increasing the sampling error. This is a result of the so-called "cluster effect."

The socio-economic data was collected using household survey questionnaire, village profiling guide, focus group discussion specific to issues (e.g. resource use and flow), and data at enterprise level (e.g. brickfields, sawmills and microfinance institutes).

Information was captured on demographic profile, education, profession, health and sanitation, etc. as indicators of level of poverty of the sample households of PA landscape. Resource extraction and flow, particularly the forest resources, through different channels were chalked out. The collected data was compared with the national averages as compiled from different studies specially BBS.

The study encompasses lots of information on different issues, not in depth, just an overview that may help the reader to have an idea about the PA landscape. Another weakness of the study due to the same reason is to establish the contexts of the issues which is interrelated and might have cause effect relationships. Due to the cursory nature of the study many issues may not explore properly to enable and register cause-effect relationships. Likewise, time bound (December - January 2006) of this study fails to focus the major issues of concern. In some cases like resource extraction from PA landscape and population used to involve with this business, will need much time and efforts for detailed study and yield sufficient information.

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1 Background

The Nishorgo Support Project (NSP) aims conservation of biodiversity within five selected Protected Areas (PAs) of Bangladesh. In order to establish a long term conservation effort, the project seeks to bring all stakeholders of a PA in a platform to better manage, to reduce pressure, to improve livelihood around, to better support Forest Department, and to introduce initiatives that enhance conservation. In other words, the project has the mandate to establish a formal co-management system.

Identification of stakeholders and an understanding their dependence and influence, interaction, conflicts, and overall dynamics surrounding resources of PAs is key to success of any initiative. The Project had done that before the field work began and the reports are available for each PA named as “Site Level Assessment Report” (NACOM 2004). The reports qualitatively depict pictures of the stakeholders, shed light on livelihood, and give idea of socio-economic conditions surrounding the PAs.

The Project hence was looking for quantitative figures which will clearly show the unique socio-economic context in which each PA lies. Accordingly initiative was taken to amass and make available secondary data (e.g. from Bangladesh Bureau of Statistics) that provides the context. However, published data was 10 years old and the available data do not clearly shows the picture.

As a result, the Project could not say the number of population in the surrounding landscape of PAs, how poor is the population, what is their demographic characteristic, what they do for living, what is the status of sanitation, or how many educational institutions in the vicinity. That is, the basic indicators surrounding the PAs compared to the same at Thana, District level, or National level.

Thus a survey was carried out to replenish the data deficiency according to the Project’s needs and the outcome is this document which layout all information accordingly.

1.1 Objective of the Report

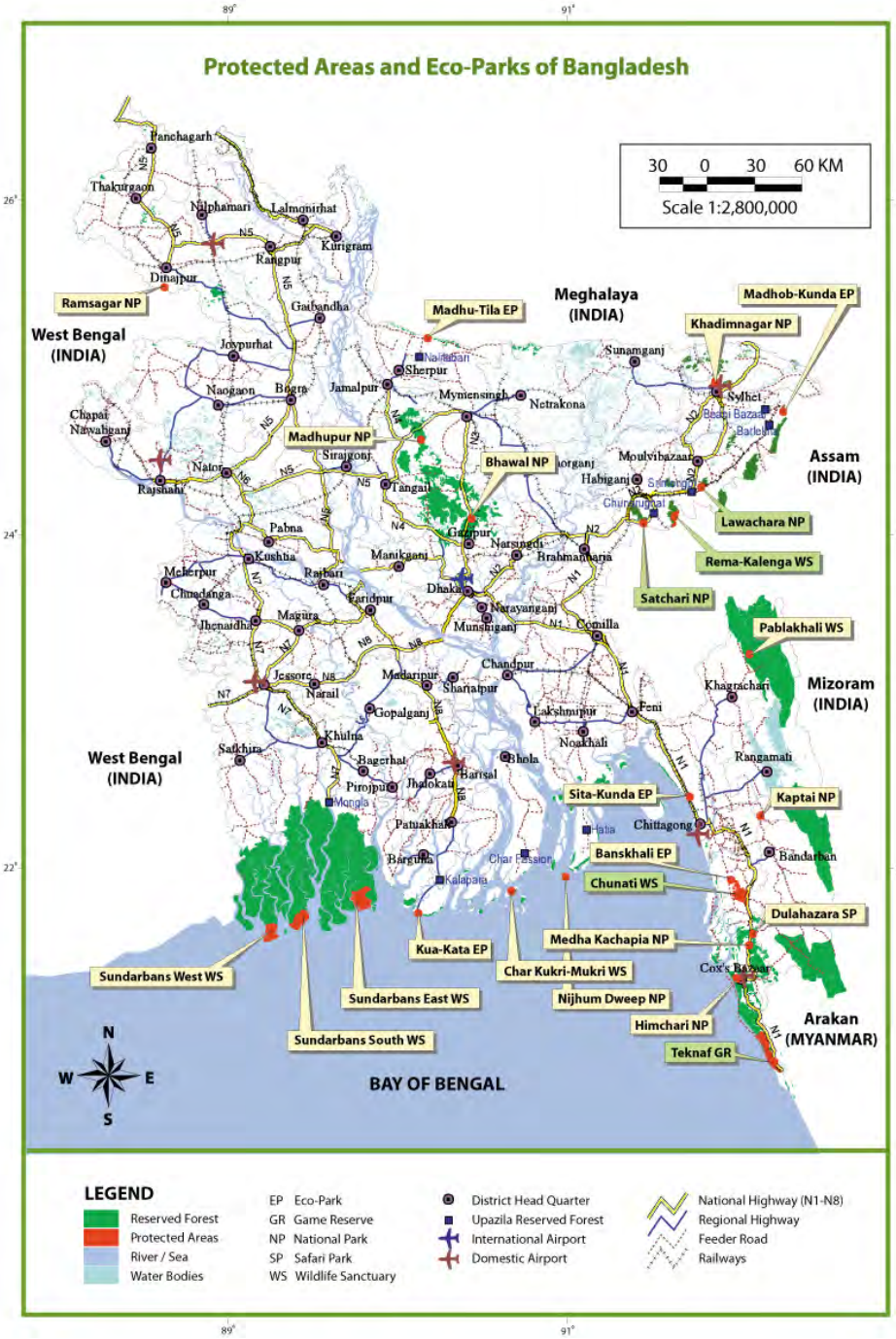
The purpose and objective of this report is to summarize just the descriptive quantitative summary data for all sites, allowing the reader to have a rapid overview of how these sites are similar or different from regional and national averages and norms. This report includes basic tables, graphs or figures and is intended rather to serve as the necessary background material -- in a single reference document -- to support other people's analyses of the challenges faced at the NSP sites.

1.2 Organization of the Report

Having set out the context of the report, the next pages give a brief introduction of the Protected Areas. The next section layout the information to be collected, methods involved for the survey and how it was done. The third section comprises the outputs, i.e., basic tables or graphs of the desired information and lastly the annexes provide the questionnaire.

2 Brief Description of Project Areas

There are about 19 Protected Areas (17 gazzetted and 2 proposed), 5 Eco-parks and 1 Safari Park in Bangladesh (Map 1). A brief description of all can be found in "Protected Areas of Bangladesh: A Visitor's Guide" (NSP 2006). Among the five Nishorgo PAs, three are located in Sylhet Division (Lawachara NP, Satchari NP and Rema-Kalenga WS), Chunati WS is located in Chittagong and Teknaf GR is located in Cox's Bazaar District.



Map 1: Protected Areas of Bangladesh (Gazetted PAs)

2.1 Lawachara National Park

Location: Approximately 160 km northeast of Dhaka and 60 km south of the city of Sylhet and approximately 10 km north of Srimongol city, in the civil administrative units of Kamalganj Thana, Maulvibazar District.

Area & History: Previously the Park was a part of West Vanugach Reserved Forest as Lawachara Beat along with Chautali and Kalachara Beats in the north. In 1996, the entire Lawachara Beat and some part of Chutali Beat was declared as National Park (1250 ha) by the Wildlife (Preservation) (Amendment) Act, 1974. Very recently the administration of the Park has been transferred from territorial unit to Wildlife Management & Nature Conservation Division.

Land use/cover within the PA: The Park originally supported a vegetation cover of mixed tropical evergreen forest. Original forest cover was removed in 1920s by plantation. Bamboo and cane plantation covers an area of about 25 ha. An estimated 483 ha of plantations (of teak, jarul, chaplash, garjan, & gamar) over 50 years of age are included within the Park, representing 40% of the total notified area. Much of the remainder of the area (244 ha, or ~20% of notified area) is covered by mixed species plantations greater than 25 years of age (teak, jarul, eucalyptus, akasmoni, molecana etc.). Other areas of natural forest cover (approximately 130 ha) are utilized for betel-leaf cultivation by the Khasia tribe.

Wildlife resources: The wildlife diversity includes 460 species; of which 167 are plants, 20 mammals, 246 birds, 6 reptiles and 4 amphibians. Lawachara is the best forest to watch the Hoolock Gobbon (*Bunipithecus hoolock*). Other important wildlife is Capped Langur (*Trachypithecus pileatus*), Phayre's Langur (*Trachypithecus phayrei*), Pig-tailed Macaque (*Macaca nemestrina*), Orange-bellied Himalayan Squirrel (*Dremomis lokriah*), Barking Deer (*Muntiacus muntjac*) and Masked Civet (*Paguma larvata*).

Surrounding Settlements: In addition to 2 Forest Villages, a total of 16 villages have been identified having varied stakes in the forests, through RRA/PRA carried by NACOM (2004) during May-July 2004. These villages lie within 5 km. of the Park boundary. Of the 18 villages, 6 villages have been identified as having major stakes, another 6 villages with moderate level of stakes and the remaining 6 villages with minor level of stakes in the forests covered under the Park. Local people from Lawachara, Magurchara, Dolubari and Birainpur are involved mainly in fuelwood collection, whereas people from Bagmara, Radhanagar, Rashtila, Baligaon, Verachara and Chatakchara are involved in illicit felling. There are 4 Tea Estates bordering the Park.

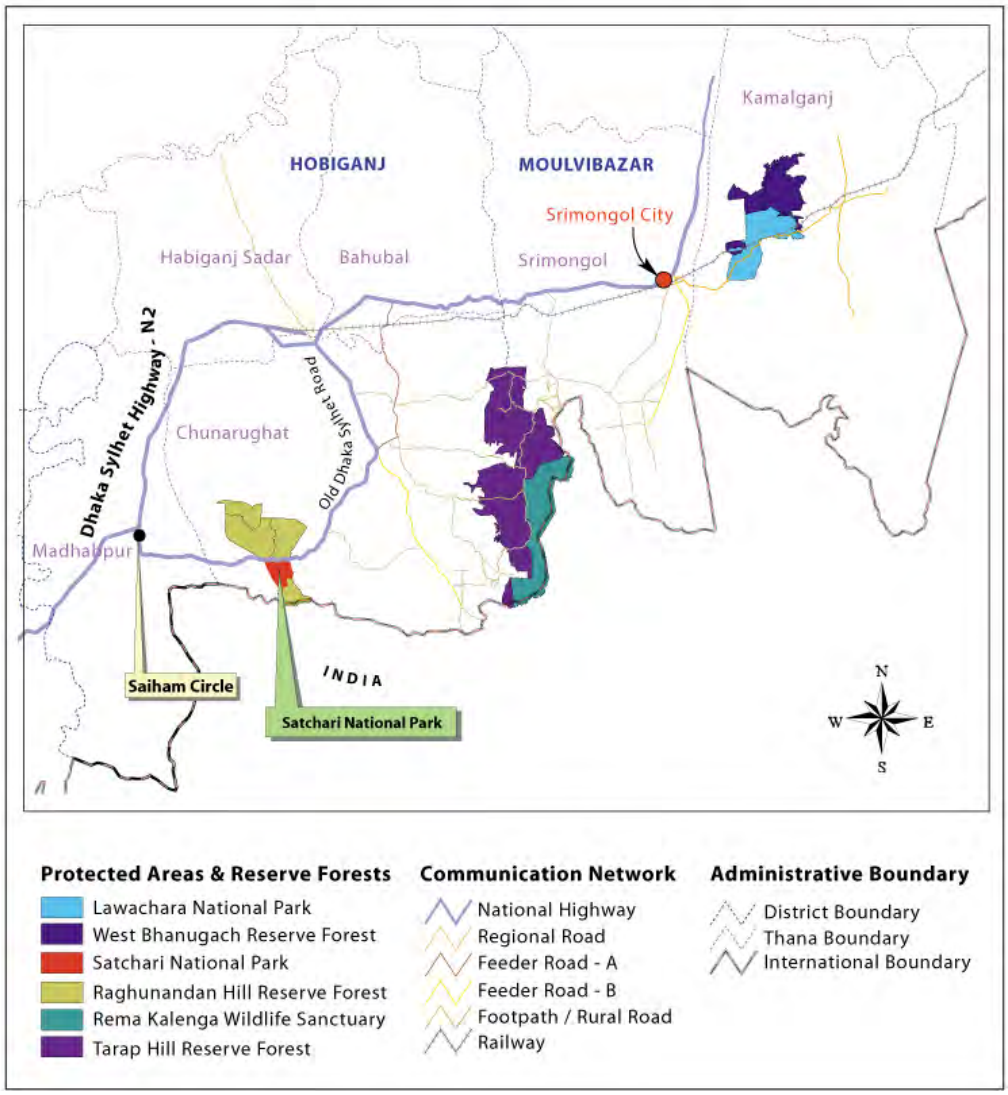
Threats to the PA: The major threat is illicit timber extraction. Fuelwood collection by the inside and outside villagers is another pressure exerted on the Park.

2.2 Satchari National Park

Location: The park is located at Chunaughat Upazilla (or Thana) under Hobiganj District. It is nearly 130 km nrth-east of Dhaka and approximately 60 km south-west of Srimongol City on the old Dhaka-Sylhet highway.

Area & History: This is a small patch (242 ha) of intact mixed-evergreen forest surrounded by Raghunandan Hills Reserved forest on north and south, and by tea estates on east and west. The National Park was established in 2005.

Land use/cover within the PA: The Park comprises of 120ha natural forest, 103.21 ha of short rotation plantation of Eucalyptus, Acacia, and Agar, raised during 1988. The rest vegetation is Teak plantation. The natural forest is dominated by 'chapalish' (*Artocarpus chaplasha*), 'civit' (*Swintonia floribunda*), 'shimul' (*Bombax insignis*), fig (*Ficus* spp.) and bamboo (*Bambusa* spp. and *Melocanna* spp.).



Map 2: Location of three northern PAs

Wildlife resources: Wildlife diversity includes 197 species, of which 149 birds, 24 species of mammals, 18 reptiles and 6 amphibians. Notable wildlife is the Asiatic Black Bear (*Ursus thibetanus*), Hoolock Gibbon (*Hylobates hoolock*), Pig-tailed Macaque and Barking Deer (*Muntiacus muntjak*).

Surrounding Settlements: Only one Forest Village, Tiprapara inhibited by 24 households of Tripura tribe is located inside the Park. Except the Tiprapara Forest Village no other village is located in the immediate vicinity of the Park due mainly it being surrounded by Tea Estates on east and west side and the portions of Raghunandan Hill RF on north and south sides. Four villages, located on the eastern side of the Park, have minor to medium level stakes in the Park (NACOM 2004). However, people from 10 or so other villages located away (8-10 km) from the Park also dependent on Park resources.

Threats to the PA: The major threat is illicit timber extraction. Fuelwood collection is heavy by the inside and outside villagers. Other threats are sand harvesting, and hunting/trapping of animals.

2.3 Rema-Kalenga Wildlife Sanctuary

Location: The Wildlife Sanctuary is situtated in the Gazipur and Ranigoan Unions of Chunarughat Upazila under Habiganj District. It is approximately 130 km north-east of Dhaka, 80 km south-west of Sylhet.

Area & History: With an area of 1795 ha, the Wildlife Sanctuary was established in 1996. Previously it was Tarap Hill Reserve Forest.

Land use/cover within the PA: The Park consists of Natural forest of 1404.90 ha, scattered trees 84.90 ha, Teak plantation of 97.90 ha, Agriculture/encroachment 206.50 ha, others 0.80 ha. This natural forest is mainly composed of evergreen trees mixed with some deciduous trees. The forest is dominated by 'chapalish' (*Artocarpus chaplasha*), 'civit' (*Swintonia floribunda*), 'shimul' (*Bombax insignis*), 'jam' (*Syzygium* spp.), fig (*Ficus* spp.), 'hargaza' (*Dillenia pentagyna*) and bamboo (*Bambusa* spp. and *Melocanna* spp.).

Wildlife resources: Past surveys show presence of species includes 37 mammals, 167 birds, 638 plants, 18 reptiles, 7 amphibians. Rema-Kalenga is the forest where the Malayan Giant Squirrel (*Ratufa bicolor*) is seen very often. Other important wildlife of the area is Leopard (*Panthera pardus*), Phayre's Langur (*Trachypithecus phayrei*) and Masked Civet (*Paguma larvata*).

Surrounding Settlements: Based on a RRA/PRA study conducted by NACOM during May-July 2004, a total of 22 villages (8 of them are tribal villages) have been identified having stakes of different levels in the WS. Of these, Debrabari Forest Village is located inside the WS, 9 villages are on the periphery of WS, and 12 villages are located outside of the WS. There is only one Tea Estate (Rema) bordering the WS.

Threats to the PA: The major threat is illicit timber extraction, fuelwood collection by the inside and outside villagers is another pressure exerted on the Park. Hunting also occurs. Conversion of forest into agriculture is another threat.

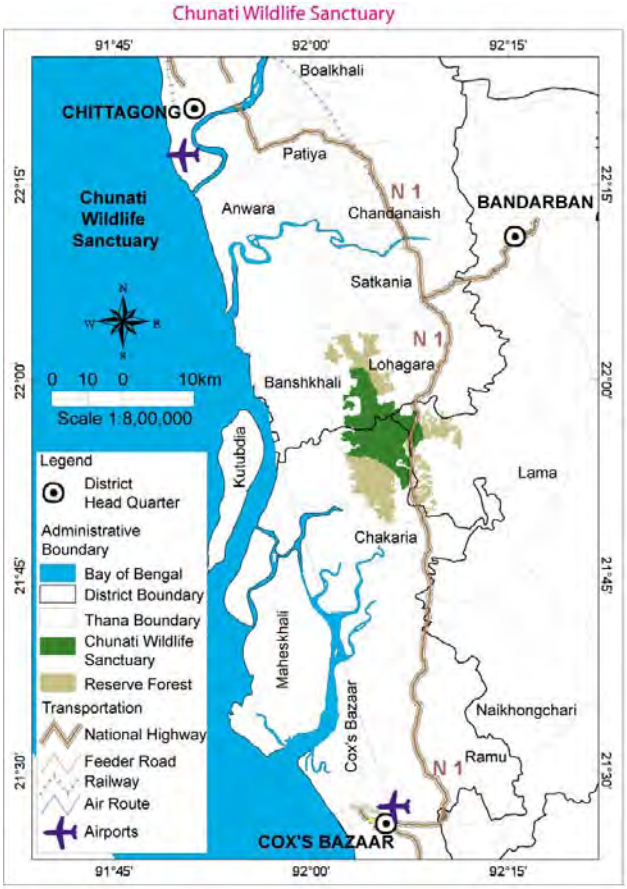
2.4 Chunati Wildlife Sanctuary

Location: The WS is located about 70 km south of Chittagong city on the Cox's Bazaar highway. Administratively the WS falls under Lohagora & Banskhali Upazillas of Chittagong District and Chakaria Upzilla of Cox's Bazaar District.

Area & History: The Sanctuary covers an area of 7764 ha. It was established in 1986. It was known as Chunati Reserved Forest. The Sanctuary was covered by dense forest of Garjan and other associated species which is now almost cleared out by illegal felling. Its administration and management has recently been transferred from Chittagong (South) Forest Division to the newly created Chittagong Wildlife Management and Nature Conservation Division.

Land use/cover within the PA: Today the hills are covered mainly by a number of species of dwarf bamboo (*Melocanna* spp., *Bambusa* spp. and *Teinostachyum* spp.), reeds (*Phragmites* spp., *Saccharum* spp., etc.), wild banana (*Musa* spp.) and many other dwarf and scrubby vegetation. Encroached land covers to about 1197 ha where agriculture is done.

Wildlife resources: Surveys done during 1980s showed that the Sanctuary inhabited by 19 mammals species, 53 birds, 4 amphibians, 7 reptiles and 107 types of plants. The most important wildlife of the area is the Asian Elephant (*Elephas maximus*), but there are Wild Boar (*Sus scrofa*), Rhesus Macaque (*Macaca mulatta*) and some other wildlife still exist today.



Map 3: Chuanti Wildlife Sanctuary

Surrounding Settlements: There are 70 Paras in 15 villages around the Sanctuary. However, only 42 Paras of Chunati Range have been studied for assessing stakes in the forests of the Sanctuary (NACOM, 2004). Of the 42 identified villages/paras, 24 are located within the Sanctuary, 13 are located near the boundary whereas 5 are located within 5 km from the boundary.

Threats to the PA: The major threat is fire to produce sungrass or collect dry materials to be used as fuelwood. This has greatly impeded natural regeneration. Encroachment is next big threat. Other major threat is brick fields. These heavily depend on fuelwood as a source of fuel as opposed to coal. Elephants are threatened by habitat loss and human interference and conflict exists between elephant and human.

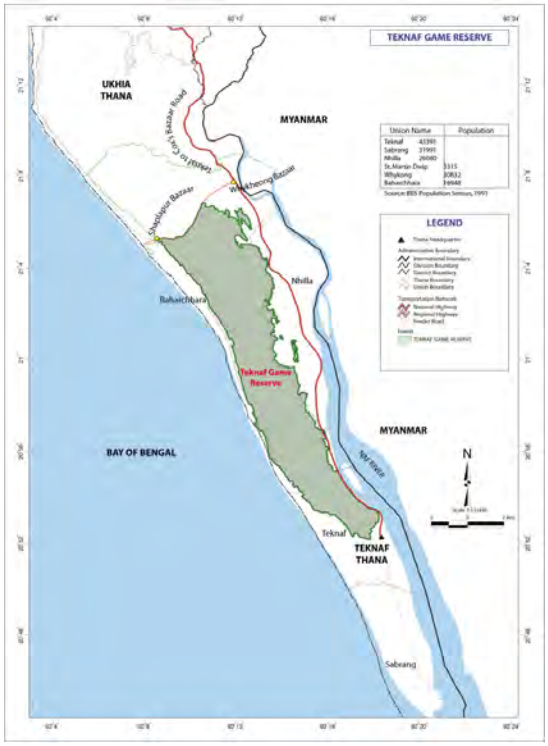
2.5 Teknaf Game Reserve

Location: The GR is situated in Teknaf Upazilla under Cox's Bazaar District. The GR is accessible by Cox's Bazaar – Teknaf road on national highway and the northern tip of the GR is about 48 km south of Cox's Bazaar.

Area & History: With an area of 11,615 ha, it is the only designated Game Reserve under the Wildlife Act of 1974. It was established in 1983 to preserve habitat for a large diversity of wildlife particularly the Asian Elephant.

Land use/cover within the PA: The GR still has some luxuriant patches of mixed-evergreen forests (around 1420 ha), with tall 'civit' (*Swintonia floribunda*), 'chapalish' (*Artocarpus chaplasha*), 'garjan' (*Dipterocarpus* spp.), 'shimul' (*Bombax insignis*), 'uriam' (i.e. wild mango, *Mangifera longipes*), fig (*Ficus* spp.) and many other trees, including 'ashok' (*Saraca indica*). Other are scattered forest about 3418 ha, plantation of some 3177 ha, bush is about 1266 ha, mangrove 29 ha, water bodies 331 ha and encroached area is about 1799 ha.

Wildlife resources: Among the wildlife, Asian Elephant (*Elephas maximus*) is the most important, but there are Wild Boar (*Sus scrofa*), Clouded Leopard (*Neofelis nebulosa*), Hog-badger (*Arctonyx collaris*) and many other wildlife.



Map 4: Location of Teknaf Game Reserve

Surrounding Settlements: Based on a RRA/PRA study conducted by NACOM during May-July 2004, a total of 115 settlements locally called *paras* or villages have been identified having stakes of different levels in the GR. A total of 53 settlements are located inside the GR boundaries, whereas the remainder 62 paras are situated adjacent or outside the GR. Nearly two-third of total paras (the villages inside and on the periphery of the GR) depends heavily on GR for meeting their needs for fuelwood, timber, bamboo and other NTFPs, vegetables, fruits, fodder and sungrass. The remaining one-third paras (lying mainly outside the GR) have minor stakes, being associated with fuelwood collection. There are a number of tribal settlements.

Threats to the PA: The major threat is illegal felling of trees, followed by fuelwood collection either by the villagers or the brickfields. The Rohingya refugees from Mynmar arrived during 1991 and 1992 also resulted in pressure on forest resources like poles, bamboos and fuelwood from the nearby GR to meet their shelter and cooking needs.

3 Survey Design and Methodology

To profile the socio-economic conditions surrounding the five PAs, a total of 65 representative villages were selected. Among these, 15 and 20 villages were from Chunati Wildlife Sanctuary and Teknaf Game Reserve respectively, and 10 villages each from the rest of the PAs. The villages were selected in such a way that they were spread all around the PAs. The villages fall within a certain distance from the PAs, generally 5 km (8 km for Satchari and 2km for Teknaf), called zone of influence or buffer zone as these villages have varied influence on the PAs (NACOM 2004). In Nishorgo Support Project's Protected Forest Areas (PFAs) the landscape includes the forest ecosystem and relevant social/institutional system surrounding the PAFs that interacts and influences each other. The landscape is taken as a planning and development unit for an integrated management of the PAs in order to address the needs of households and co-management activities in the context of a broader economic, natural resource and socio-institutional environment of PAs. It provides a framework to manage the PA for multiple uses by addressing interactions between local economy, stakeholders and natural resource base of the PAs.

Samples are small in size, 10 households per village, to balance sampling and non-sampling errors. They are selected to represent the population of the PA as a whole, as well as that of certain subgroups of the population. Two-stage sampling reduces the cost and effort of sampling and of field work compared with single-stage sampling, but at the cost of increasing the sampling error. This is a result of the so-called "cluster effect."

To reliably depict the overall situation of the population, the selected sample should contain a sufficient number of households, scattered as much as possible throughout the PA. However, to reduce the costs, simplify management and control the quality of the interviews, the sample size and its geographical dispersal must be kept within reasonable limits. The population of the PA may contain certain subgrous, such as urban and rural areas or other aggregates, that deserve to be studied separately. The sample of households should adequately represent each of these subgroups as well as the PA as a whole. Each household in the PA should be given a chance to be selected in the sample. To simplify survey design and analysis, this chance should be similar for all households, or at least for all households within the same large domain of interest.

