Chapter - One

INTRODUCTION

1.1 Background

Protected areas are mainly established for the conservation of nature, environment and bio-diversity, such areas play significant role in livelihood of people surrounding them. Protected Areas can be in various forms such as National Parks (NP), Buffer Zones (BZ), Strict Nature Reserves (SNR) and Wildlife Reserves (WR). Depletion of bio-diversity affects the existence of human life, so establishment of such areas plays significant role in conservation of nature and existence of human beings in this planet.

In present world, it has been found that most of the countries have demarcated certain areas for conservation of nature and environment as well. The list of protected areas specifies that PAs cover 18.8 million square kilometers or 11.5 percent of global land surface (UN 2003). In south Asia, the protected areas number reached 1892 covering about 49 million hectares. This represents about 6 percent of total area of south Asia. Although the percentage of coverage is lower than global coverage of 11.5 percent, individual countries have remarkable achievements: Bhutan has designated over 27 percent of its territory as protected areas and Nepal is at 19.42 percent or 28585.7 sq.km.

With the enactment of National Parks and Wildlife Conservation Act 1973, Nepal today has nine national parks, three wildlife reserves, three conservation areas and one hunting reserves in a period spanning less than three decades. From a total area of more 4584 Sq.km. in 1970s, protected areas today covers 28585.7 Sq.km. or 19.42 percent of the country's total land area including nine buffer zones (DPNWC 2005). Pas management has provided protection to several flagship

species like one horned rhinoceros, tiger, Indian wild elephant, snow leopard, musk deer, bara singha and gharial.

While, the protected area system came as a blessing for wildlife, several restrictions and regulation imposed and the people living around there protected areas, gave away to large-scale conflicts between park management and local communities. The major issues that surfaced included resources use are conflicts, livestock grazing pressure, wildlife human encounters, and inadequate alternative resources and poaching. It soon became apparent that unless these issues were properly addressed, the government conservation effort would not be balanced and sustained.

All our activities should be used for betterment of the people. National Parks have tried to become representative of conserving certain vulnerable ecosystem of the world. Those parks today protect vast areas of diverse natural landscapes on the earth surface, which are significantly rich in bio-diversity. They are indispensable element of nature conservation. Many benefits of national parks have been identified. If helps to maintain the essential ecological process in natural ecosystems, it preserves the diverse species and this genetic variation and thereby prevent irreversible damage or loss of the world's natural heritage; it maintains the productive capacities of ecosystems and safe guard the habitats critical for the sustainable, use of species; and it provides opportunities for scientific research, education, training, recreation and tourism. The benefits of natural parks by for exceed. The benefits of national parks by far exceed the cost incurred in managing them.

1.2 The National Park Paradigm

IUCN describes national park as follows:

“National area of land or sea designated to (a) protect the ecological integrity of one or more ecosystem for present and future generation, (b) exclude exploitation or occupation inimical to purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible (IUCN, 1978)

National parks are the protected areas managed mainly for ecosystem protection and recreation. The objectives in the establishment of National Parks given by IUCN 1978 are:

- To protect natural and scenic areas of National and International significance for spiritual, scientific educational or tourism purpose.
- To perpetual in as natural site as possible representative examples of physiographic regions, biotic communities, genetic resources and species to provide ecological stability and diversity.
- To manage visitor use for inspirational, educational cultural and recreational purposes at a level will maintain the area in a natural or near natural state.
- To eliminate the there after prevent exploitation or occupation inimical to the purpose of designation.
- To take into the account the needs of indigenous people, including subsidence resource use, in so far as these will not adversely affect the other objective of management.

In 1978, the National Parks and Wildlife. Conservation Act came into force and provides the legal base forth management of National Parks and Protected Areas. In the year 1973, Royal Chitwan National Park was declared as the first National Park of Nepal.

According to NPWC Act 1973m National Park it defined as " An area for conservation management are utilization of animals, birds, vegetation together with natural environments". As per out (4^{th} amendments 1997) there are four types of protected areas which fall under category I, II, III and IV of IVCM's International system of protected areas categories. In Nepal at present all together 16 protected areas exist vizs nine national parks, three wildlife reserves three conservation areas and one hunting reserves covering about 19.42 percent of total land area (1471 Sq. km) of the country.

U.S. park system and British park system are two major paradigms in the field of conservative. According to the US park system, national parks are considered as places for conserving the bio-diversity limiting the movement of people and they are to be protected by the highest national authority. These aspects of the North American parks have been widely applied in the third world countries. In contrast, the British park system recognizes man as an integral component of natural landscape. Thus, British park authorities have always impropriated the principles of eco-development, involving sustainable resource use and rural development. They have promoted agriculture within the national parks declines. This indicators that, there are two extremely opposite concepts of national parks between these two systems. While U.S. parks are based on a romanticized vision of primitive areas and the British parks are conceived through a pragucatic approach of the co-existence of man and nature.

Third world countries are heavily influenced by the U.S. model to establish national parks affecting the local traditions and beliefs of cultures and such, in some instances result in disastrous effects. The some instances result in disastrous effects. The livelihood of indigenous people or local people who were depending on forest resources, become much more insecure and pushed towards the uncertain future. Relocation obsolescence of cultural values, social disintegration, economic

dependency, unsustainable harvesting and reserve conflicts over resources use are some of the major negative impacts of the establishment of national parks based on U.S. model.

The conservationist in the so-called third world countries have now realized that the concept of strict protection is ill-suited to the needs and to resolve the problems of local, often native people, and thus remain largely inappropriate western concepts the prospective on the need and aspiration of the rural population have been missing in that concept of national parks. Failing to recognize this constellation will inevitably result in the failure of any national park plans. In the same vein, the success of wildlife conservation beyond the parks will also depend on the degree to which concept and design suit local conditions.

It is recognized that national parks embedded in a wilder regional system are determined by its population, organization, technology and environment by which they are surrounded and with which they interact. This call for urgent attention to three major aspects of national parks: (i) the role of national parks in regional environment planning, (ii) the link between national parks and people living in their vicinity and (iii) role of national parks in comprehensive land use management.

1.3 Statement of Problem

Agricultural lands and human settlements are very near to many national parks in developing countries. The people living in and around such national parks have interacted with them in multifarious way. Some of them have build an ecological relationship with the park, whereas in certain other cases, the existence of national parks have been questioned because of growing conflict over land use rights and practices. Thus, national parks are facing several challenges out of the conflicts of

interests, i.e. the conservation goal of the park authority and need of surrounding communities.

Forest is the major source of livelihood of people in Nepal. Forest provides firewood, timber, fodder, pastureland, non-timber forest products (herbal medicine) to people. Also, forest plays significant role in balancing the environment and hydrological cycle. Further it is source of raw material for different small and large industries. The harvesting of such forest is being unsustainable in recent decade. Depletion of biodiversity, environmental degradation, global warming is rising day by day. So, conservation process and programs set by establishing protected areas. Thus, protected areas are directly or indirectly concerned with sustainable livelihood of people, especially residing near to it. The conflicts between park and people are very common in these days. The consumption of products from PAs are unsustainable and the sustainability of livelihood of local people is also questioned in such situation.

Thus, this research has tried to find out the major role of PAs in sustainable livelihood of the people residing adjacent to PAs. Since the trends in agricultural resource, energy, atmosphere, economy, industry, society and food are the main indicators of ecosystem sustainability, such trends in the study area which directly affect the livelihood of people has been assessed. The policies and programs pertaining to PAs under study i.e. the Shivapuri National Park, has also been analyzed. Mainly, socio-economic status of the people of the study area i.e. Mulkharka (Sundarijal/VDC) has been studied.

1.4 Objectives of the Study

The main objective of the study is to find out the role of Shivapuri National Park in the sustainable livelihood of the people living nearby. The specific objectives are:

1. To analyze the policies and programs relating to Shivapuri National Park.
2. To assess the impacts of Shivapuri National Park in livelihood of the local people.
3. To measure the standard of living of the local people.
4. To enumerate the major agricultural products and productivity in the area.
5. To find out the people's awareness about conservation of nature.

1.5 Significance of the Study

It is becoming increasingly necessary to broaden our knowledge about the consequences of on going environment changes and at the same time, to learn how to combat some of the determinate effects, which have already occurred. It is necessary to evaluate the work which are being conducted in the name of conservation and protection, whether it is useful or not to local households or community. It is also important to understand the problems of local people and impacts on their everyday life after the introduction of park, and related conservation policies.

The research has tried to find out the answers to following questions, which are directly associated with the livelihood of people:

i. What are the impacts of the programs conducted by Shivapuri National Park on the local households and the community?
ii. What types of policy and program interventions are pertinent to improve the livelihood of the local people?

1.6 Limitations of the Study

i. The findings of the study are limited in the selected sample units.

ii. The study is very specific like that of case study and concerned with the people living inside the Shivapuri National Park; It may not represent the relationship between the parks and people in other places of the country.

iii. The variables in present study are personally defined in view of the general characteristics of the study and therefore they are applicable only to the present context.

iv. The main constraint of the study is 'limited time' for field study and resource limitation.

1.7 Organization of the Study

This dissertation is divided into eight chapters. The first chapter deals with the introduction of the study including background, national park paradigms, statement of the problem, objectives, significance and limitation of the study Chapter Two includes the review of literature including theoretical review and review of related studies. Chapter Three concerns with methodology and tools used for data collection, handling, and analysis, Chapter Four deals with the introduction of study area. Chapter Five, Six and Seven concern with the results, data findings and analysis. Finally, Chapter Eight concerns with conclusion and recommendations.

Chapter –Two

LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Concept of Protected Area:

Protected Areas (PAs) were initially established in Nepal for protection of wildlife. However, the objectives have now been broadened to include the preservation of natural historic, scenic and cultural values. According to latest estimates 28585.7 sq. km (19.42%) of total area of Nepal, is now declared protected. The National park and Wildlife conservation Act 1973 provides the legal basis for the management of PAs. The Act was later on amended four times in 1974, 1982, 1989 and 1994 and recognizes following six categories of PAs in Nepal.

National Parks

The NPWC Act defines a national park as an area set aside for the conservation and management of the natural environment including the ecological, biological and geomorphic associations of aesthetic importance. To, develop the area for eco-tourism is the second objective, provided that it sops with sustainable conservation.

Strict Nature Reserve

This is an area of unusual ecological or other significance, set-aside for the purpose of scientific study. The inaccessible lower Barun Valley, fed by the Saldima River a glacier-fed tributary of the Arun River, is the most pristine area in Makalu Barun National Park, and they has had been designated as a strict Nature Reserve, the first in Nepal.

Wildlife Reserve

A Wildlife Reserve is an area established for the conservation and management of plants and wildlife and their habitat.

Hunting Reserve

It is an area see-aside for the conservation and management of wildlife to provide opportunities for legal recreational hunting.

Conservation Areas

This type of protected area is managed according to an integrated plan for the conservation of the natural environment and the sustainable use of the natural resources contained within it.