One of the overriding objectives of the survey was to create very high quality data sets. Thus, great weight has been given to minimizing non-sampling error. Because the different tools of data collection questionnaire is complex and fieldwork requires extensive supervision, the consensus has been that non-sampling error could only be kept to the desired standard by using considerable number of samples, 10 households per village. As a result, the consultant decided to accept higher sampling error in exchange for lower non-sampling error. Moreover, in designing the survey it was judged of much greater analytical interest to have a large amount of information about a relatively small number of households rather than a little information about a larger sample. Given the multiple purposes of this survey, it is hard to select one single variable for the purpose of minimizing sampling error.

A set of criteria guided the selection of villages in each PA. A two-stage sampling method was used randomly to select the villages and households for survey at household level. With this, it is expected that varied yet comprehensive information about socio-economic situation in the PAs will be generated through participatory and formal data collection methodologies.

Households and villages, who are reflective of the implications of NSP interventions, are considered as the unit of analysis.

3.1 Socio-economic Survey

The one-time socio-economic survey consists of data gathering from the household, village, community, enterprises and the national level. The Household Survey Questionnaire, Village Profiling Guide, Topical Outline of Focus Group Discussion, Enterprise Data Collection Guide and the National Soio-Economic Situationer are the five types of data collection instruments designed for each level, respectively. Below are brief description of the instruments and the general guidelines in administering them.

3.1.1 Household Survey Questionnaire

The household survey questionnaire is composed of the *i)* household profile; *ii)* migration pattern; *iii)* housing and facilities; *iv)* household health status; *v)* land related information; *vi)* household income; and *vii)* fuel for cooking. Sources of information required in this instrument were the male or female head of the household or the eldest sibling. In the process, any or all of them sat in the interview. Ten (10) households represented each selected village for the survey. Sample households were selected based on systematic random sampling details of which procedure given below. Guidelines were provided to data collectors on the sampling technique. Data collection was done by Field Organizers (FOs) of partner NGOs (CODEC and RDRS) as enumerators with the supervision of the Monitoring Team members (NACOM).

3.1.2 Village Profiling Guide

The village profiling guide contains a snap shot of about the village's *i)* total population; *ii)* health facilities, and; *iii)* social institutions. Data was collected from the same villages where household survey was conducted. Information required in this guide was obtained from both primary and secondary sources through participatory approaches. Sources may include key informant interviews, focus group discussion, and ocular inspection and line agencies among others. Village profiling processes was led by the two monitoring team members.

3.1.3 Topical Outline of Focus Group Discussion Guide

Topical Outline of Focus Group Discussion Guide contains about the landscape's *i)* resource extraction issues; *ii)* resource flow; *iii)* conservation issues, and; *iv)* population characteristics. The information required in this guide was obtained from both primary and secondary sources through participatory Focus Group Discussion (FGD) approach. The priority issue that applies to the particular Focus Group was conducted and checklist was used as a guide to the interview. In each focus group number of participants was not more than 30 (thirty) and there was one (1) facilitator and one (1) co-facilitator. This process was led by Monitoring team members and Site Facilitator of the respective site/PAs.

3.1.4 Data Collection at Enterprise Level

Enterprise level data collection guide contains data on *i)* saw mills; *ii)* brick fields; *iii)* banking and micro finance; *iv)* NGO intervention, and; *v)* alternative energy sources. This data was obtained from the enterprise specific to the sector. Sources include group discussion and key informant interview. Data was collected by Monitoring team members.

3.1.5 National Socio-Economic Situationer

The National Soio-Economic Situationer outlines the basic information for a general assessment of national socio-economic status. Secondary data was collected from BBS, HEIS and SVRS. The secondary data collected from the above mentioned sources is to give a comparative view of the primary data collected at the field level.

3.1.6 Snap shot of fuel wood extraction from PA

The fuel wood survey questionnaire contains information on amount/volume of fuel wood extracted from the PAs by the collectors, fuel wood use either for self consumption and/or sale and fuel wood sale value (as per local market price). Data was collected for at least 3 days at some entry and exit points of the PA. Do note that, FGD and HH Questionnaire also attempted to collect fuelwood extraction, but as surrounding population is not aware of boundary of Reserved Forest and Protected areas, the actual amount extracted from PAs is less likely to be reflected. Having said that, a three-day survey was not going to serve the purpose and more over, not all entry and exit points were surveyed. But given the limited time condition, such survey was thought to give a snap shot of the situation.

3.2 Two-stage Sampling

In order to address the survey questions at the household level, a two-stage sampling method was used randomly to select survey households.

3.2.1 First Stage - Selection of villages:

In the first stage, ten (10) villages were selected from each PAs. However, as the population at Teknaf and Chunati are much more widely dispersed than in the north, more villages were selected from these two southern PAs to make data more representative. A total of 15 and 20 villages were selected from Chunati Wildlife Sanctuary and Teknaf Game Reserve, respectively. Thus the total number of sample villages increased to 65.

The selection aimed at reducing logistical costs while preserving as much variability in the major determinants of socio-economic development. A complete enumeration of villages, number of households and total population of those villages for five PAs was undertaken. In the selection of these villages, a number of considerations were made.

First, the selected villages of each PA represented one of the quintiles of population density by village. Second, each village is located within 5 km from the boundary of the PA. These two criteria were then followed by two additional, but subordinate criteria, (1) location (inside, outside, or adjacent to the PA) and (2) aspect (east, west, north and south of PA). PA wise list of selected villages is given below:

Table 1: Surveyed Villages, Household & Population in Teknaf Game Reserve

Sl. No.	Thana	Union	Village	Total Nos. of Household	Total Population
1	Teknaf	Baharchara	Halbania	205	1200
2	Teknaf	Baharchara	Jahajpura	220	1520
3	Teknaf	Baharchara	Bordail	200	1000
4	Teknaf	Baharchara	Puran Para	140	850
5	Teknaf	Baharchara	Morich Bunia	140	810
6	Teknaf	Hnilla	Muchani Para	600	4000
7	Teknaf	Hnilla	Noa Para	140	1100
8	Teknaf	Teknaf	Baraitali	110	800
9	Teknaf	Teknaf	Kerantali	130	1000
10	Teknaf	Teknaf	Lengur Bill	500	4000
11	Teknaf	Teknaf	Natun Para	600	5000
12	Teknaf	Whykong	Amtoli	115	700
13	Teknaf	Whykong	Daingakara	130	850
14	Teknaf	Whykong	Harikhola	120	750
15	Teknaf	Whykong	Kanger Para	620	1979
16	Teknaf	Whykong	Keruntali	190	564
17	Teknaf	Whykong	Lambabil	446	1468
18	Teknaf	Whykong	Laturikhola	100	303
19	Teknaf	Whykong	Raikang	220	640
20	Teknaf	Whykong	Whykong	407	1266
Source: Village Profiling Guide			Total	5333	19800

Table 2: Surveyed Villages, Household & Population in Chunati WS

Sl. No.	Thana	Union	Village	Total Nos. of Household	Total Population
1	Banskhali	Puichari	Jangal Puichari	2000	13000
2	Banskhali	Puichari	Jangal Napura	1000	7000
3	Banskhali	Chambol	Jangal Chambol	70	500
4	Banskhali	Shilkup	Shilkup Barua Para	400	2000
5	Banskhali	Shilkup	Shilkup Darsha Gram	45	250
6	Banskhali	Jaldi	Jaldi Villager Para	500	3000
7	Banskhali	Puichari	Purba Napura	1000	6000
8	Chakaria	Harbang	Goyal Mara	300	2400
9	Chakaria	Harbang	Brindabankhil	500	3000
10	Chakaria	Harbang	Villager Para	1500	12000
11	Chakaria	Harbang	Gainakata	85	600
12	Lohagora	Chunati	Banpukur	500	3500
13	Lohagora	Chunati	Hindupara	70	500
14	Lohagora	Chunati	Mawlana Para	120	1000
15	Lohagora	Chunati	Barua Para	70	500
Source: Village Profiling Guide			Total	8160	55250

Table 3: Surveyed Villages, Household & Population in Lawachara NP

Sl. No.	Thana	Union	Village	Total Nos. of Household	Total Population
1	Srimongol	Srimongol	Bisha Moni	250	1600
2	Srimongol	Srimongol	Daluchara/bari	130	780
3	Srimongol	Srimongol	Radhanagar	300	1800
4	Kamalganj	Kamalganj	Baghmara	283	1700
5	Kamalganj	Kamalganj	Bali Gaon	390	2200
6	Kamalganj	Kamalganj	Bongaon	90	600
7	Kamalganj	Kamalganj	Sharaibari	170	1350
8	Kamalganj	Kamalganj	Varachara	180	1100
9	Kamalganj	Kamalganj	Ballarpar	90	550
10	Kamalganj	Kamalganj	Longurpar	150	900
Source: Village Profiling Guide			Total	2033	12580

Table 4: Surveyed Villages, Household & Population in Satchuri NP

Sl. No.	Thana	Union	Village	Total Nos. of Household	Total Population
1	Chunarghat	Sankhola	Tiprapara Forest Village	23	115
2	Chunarghat	Deorgach	Deorgach	381	2500
3	Chunarghat	Paikpara	Gazipur	220	1335
4	Chunarghat	Paikpara	Holholia	290	1760
5	Chunarghat	Deorgach	Nayani Bongaon	18	105
6	Chunarghat	Deorgach	Chanpur Bosti	140	900
7	Madhabpur	Shahajahanpur	Goachnagar	197	1450
8	Madhabpur	Shahajahanpur	Teliapara	145	950
9	Madhabpur	Shahajahanpur	Shahajahanpur	238	1500
10	Madhabpur	Shahajahanpur	Baghbari	104	700
Source: Village Profiling Guide			Total	1756	11315

Table 5: Surveyed Villages, Household & Population in Rema Kalenga WS

Sl. No.	Thana	Union	Village	Total Nos. of Household	Total Population
1	Chunarghat	Gazipur	Alinagar	113	272
2	Chunarghat	Gazipur	Basullah	304	2300
3	Chunarghat	Gazipur	Kabilaspur	200	1500
4	Chunarghat	Mirashi	Nishchantapur	300	2000
5	Chunarghat	Mirashi	Himalia	103	677
6	Chunarghat	Mirashi	Laturgoan	203	1500
7	Chunarghat	Ranigoan	Chonbari	33	221
8	Chunarghat	Ranigoan	Debrabari	19	104
9	Chunarghat	Ranigoan	Kalenga FV	135	832
10	Chunarghat	Gazipur	Krishananagar	180	1000
Source: Village Profiling Guide			Total	1590	10406

3.2.2 Second Stage - Selection of households:

In the second stage, 650 households were randomly drawn for the household survey, based on the preceding purposeful selection of 65 villages. Ten households (HHs) were identified for sampling in each village. These 10 HHs were selected following the method mentioned below:

- a complete list of household heads was done and numbered for each village
- systematic random sampling method was applied to select 10 HHs.
- the interval between each HH unit was enumerated using the following simple formula:

$$N/n = k$$

Where:

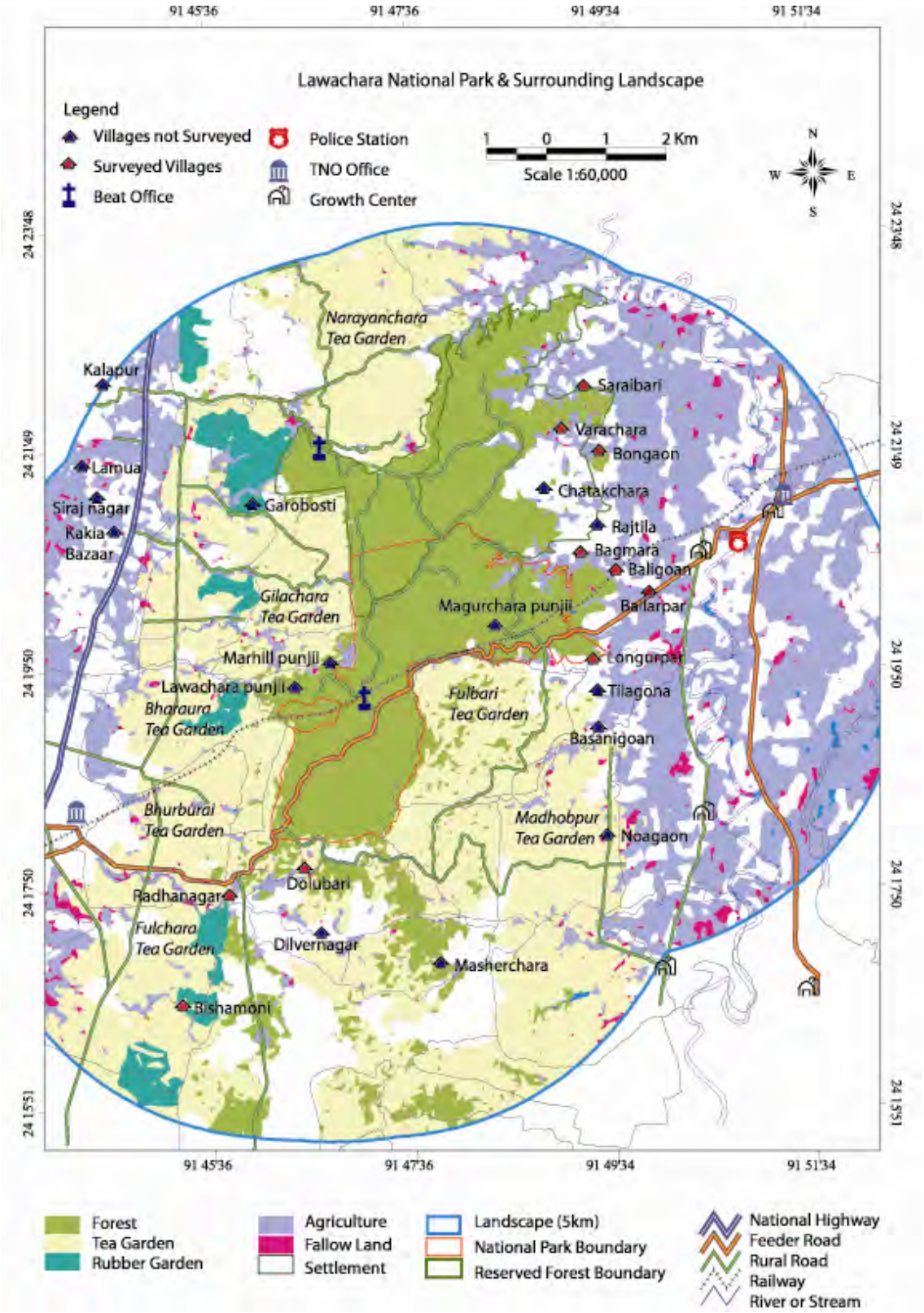
N = total household

n = desired number of sample (10 HHs)

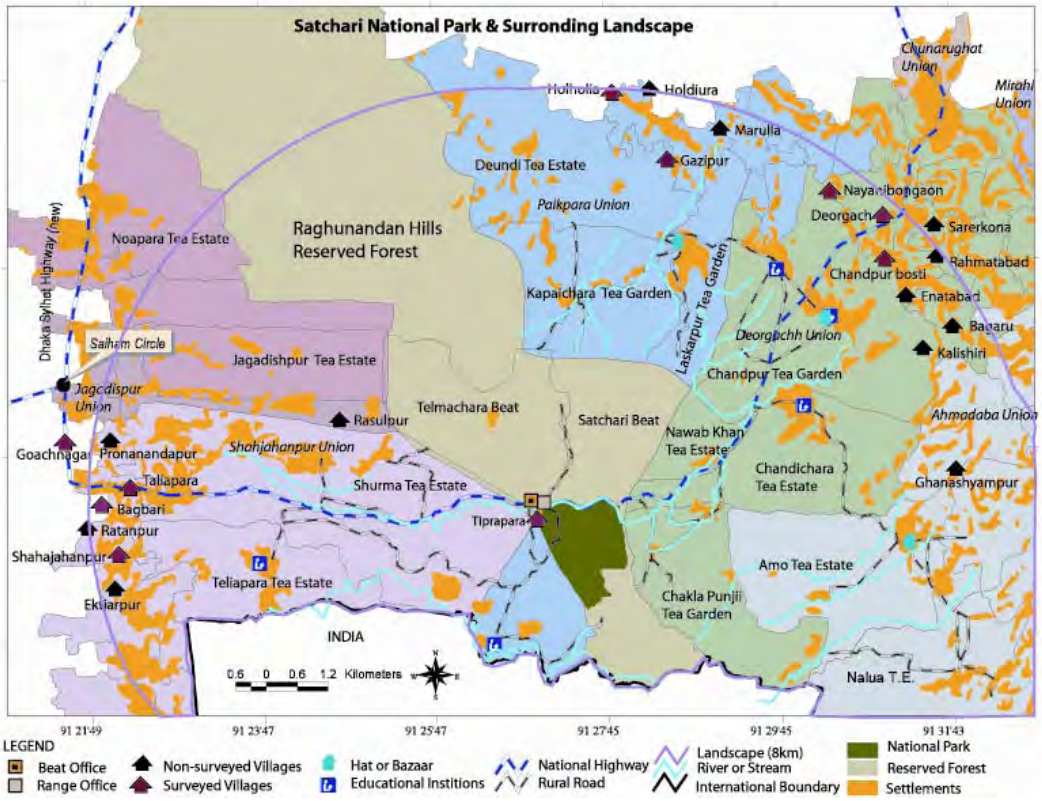
k = interval

3.2.3 Proposed Questionnaires and other Survey Instruments

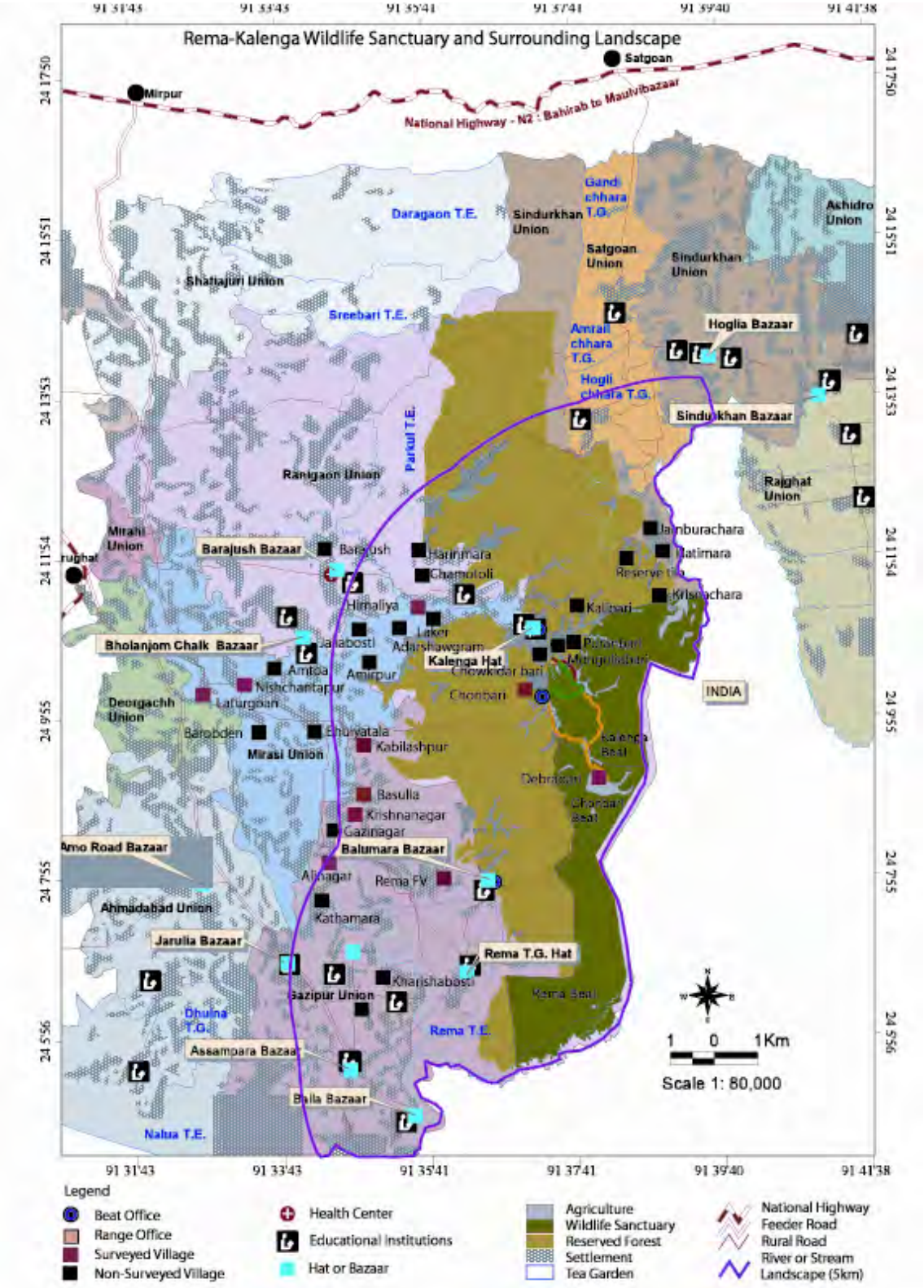
Household survey questionnaire (Annex II), Village Profiling Guide (Annex III), Topical Outline of Focus Group Discussion Guide (Annex IV), Data Collection at Enterprise Level (Annex V) and fuel wood survey questionnaire (Annex VI) are enclosed herewith.



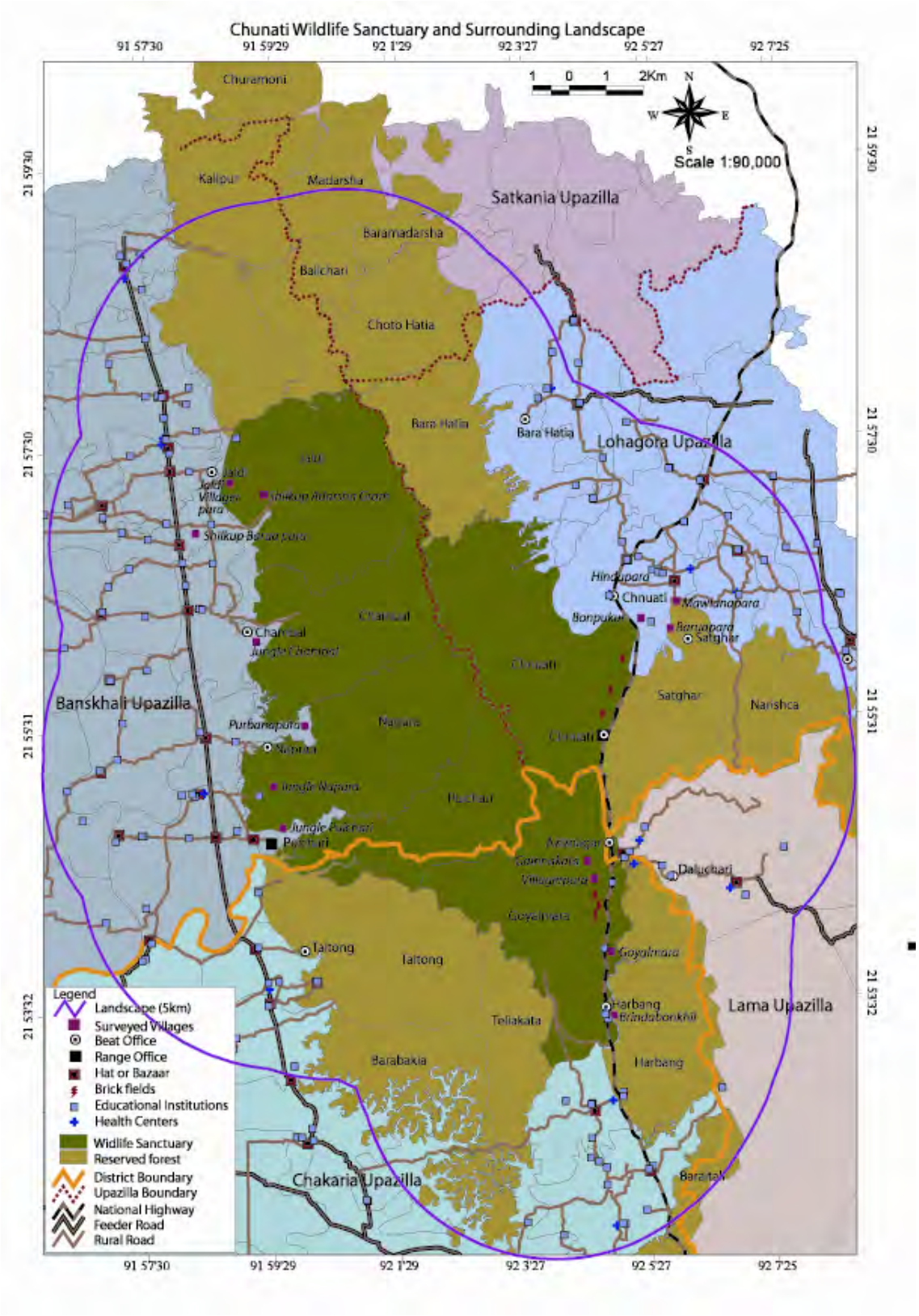
Map 5: Lawachara National Park & Surrounding Landscape



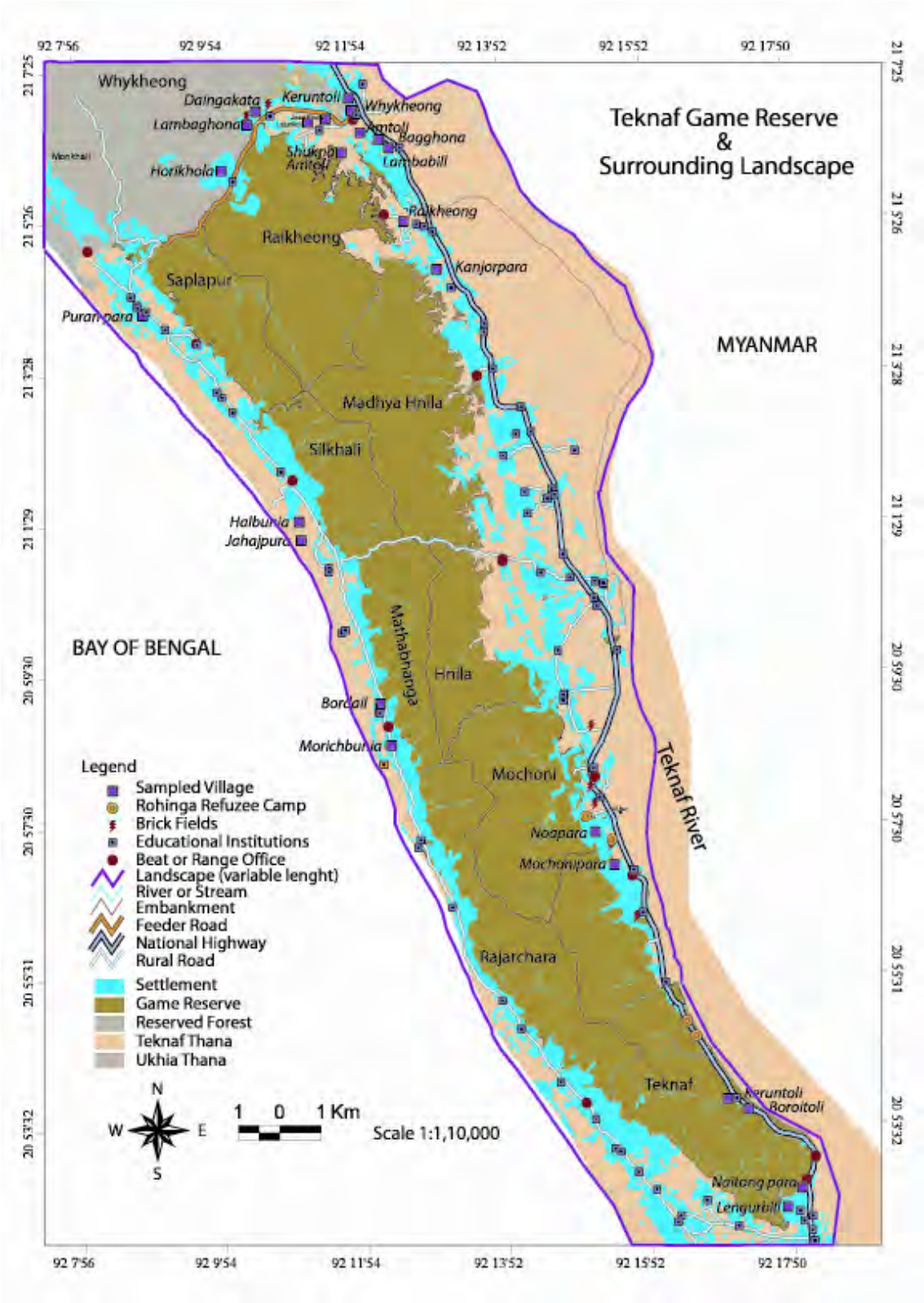
Map 6: Satchari National Park & Surrounding Landscape



Map 7: Rema-Kalenga Wildlife Sanctuary & Surrounding Landscape



Map 8: Chunati Wildlife Sanctuary & Surrounding Landscape
Note: only surveyed villages are shown due to clarity of the map



Map 9: Teknaf Game Reserve & Surrounding Landscape

Note: only surveyed villages are shown due to clarity of the map

4 General demographic characteristics

4.1 Population

The socio-economic survey was conducted in 650 households of 5 PAs covering a total of 3758 people. The overall ratio of men and women was almost same except in TGR (0.96) (Table 6; Source: Household Survey). The exception is the lower number of men, which probably reflects the migration strategy common to many households of Cox's Bazaar. Household size of the survey population is around 5-6. Most of the population aged 5-9 and 15-24 (Fig 1; Source: Household Survey). On an average, 10% and 15% of household members belonged to the zero to four and five to nine year old age categories, respectively. Twenty percent of household members were of the 15-24 age categories. The population profile in general coincides with that of the national data (SVRS 2002).

Table 6: Protected Area wise sample population, sex ratio and size of household

	PA					Population ('000'), Sex Ratio (M/F) and Size of household [1]			
	TGR	CWS	LNP	SNP	RKWS				
	Cox's Bazaar	Chittagong	Moulvibazar	Habiganj	Habiganj	Chittagong	Cox's Bazaar	Moulvibazar	Habiganj
Male	598	495	290	284	268	3441	915	818	886
Female	620	456	255	254	238	3103	844	791	864
Sex ratio (M/F)	0.96	1.09	1.14	1.12	1.13	1.11	1.08	1.03	1.03
Size of household	6.9	6.2	5.5	5.4	5.1	5.3	6.0	5.5	5.4

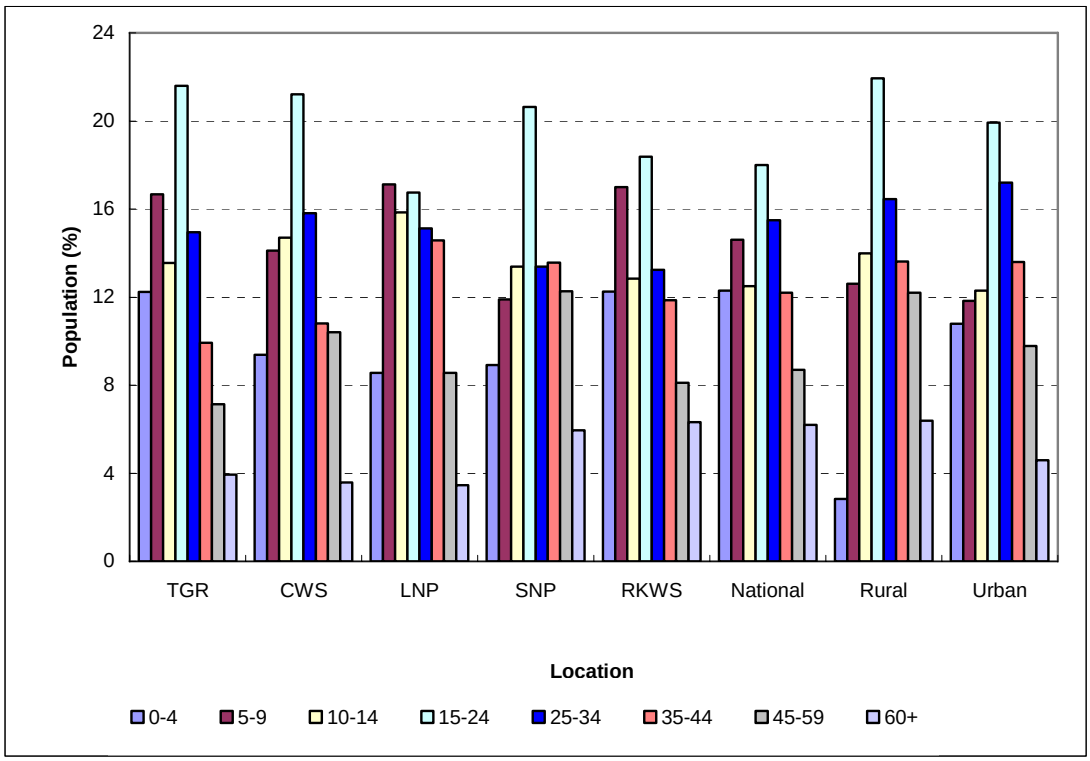


Figure 1: Percentage distribution of population by age group

4.2 Age-dependency ratio

The age-dependency ratio is the ratio of persons in the "dependent" ages (under 15 and over 64 years) to those in the "economically productive" ages (15-64 years) in a population. The age-dependency ratio is used as an indicator of the economic burden the productive portion of a population must carry—even though some persons defined as "dependent" are producers and some persons in the "productive" age range are economically dependent.

The formula for this ratio:

$$\frac{\text{\% of population under age 15 + \% of 65 and over}}{\text{\% of population ages 15-64}} \times 100$$

Fig 2 (Source: Household Survey) presents the age-dependency ratio (%) enumerated for five PAs and compared with national data (HIES 2000). It is evident from the graph that the age-dependency ratio is more than 75% in all PAs except SNP (60%) and similar to national and rural dependency ratios. The higher dependency ratio indicates the higher dependent-aged populations than economically productive aged population are living in the PA landscape. The trend analysis of HIES survey says the decrease of dependency ratio in urban area is much faster than the rural area from 1991 to 2000 (SVRS 2002; HIES 2000).

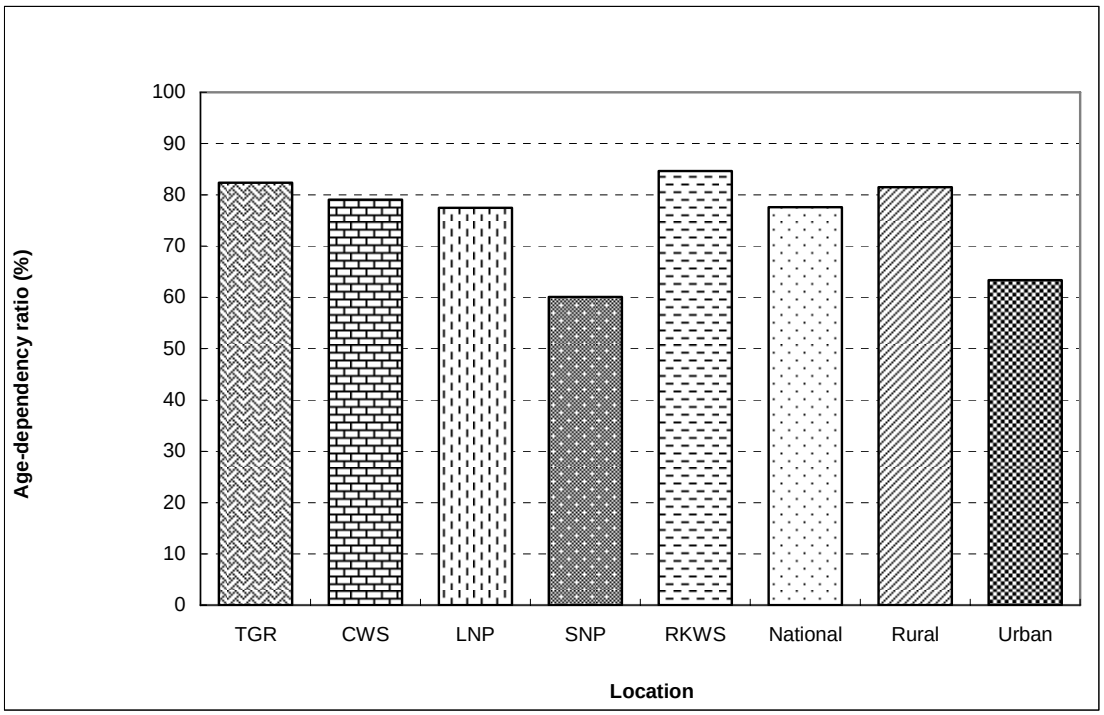


Figure 2: Age-dependency ratio (%) of population

4.3 Religion

Reader should keep in mind that this variable is highly village dependent and may not give the actual picture if not included in the sample. For example, three Christian villages inside the Lawachara National Park were not surveyed. So the classification based on religion in LNP is not accurate. Based on the sample survey, population classified by religion and locality (PA) and national data (Population Census 2001) is presented in Fig 3. As evident

from the graph that population of LNP, SNP and RKWS are of muslim and hindu religion and dominated with muslim (Source: Household Survey) which is close to national average (90%). CWS, LNP and RKWS also have higher than above average (13%, 26% and 33% respectively) of hindu. There are 6% and 8% Buddhist of the sample population in TGR and CWS respectively. The sample population represents 7% Christian in CWS.

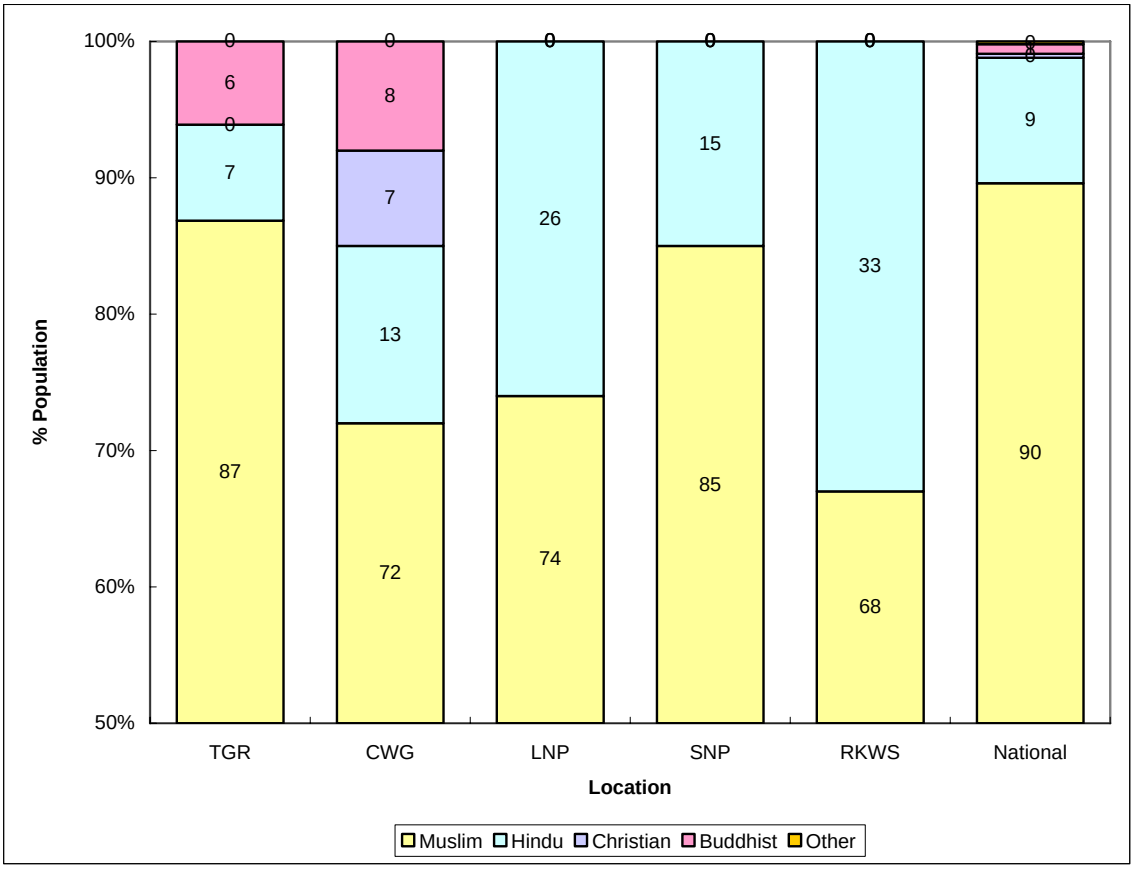


Figure 3: Percentage distribution of population by religion

4.4 Ethnicity and Migration

Protected Area wise percentage distribution of population by ethnic community (source: Household survey) and District wise corresponding data (Population Census 2001) is presented in Fig 4. Again readers should be cautious as data are village dependent. The data presented here are based on Household survey and FDG of the sampled villages. Nevertheless, Non-adibashi people are dominated in TGR, south CWS and SNP (Source: Household Survey). There are few adibashi / tribal in those PAs. This bulk of categorized population is also similar to national average. About 25%-32% tribal are found in LNP, north CWS and RKWS which more than national average. There is no rohinga (migrated from Mayanmar) within the sample population of CWS. However at TGR, by 1993 about 233,000 Rohingyas had been resettled in Myanmar and some 30,000 remained in Cox's Bazar, most of them in Teknaf (Bari and Dutta 2004).

Population classified by ethnic minority, tea estate residents and rohinga during current and 5-year back of PA has been shown in Table 7. It is evident from the table that there is no remarkable change (increase or decrease) of ethnic minority and a considerable change

(increase) in rohinga**.** There are no tea estate residents within the sample villages of the northern PA.

Percentage distribution of migrant and non-migrant population, duration of migration (years) are shown in Table 8. Most of the population of the PA landscape is non-migrants and percentage ranges from 65% (in CWS and LNP) to 90% (in SNP). Duration of migration ranges from 7 to 14 years. There is insignificant increase both recent and long term (> 10 years) migrants over the last 5 years across PA (Table 9).

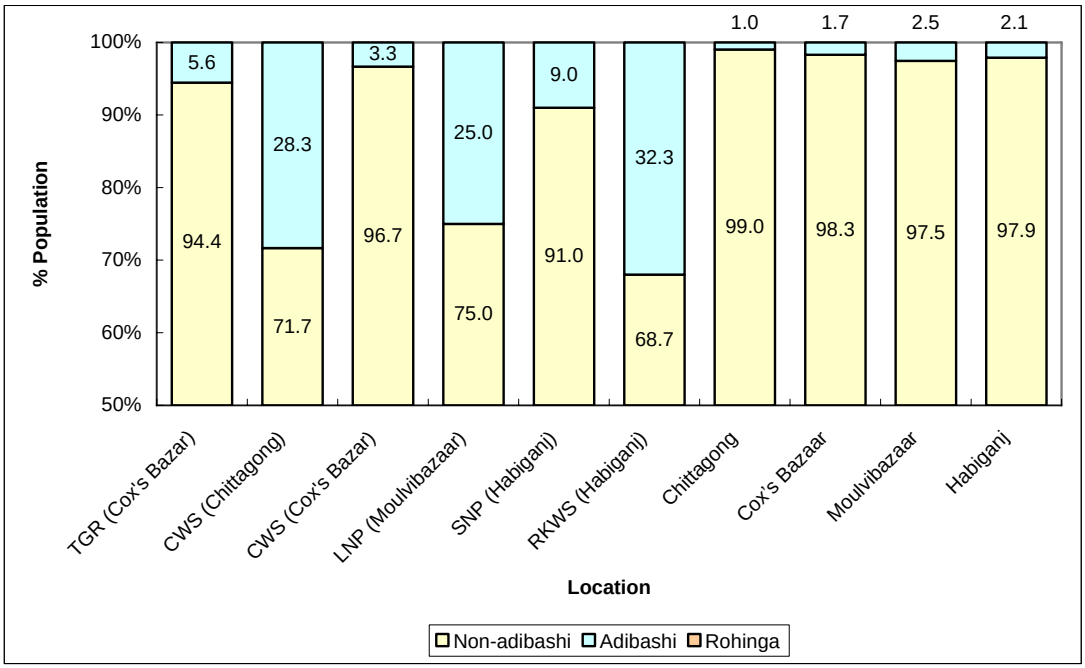


Figure 4: Percentage distribution of population by ethnicity

Table 7: Current (2006) and 5-year back (2000) population distribution (%) by ethnic minority, tea estate residents, and rohinga

Category	PA									
	TGR		CWS		LNP		SNP		RKWS	
	2006	2000	2006	2000	2006	2000	2006	2000	2006	2000
Ethnic minority	7	7	0	0	21	21	10	10	26	27
Tea Estate Residents	0	0	0	0	0	0	0	0	0	0
Rohinga	6	5	6	3	0	0	0	0	0	0

Source: Focus Group Discussion

Table 8: Population distribution (%) by migrants, non-migrants and duration of migrants

	PA				
	TGR	CWS	LNP	SNP	RKWS
Migrants	23	35	35	10	30
Non-migrants	77	65	65	90	70
Duration of migrants (years)	14	7	7	8	12

Source: Focus Group Discussion

Table 9: Current (2006) and 5-year back (2000) population distribution (%) by migration status (recent and long term)

Migration Status	PA									
	TGR		CWS		LNP		SNP		RKWS	
	2006	2000	2006	2000	2006	2000	2006	2000	2006	2000
Recent Migrants	0	0	2	0	5	4	5	2	22	16
Long term (> 10 years) migrants	0	0	2	1	22	21	35	25	30	22

Source: Focus Group Discussion

5 Education and Literacy

Fig 5 and 6 show the percentage distribution of male and female population of five PAs and national, rural and urban data (HIES 2000) by level of education. Primary school net enrolment ratio and literacy rates have been computed for age (5+), age (7+) and age (15+) by PA and national, rural and urban data (BBS 2004) by sex are shown in Fig 5, 6, 7 and 8 respectively (Source: Household Survey).

It is evident from Fig 5 and 6 that most population with little education (Class I-V) in all PAs. Both male and female population (%) of TGR is highest in illiterate group as 48% and 58% respectively. Average literacy for this level of education is 48% for male and 45% for female across PA. It is also depicted that this level of education for both male and female is higher than national, rural or urban population. In the PA landscape, illiterate population (28% for male and 37% for female) is lower than the national, rural or urban data. This may reveal that most of the population of the PA landscape is either under aged (<5 years) or children who have just started for going to school.

After the primary classes, a large percentage of boys and girls discontinue school. The stipends provided by the government for children's attendance do not necessarily help the always and usually poor households, who need their children's labour once they reach their teens. In addition to child labour, the distance from secondary school, and the marriage of girls were mentioned in the group discussions as reasons for children dropping out of school.

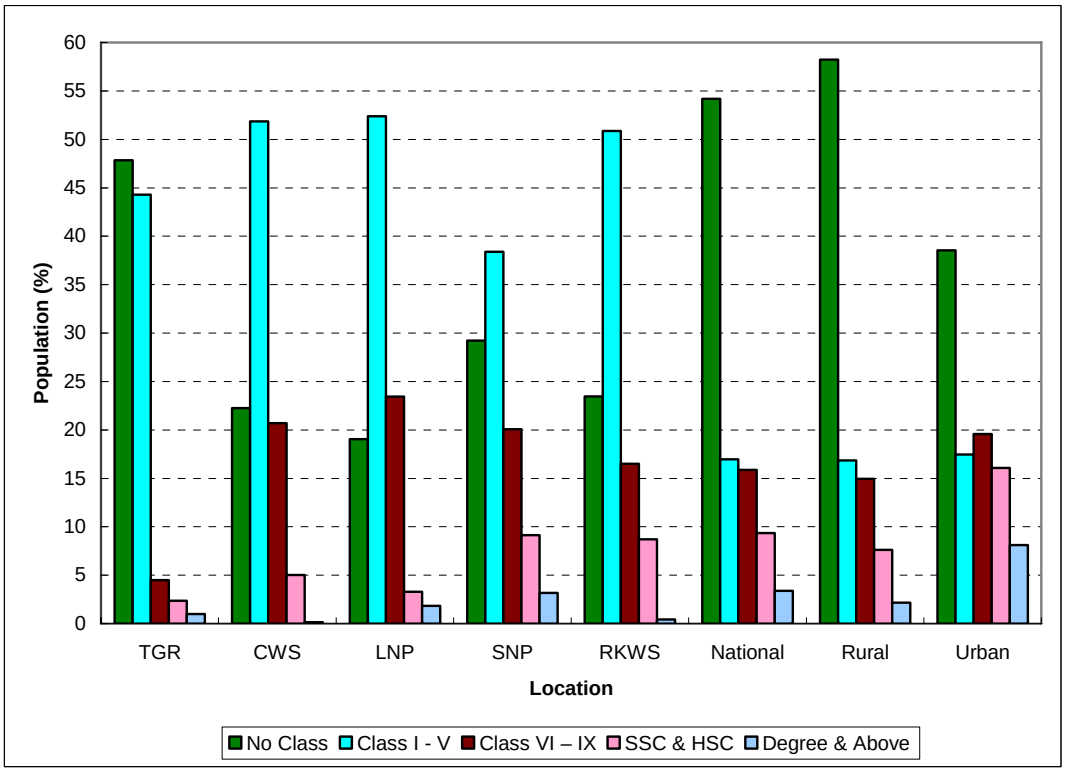


Figure 5: Distribution of Male population by level of education

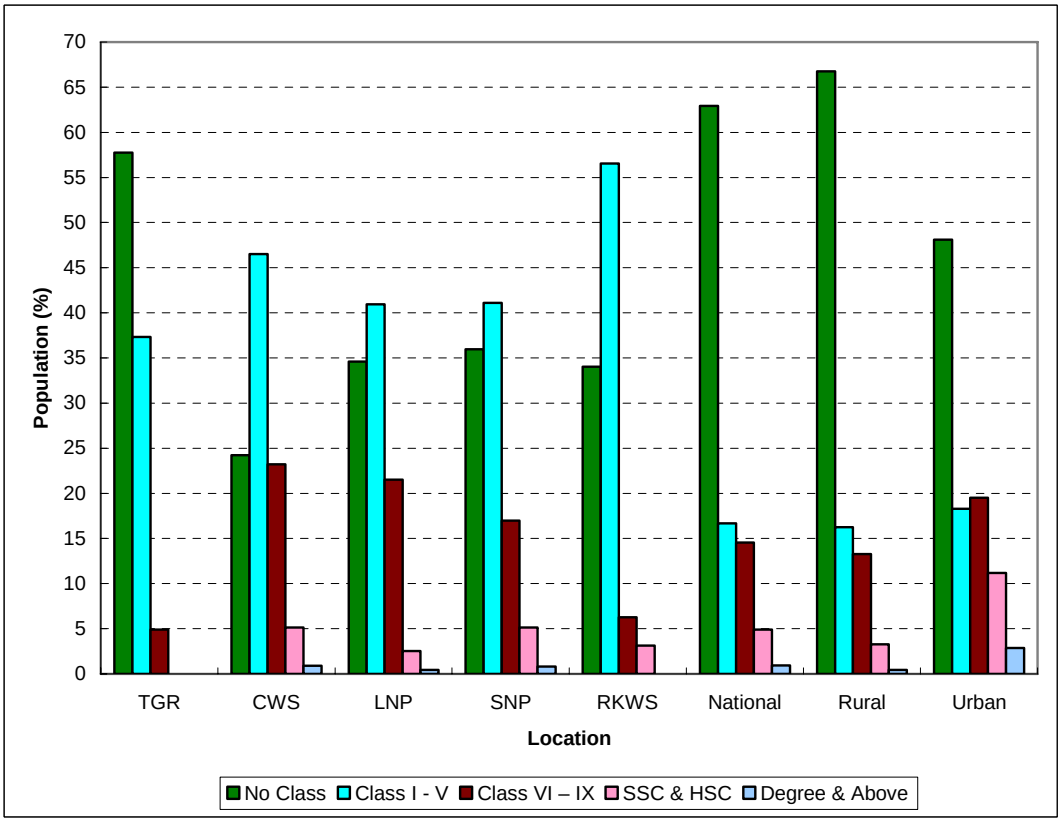


Figure 6: Distribution of female population by level of education

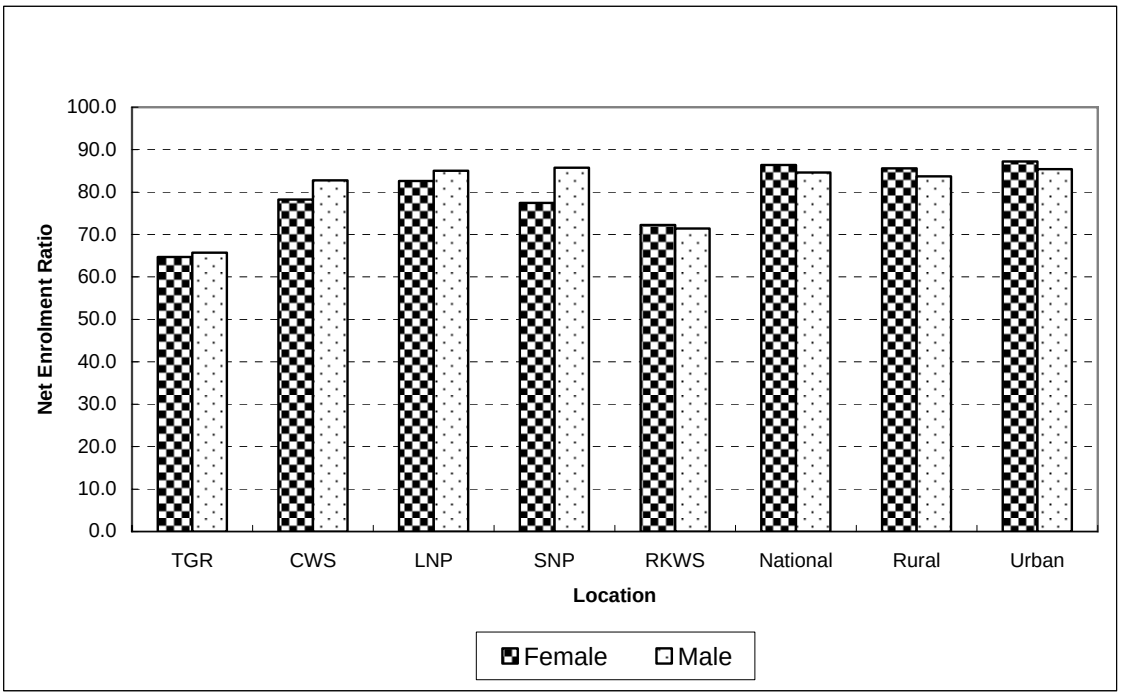


Figure 7: Primary school net enrollment ratio (6-10 years)

The primary school net enrolment ratio of enrolled students (Figure 7) belong to age group 6-10 years, and literacy rates for age 5+, 7+ and 15+ are more than average (Figure 8, 9, 10) in all PAs and almost similar and higher than the national data except TGR which is lower. Literacy rates for ages 5+, 7+ and 15+ of female population is worse than male population in all PAs.