Buffer Zone

It is designated area surrounding a national park or reserve within which the use of forest products by local people is angulated to ensure sustainability.

2.1.2. Concept of Park – People Conflict

Conflict is disagreement between two parties, system Vs system, group Vs group or individual Vs individual.

According to Coser (1967) conflict is a struggle over values and claims to scarce status, power and resources which the aim of opponents is to neutralize, injure or eliminate the rivals.

Local people who have been enjoying free access to the forest areas and were able to meet their needs from inside resources now no longer has legal access since the area has been covered by national parks. Local people have seen the park as an

attempt by the government to curtail their access to their traditional rights of resource use. As a result illegal activities such as hunting and poaching have intensified, and there are many cases of confrontation between park officials and local people. Moreover the wild animals of national parks have caused losses by damaging the villagers' agricultural crops and predating on livestock, which has further aggravated the problem.

The conflict between national parks and local people is rooted in conception of parks as area, without human habitation, which is heavily based on a U.S park model. The concept of a national park in the strict sense of "Preservation" has thus entangled people in conflicts over the traditional use of such areas, concept based on intellectual or aesthetic values have little meaning to local villagers who have to struggle day-in day-out for their existence. If the source of the next meal is a major worry, aesthetic or environmental logics for conservation have little relevance to people (Mishra, 1983).

The crucial matter then becomes maintaining a harmonious relationship between a national park, and communities in its surrounding area. The question is how to fulfill the objectives of both and achieve sustainable development. Thus, the cultural, political and socio-economic problems related to wild life conservation have to be solved before purely ecological problems can be talked (Walter, 1981).

2.1.3 Concept of Sustainable Livelihood:

A livelihood comprises the capabilities assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and it the future, while not undermining the natural resource base. (DFID Guidance sheet 2001).

WWF has followed the sustainable livelihood approach of DFID in conservation of nature and upliftment of local people sustainable livelihood approach follows the following directive principles:

1) People Centered

The livelihood approach puts people at the centre of development. This focus on people is equally important at higher levels (When thinking about the achievement of objectives such as poverty reduction, economic reform or sustainable development) as it is at the micro or community level (where in many cases it is already well entrenched).

At practical level, this means that the approach

- Starts with an analysis of people's livelihoods and how there have been changing overtime.
- Fully involves people and aspect their view.

Sustainable poverty reduction will be achieved only if external support (i.e support from outside the households) works will people in a way that is congruent with their current livelihood strategies, social environments and ability to adopt.

2) Holistic

The livelihood approach attempts to identify the most pressing constraints faced by, and promising opportunities open to, people regardless of where (i.e. in which sector, geographical space or level from the local through to the international) these occur. It built upon people's own definitions of these constraints and opportunities and, where feasible, it then supports people to address/realize them.

The livelihoods frame work helps to organize the various factors which constrain or provide opportunities and to show how these relate to each other.

- It recognizes multiple influences on people and seeks to understand the relationship between these influences and their joint impact upon livelihoods.
- It recognizes multiple actors (from private sector to national level ministries from CBOs to newly emerging decentralized government bodies).
- It acknowledges the multiple livelihoods strategic that people adopt to secure their livelihoods.
- It seeks to achieve multiple livelihood outcomes, to be determined and negotiated by people themselves.

In this way it attempts to gain a realistic understanding of what shapes people's livelihoods and how that various influencing factors can be adjusted so that taken together they produce more beneficial livelihood outcomes.

3) Dynamic

Just as people's livelihoods and the institutions that shape them are highly dynamic, so is this approach. It seeks to understand and learn from change so that mitigate negative patterns, it explicitly recognizes the effects on livelihoods of external shocks and more predictable, but not necessarily less damaging, trends. Attempting to capture and build upon such livelihood dynamism significantly increases the scope of livelihood analysis. It calls for ongoing investigation and an effort to uncover the nature of complex, two-way cause and effect relationships and iterative chains of events.

4) Building on Strengths

An important principle of sustainable livelihood approach is that it starts with an analysis of strengths, rather than needs. This does not mean that it places undue focus on the better endowed members of the community. Rather, it implies a recognition of everyone's inherent potentials, whether this derives from their strong social networks, their access to physical resources and infrastructure, there ability to influence core institutions or any other factor that has poverty reducing potential. In 'livelihood focused' development efforts, a key objective will be to remove the constraints to the realization of potential. Thus, people will be assisted to become more robust, stronger and better able to achieve their own objectives.

5) Macro-micro links

Development activity tends to focus at either the macro or the micro level. The livelihoods approach attempts to bridge this gap, emphasizing the importance of macro level policy and institutions to the livelihood options of communities and individuals. It also stresses the need for higher level policy development and planning to be informed by lessons learnt and insights gained at the local level. This will simultaneously give local people a stake in policy and increase overall effectiveness. It is, though, a difficult task to achieve. Much macro policy is developed in isolation from the people it affects, Indeed, understanding of the effects of policies on people (what actually happens as opposed to what is assumed will happen) and people on policies (the policy making process itself) is remarkably limited. Both these areas will need to be better understood if the full value of the livelihood approach is to be realized.

6) Environmental, Social, Economical and Institutional Sustainability

While it is common to hear and use the short hand livelihood approach the nation is sustainability is key to this approach. It should not ignore or marginalized.

Sustainability has many dimensions, all of which are important to the sustainable livelihoods approach. Livelihoods are sustainable when they

- Are resilient in the face of external shocks and stresses;
- Are not dependent upon external support
- Maintain the long term productivity of natural resource; and
- Do not undermine the livelihoods of, or compromise the livelihood options open to others

Another way of conceptualizing the many dimensions of sustainability is to distinguish between environmental, economic, social and institutional aspects of sustainable system.