In all the cases literacy rate of male is higher than female. The literacy rate in TGR is lower despite having more institutional facilities like schools, college or madrasha as compared to other PAs (Table 10).

Table 10: Nos. of educational institutes in different PA

	PA				
	TGR	CWS	LNP	SNP	RKWS
Primary school	63	96	3	5	25
High school	12	26	0	0	4
College	2	5	0	0	0
Madrassa	33	30	0	0	4

Source: NSP GIS Database 2006

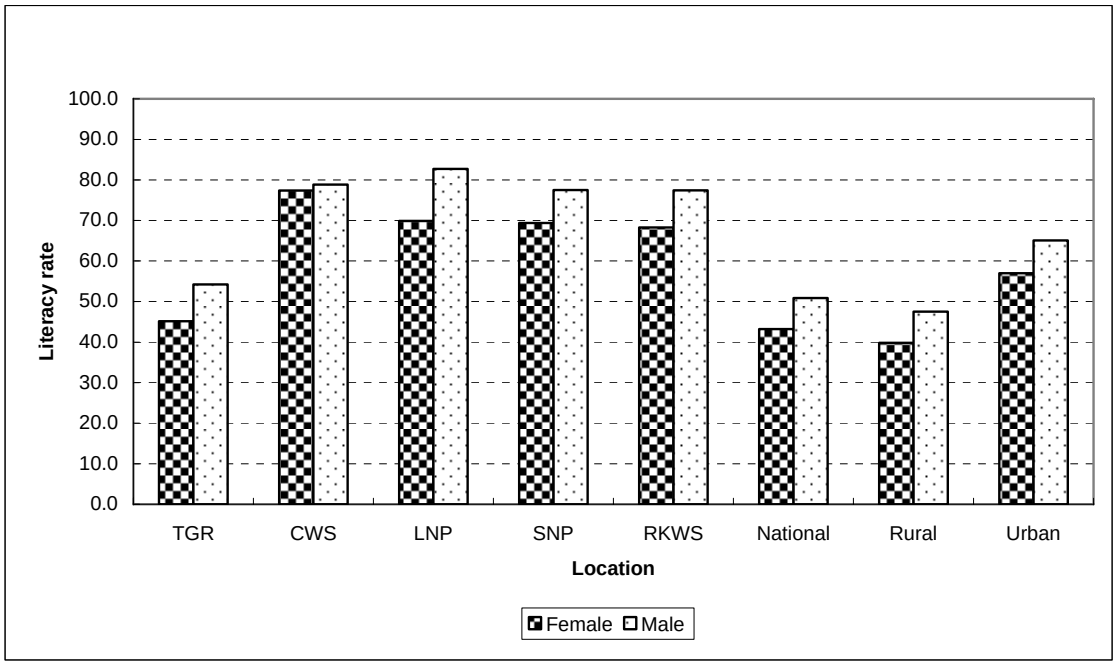


Figure 8: Literacy rate of population 5+

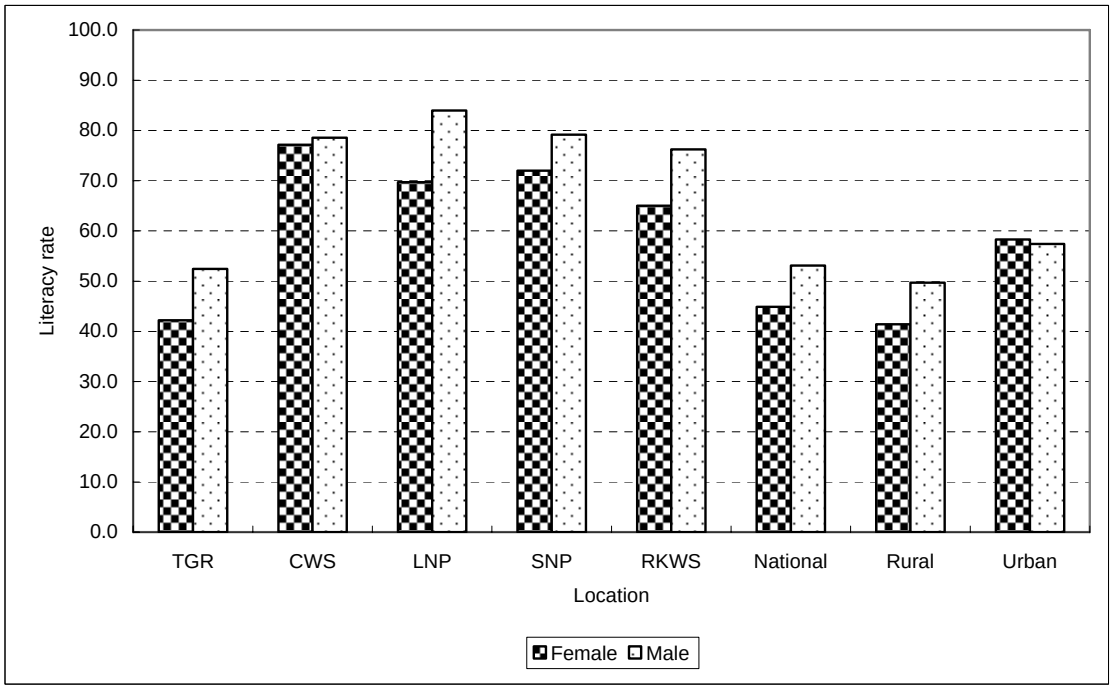


Figure 9: Literacy rate of population 7+

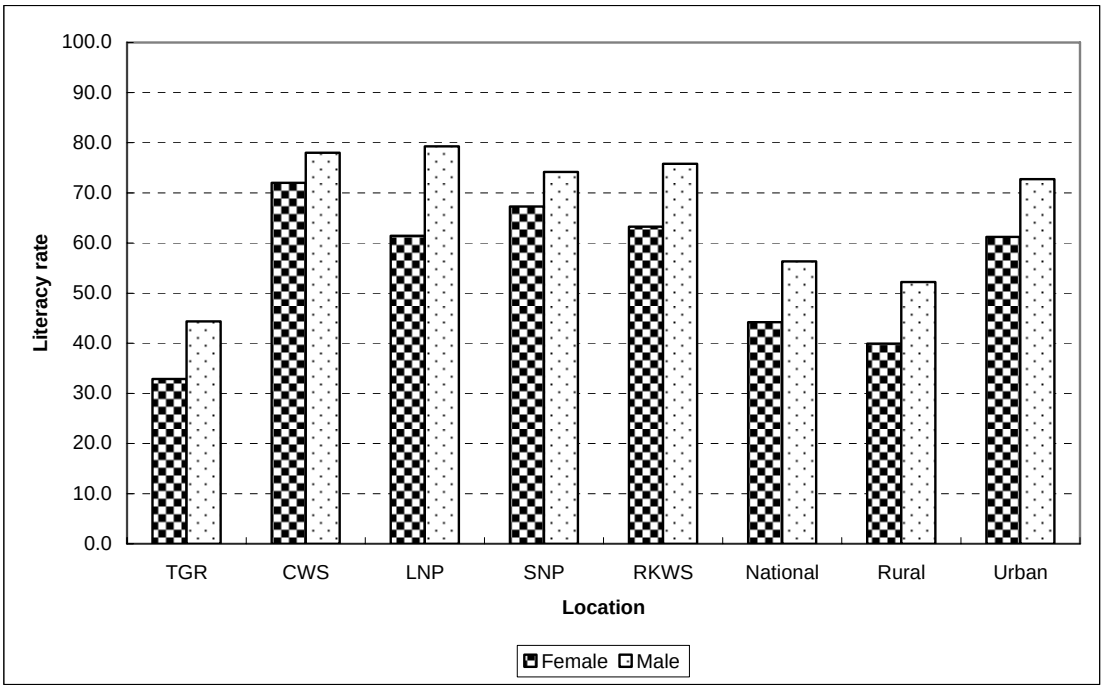


Figure 10: Adult literacy rate of population 15+

6 Occupation

Most of the populations are involved in agriculture (Figure 11) followed by business in all PAs. Day laborers working in the agricultural fields of others are counted under the occupation category as 'agriculture'. Major portions of population who are involved in 'other occupation' are either house wife or involved in household works (Table 11).

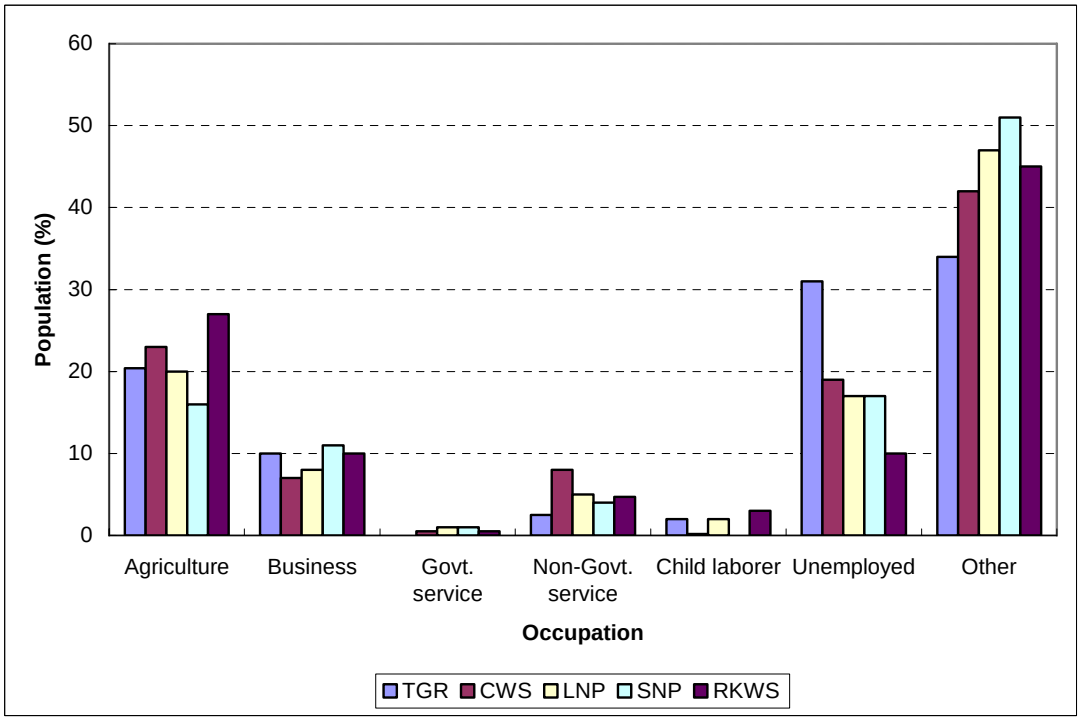


Figure 11: Percentage distribution of male and female population by occupation

Table 11: Percentage distribution of population by other occupation in different PAs

Other occupation	PA				
	TGR	CWS	LNP	SNP	RKWS
Barber	1	0	0	0	0
Carpenter	0	2	3	0	2
Day laborer	9	9	21	13	18
Fisher man	4	0	0	0	0
Handicrafts	0	0	0	0	8
House wife	50	78	70	83	69
Household work	32	2	4	0	3
Mechanic	0	2	0	0	0
Painter	0	0	0	0	0
Salt cultivator	1	0	0	0	0
Service	1	0	0	0	0
Tailor	0	2	0	0	0
Transport	1	6	3	4	0

7 Household structure and Ownership

Fig 12 shows the percentage distribution of households by household structure type of PAs (Household Survey) and national data (Analysis of Basic Needs Dimension of Poverty, 1998). Most of the households of the south (CWS and TGR) is jhupri (slum dwelling structure type) and 'other' types like either soil or bamboo made. The national data bearing household structure also shows that most of the households are of either jhupri or tinshed (roof made of corrugated iron sheet). The households of the north (LNP, SNP and RKWS) are made of mostly by tinshed followed by other (bamboo or soil) but the national data fits proportionate distribution for only tinshed which is followed by jhupri. However, household structure classification gives an idea about the poor households of the PA landscape who are dwelling in jhupri, bamboo, tinshed or earthen house. There are few households living in semi-pucka (sidewall made of brick and roof generally made of tin shed) and pucka (house completely made of bricks) in all PAs.

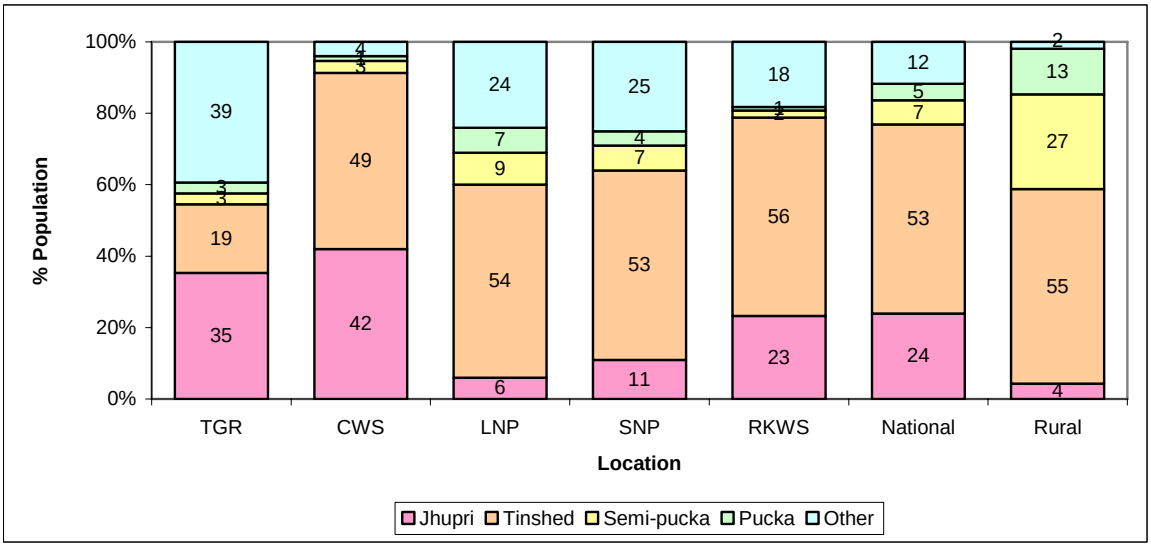


Figure 12: Percentage distribution of households by structure type

Apparently, there is a relatively small percentage of the population is homeless (don't have any house to sleep), as the majority are home owning (Fig 13). There is no remarkable change of this home ownership from past 5-year back till current year (Source: FGD). National data at district level (Analysis of Basic Needs Dimension of Poverty, 1998) is almost similar except higher in renting than PA.

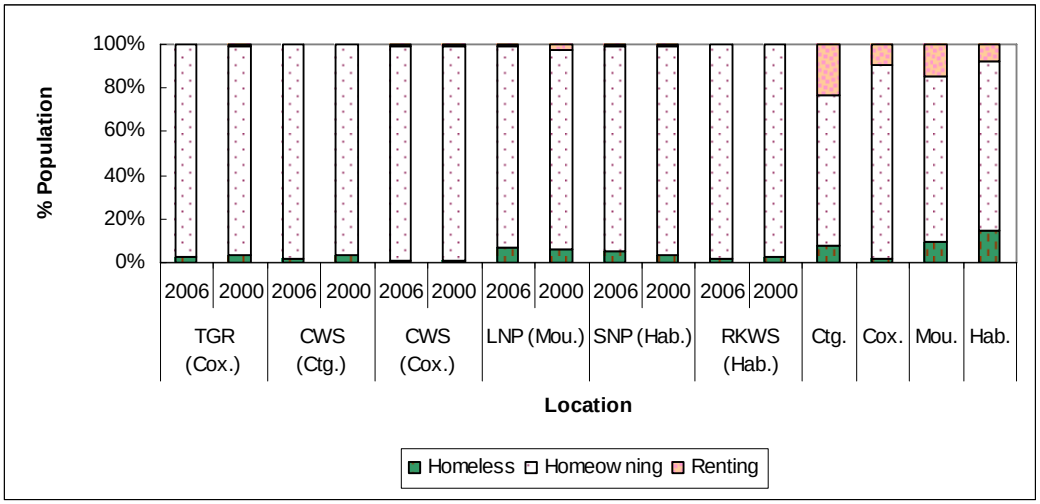


Figure 13: Percentage distribution of population by home owning category

8 Lighting Facilities

Percentage distribution of population of PA landscape by lighting facility type and national data at national, urban and rural level (BBS 2004) is presented in Fig 14. Most of the population of south PA (TGR and CWS) and 100% population of LNP use kerosene for lighting. There are few households (10%-12%) of those areas have got electricity. Villagers of SNP, half of the population uses electricity (51%) and kerosene (49%). Although the national data represents higher proportionate population using electricity but lower in PA, indicates rural poor with narrow electrification facility.

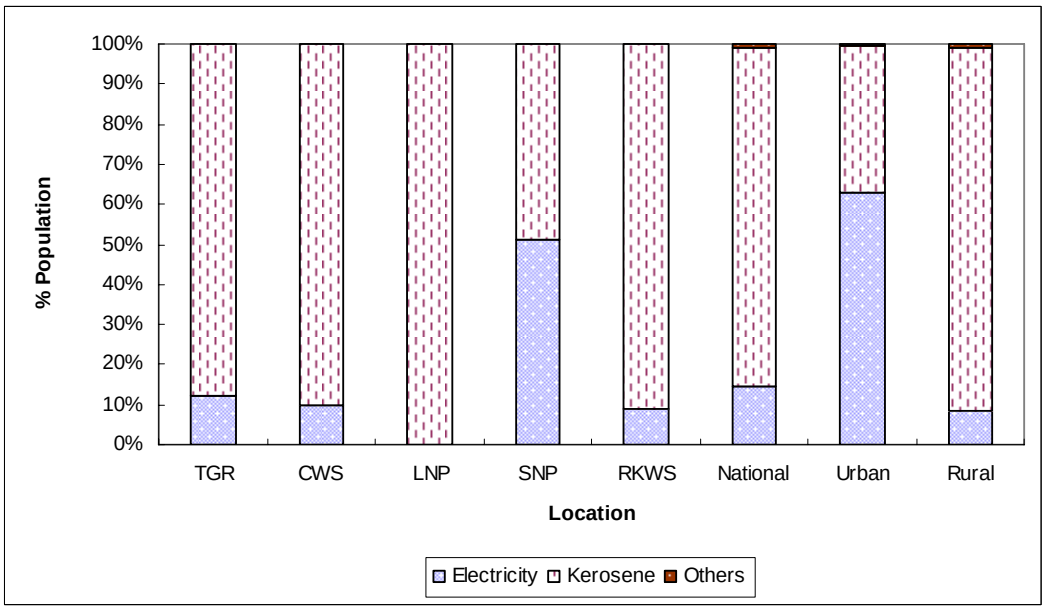


Figure 14: Percentage distribution of population by lightening facility

9 Health and Sanitation

Percentage distribution of population of PA (Household Survey) and the national data (Analysis of Basic Needs Dimension of Poverty, 1998) by type of toilet facilities is presented in Fig 15. The highest population (%) is using kutcha toilet (toilet made of bamboo or branch of trees) which is similar to the national data.

Most of the people of all PAs have access to safe drinking water, but half of the households of TGR don't have (Fig 16; no national data available). Major percentage of households of PAs is using tube-well as a source of this drinking water (Fig 17) which is similar to national data (SVRS 2004). The ownership of drinking water source goes to either own or neighbor (Fig 18). The differentials of ownership of drinking water source across PA and national data (SVRS 2004) shows almost same.

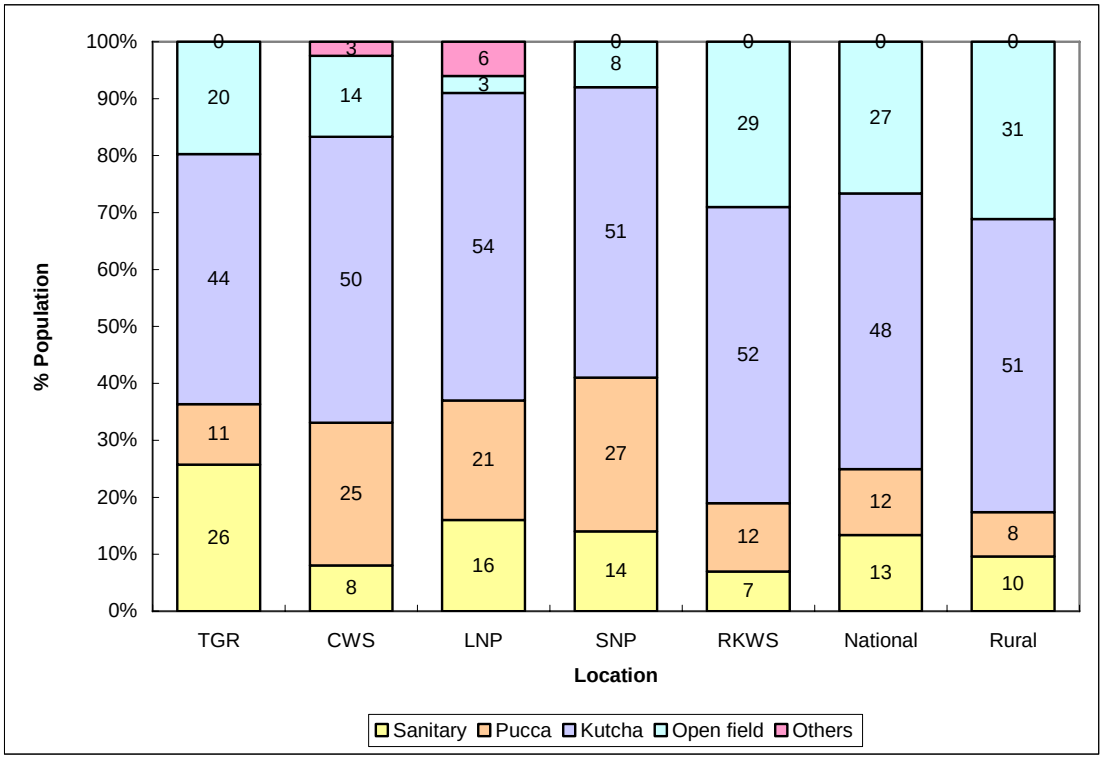


Figure 15: Percentage distribution of population by toilet facility

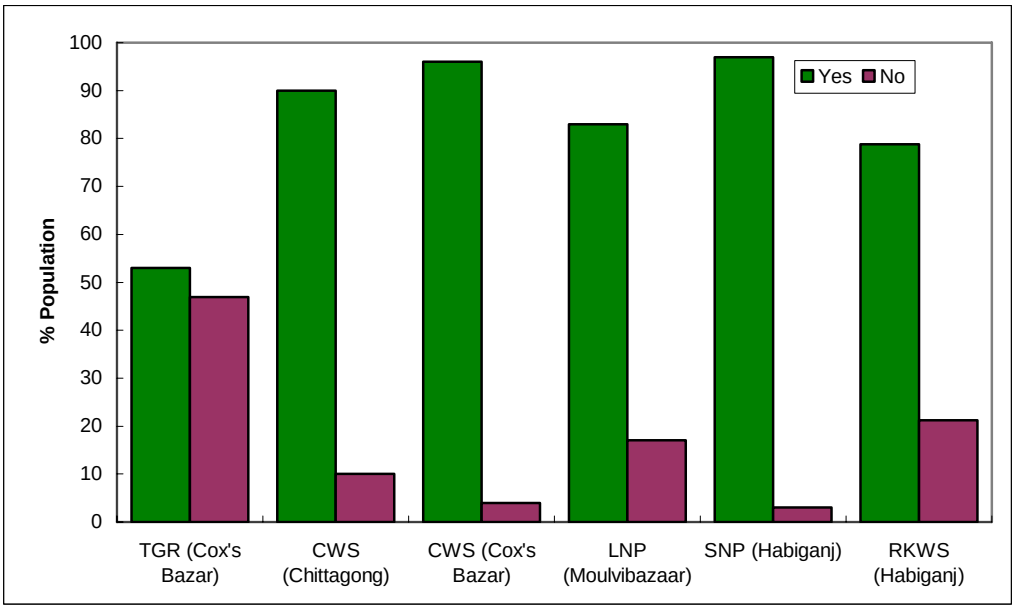


Figure 16: Percentage distribution of population by access to safe water

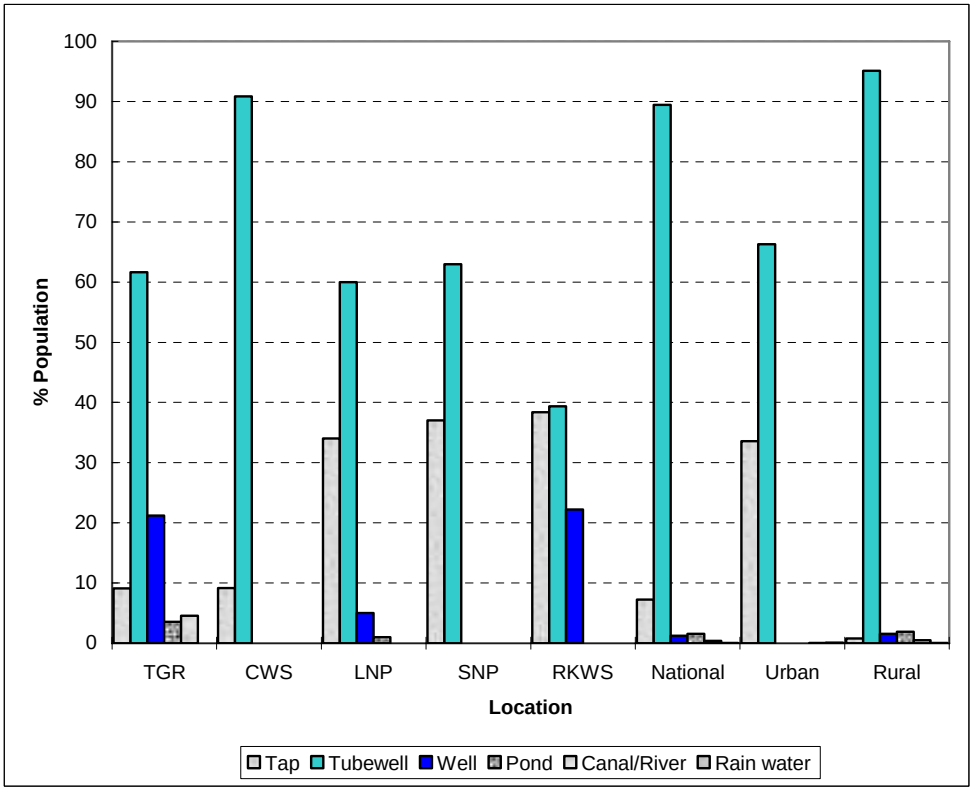


Figure 17: Percentage distribution of population by sources of drinking water

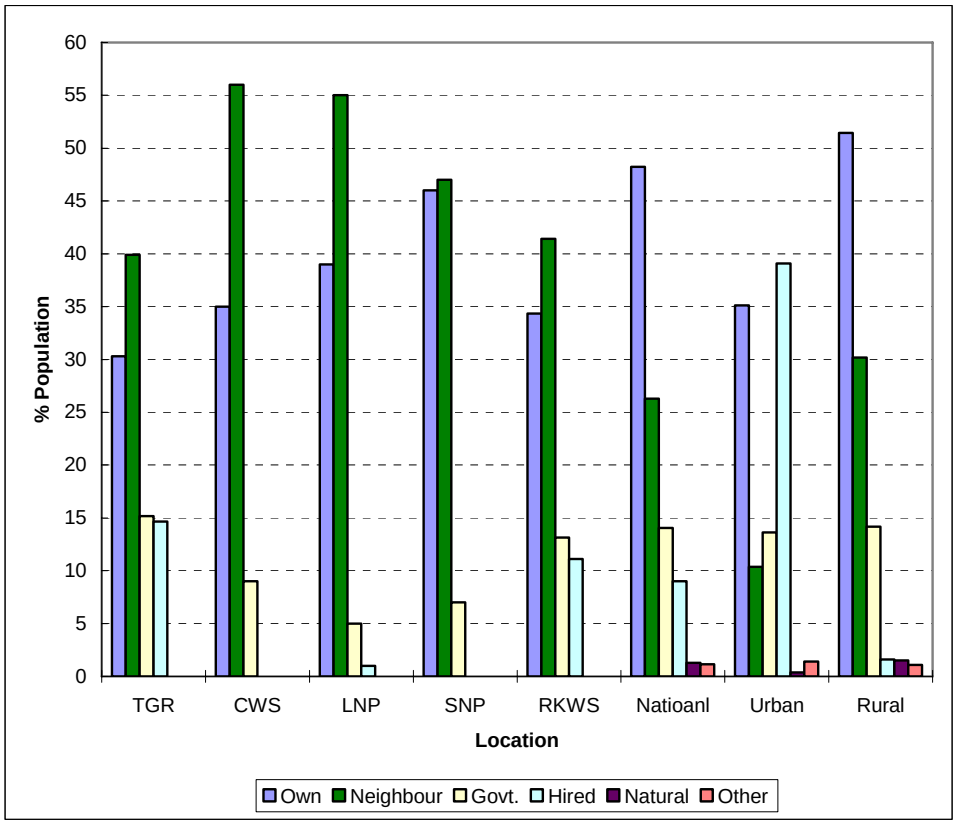


Figure 18: Percentage distribution of population by ownership of drinking water

There are almost half of the households of PA had experienced infection with malarial diseases (Table 12). On an average one to two members per household are infected with this disease. There is no MBBS or LMF doctor in any of the PA to seek health care (Table 13). They need to depend on kabiraj, ojha or homeopath. There are highest numbers of clinic and community clinics in CWS in comparison with other PAs (Table 13.1). There is no health care institute in SNP.

Table 12: Percentage distribution of household by prevalence of malaria disease

Prevalence of malaria disease	PA				
	TGR	CWS	LNP	SNP	RKWS
	Cox's Bazaar	Chittagong	Moulvibazaar	Habiganj	Habiganj
Yes (%)	58	54	63	21	53
No (%)	42	49	37	79	47
No. of persons per household infected with malaria	1	1	2	1	1

Source: Household Survey

Table 13: Health services

Health services	PA					
	TGR	CWS		LNP	SNP	RKWS
	Cox's Bazaar	Chittagong	Cox's Bazaar	Moulvibazaar	Habiganj	Habiganj
MBBS doctor	0	0	0	0	0	0
LMF doctor	0	0	0	0	0	0
Homeopath	10	10	7	5	9	4
Kabiraj	34	3	0	13	24	11
Paramedics	1	0	0	0	10	0
Sales persons of medicine shop	30	24	7	7	18	24
Ojha	14	15	17	5	5	7
Others	0	1	0	0	0	0

Source: Village Profiling Guide

Table 13.1: Health institutes in different PAs

Health institutes	PA				
	TGR	CWS	LNP	SNP	RKWS
Clinic	5	3	0	0	0
Community clinic	1	4	0	0	0
Family planning cent	1	0	0	0	0
Family Welfare Clinic	0	1	0	0	0
Gana Shastra Kendra	1	0	0	0	0
Health Center	0	0	1	0	2
Health Clinic	0	2	0	0	0
Health Complex	1	3	0	0	0
Hospital	1	3	0	0	0
Private clinic	0	0	1	0	0
Red Crescent Society	0	1	0	0	0
Thana Health Complex	0	0	1	0	0

Source: NSP GIS Database 2006

10 Social Institutions

Total number of social institutions by type found in the PA landscape is shown in Table 14. In all PAs there are more or less youth clubs and cooperative societies.

Table 14: Social institutions

Social institutions	PA					
	TGR	CWS		LNP	SNP	RKWS
	Cox's Bazaar	Chittagong	Cox's Bazaar	Moulvibazaar	Habiganj	Habiganj
Adult education	0	2	1	0	4	0
Social welfare	0	1	0	35	1	0
Recreation	6	0	1	2	0	0
Youth Clubs	31	6	6	13	13	3
Cooperative societies	8	3	2	10	7	2
Libraries	1	1	0	2	5	0

Source: Village Profiling Guide

11 Land information

Average total owned land per household and land utility type is presented in Fig 19 (Source: Household Survey). Total owned land area ranges from 41 dec (in CWS) to 105 dec (both in SNP and RKWS). Likewise, agricultural land per household ranges from 24 dec (CWS) to 101 dec (RKWS). The households possessing more land in northern PA than southern PA.

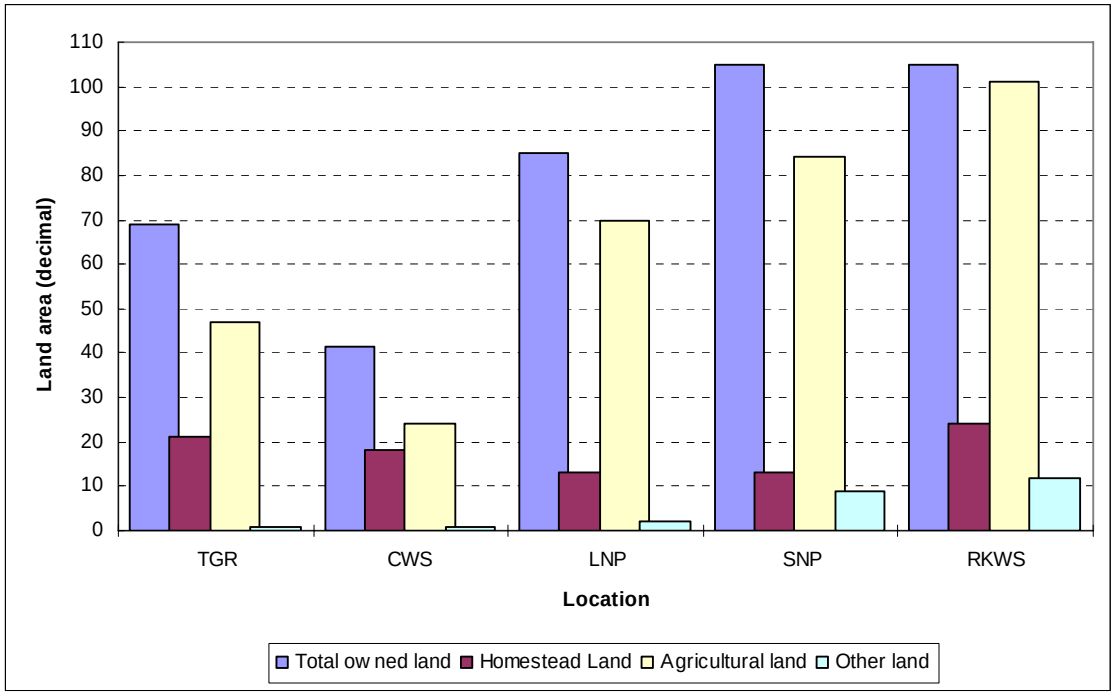


Figure 19: Average land area (decimal) per household by land utility type

The land ownerships of the households have different ownership like leased land, mortgage land, owned land, etc in our country. Since our survey didn't classify under those detailed classification, information may obscure under the landless category which truly means they don't have own land but dependent on others land for economic activities (with reference to Fig 20). However, landownership is reduced and % of landless households especially high around TGR and CWS (Fig 20; presented from Focus Group Discussion).

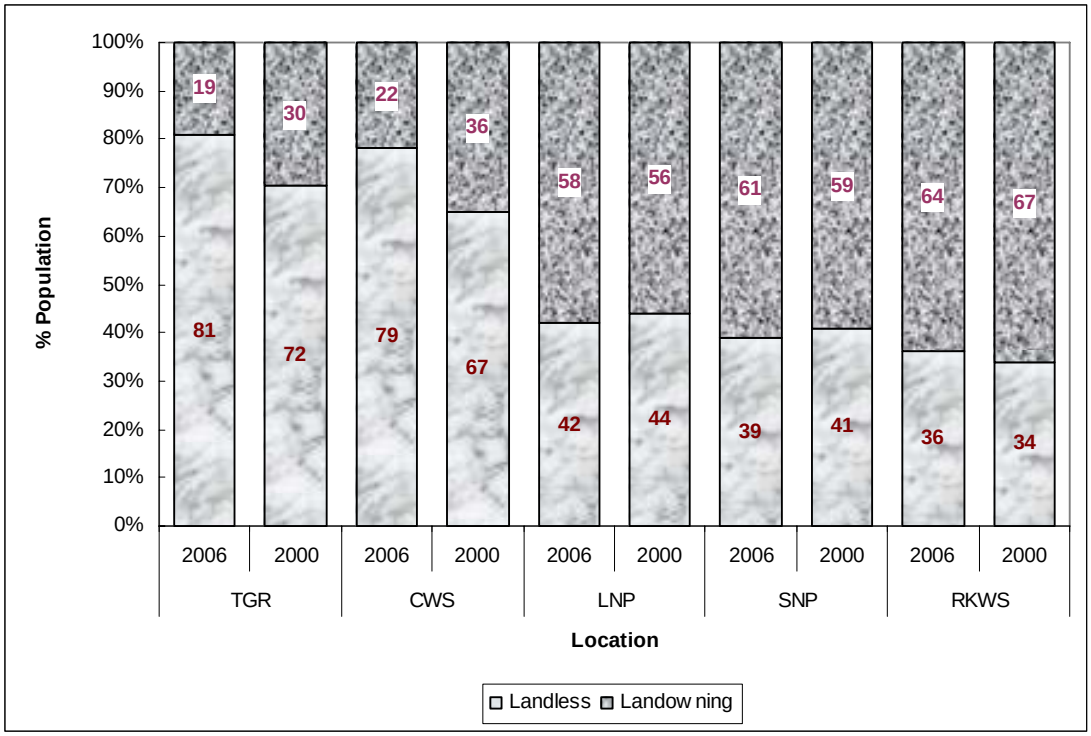


Figure 20: Percentage distribution of population by land ownership during present and 5 year back

12 Economy

The average income per month per household of PAs presented in Fig 21 shows that average income of sampled households of five PAs is lower than the rural average (HIES 2000). Among the PAs, CWS has the lowest income per month.

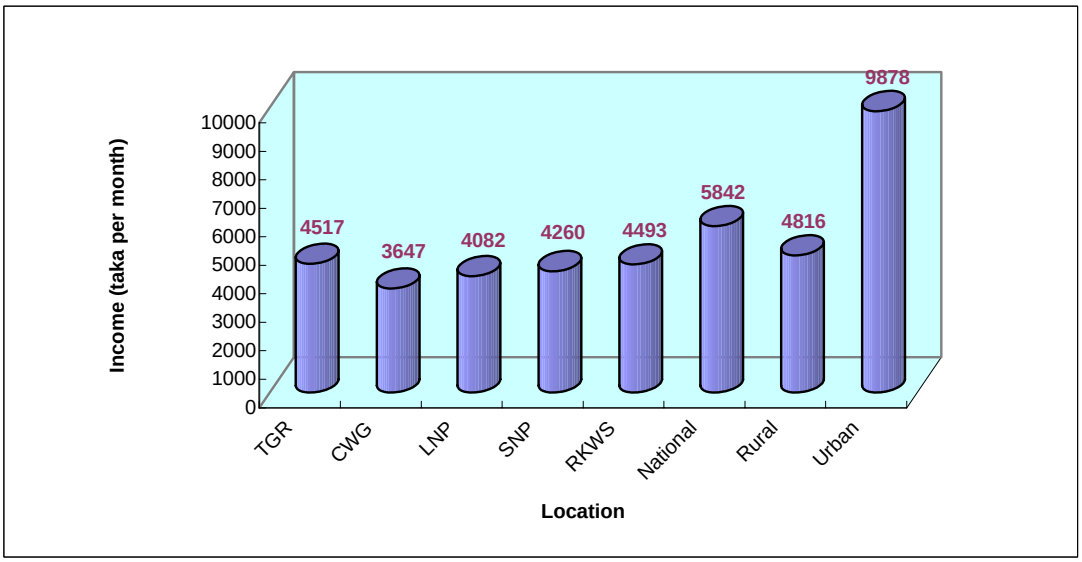


Figure 21: Average income per month per household by location

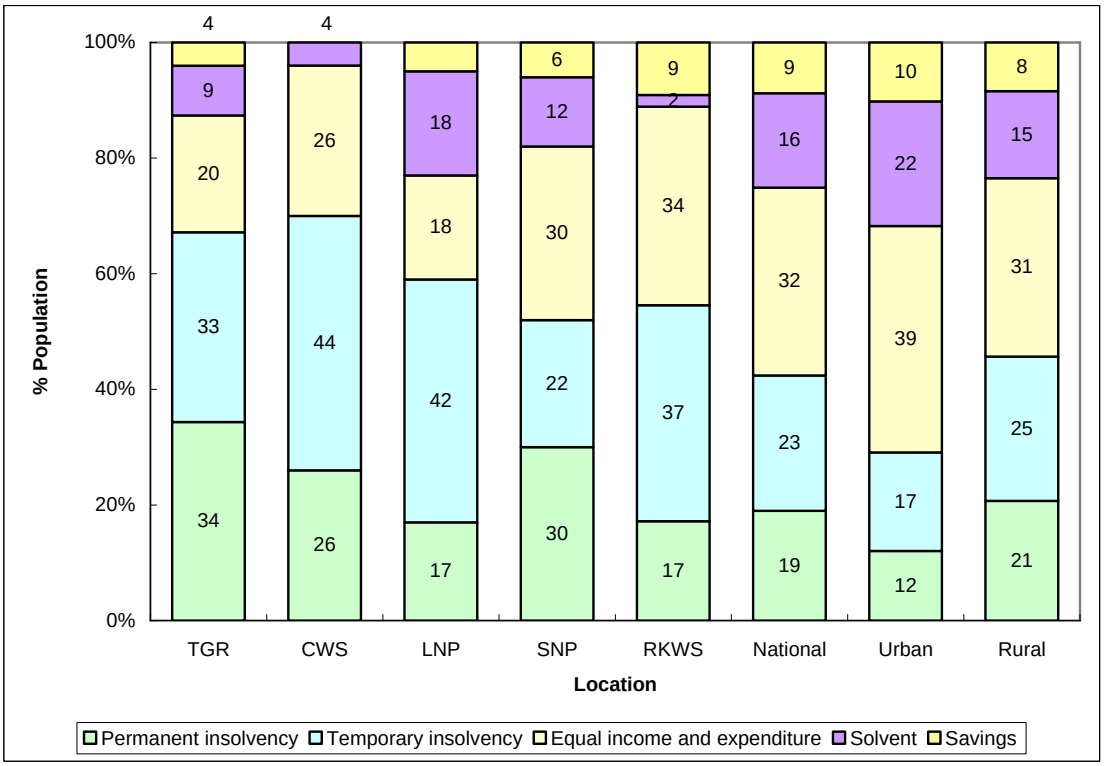


Figure 22: Percentage distribution of household by economic condition

About 45-55% of households are classed as "permanently insolvency' for all of the 5 PAs which is well above the % of urban areas like Cox's Bazaar and Chittagong (SVRS 2002). Only LNP seems to have more than 20% of households in classes with savings or solvency (Fig 22).

13 Resource Extraction: Beneficiaries

13.1 Reduced access to PA

Worse-off conditions due to reduced access to PA as indicated by reduced income, scope to develop new enterprise, resource use, hunting are presented in Fig 23 (Source: Focus Group Discussion). Most of the worse-off condition indicators of households of southern PA (TGR and CWS) have significantly reduced than northern PA (LNP, SNP and RKWS) over the past five years.

Both TGR and CWS seem to have been more heavily impacted in a negative way by reduced access to the PAs or availability of resources; this also would confirm an apparently higher level of dependency on the PA in the south (fig 23).

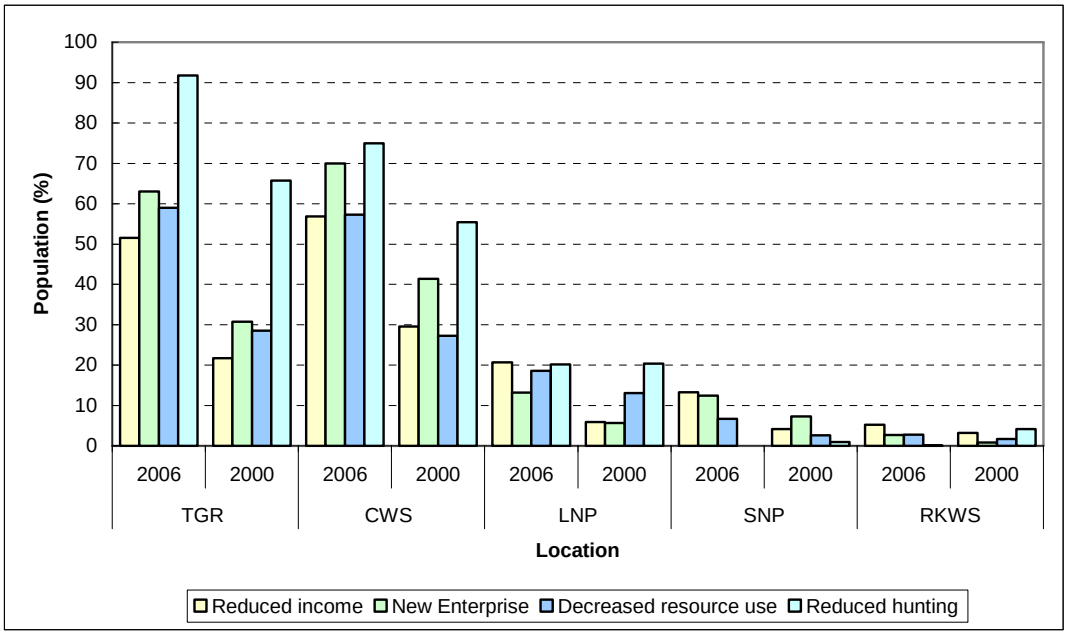


Figure 23: Percentage distribution of population by worse off condition due to reduced access to PAs

13.2 Alternative income generating activities

PA wise AIG of different sectors and changes with time (current and 5-year back) are presented from Fig 24 to 28 (Source: Focus Group Discussion). In most areas, the % of IGA related to day labourer, fish, salt field, and business have all increased over the past 5 years. Fig 24-28.