- Environmental sustainability is achieved when the productivity of life-supporting natural resources is conserved or enhanced for use by future generations.
- Economic sustainability is achieved when a given level of expenditure can be maintained over time. In the context of livelihoods of the poor, economic sustainability is achieved if a baseline level of economic welfare can be achieved and sustained. (The economic baseline is likely to be situation-specific, though it can be thought of in terms of the 'dollar-a-day' of the International Development targets).
- Social sustainability is achieved when social exclusion is minimized and social equally maximized
- Institutional sustainability is achieved when prevailing structures and processes have the capacity to continue to perform their functions over the long terms.

2.2 Review of Related Studies

Poudel (2005) has reported that, in Nepal, like else where in the world, the approach to protected area (PA) management has evolved gradually. The Department of National Parks and Wildlife conservation (DNPWC) is sole government organization with a mandates to maintain ecological integrity of protected areas (27,800Km^2). In the beginning, the need was to protect key species of wildlife whose populations were fast diminishing. The management focus then, was on species conservation especially the greater one-horned rhinoceros, Bengal tiger, Indian wild elephant, swamp deer, wild water buffalo which were under threat. The capacity of protected area managers and staff in those days required them to be trained in the strict law enforcement practices so as to meet the conservation needs. The experience of last three decades of bio-diversity conservation, suggests a shift in the management towards the ecosystem approach because it maintains viable populations of endangered wildlife in areas where the resident people are their custodians.

In early 1990s, the participatory approach in bio diversity conservation was adopted by HMG/DNPWC with establishment of Annapurna Conservation Area. The responsibility of managing and financing the Annapurna conservation Area Project has been entrusted to King Mahendra Trust for Nature conservation (KMTNC), a national NGO. Similar arrangements are developed for the Manaslu Conservation Area and Kanchanjunga Conservation Area, who have helped DNPWC is reducing financial burden to some extent.

Significant amendments were made in the National Parks and Wildlife Conservation Act (1973) allowing the creation of buffer zones around the protected areas. The amendment has also made provisions for the sharing of 30-50 percent of the revenues annually earned by the parks/reserve for community development activities in the concerned buffer zone(s). The concept and approach

of establishing buffer zone is initiated by the Department of National Parks and Wildlife Conservation (DNPWC) has advocated social mobilization by striking of a balance between conservation and human needs through Participatory Conservation Program (PCP) now. This approach was, in a sense, an extension of the Annapurna Conservation Area Project (ACAP) in that it aimed to achieve HMG/N's conservation goals by entering into partnership with communities living in the buffer zones(s). With the application of new approach in conservation, the training needs of protected area manage and staffs have also changed. Today they need not only know about wildlife natural resources and their conservation, but should also be able to see it in broader picture of socio-economic dimension.

Upreti (2001) has concluded that here is no single form and model for handling natural resources related conflict in the community. Rather it is a broad, dynamic and complex process constantly evolving and responding to changing circumstances. So long as the present dominant method of addressing conflict in the country continues, conflict will increase more in the future together with the expansion of development interventions. It becomes clear from both the empirical evidences and theoretical background that conflict is ubiquitous. Conflict, are from being static is evolving under the pressure of growing resources scarcity, faculty execution policies and procedures excessive political interference and political, bureaucratic and administrative corruption. Conflict in natural resource management can be positive because its management or solution often leads to creative options and innovation. When people are entangled in conflict they search for ways and means to change the situation. Protection of pasture and forestland, proper utilization of the spring as source of water harvesting, the increase motivation of people to participate in externally funded or implemented development activities. Securing entitlement and ownership of land in a non-coercive way in this book demonstrated that conflict could be stimulus for positive change and s source of learning. Such changes are more durable and acceptable in

terms of resource management, social relationship and community organization. Nevertheless, conflicts can also have serious negative effects. If not addressed timely and appropriately, it may deplete resources affect psychological well being and can result into anxiety, tension and resentment that ultimately damage social relation and may promote violence and disintegrate society.

King Mahendra Trust for Nature Conservation (1999) has concluded that habitat destruction, soil erosion, drying of Watersheds, species being endangered and increasing national hazards and losses are some of the major environmentally unsustainable dimensions. Man induced pressure on fragile landscape, mainly these arising out of a rapidly growing population, rampant and large scale poverty and inappropriate development intermentally non-sustainability. In the context of Nepal, problems are increasing faster then capacity to correct to lack of resources or Capital (human, natural, financial physical and social), poor program design and a weak capacity for organizations, management and implementation. The scale of intervention needed program and activities, rules and regulations and their enforcement etc. that depends on the allocation of resource which is generally insufficient to cops with the growing magnitude of problems. There are numerous problems that need to be addressed, but in view of the scarcity of resources, problems need to be prioritized. Therefore present recommendation for improving the livelihood of the people who live around the park and at the same time to assist in improving the conditions of the park resources are: (1) social capital formation, (2) policy reforms to encourage conservation (a) land use planning (b) rural energy planning, (3) setting standard and research (4) mobilizing resources, (a) patent and copy rights, (5) Green Development (a0 community and agro forestry (b) Bamboo and care production (c) katha production (d) paper making (e) tourism (f) livestock development and alternative energy (g) horticulture and intercropping (h) medicinal and aromatic plants and (6) immediate measure: buffer zone, social institutions, income generating activities.