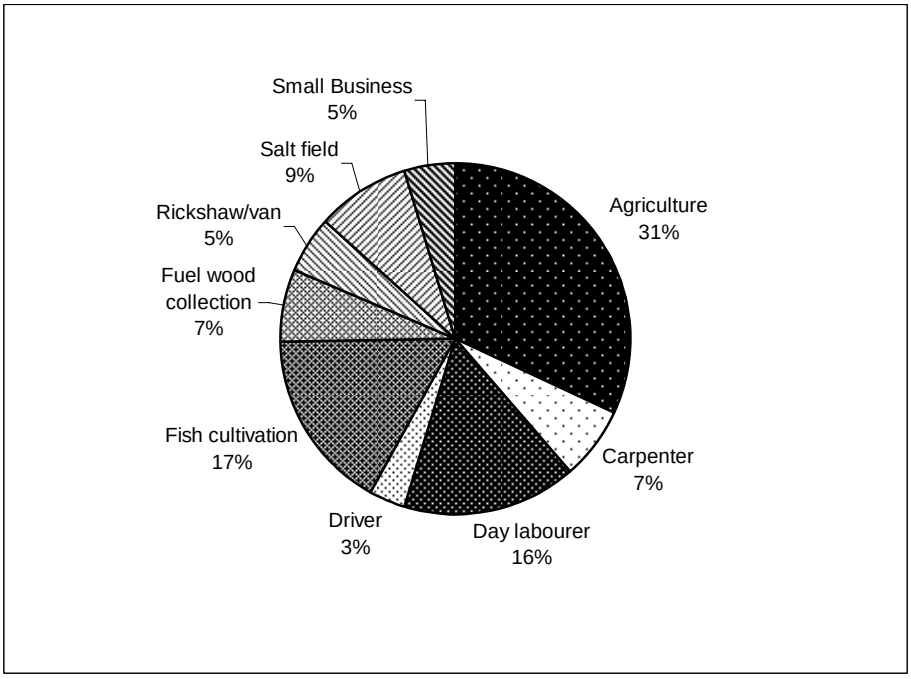


Figure 24 (a): Current distribution of population of TGR by IGA

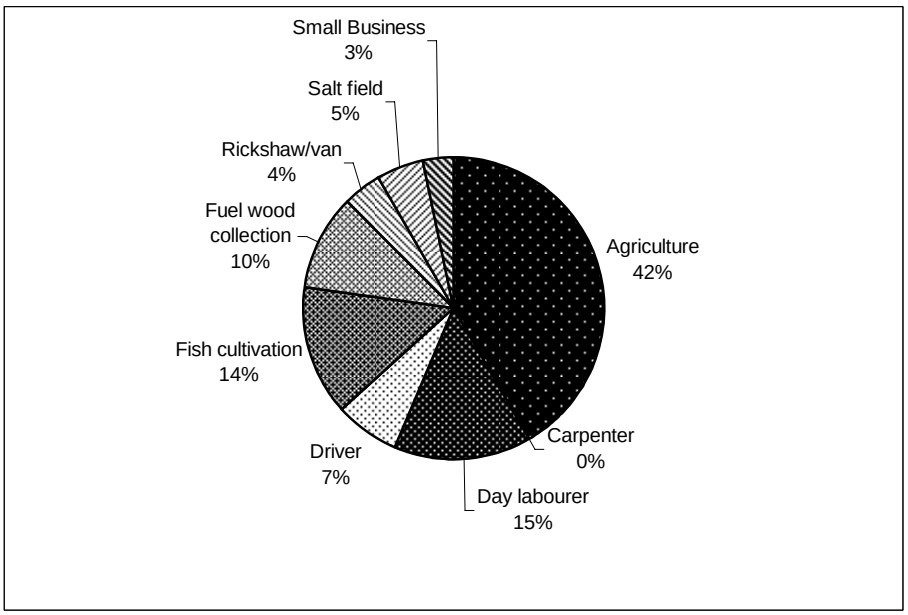


Figure 24 (b): Distribution of population 5 years back in TGR by IGA

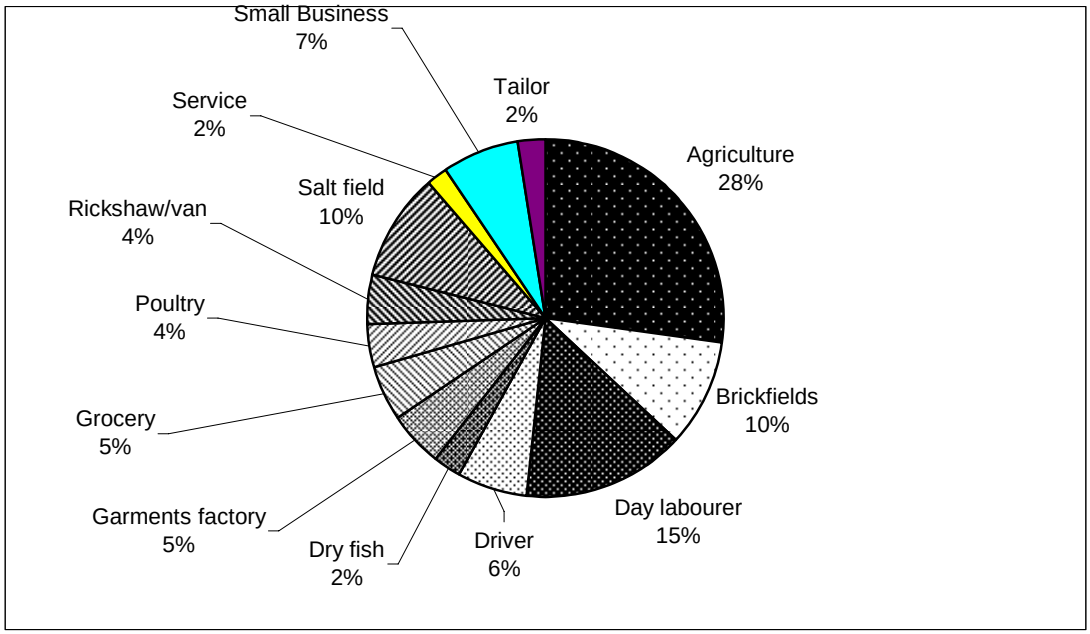


Figure 25 (a): Current distribution of population of CWS by IGA

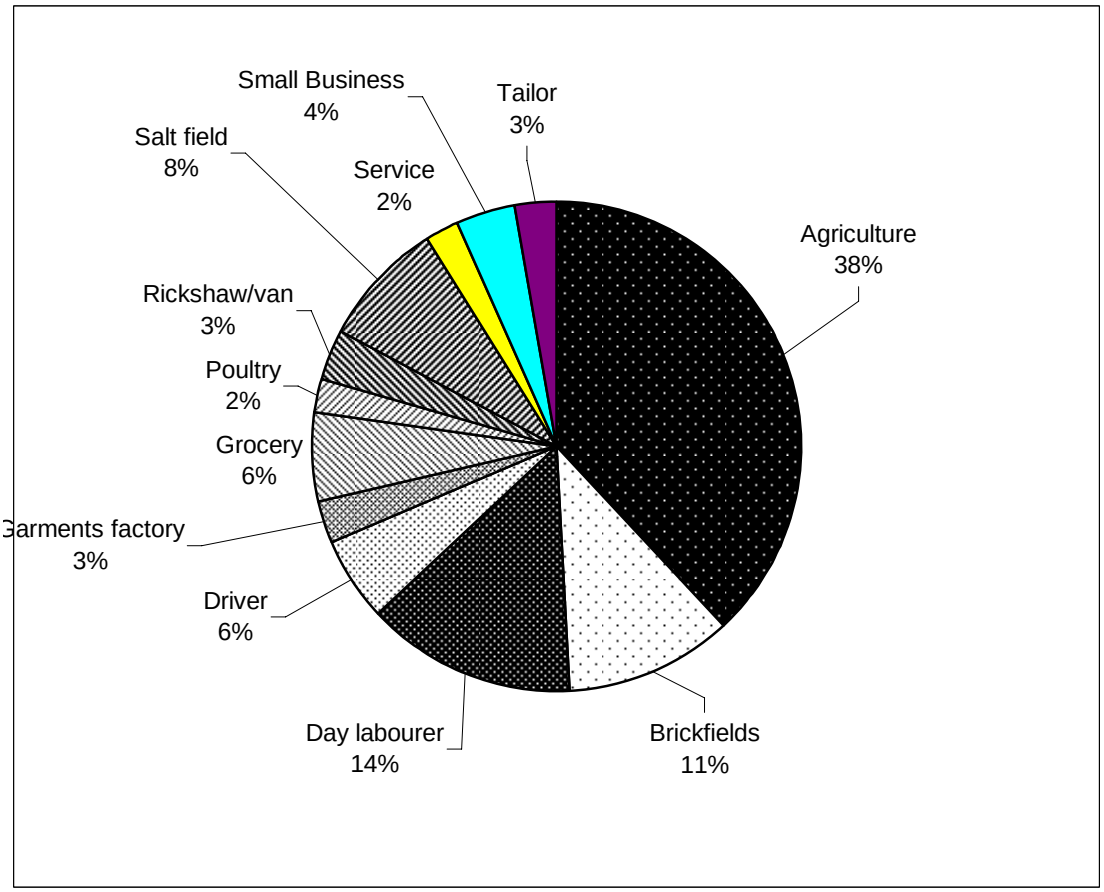


Figure 25 (b): Distribution of population 5 years back in CWS by IGA

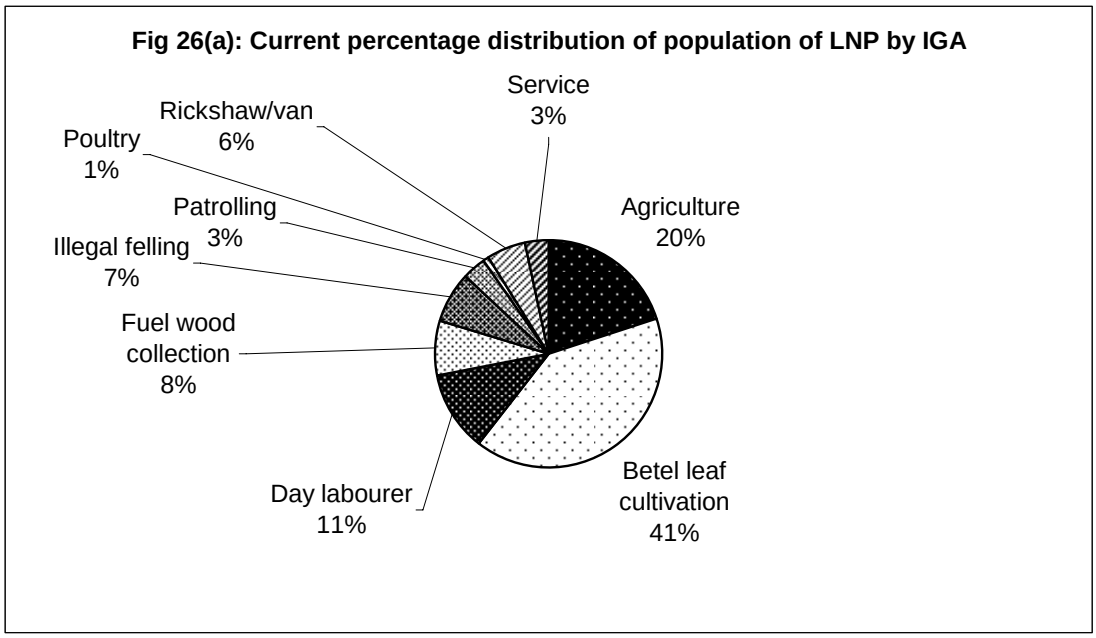


Figure 26 (a): Current distribution of population of LNP by IGA

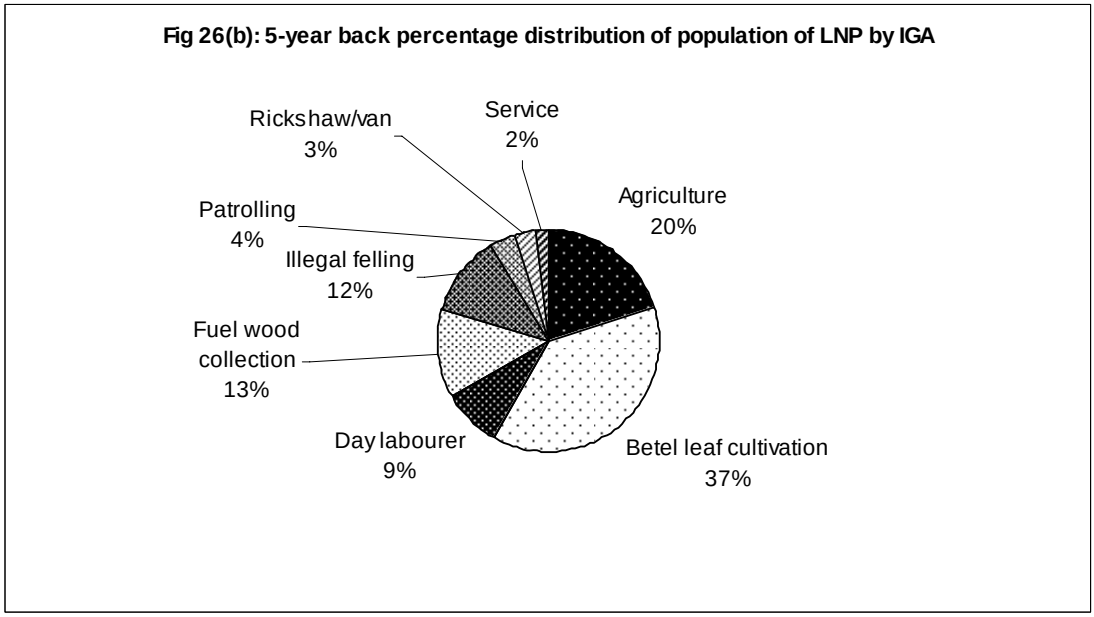


Figure 26 (b): Distribution of population 5 years back in LNP by IGA

The respondents of LNP during FGD reported about betel leaf cultivators and trend with respect to involvement of population between recent and 5-year back. This betel leaf cultivation is the major source of IGA of that PA landscape. So, information was intentionally included to see the proportionate IGA comparison thereafter.

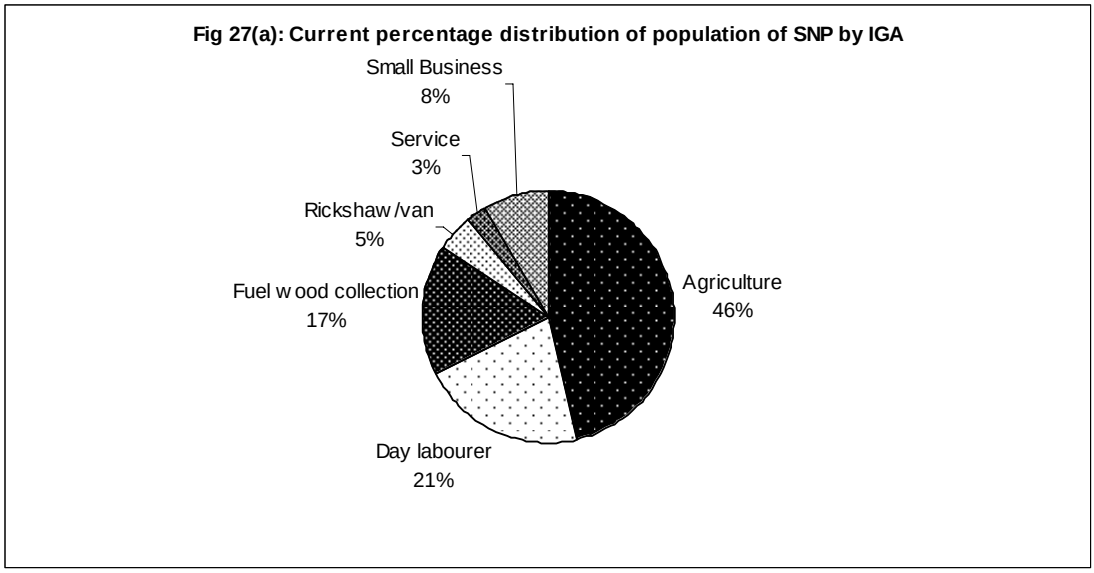


Figure 27 (a): Current distribution of population of SNP by IGA

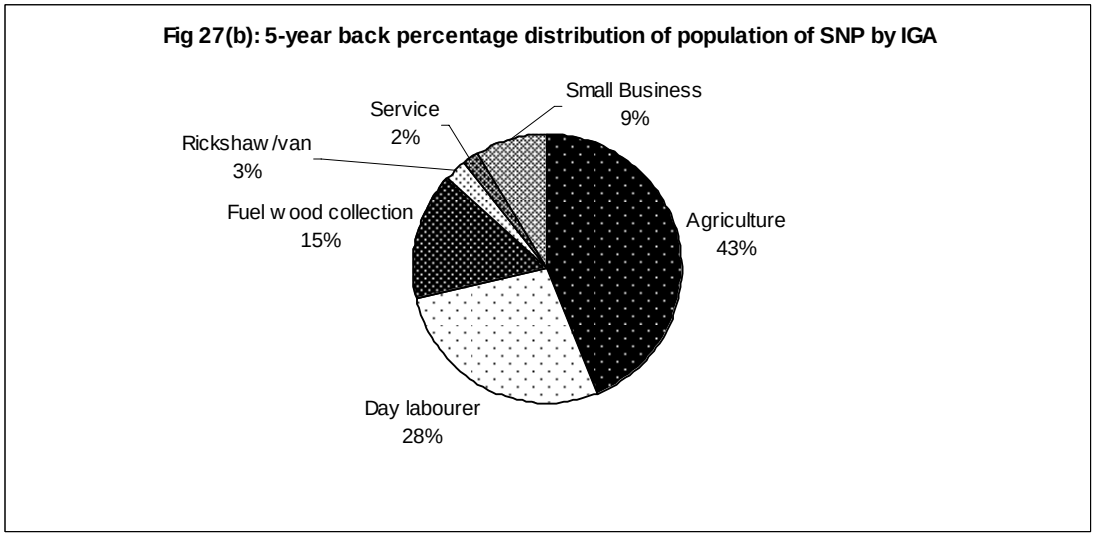


Figure 27 (b): Distribution of population 5 years back in SNP by IGA

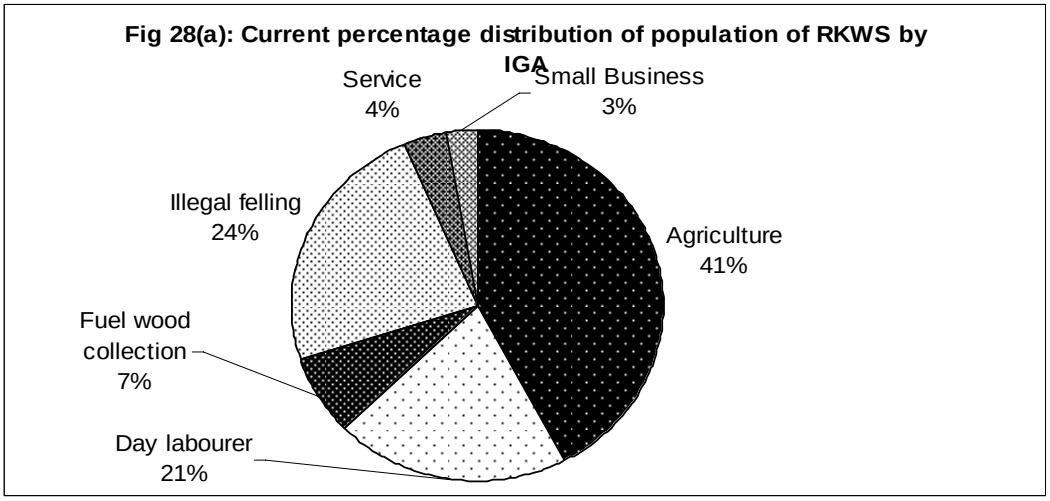


Figure 28 (a): Current distribution of population of RKWS by IGA

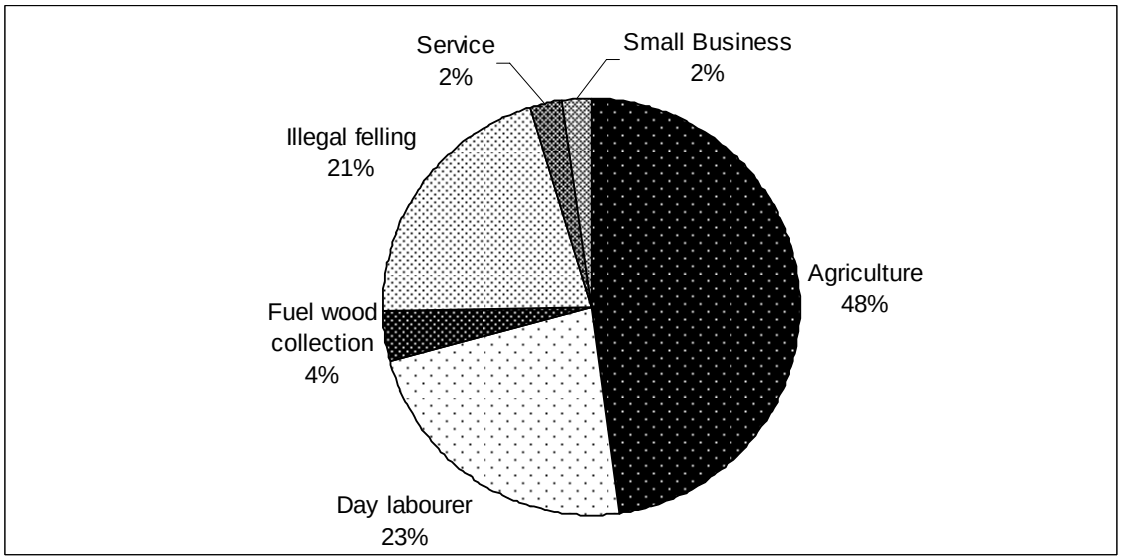


Figure 28 (b): Distribution of population 5 years back in RKWS by IGA

13.3 Sources of Fuel

Percentage distribution of households by sources of fuel by locality is presented in Fig 29 (Source: Household Survey). In all the PAs wood/bamboo is the major source of fuel followed by straw which is similar to national average (SVRS 2002). There is no household using electricity or gas as a source of fuel since those are costly and also because of unavailability. As depicted from the Table 15 that average consumption of wood/bamboo per household is higher in southern PA (8-9 mond) than northern PA (4-6 mond). To collect this fuel wood, people are coming from varying distance ranging from 1 km (for TGR) to 15 km (for CWS) and close to the forest proximity (0 km).

Amount of fuel wood (ton) extracted for different purposes from different PAs has been shown in Table 16. From this table, we will find that self consumption of fuel wood with

respect to temporal differences (recent and five year back) self consumption increased from five year back to recent in all PAs. It is apparent that brickfield is the major source of fuel-wood extraction around TGR and southern CWS and consumption increased due to increased number of brickfields over the last 5-years. Wood/bamboo is the major source of household fuel (Fig 30) as compared with leaves/husk or cow-dung. This also fits the national average (BBS 2004). In case of all the PAs male members of the households are more involved in fuel-wood collection (Table 17). In most of the cases children are more involved than household heads and no significant changes of this involvement over the past five years. Percentage distribution of population by natural resource use categories (Table 18) shows that most of the people harvest resources from PA mainly as fuel wood and NTFP. There is few hunting wildlife. This resource use has little variation from five year back.

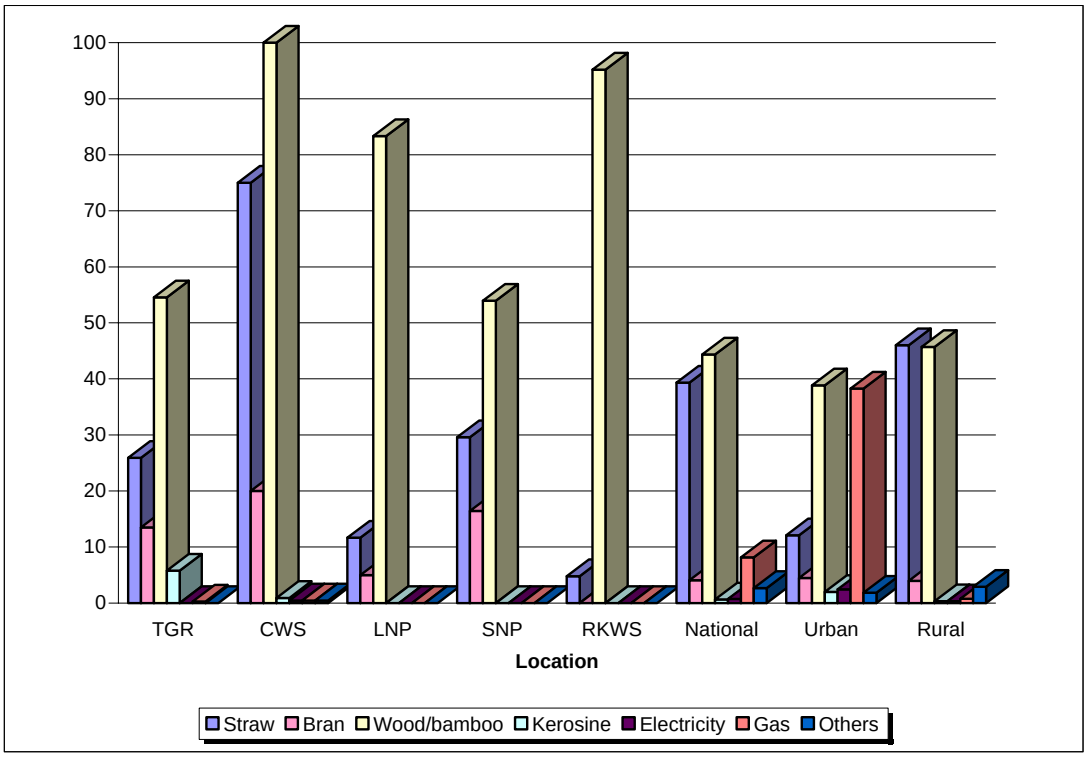


Figure 29: Percentage distribution of household by sources of fuel

Table 15: PA wise average weight (mond) of wood/bamboo used by household as fuel and mean distance (km) for collection of fuel

	PA				
	TGR	CWS	LNP	SNP	RKWS
	Cox's Bazaar	Chittagong	Moulvibazaar	Habiganj	Habiganj
Wood/bamboo weight [1] (mond)	9	8	5	4	6
Distance [2] (km)	(0-5)* 0.75	(0-15) 5.6	(0-7) 3.0	(0-12) 6.00	(0-4) 0.60

* Values within the parentheses are representing range and the rest as average distance.
[1]Source: Household Survey
[2]Source: Focus Group Discussion
Note: 1 mond = 37.31 kg

Table 16: How much (in tons) fuel wood is being extracted from PA

	PA									
	TGR		CWS		LNP		SNP		RKWS	
	2006	2000	2006	2000	2006	2000	2006	2000	2006	2000
Self consumption	8	7	9	8	7	6	5	4	8	7
Brickfields	4875	4350	16875	15000	0	0	0	0	0	0
Restaurants	45	39	63	55	0	0	0	0	0	0
Export	208	1125	2625	4000	91	145	74	71	42	38

Source: Focus Group Discussion

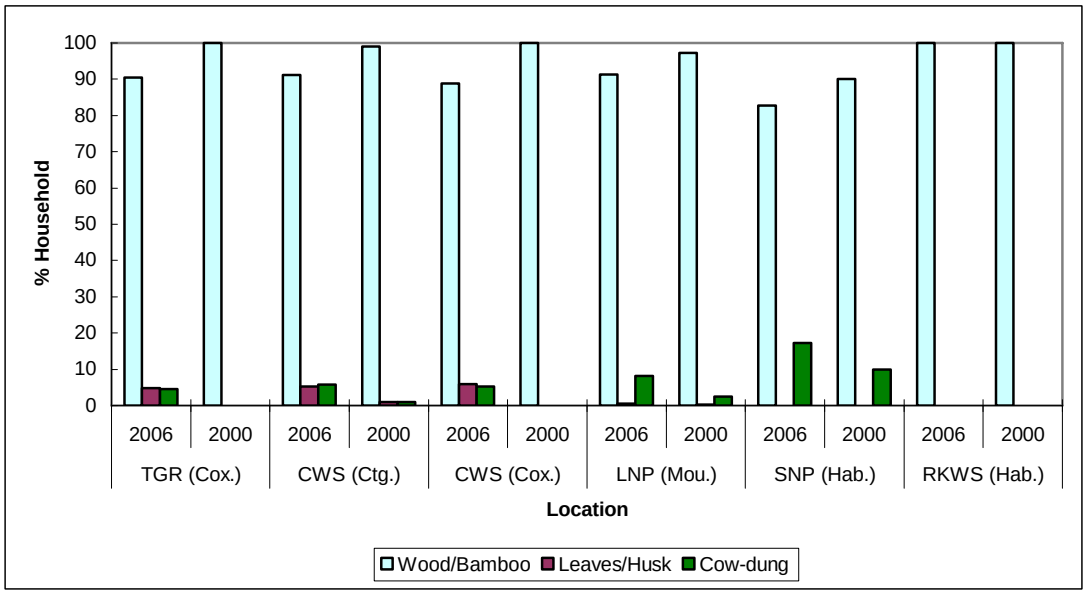


Figure 30: Percentage distribution of household by solid fuel use type during recent and 5-year back

Table 17: Percentage population involved in forest product extraction from PA during current and 5-year back

	PA									
	TGR		CWS		LNP		SNP		RKWS	
	2006	2000	2006	2000	2006	2000	2006	2000	2006	2000
Total (%)	71	82	75	88	52	66	26	26	85	79
HH head (%)	32	44	51	62	68	71	90	91	53	54
Children (%)	68	56	49	38	32	29	10	9	7	46
Male (%)	59	62	68	76	71	74	93	91	76	75
Female (%)	41	38	32	24	29	26	7	9	24	25

Source: Focus Group Discussion

Table 18: PA wise percentage distribution of household by natural resource use categories during current and 5-year back

	PA									
	TGR		CWS		LNP		SNP		RKWS	
	2006	2000	2006	2000	2006	2000	2006	2000	2006	2000
Fuel-wood	100	100	97	100	59	41	45	37	67	61
NTFP	100	100	98	100	19	22	37	42	17	25
Log	3	17	1	14	22	36	18	18	16	13
Wildlife	3	16	3	14	0	0	0	1	0	1

Source: Focus Group Discussion
Note: NTFP indicates Non-timber forest products other than fuel wood

In the entry and exit routs of PAs, the fuel wood carried by the villagers are estimated and average weight (kg), % used for self consumption and % sold in the market and sale value (tk.) of the fuel wood is presented in table 20. It is evident from the table that average weight ranges from 25 kg (from SNP) to 68 kg (from LNP) carried by each fuel wood collector. Most of this fuel is sold in the market in LNP (87%) followed by TGR (about 80%) and highest self consumption is in SNP (74%).

In another study by Sultana (2006), it was found that 100% of fuel wood is self consumed by the collectors of SNP. Moreover, fuel wood is the only available source of domestic energy available in Satchari and approximately 2 tons of fuelwood are extracted from the park by these communities daily.

The average sale value range of that fuel wood as per market price is from 1.5 tk/kg to 2.5 tk/kg.

Table 19: PA wise fuel wood extracted (kg) per collector, use pattern (%) and average sale value (Tk.)

PAs	Ave. weight (kg)	Self consumption (%)	Sold in market (%)	Average sale value in Tk./kg
TGR	32	22	78	1.5
CWS	43	41	59	2
LNP	68	13	87	2.5
SNP	25	74	26	2
RKWS	44	51	49	1.5

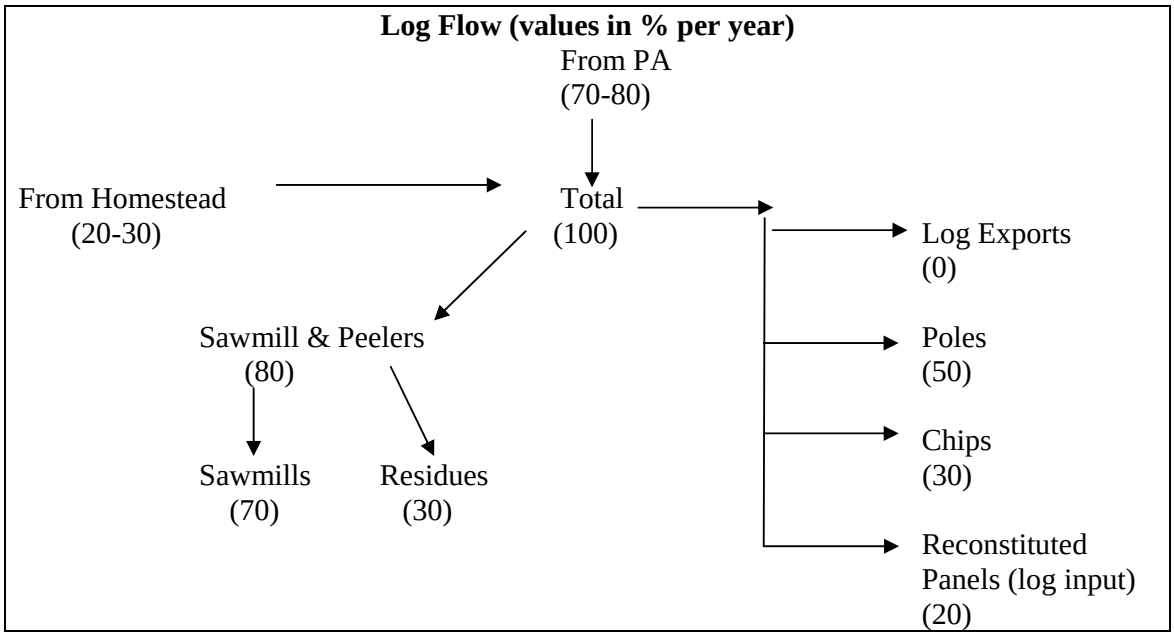
Source: Fuel wood survey

14 Natural resource flow

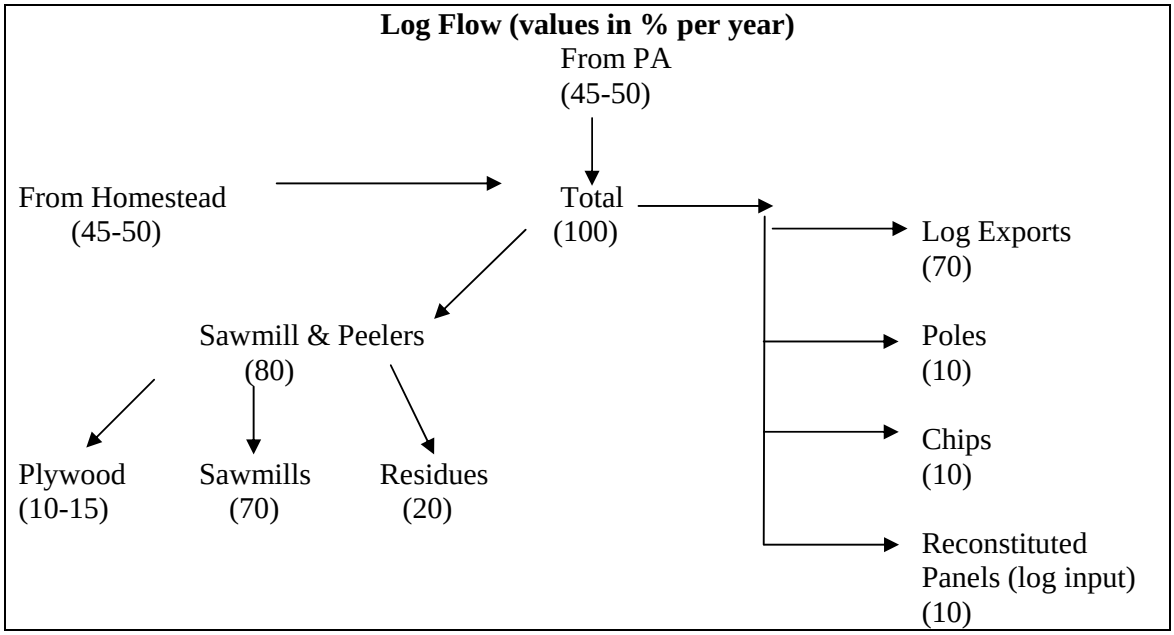
14.1 Log flow

Percentage distribution of Log flow through different channel is presented in the schematic diagram below (Source: Focus Group Discussion). It is evident that about 80% log is supplied from PA and the rest from homestead except CWS. In case of CWS it is 50% from each. Out of this, major bulk of log exported (70%-90%) outside local peripheries from CWS and LNP. No log is exported from TGR but converted into poles, chips and reconstituted panel. Higher bulk of log is feed into the sawmill and peelers in the southern PA (80%) than northern PA (10%-50%). Nil or little amount of log produces chips across all PAs.