Sharma (1999) has reported that Nepal still needs to sharpen its policies and legislation to be more effective in the collaborative management of protected areas. The traditional parks and reserves must be expended, adding areas as buffer zones so that the socio-economic needs of the local people are given due consideration in a manner compatible with the park management philosophy. An approach such as this is the only way of creating suitable environment for local people especially in and around Himalayan Nation Parks to enable them to joint hands as partners with the park management to make the conservation program a grand success. Proper management of community – based nature tourism can bridge the financial shortfalls in at least a few National Parks where the meager government budget and the small number of personnel will never be able to meet the demand for community development.

Oli (2005) has written that collaborative management (CM) of community areas to protect natural and cultural resources, are vital signs of bio-diversity conservation. In South Asian context collaborative management (also referred co-management, participatory management joint management, shared management, multi stoke holder, management or round table agreement) is widely used to describe a situation where a partnership id developed with other relevant stakeholders that specifies and guarantees their respective functions, rights, responsibilities with regard to protected areas (PA). The history of CM in South Asia has been long, but the systematic approach to its management is recent. The WCPA South Asia has promoted Cm as one of the four priority projects under its regional action plan. Considering the importance of community to participate in the PA management with a view to develop equitable sharing of benefit from natural resources, CM has even a greater role in the landscape-level conservation to address the ecological and socio-economic needs of the people.

Maskey (2001) has argued that despite extensive network of protected areas in Nepal, there is still a gap in representation of all ecosystems found in Nepal within the protected area system. So there is a need for adequate representation of major ecosystems in the protected area systems. There is also a necessity to conserve and manage natural resources outside the protected areas to avoid the isolation of protected areas that may stop the seasonal movement of wild animals. Nepal still holds good population of some of endangered species. Hence, conservation of such areas should be topmost priority list of action. There is a dire need to strengthen the department's management capacity through the recruitment of additional staff and enhance the management capability by providing staff training at all levels. Priority should given for monitoring and long-term studies and establishing bio-diversity conservation should be emphasized. Moreover, consolidation of existing resources and support to wildlife conservation from different conservation patterns is required since the government alone can not achieve the long – term goal of bio diversity conservation. The Nepal Bio-diversity Trust Fund should be created as soon as possible to over come the financial gap and programs identified in Nepal biodiversity action plan.

Pokharel (2004) has summarized the major finding related to park people relations as:

a) Review of literature from different parks across the country reveals that a major injustice is done to local people in that their crops and livestock are damaged/killed by wild animals, but they do not receive any compensation, even though small, were recorded in the past, but not in recent times. Loss of human life due to wild animals is another problem.
b) Forced eviction of people and their resettlements in places, which are culturally and geographically aliens is another injustice. But this had happened mainly in the past.

c) Harash and inhuman behavior of guards and park authorities is another problem faced by local people. Women and children have suffered most in the hands of these guards and park authorities. Beating and rope by forest guards and armies are also reported by various studies. These guard and armies harash mainly those illegally enter the park.
d) Various traditional rights to use park resources for fuel wood and fodder, timber, fishing, NTFP, and gracing facilities have been curtailed without providing adequate alternative opportunities.
e) In people's perception, the main benefits of the park goes to park authorities and foreigners, local people do not have the information on park income/cost and how much of the benefit goes back to them.

Regmi (1998) reported that the relation between park and people is more critical when the local inhabitants use park resources illegally. Cutting down trees, firewood and fodder, livestock grazing, poaching of animals and fishing are the common activities done by local inhabitants inside the park. Park-people conflict is thus emerging as a burning issue of protected areas in Nepal. Animal husbandry is a vital part of economy in Nepal. Livestock grazing is main problem of the local people around the National Park. Due to lack of grazing land in their farm, local people are forced to graze their animals inside the parks or reserves. Livestock grazing can play strong influences on grassland vegetation, forest structure and wildlife.

Nepal and Weber (1993) have studied on the park people conflict in Royal Chitwan National Park and its adjoining areas. They found that there were five different types of park people conflict namely, illegal extraction pf resources by the people, live stock grazing, hunting and fishing, crop raiding by wild animals and loss of human life due to wild animals. They started that the crop loss was highest in close to the park area. During the cropping season, crop raiding at night

was almost a regular phenomenon. They noticed that extend of crop damage mainly depended on size of households, distance to the park and influencing of visit by wild animals and crop raiding by wild life. The concluded they effective fencing could solve the crop loss problem. They recommended launching a buffer zone programme to reduce the impact of wild animals into the agriculture.

Shrestha (1994) has suggested that the creation of a boundary wall does not necessarily ensure the protection of an area. Despite many established public entry points for public access made by the reserve management, several illegal entry points are recorded on the boundary wall. There were five hundred and fourteen damaged sites of which eighteen percent were human related. It appeared that people either breaks the wall to hasten the process of collapse. Most of such damaged sites were adjacent to farms or house. Wild pigs do much damage and trapping them is very difficult. Maintenance of boundary wall may control the crop raiding intensity but the maintenance cost of wall is very high.

Sharma (1991) has said conceptually, it can be argued that strict control on park resources against exploitative pressure is essential in the long run to resolve the conflicts between National Park management and local people. Only effective law enforcement against the exploitation of the park resources provides necessary conditions to motivate the people to intensity the management of their own lands rather than relying on the park for essential subsistence commodities. For the Royal Chitwan National Park, this model applies to firewood and fodder. Intensification of production of these commodities on public and private land outside the park will not happen, it the park provides them freely.