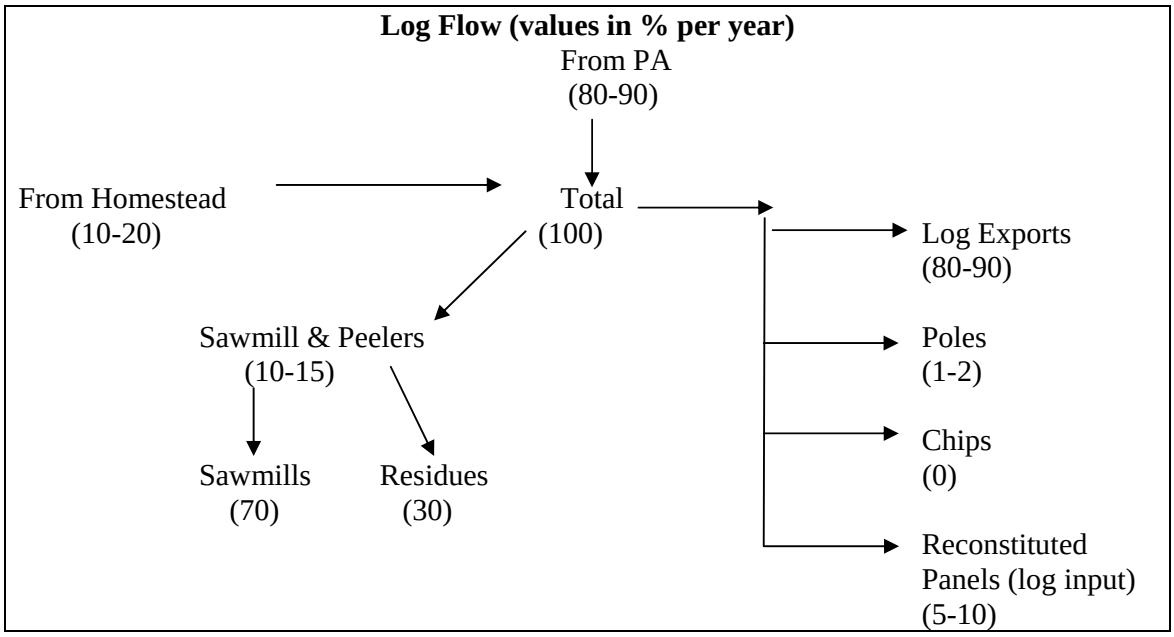
Log Flow for PA - TGR



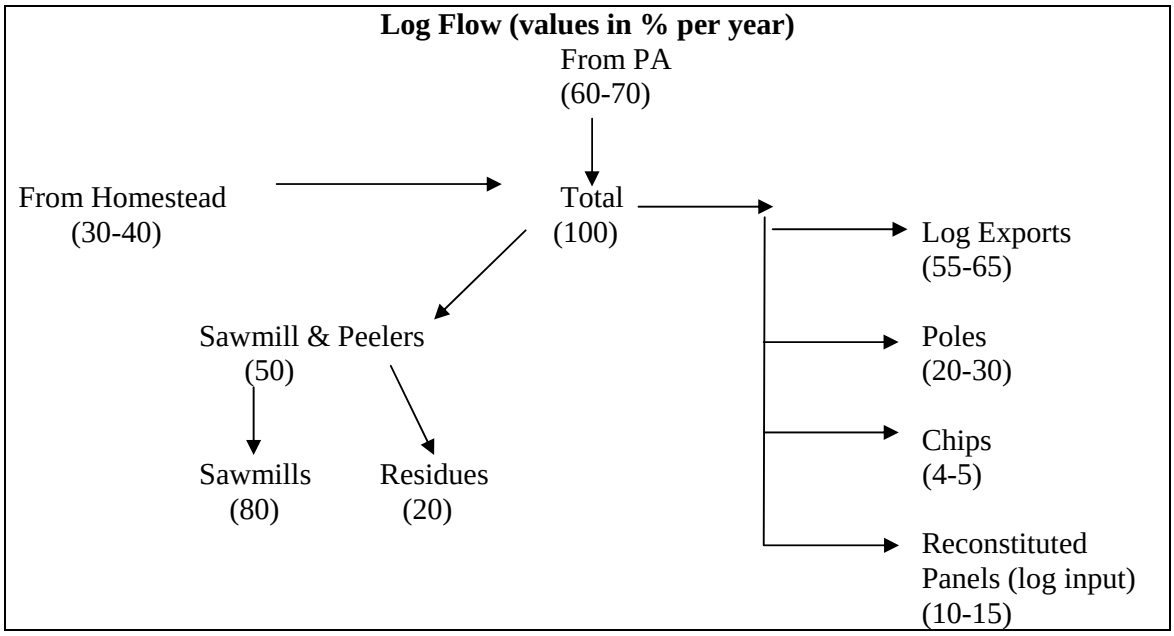
Log Flow for PA - CWS



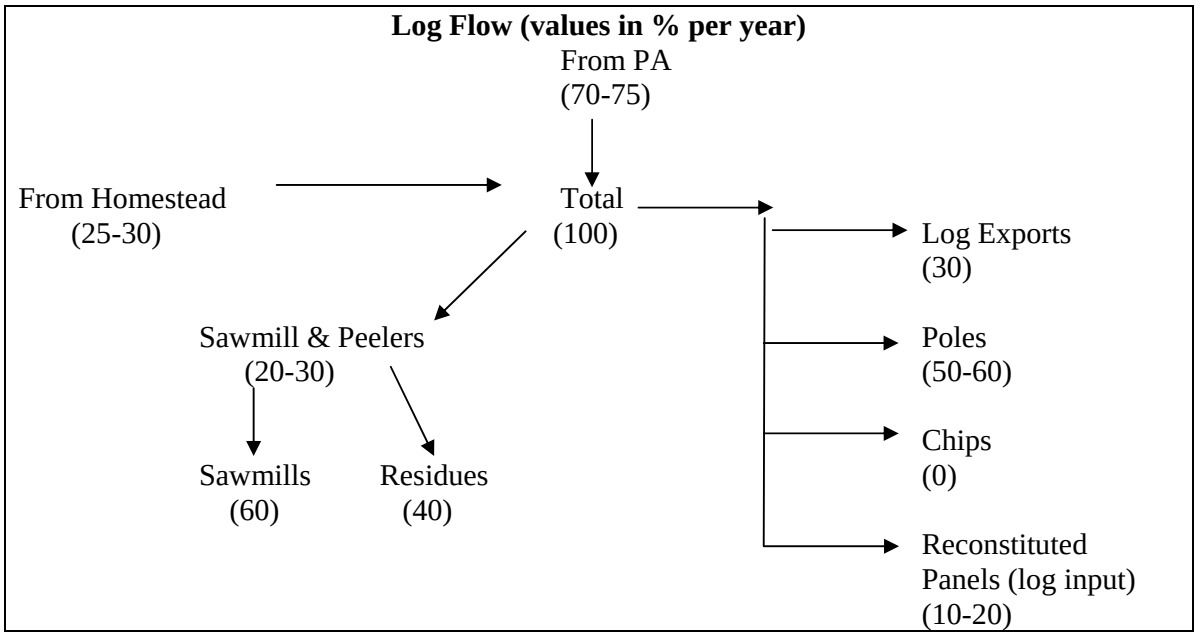
Log Flow for PA - LNP



Log Flow for PA - SNP



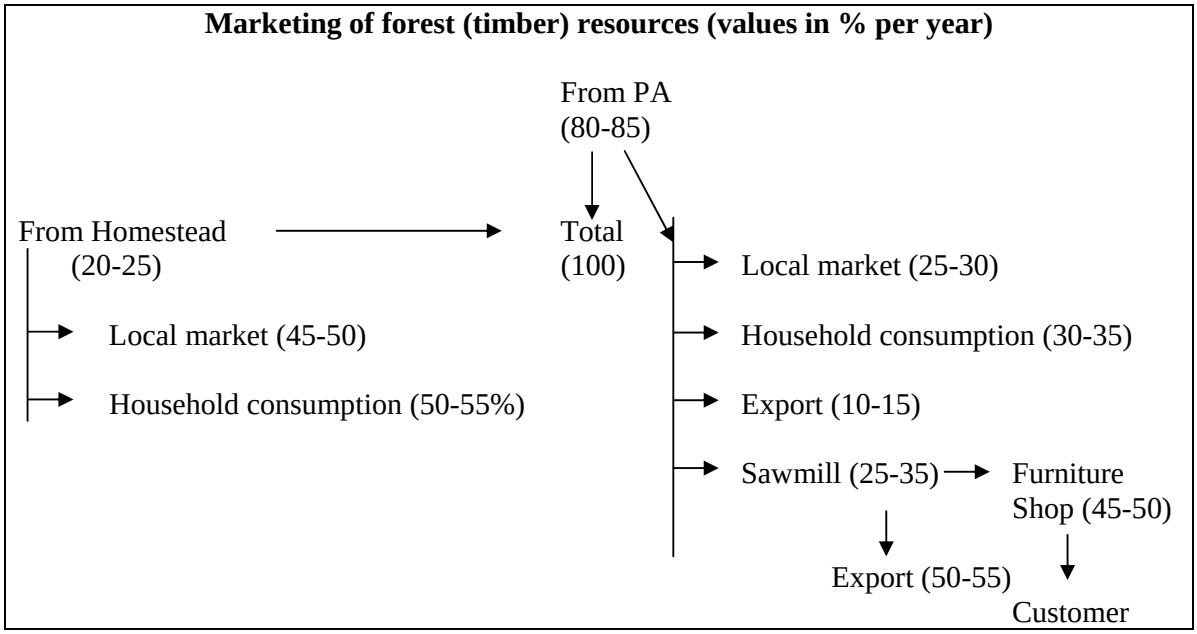
Log Flow for PA - RKWS



14.2 Marketing of timber resources

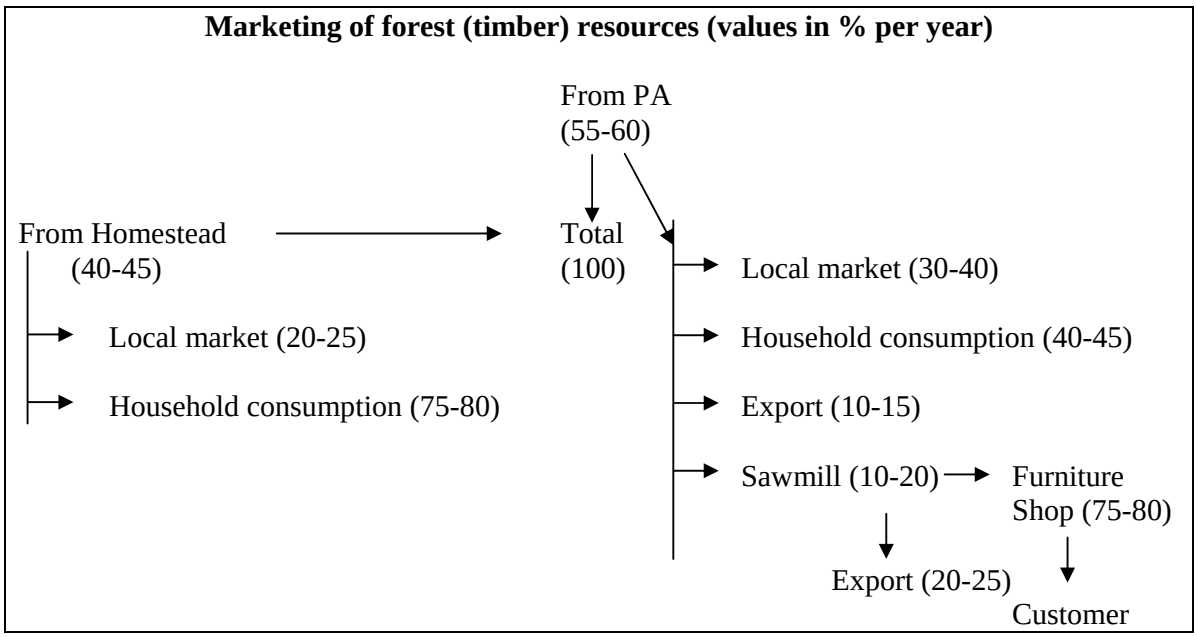
The market structure and timber resource flow (%) in different marketing channels is presented in the following schematic diagram (Source: Focus Group Discussion). The marketing channel shows that half of homestead timber is sold in the local market and the remaining uses for own consumption in TGR, LNP and RKWS. Household consumption of homestead timber is higher than local market sale in CWS and the scenario is just reverse in SNP.

Marketing of forest (timber) resources for PA - TGR

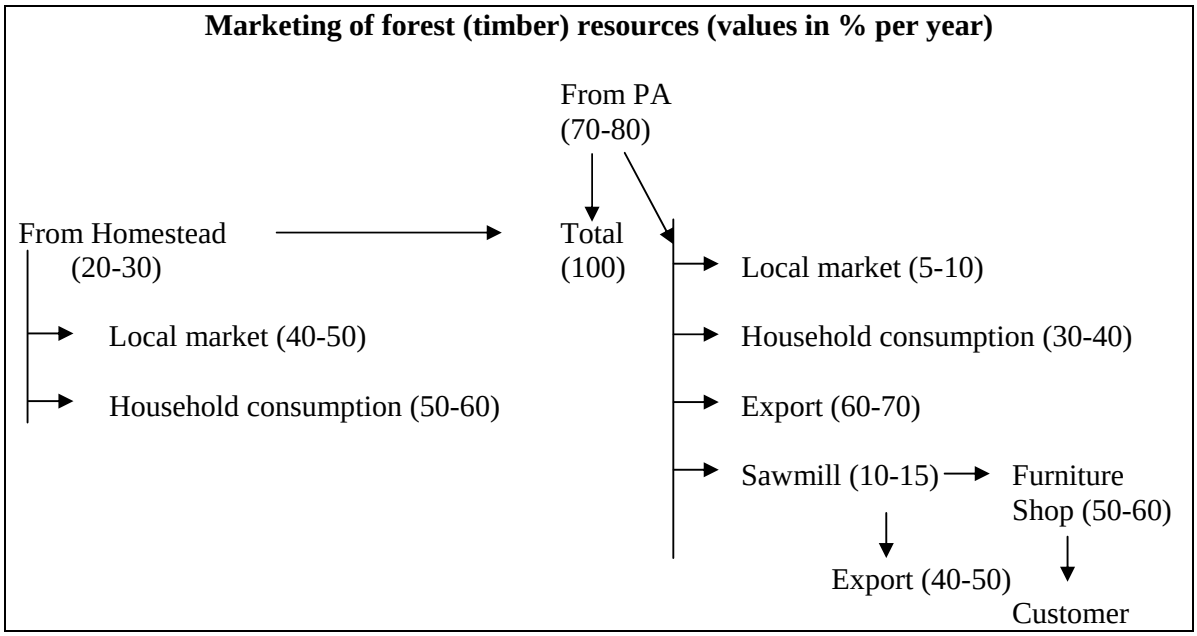


Timber harvested from PA is marketed in different channels in varying proportions to the local market, sawmill or wood processing industries, household, or exported outside PA landscape. In all PAs more or less bulk of timber is again exported outside from sawmill and feed the furniture shop as input.

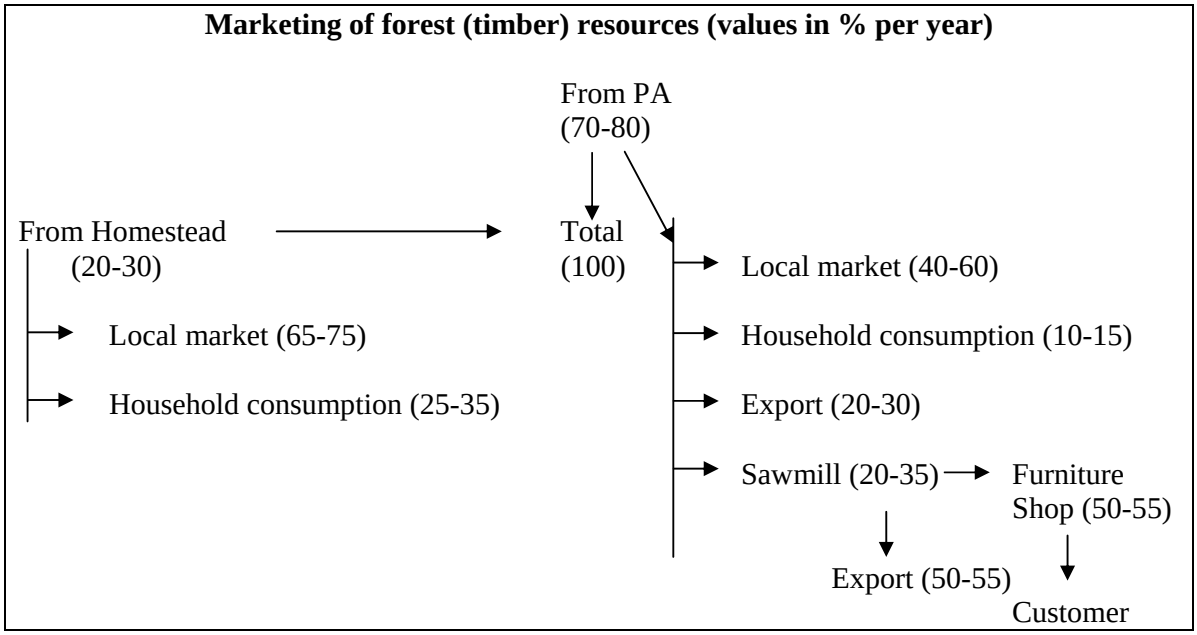
Marketing of forest (timber) resources for PA - CWS



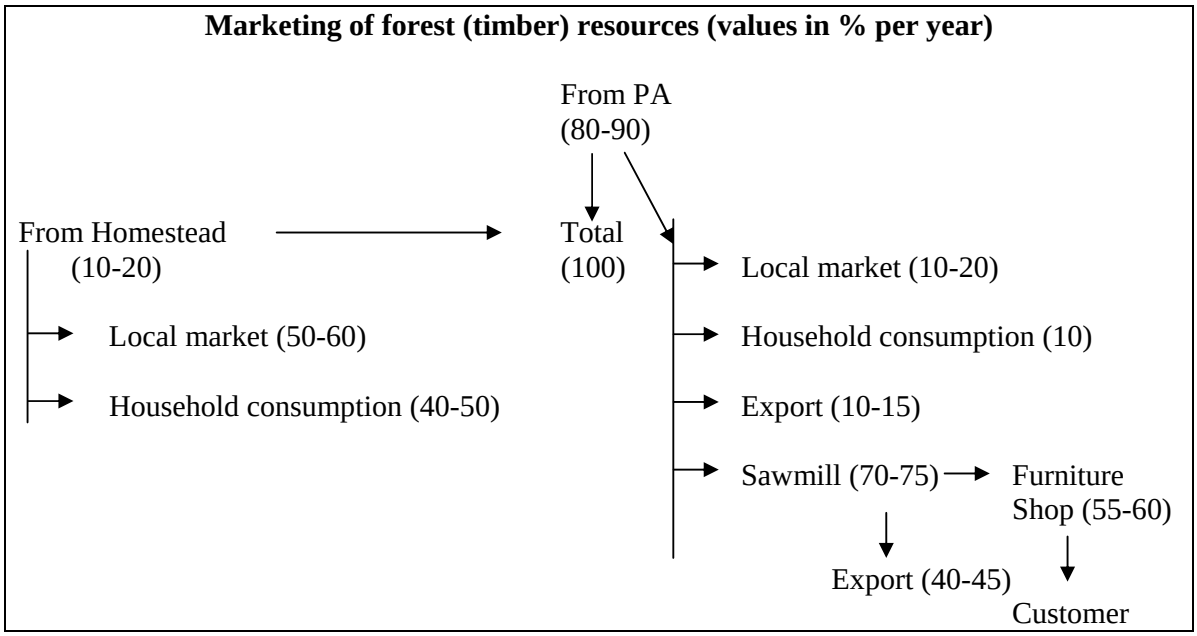
Marketing of forest (timber) resources for PA - LNP



Marketing of forest (timber) resources for PA - SNP



Marketing of forest (timber) resources for PA - RKWS



15 Information at Enterprise Level

Enterprise level information of 5 PAs are presented from Table 20-24. Nos. of sawmills are higher in southern PA than in northern PA (Table 20). Same trend also followed in case of brick field (Table 21). There is no sawmill in RKWS. Buy and sale ratio apparently depends on nos. of sawmill. Sawmills of south is older than the northern PA. As alternative fuel

energy supply traders (Table 23) of the PA are marketing gas cylinder, fuel wood, fuel oil and solar panel. There is no coal supplier in any of five PAs. There are front line national NGOs working in the PA (Table 24). Most of the NGOs are supporting the people of PA landscape with micro credit. The lead national NGOs like ASA, BRAC, GRAMEEN BANK are working both in northern and southern PA. ASA in RKWS and SHED and Pothikrit in TGR provide financial assistance for nursery and plantation program.

Table 20: Sawmill

	PA				
	TGR	CWS	LNP	SNP	RKWS
Nos. of sawmill	11	15	10	7	0
Buy/year (cft)	29,200	328,500	250,000	12,500	0
Sale/year (cft)	14,000	150,000	150,000	11,200	0
Establish (yrs)	17	35	7	22	0

Source: Data Collection at Enterprise Level

Table 21: Brickfield

	PA				
	TGR	CWS	LNP	SNP	RKWS
Nos. of brickfields	7	6	4	1	1
Sale/year (Nos.)	6,000,000	3,000,000	2,600,000	1,400,000	2,000,000

Source: Data Collection at Enterprise Level

Table 22: Fuel wood trader

	PA				
	TGR	CWS	LNP	SNP	RKWS
Supply/month (mond)	300	45,000	250	1,800	800
Supplier	Local people	Women, Children, Male	Local people	Local people	Local people
Sale/month (mond)	300	45,000	250	1,800	600
Export/month (mond)	0	20,000	7,500	1,500	0

Source: Data Collection at Enterprise Level

Table 23: Alternative fuel supply

	PA									
	TGR		CWS		LNP		SNP		RKWS	
	Total number*	Supply/ month	Total number	Supply/ month	Total number	Supply/ month	Total number	Supply/ month	Total number	Supply/ month
Gas Cylinder	4	600	8	560	0	0	2	2000	5	4000
Coal supplier	0	0	0	0	0	0	0	0	0	0
Fuel wood trader	16	300	30	45000	0	0	2	200000	5	150000
Fuel oil trader	17	8000	0	0	0	0	0	0	0	0
Solar panel trader	0	0	0	0	0	0	0	0	1	46

Source: Data Collection at Enterprise Level

*Values measured in number for Gas Cylinder, ton for Coal, mond for fuel wood, litre for fuel oil, number of units for solar panel.

Table 24: Micro finance institutes

Micro finance institutes	Activities*	PA									
		TGR		CWS		LNP		SNP		RKWS	
		Coverage	Spatial Coverage	Coverage	Spatial Coverage	Coverage	Spatial Coverage	Coverage	Spatial Coverage	Coverage	Spatial Coverage
ASA	MC	100	Hnilla	100	Chunati, Adhunagar, Harbang	80	Kamalganj, Madhapur	70	Deorgach, Paikpara, Shajahanpur	70	Ranigaon, Gazipur
	P	-		-		5		-		10	
	PL	-		-		8		-		5	
	ED	-		-		7		-		10	
	BF	-		-		-		30		-	
	N	-		-		-		-		5	
BRAC	MC	70	Hnilla, Teknaf	80	Chunati, Adhunagar, Harbang	60	Kamalganj, Madhapur	60	Deorgach, Paikpara, Shajahanpur	85	Ranigaon, Gazipur
	P	-		-		3		10		2	
	PL	-		-		17		5		8	
	ED	-		-		15		25		5	
	E	30		20		-		-		-	
PROSHIKA	MC	-	-	80	Chunati, Adhunagar, Harbang	-	-	-	-	-	-
	E	-		20		-		-		-	
BRDB	MC	100	Hnilla, Teknaf	100	Chunati, Adhunagar, Harbang	-	-	-	-	-	-
Gonasastha	H	100	Baharchara	-	-	-	-	-	-	-	
GRAMEEN BANK	MC	100	Whykhong, Hnilla, Teknaf	100	Chunati, Adhunagar, Harbang	60	Kamalganj, Madhapur	90	Deorgach, Paikpara, Shajahanpur	90	Ranigaon, Gazipur
	PL	-		-		25		-		-	
	ED	-		-		10		8		7	
	E	-		-		5		2		3	
HEED Bangladesh	MC	-	-	-	-	70	Kamalganj, Madhapur	-	-	-	-
	PL	-		-		10		-		-	
	HG	-		-		10		-		-	
	ED			-		10		-		-	
KRISHI BANK	MC	100	Whykhong, Hnilla, Teknaf	-	-	-	-	-		-	-
MUSLIM AID	MC	-	-	-	-	80	Kamalganj, Madhapur	-	-	-	-
	ED			-		20		-		-	
Pothikrit	MC	-	-	50	Chunati, Adhunagar, Harbang	-	-	-	-	-	-
	PN	-		50		-		-		-	
SHED	MC	80	Hnilla, Whykhong	-		-	-	-	-	-	-
	PN	20		-		-		-		-	
VERC	H	100	Whykhong, Hnilla, Teknaf	-		-	-	-	-	-	-

*Note: BF = Beef fattening; E = Education; ED = Enterprise development; H = Health; HG = Home gardening; MC = Micro credit; N = Nursery; P = Pisciculture; PN = Plantation; PL = Poultry & livestock

Source: Data Collection at Enterprise Level

16 Conservation Issues

People of TGR, CWS and RKWS are well aware about NSP as indicated by the name recognition of Nishorgo (Table 25). But this awareness indicator is lower in scale for LNP and SNP. More than half of the people can not differentiate between PA and RF. The inhabitants of the PA landscape do not have much cultivable land area but most of the people do not want to see forest being converted into agricultural land.