Bishop (1990) has conducted the research in Karnali zone. He has said that the central theme of the research is to understand the relationship of human to the biota of their habitat and their modification of that habitat. As such he examined that the ways of people of Karnali-Zone-Aryan Speaking Paharis or hill Hindus

and Mongoloid Bhotia of Tibetan Origins traditionally have been coped with constraints on their ways of life and how their constraints on their ways of life and how their old methods are holding up today under new and more intense stresses. The study has focused upon the components of their peasants' cultural-ecological system both historical and contemporary. A unifying explanatory analysis of multidimensional character exhibits great inherent complexity of process in relation to scale place and time. The study is very much helpful to understand the struggle of people for existence when time and context is changed.

Corneille (1985) has concluded that the problems of population's pressure in Hindu Kush-Himnalaya region are too important to allow for a sectoral approach both development and environmental protection. In the whole region the most crucial economic problems lie in the hills (500m-2500m). It is clears that the problem of poverty has to be talked and this will require development inputs and economic incentives. The Hindu Kush Himalayas environmental problem is transitional in characters and can only solve with active participation and collaboration at regional as well as national levels. Any plan or program of protected area development must involve the management of change is that of human behavior.

The concern of conservation is that of the relationship between population, resources and environment. This can be studied by concentrating either upon the relationships between population, resources and environment. This can be between population, resources and technology or upon the relationships between social organization, value, and associated lifestyles. Whatever theme is explored, the framework should help us to see how individuals and group perceive their surroundings and hence, within the limits of their technical tools which their options are the institution responsible for planning must actively test innovative programs. Examples of socially based conflicts over natural resources should be

analyzed social structural reforms might be considered. The concerns of mountain people must betters understood their consciousness about the protected areas raised and their educational levels and organizational skills enhanced. The aim must be that the local communities control the resource systems.

Budhathoki (2005) has concluded that in Chitawan, the Rhino population reached to 544 in 2000, which was more than five times than the time of National Park establishment in 1975. Similarly, the park has healthy population of tigers, which has been estimated to increase from less than 40 in 1977 to over 100 in 1995. The population of sloth bear and gaur are estimated to be 200-250 and 399 respectively. This is the most visited park in the country by domestic and foreign tourists generating about $900,000 income to the park in 2000/2001 (DNPWC).

Despite its several successes in bio-diversity conservation, threats to sustainable bio-diversity conservation in Chitwan continue to exist in many forms and at different scale. Both biological as well as anthropogenic induced threats have been observed in Chitwan. Like in many world heritage sites of developing countries, Chitwan has on-going illegal hunting/poaching and cattle grazing. These are the biggest human induced threat to park management. In recent years, due to political instability in the country, Chitwan had lost 38 rhinos through poachers in one year (July 2001 – June 2002), which is equal to total rhino poached in the years between 1992 and 1995.

Habitat degradation due to change induced by succession of grassland into shrubland and the degradation of forest into shrubland and agricultural land in the BZ, are considered a serious threat to long term bio-diversity conservation. In the recent years, the Park is also increasingly threatened by infrastructure development projects such as roads, bridges and irrigation and urbanization

The park management paradox in RCNP is that its successful wildlife conservation has led to more human – wildlife conflicts. As wild animals and human beings compete each other for food and space, Chitwan, a rich biodiversity area of global significance exists amidst the rampant poverty. In the context of wide spread poverty and unemployment, the issue of meeting basic survival needs is the single most threats to conservation of the biological resources of RCNP. A study reveals that Nepal is the high bio-diversity risk and low capacity country in South Asia.

Bajimaya (2005) has written that Nepal has gone through various stages of learning processes in its bid to conserve and manage its biological resources. But its relatively recent experience on participatory bio-diversity conservation perhaps, has been the most educative and constructive of all. Today, some eight years after the buffers zone management in the Royal Chitwan National Park was implemented, it has clearly emerged that protected areas and local people can help each other. In this partnership, local communities gain both natural financial resources and protected areas can benefit by involving local people in their planning and management.

The NPWC Act was amended in 1992 to incorporate provision for “buffer zones” in the protected area system and the sharing of 30-50 percent of the park/reserve annual revenue with the buffer zones. A buffer zone is a designated area surrounding a national park or reserve within which the use of forest products by local people is regulated to ensure sustainability. The concept of buffer zone, besides calling for the sustainable utilization of forest resources, also necessitates environmental conservation within the zone. Therefore, the contribution of local communities in the effort is equally imperative. Likewise, the management also had to be shaped accordingly to accommodate the participation of local people in the country’s bio-diversity conservation agenda.

Gurung (2005) has said that the Annapurna Conservation Area project (ACAP) of King Mahendra Trust for Nature conservation (KMTNC) in Nepal, was established as an initiative and innovative approach for financial sustainability. The basic principle is to collect tourist's entry fee and reinvest it for the management of conservation Area. Also, revenues generated from the use of resources from its use-zone, is utilized for the management. In order to reduce the management cost of PA management by deputing army, the project is based on community involvement.

The Annapurna Conservation Area (ACA) (IUCN category VI) is the first conservation area and largest PA (7,629 km^2) in Nepal. The climatic extremes from subtropical to alpine within a distance of less than 35 km, support rich biodiversity which include 1,226 species of flowering plants, 38 species of orchids, 3 species of rhododendron, 101 species of mammals, 474 species of birds, 39 species of retiles and 22 species of amphibious.