Table 25: Conservation Issues

Conservation issues	PA									
	TGR		CWS		LNP		SNP		RKWS	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Have you ever hard the name of NSP?	90	10	97	3	48	52	54	46	90	10
Would you differentiate between PA and RF?	16	84	20	80	44	56	15	85	50	50
Would you like to see forest being converted into agricultural land?	0	100	5	95	18	82	9	91	55	45

Source: Focus Group Discussion

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Annex I: Terms of Reference for Socio- Economic Survey at Five Nishorgo Support Project Sites

Background

The Nishorgo Support Project (NSP) has been designed to assist in achievement of the primary objective of conservation of biodiversity within the selected Protected Areas (PAs) of Bangladesh. This overall objective is to be achieved through support to the Forest Department and to key local and national stakeholders using a collaborative approach to the management of the targeted PAs and the surrounding landscape. To date, several co-management councils and committees has been formed with a view to capitalize upon the linkages and potential synergies between improved natural resource management, good governance, sustainable economic development and poverty alleviation at the local level. The Nishorgo Support Project (NSP) is working to achieve six separate but closely related objectives in support of this overall objective. One of the objectives is to "Create alternative income generation opportunities for key local stakeholders associated with pilot co-managed Protected Areas".

In order for pressure on Protected Areas to be reduced, Nishorgo Support Project has identified key stakeholders, alternative opportunities, and has been making identified opportunities available to stakeholders through training and credit support. The opportunities range from – poultry rearing, fish culture, vegetable gardening, beef fattening, etc targeted at the household level to activities that will have impact at the regional or landscape level like eco-tourism, small handicrafts, small business (like eco-cottage development) etc.

Against NSP's proposed objectives and subsequent interventions, it became imperative that a system is necessary to capture socio-economic development of targeted beneficiaries as well as economic development at the landscape level (Indicator 4: Livelihoods improve around pilot PAs).

Context and Purpose of this Consultancy

NSP is already collecting a range of socio-economic data under the project. Basic instruments for this data collection are:

- Community scorecard – with which communities via Committees and Councils score the activities and impact of the co-management process
- PA Management Scorecard – with which the FD scores, with assistance from NSP technicians, score the progress of PA management changes at the pilot sites.

NSP has taken an approach focused on ensuring the need for sustainability of the monitoring process, hence the use of simple scoring methods and, for the natural indicators, simple measurement of features such as birds.

However, it is important now to add further to the quantified socio-economic context in which the NSP is taking place. This data collection is important for evaluating the appropriateness of the NSP approach at the pilot sites. One would not expect all of this supplementary data collection to be done in a replication phase, but it is important now.

Objective of the Consultancy

The overall objective of this consultancy is to help NSP in designing and carrying out socio-economic survey (baseline) and to measure social and economic impacts. The Consultant will help NSP to better understand the following questions:

Key Areas we Need to Understand Better Using Monitoring Data

- With pressure to reduce extraction from the PAs, how many people that used to take resources from the PA are no longer able to do so?
- Who are these people?
    - Where do they come from? (inside or outside the landscape)
    - What is their income level generally?
- When the resources flow has be "cut off" to key poor from the area, what are they doing to replace the same products?
- Who is capturing the benefits of extracted resources from the PAs?
    - Who are the primary beneficiaries?
    - Who are the commercial organizations (if they exist) that are organizing the resource extraction?
    - Are they from the area/landscape?
    - Are they hired, and if so, by whom?
- What is the current volume of the resources being extracted from the PAs?

General Areas of Knowledge Improvement

The following includes the major areas in which monitoring will be improved and extended. Sample design and sampling frame may change by the general categories listed below.

I. General data summarized at landscape level: We must be capable of stating in a quantified terms what the key characteristics of our landscapes are, including
    a. How does the education system and enrollment compare to other areas
    b. What is the population composition, density and breakdown
    c. What is the health system access in our areas
    d. What is the religious and ethnic characteristics
    e. How poor are our landscapes compared to other areas
    f. What is the court system like compared to other areas
    g. How is the land used in our landscapes compared to other areas (tea vs agriculture vs forestry vs homestead/villages)
    h. In all these statistics, we must be able to answer the following questions:
        i. How does our makeup at the landscape level differ from
            1. Regional averages
            2. National averages
        ii. Wherever possible, we must collect data that is comparable with the BBS survey data so that we can make comparisons

II. Household level data- target beneficiaries (in RUGs or other enterprises). Main purpose of this data collection is to understand livelihood impacts (positive and negative) of changes stimulated by the Project. We must be careful not to over-collect extraneous data. However, we must collect the basics.

a. Target beneficiaries
    i. Data elements
        1. Family size
        2. Number of dependents
        3. Range of economic activities
        4. Variable roles of men and women
        5. Indicators of poverty
        6. Household fuel profile. What kind of energy used? Any renewable?
    ii. Frequency of collection and sample approach
        1. Suggest that some basic data collected for all beneficiaries, but that a sub-sample be collected with greater data intensity.
b. In-landscape control group: Same sets of data should be selected for a control group within the landscape who are not benefiting from any direct participation in group activities or other project activities. Purpose of this control data is to provide reference for such key questions as:
    i. How does our group selection compare to the overall landscape population
c. Out-of-Landscape control group:
    i. We have said that the incomes from our people would go up compared to others in the area. We need some kind of control for those from the area to see if this is happening.

III. <u>Gender specific data</u> on behavior and resource use
    a. Need to double check that we are on track for this.

IV. <u>Resource status and flow data</u>
    a. Need some kind of check points at key resource removal areas, especially for fuel wood. Can do this based on feedback from Sultana's study.

V. <u>Sector specific economic data</u>
    a. Tourism and Nature tourism
        i. Tourist visitors
        ii. Estimated resources expended by tourists
        iii. Tourism infrastructure and services.
    b. Saw mills
        i. How many
        ii. How much pass through
        iii. When created
    c. Lumber yard and lumber sales
        i. How many
        ii. How much pass through
        iii. When created
    d. Fuel wood collection and sales
        i. Need to capture this
    e. Banking and micro finance
        i. Terms of use of micro-finance
        ii. How much available
        iii. Local banks
    f. NGO services

i. We know which ones are out there, but what are they doing?
ii. How much are they providing in the landscape?

g. Availability of alternative energy (gas, coal, solar etc)
   i. What are current presence of companies delivering alternative fuel supplies (electric, etc)

Major Component Activities of the Consultancy

Major activities of the consultancy include the following:

- Help in design of socio-economic survey (sample unit, sample frame, survey design, degree of precision desired, data sheet, pre-test, Organization of field work like training of enumerators, and carrying out of survey at each of five NSP pilot sites (LNP, SNP, RKWS, CWS and TGR).

- Data entry, data base development, linking with GIS data base and Preliminary analysis of collected data and preparation of baseline report.

Methodology and Approach

The consultant will design the methodology based on his experiences, having input from COP, ESMS and others and from the information collected in the five Field Appraisals as well as from other documents produced for NSP. He will also examine existing socio-economic data base at BBS and/or NSP. Visit to five pilot sites may be necessary to gain more insight and to have a feel of the areas.

Expected Outputs and/or deliverables

The Consultant would be expected to produce:

1. *A report on "Approach and design of socio-economic survey at five pilot Nishorgo Sites"*: Based on the data need/requirement of NSP and based on site level assessment reports, a report elaborating survey design and steps to carry out the survey.

2. *A database of collected data after cross-checking and data brushing that can be linked with GIS data base.*

3. *A preliminary report including summary graphs and table that gives the socio-economic context of NSP sites, and baseline situation*: This will include those actions that should be taken by the Council and FD to put in place the most important features to support tourism growth.

Steps and Timeline

The following is a tentative list of activities and timeline for socio-economic survey:

Week 1: Initial discussions and share of thoughts and information and/or document with the Consultant. Identification and need assessment of

secondary socio-economic data (like in BBS or in Thana or Unions HQ) that will contribute to better design. Initial reconnaissance to all five sites.

Week 2 & 3: Preparation and submission of draft first deliverable. Comments from COP and others and approval.

Week 4: Field test of questionnaires, addition, revisions, edition etc and finalization of questionnaires. Preparation of data entry forms and data base.

Week 5: Formation of team to conduct survey, orientation and training of data enumerators and data entry operators.

Week 6, 7 &8: Supervise data collection, data entry, cross-checking.

Week 9 & 10: Final edits and completion and submission of final data base (deliverables 2) that can be linked with GIS data base of NSP.

Week 11-15: A preliminary report (deliverable 3).

Supporting Team and Working Relationships

In Dhaka, Philip (Chief-Of-Party), Dr. Sharma (PAMS/DCOP), Nasim (ESMS), and others will provide input to the Consultant. Main coordination and oversight will be done by Nasim. The consultant will be reporting to COP.

In both North and South sites, NSP-NACOM Staff (Dhruba and Safiq) will be the Regional Coordinators for the survey. Eco-guides, FOs will be the data enumerators (collector). The training and orientation sessions are to be led by the consultant, under guidance of Training Coordinator.

Estimated LOE and Allocation

Based on an 15 week consultancy and a five day work week, the allocated LOE for this effort is 75 days.

Annex II: Household Survey Questionnaire

AREA IDENTIFICATION

Protected Area : _____

District : _____

Upazila : _____

Union : _____

Village : _____

RESPONDENT'S IDENTIFICATION

Respondent's Name 1 _____

2 _____

ENUMERATOR & DATA ENTRY OPERATOR

Date of interview : ☐☐ ☐☐ ☐☐☐☐

Name of Enumerator : _____ Empl No. ☐☐☐☐

Name of Supervisor : _____ Signature_____

Name of re-interviewer : _____ Signature_____

Name of editor : _____ Signature_____

Name of data entry operator : _____ Signature_____

1. HOUSEHOLD PROFILE

Name of HH Member (Start with the name of HH head)	Sex[1]	Age* Year	Education[2]	Occupation[3]
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				

[1]Sex: *1=Male, 2=Female*
[2]Education: *0=No class, 1=Class I-V, 2=Class VI-IX, 3=SSC & HSC, 4=Degree & above, 5=Not applicable (If age is less than 5 years), 6 = Dropped-out*
[3]Occupation: *0=Unemployed, 1=Agriculture, 2=Business, 3=Govt. Employee, 4=Non-Govt. Employee, 5=Pensioner,6=Other, 7=Child labourer, 8=Not applicable (when below age 5 years)*

Please enter HH heads details in first row
**Age: Round up the age in year for the individuals 5 year old and above.*
If the household got more than 11 members use a separate piece of paper.

1A. RELIGION Muslim = 1, Hindu = 2, Christian = 3, Buddha = 4, Other = 5 ☐
1B. ETHNICITY Adibashi= 1, Non-adibashi= 2, Rohinga=3, Other = 4 ☐

2. MIGRATION PATTERN

a) Have you and your family always resided in this area? Yes/No

b) Have you migrated to this place? Yes/No

If yes, When? ____(year)

3. HOUSEHOLD HOUSING and FACILITIES

3A. Type of residential main house
a) Jhupri ☐ b) Tinshed ☐ c) Semi-pucka ☐ d) Pucka ☐ e) Others (specify) ☐

3B. No of rooms in the house (main + other) ☐

3B. Household lightening ☐
Code: 1. Electricity, 2. Kerosene, 3. Others (Specify)

4. HOUSEHOLD HEALTH STATUS

4A. Type of latrine ☐

Code: 1=Sanitary, 2=Pucca, 3=Kutcha, 4=Open field, 5=Others (Specify)

4B. Source of drinking water

i) Do you have access to safe water? ☐ Code: 1=Yes, 2=No

ii) What are the sources of drinking water? ☐

Code: 1=Tap, 2=Tubewell, 3= Well, 4=Pond, 5=Canal/River, 6=Rain water

iii) Ownership of drinking water source: ☐

Code: 1=Own, 2=Neighbour, 3=Govt. 4=Hired, 5=Natural, 6=Others (Specify)

4C. Prevalence of malaria disease

i. Do any of your member infected with Malaria during last 1 year? ☐ Code: 1= Yes, 2 = No

ii. If yes, How many? ☐

5. LAND RELATED INFORMATION

Information of land *(In Decimals)*

	Land Type	Area			
1	Total owned land				
2	Homestead Land				
3	Agricultural land				
4	Other land				

6. ECONOMIC CONDITION OF HOUSEHOLD

6A. How much do you earn in a month? _____ Tk.

6B. What is the status of your economic condition (for last 1 year)? ☐

Code: 1=Permanent insolvency, 2=Temporary insolvency, 3=Equal income and expenditure, 4 = Solvent, 5 = Savings

8. HOUSEHOLD FUEL FOR COOKING

I. What are your sources of fuel?

	1=Yes, 2=No	Amount
Straw		
Bran		
Wood/bamboo*		
Kerosine		
Electricity		
Gas		
Others		

* Please measure amount in mond

Annex III: Village Profiling Guide

AREA IDENTIFICATION

Protected Area : _____

Range Name : _____

District : _____

Upazila : _____

Union : _____

Village : _____

RESPONDENT'S IDENTIFICATION

Respondent's Name 1 _____

2 _____

3 _____

4 _____

4 _____

5 _____

ENUMERATOR & DATA ENTRY OPERATOR

Date of interview : ☐☐ ☐☐ ☐☐☐☐

Name of Enumerator : _____ Empl No. ☐☐☐☐

Name of Supervisor : _____ Signature_____

Name of re-interviewer : _____ Signature_____

Name of editor : _____ Signature_____

Name of data entry operator : _____ Signature_____

1. Total number of households in the village: [ ]

2. Total population of the village: [ ]

3. How many of these people provide health services in the village

Health service provider	Total NOs
MBBS doctor	
LMF doctor	
Homeopath	
Kabiraj	
Paramedics	
Sales persons of medicine shop	
Ojha	
Others (please specify	

4. Social institutions in the village

Institutes	Total NOs
Adult education	
Social welfare	
Recreation	
Youth Clubs	
Cooperative societies	
Libraries	

Annex IV - Topical Outline for Focus Group Discussion Guide

Village: Mouza: Union:

Thana: District: PA:

Total Population:

Total Households:

# of Participants:

Facilitators:

Select the priority issue that applies to the particular focus group and use the following points as a guide to the interview. Ensure that variations among different strata within the stakeholder group are captured.

A. Population Characteristics

Key Questions	Response		
1. How many of population are (This year? 5 years back?) - ethnic minority? - Tea estate residents - Rohinga (listed and unlisted) - Recent migrants VS long term (>10 years) migrants - Landless VS landowning - Employed VS unemployed - Homeless, homeowning, renting	Issues	This Year (2006)	5 years back (2000)
	Ethnic minority		
	Tea Estate Residents		
	Rohinga		
	Recent Migrants		
	Long term migrants		
	Landless		
	Landowning		
	Employed		
	Unemployed		
	Homeless		

Key Questions	Response		
All data values in **NUMBERS**	Homeowning		
	Renting		
2. What was their general poverty profile? (Last 5 years) - Income/expenditure per month - Savings	Poverty indicators	This year (2006)	5 years back (2000)
	Income / month		
	Expenditure / month		
	Savings / month		

B. Resource Extraction

Key Questions	Response				
1. Extraction of forest produces from PA prior to NSP - How many? This year? Last year? - Who were involved? (HH head, children, male/female) - List by category of use: Fuelwood Log NTFP	Forest product extraction from PA	This year (2006)		5 years back (2000)	
		Total (%)		Total (%)	
	How many?	HH head (%) Children (%)		HH head (%) Children (%)	
		Male (%) Female (%)		Male (%) Female (%)	
	Resource Use				
		This year (2006)		5 years back (2000)	
	Fuelwood				
	NTFP (honey, bamboo, sungrass, cane, medicinal plants, etc.)				
	Log				
	Wildlife				

2. How many of them have stopped extraction of resources from PA? - % of total population - how long (months/years) - what are they doing as an alternative to income (list and estimate % of total)	Resource Extraction	This year (2006)	5 years back (2000)	
	How many used to collect (% of total population)?			
	What are they doing as an alternative to income (% of total population)? a) b) c) d) e)			
3. Worse off conditions due to reduced access to PA - How many? This year? Last year? - % of population affected? - Worse of conditions: decreased income, enterprises, resource use, etc.	What are the worse off conditions due to reduced access to PA? (% of total population)	This year (2006)	5 years back (2000)	
	a) Reduced income			
	b) Scope to develop new enterprise			
	c) Decreased resource use			
	d) Reduced Hunting			
	e) Mental condition			

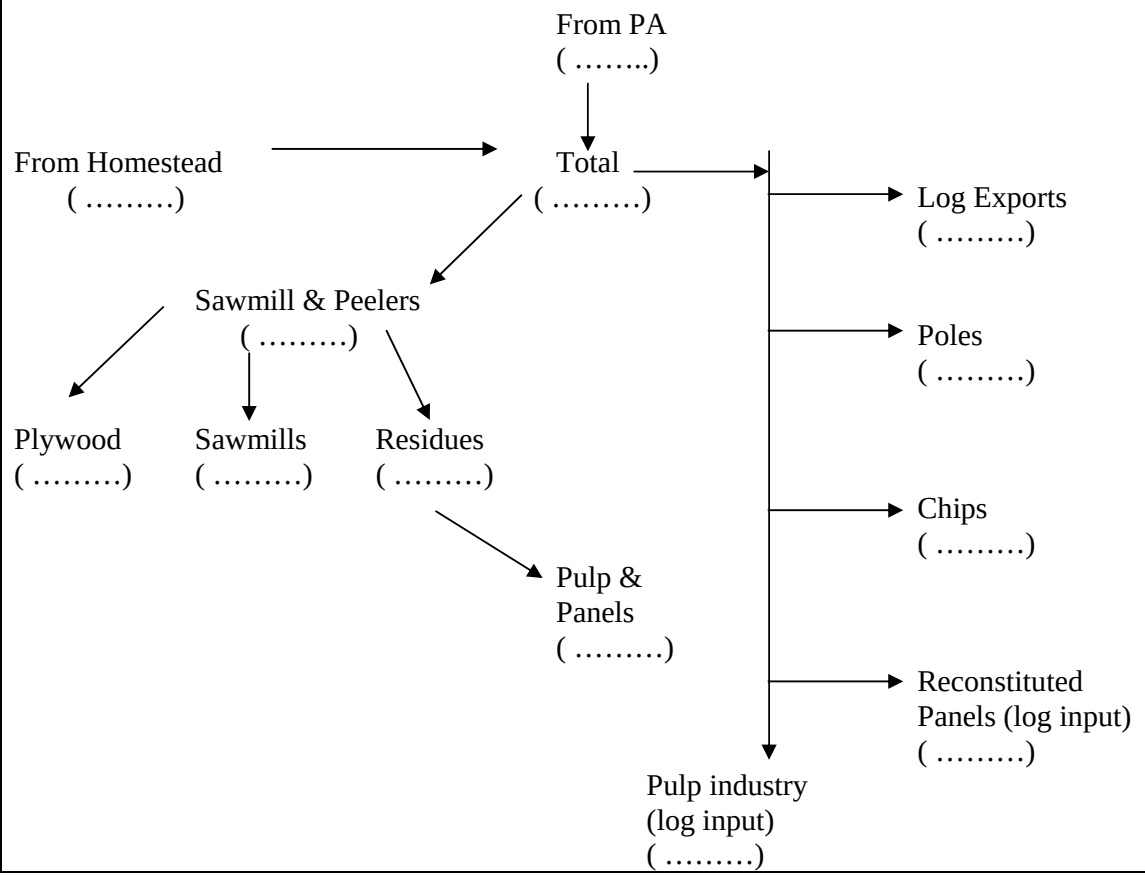
4. How much value the stakeholders give up after reduced access to PA? (compare present and previous conditions and prioritize)	Issues	This year (2006)	5 years back (2000)	
	How much value (in terms of money) the stakeholders give up after reduced access to PA?			
5. Where did these people come from? How long distant (km)?				

C. Resource Flow

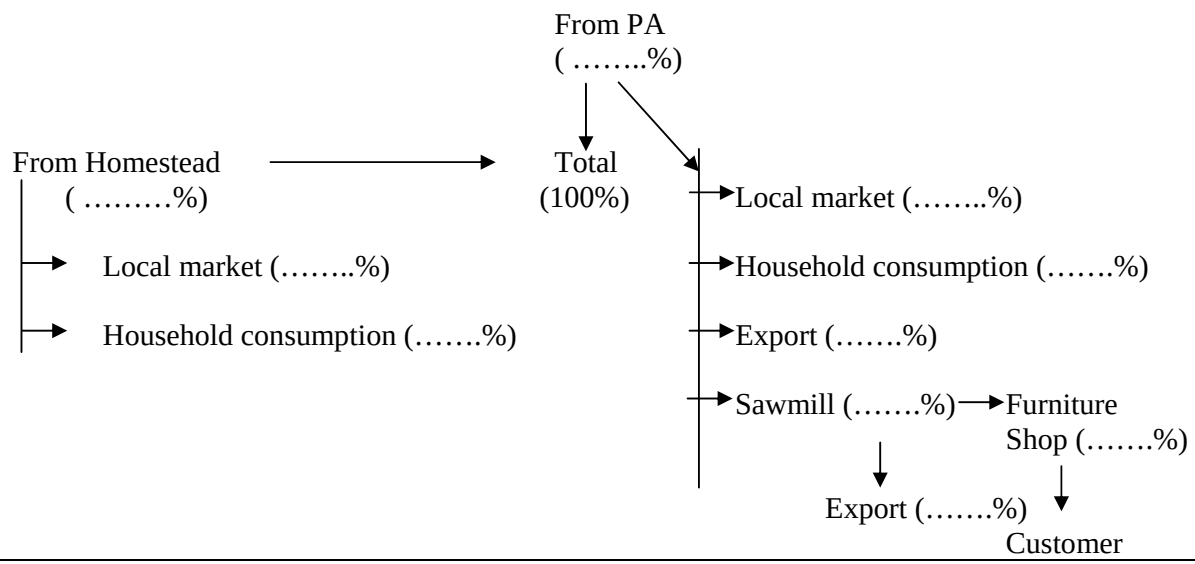
Key Questions	Response			
1. How much (in tons) fuel wood is being extracted from PA? This year? Last year? - self consumption - brickfields - restaurant	How much (in tons) fuel wood is being extracted from PA?	This year (2006)	5 years back (2000)	
	a) Self consumption			
	b) Brickfields			
	c) Restaurant			
	d) Outside/Export			
2. Proportion of population using solid fuels - Wood/Bamboo - Leaves/Husk - Cow-dung	Population using solid fuels? (% of total population)	This year (2006)	5 years back (2000)	
	a) Wood/Bamboo			
	b) Leaves/Husk			
	c) Cow-dung			

3. How much wood (in tons) flow to
- Sawmill & peelers
    - Plywood
    - Sawmills – Pulp & panels
    - Residues
- Log exports
- Poles
- Chips
- Reconstituted panels (log input)
- Pulp industry (log input)

Log Flow (values in cft per year)



4. Marketing information of forest resources - From where do you collect forest resource? - Where do you sell your collected fuelwood? - What is the typical structure for collection and sale of key resources	**Marketing of forest (timber) resources (values in % per year)**



D. Conservation Issues

Key Questions	Response		
- Have you ever hard the name of NSP/Nishorgo? - Would you differentiate between PA and RF? - Would you like to see forest being converted into agricultural land? - Do you think this PA is justified and help to improve livelihood of your community? - If yes, How?	Measure % of total population	Yes (%)	No (%)
	Have you ever hard the name of NSP/Nishorgo?		
	Would you differentiate between PA and RF?		
	Would you like to see forest being converted into agricultural land?		
	Do you think this PA is justified and help to improve livelihood of your community?		
	If yes, How?		

Annex V: Guideline for Data Collection at Enterprise Level

Name of PA: _____

a. Saw Mills

Issues	Information
i. How many saw mills are in the landscape?	
ii. How much amount (cft.) do you buy as raw material for last 1 year?	
iii. How much amount (cft) processed material have been sold for last 1 year?	
iv. When created	

b. Brick fields

Issues	Information
i. How many	
ii. Nos. of brick sold for last 1 year	

c. Fuel wood collection and sales (to be collected from fuel wood trader)

Issues	Information
i. How much (mond) do you collect from your supplier?	
ii. Who are those supplier?	
iii. Whom do you sell? And how much (mond) in a month?	
iv) Do you export outside district? And how much (mond) in a month?	

d. Banking and micro-finance
List name of micro-finance institutes including NGOs and local bank with activities:

Name of Bank/NGO/Micro-finance Institutes	Activities	Coverage (%)*	Spatial Coverage (Union)
	a. b. c. d. e.		

* The proportionate values (%) of credit facilities provided by the microfinance institutes (NGO, Krishi bank, etc.) with respect to activities like IGA, poverty alleviation, livelihood, etc.

e. Availability of alternative energy (gas cylinder, coal, solar, etc.)

i. What are current presences of companies delivering alternative fuel supplies (electric, etc.)

Alternative Energy Sources	Total Number	Supply Value/month*	Improvement Possibility**
Gas Cylinder			
Coal supplier			
Fuelwood trader			
Fuel oil trader (kerosene)			
Solar panel trader			

*Values measured in number for Gas Cylinder, ton for Coal, litre for fuel oil, number of units for solar panel.

** Comments/suggestions from the trader on improving sale and distribution

Annex VI: Fuel Wood Survey Questionnaire

AREA IDENTIFICATION

Protected Area : _____

District : _____

Upazila : _____

Union : _____

Village : _____

Date:

Sl. No.	Weight (mond)	Self-consumption (%)	Sale (%)	Sale Value (Tk.)
1.				
2.				
3.				
4.				
5.				
6.				
7.				
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