The ACA is also home to over 100,000 agrarian people. In addition to agriculture and livestock rearing, communities are much involved in off-farm income generation activities. Therefore cash economy is based on remittance, tourism local trade and regional business. However, a great majority still depend upon natural resources for their subsistence. As population increases incidence of poverty continues to be a major concern for the community – based conservation. The underlying reason for the establishment of ACAP was to conserve the area's rich biodiversity and to help meet the basic human needs. As a result, tourism management remained a central focus, which has an outstanding role for both conservation and development. The principles of the ACAP are based on community participation, sustainable use of resources and the catalytic role of the ACAP. Objectives of the ACAP are: 1) to conserve the natural resources 2) To help socio-economic development; and 3) to manage tourism. ACAP has

implemented a wide range of activities to integrate conservation and development including:

a) Natural resources conservation programme (natural forest management, nursery raising, tree plantation, wildlife conservation, and soil and water conservation).
b) Alternative energy programme (promotion of fuel wood reducing devices, solar technologies, kerosene and LP Gas, micro hydro electricity).
c) Tourism management programme (tourist information centre, information materials, trainings to local people, waste management)
d) Conservation education programme (awareness programmes, plays and dramas, conservation education in schools, adult literacy programmes)
e) Community development programme (trails and bridge repairement, school buildings, health posts buildings, drinking water).
f) Agriculture and livestock development programmes (cash crops, including vegetables, fruits-farming, organic farming, livestock breed improvement, livestock feed improvement, livestock health improvement.
g) Women in conservation (women education, income generation for women, reproductive health for women, overall involvement of women in conservation and development).
h) Cultural heritage conservation (physical and cultural assets including believes and practices).

Gurung (2005) has concluded that, Nepal experienced a direction with a new dimension to biodiversity conservation in Nepal because of two paramount lessons: 1) Unless the needs of local communities were addressed, long-term conservation is not possible; and 2) Protected Areas in Nepal, are like islands which are 100 small to support viable population of endangered species and

ecological process. In Nepal, existing forests that can link protected areas and provide refuge for wildlife population are control to land scope-level conservation.

Terai Arc Landscape (TAL) encompasses the only remaining natural habitat in the lowland Himalayas extending from the Bagmati River (Nepal) in the east to the Yamuna River (India) in the west, covering an area of 49,500 km^2. In the context of Nepal, TALextends from Bagmati River in the east to the Mahakali River in the west, covering 14 districts and includes over 75 percent of the remaining lowland forests of the Terai and foothills of the churiya. In addition to biodiversity conservation, management of Terai forests is necessary for meeting the nation's demand for timber and other forest products. TAL is not only a critical habitat for biodiversity; it is also home for more than 6.5 million people who depend on its resources for their livelihood. Thus, sustainable management of TAL will simultaneously help to maintain biological diversity and help Nepal meet the national demand of forest products and food supply for its rapidly growing human population.

TAL program is one of the first landscape level conservation initiatives undertaken by government of Nepal and was initiated in 2001 and jointly implemented by Department of Forests (DOF), Department of National Parks and Wildlife Conservation and WWF. This program peruses conservation through the economic and social empowerment of local communities and full participation of resource users and government of Nepal. The local communities play an important role in restoring degraded forest corridors through plantation and natural regeneration, mobilizing local community and facilitating conservation efforts between concerned line agencies and grass root level beneficiaries. Community Based Organization (CBO) most particularly community Forest User Groups (CFUGs) are the focal points of TAL programs for program planning, implementation and monitoring at grass root level. Three decades of conservation

in Nepal has proved that long-term conservation is not possible without the involvement of local communities.

WWF (2005) has recommended the strategies for sustainable livelihood approach mainstreaming in conservation as follows:

1) Entry points and selection of activities to support
   - Idenfying the major entry points which stimulates the local people's participation for conservation and improve the livelihood of people sustainably.
2) Supporting activities which will potentially result in Multiple Benefits:

   - Promotion and establishment of cottage and small industries based on non-timber forest products
   - Income generation activities based on Agro forest
   - Capacity building and institutionalization of community users groups.
   - Promotion of alternative energy.
   - Promotion of human skill, entrepreneurship ecotourism and species tourism.

3) Good Governance:-

   - Transparency
   - Accountability
   - Participation
   - Equity
   - Social inclusion

4) Institutional Analysis

To maintain good governance the institutions working with WWF the institutional capacity should be analyzed in every stages of project cycle. This analysis helps in identification of every point.

5) Policy Analysis and Advocacy

The policy related to conservation should be analyzed and reviewed for understanding the impact upon livelihood of local people.

6) Monitoring & Evaluation

More focus should be given in monitoring and evaluation as it is major element for livelihood in sustainable livelihood Approach.

Phuyal (2004) has concluded that a decision to establish park and protected area has pushed the livelihood of the local people who were depending on the forest resources towards more Vulnerability. The programs launched to mitigate the problems of the people also could not be effective if they are not implemented honestly. When people stopped to use forest resources, the occupation and income changed very immediately. Other change occurred later slowly in community and at the household level. After the establishment of Park, the local people were affected immediately. The livelihood of the local people becomes more vulnerable, but the people could find out the ways to cope the situation themselves but it depends upon other available assets.

The people who have other assets they can very soon, but the people who have no or have very few other assets could not cope or take very long time to cope and adopt with the situation. The local people are needed to be included in the conservation activities as an important part for conservation and use of the

resources for the sustainable development. It is very necessary to help the people to find out alternatives for sustaining their livelihood immediately after establishment of the park.

Pokharel (2004) has concluded that the establishment of Shivapuri National Park curtails the legal right of local people living in and around the park as the people found in other places of the world people of Sundarijal VDC are also made the victimers of this problem. The attempt of establishment Shivapuri National Park is good in environmental perspective but it has been undermining the indigenous right of local people towards the use of natural resources available in the park. Hence the people heavily depend up on traditional farming and livestock rearing falling in additional problems people having poor socio-economic condition poorer. Moreover, the increasing number of wild animals inside the park led heavy loss of the livestock and crops of the local communities. People of the Sundarijal VDC have good access in the resources of Shivapuri National Park in terms of resource quality and distance but delivery mechanism made the resources inaccessible to them. These make the life of people living in the park area as the life of prisoners and life of animals living in deserts, although the area is full of resources.

Poudyal (1995) has concluded that each years 242 affected households out of 263 households lost about 93.29 metric tons of grain in the study area i.e. Sundarijal inside the Shivapuri National Park. About 92.01 percent of households living in the settlements within the walled boundary of reserves are affected by wildlife. Total of Rs. 758, 070 was lost in 1994 alone in crop depredation. Although monkeys, birds and porcupines also damage the crops but wild boars are the most serious problems for farmers as far as crop farming is concerned. Preventive measures adopted by farmers are mostly primitive and labour inter give on an average, farmers spend 126 nights in watching and protecting their fields crop

depredation by wildlife depends on various factors such as: distance from reserve boundary, the numbers of crop raiding animals, variations in places, population of crop raiding animals and its fluctuations overtime, nature of barrier between the cropland and reserve and types of preventive measures used by farmers.

Chapter – Three

RESEARCH METHODOLOGY

3.1 Research Design

This study has been carried out on the basis of exploratory and descriptive, search design. The study is focused on the role of protected area in sustainable livelihoods of local people of Sundarijal area.

3.2 Rationale for the Selection of the Study Area

The conflict between national park and the people living near by is very common. Similarly, Sundarijal VDC is one of such areas affected by national park. Six wards of Sundarijal are located inside the Shivapuri national park. The people are not allowed to collect essential materials from the park. Most of the people within the park are Tamang. The livelihood of people is directly associated with the park, management and the programs launched by the park. The study has been carried out on wards 4.5 and 6 of Sundarijal VDC, which Sundarijal Bus Park. The bus park is 15 Km northeast from Kathmandu city.

Further, Sundarjal is very well known to the researcher, which is another reason why it has been selected for the study.

3.3 Sampling Design

There were 491 households in a Sundarijal VDC. The total number of households in the study area was 165. Out of the total 36 households were selected.

3.4 Source of Data

The primary data were collected through household survey. Secondary data were taken from the official record of VDC, Department of National Parks and Wildlife conservation, WWF, IUCN and participatory conservation program (PCP) of UNDP and informations were taken from published and unpublished literature such as books, journals, reports, articles and research papers etc.

3.5 Techniques of Primary Data Collection

The collection of data for the study is very challenging as well it provided an opportunity to learn the problems of people. The following methods were applied to collect primary data.

a) Households Survey (Interview)

   To collect the primary data, a structured questionnaire related to family size, education, occupation age, gender, income-expenditure, landholding, production etc. Before setting the final questionnaire it was tested in the study area and modified whenever it was necessary; some questions were added and some were deleted according to its importance. Questionnaires of the different researchers were also studied. After finalizing the set of questionnaire interview was carried out by the researcher himself.

b) Group Discussion

   Group discussions were carried out with the local people gathered in local tea stall and park staffs in the office of Shivapuri National Park. The main aim of discussion was to get information about programs of National Parks and its impacts, their eruption to the park the solutions they think, appropriate to tackle the different problems created by national park.

c) Observation

During the field survey, physical infrastructures, expression of respondents, crop damage, land use, behaviour of park staff etc were observed and noted in field note book.

3.6 Data Processing and Analysis

Descriptive analysis of collected data had done in the study. Quantitative data presented in terms of percentage, Frequencies and mean tables. Table, charts and figures are used for profound illustration.

Chapter – Four

THE STUDY AREA

4.1 Background

Shivapuri has been famous for its sanctity since ancient period of time. Shivapuri commands religious respect from both the followers of Hinduism and Buddhism. For Hindus, it is abode of Lord Shiva and for Buddhists, it is a holy place supposed to have footprint of Buddha on a big stone at the top of the hill. On Nepal's New Year's Day in mid-April pilgrims from Kathmandu Valley and neighbouring valleys flock to Baghdwar and Bishudwar, from where the sacred rivers Bagmati and Bishnumati originate.

Shivapuri is famous for meditation. The Indian philosopher saint named Govindananda Bharati from Kerala, India used Shivapuri hill top as place of meditation and he was later known as Shivapuri Baba. Until one decade ago, this forest had been supplying fuel wood for Kathmandu city and surrounding settlement. From the Shivapuri holy rivers, Bagmati and Bishnumati as well as numerous springs and streamlets supply drinking water to Kathmandu city and at the same time irrigating great fertile valley of Kathmandu.

With continuous increase in population of Kathmandu valley degradation of Shivapuri forests also continued. To that the increased demand of fuel, fodder and timber of Kathmandu its forests were cut and over exploited. Steep lands were cultivated for more food. As a result, landslides and slips become a common phenomenon in Shivapuri. Problem became so serious that the quality and quantity of the drinking water produced from the area also started declining.

To overcome there problems, HMG/N initiated a program to protect Shivapuri in 1976. In 1982, the Shivapuri Protected Watershed Area was declared, and in 1984,

the Shivapuri Watershed and Wildlife Reserve. At the same time the Shivapuri Watershed Area Development Board was constituted, which in 1984 was converted into the Shivapuri Watershed and Wildlife Reserve Development Board. This Board has been dissolved on September 2000. Now this area is gazetted as Shivapuri National Park in 2002. It is Nepal's Protected Area that lies entirely within the Middle Hills physiographic Zone.

4.2 Physical Features

4.2.1 Location

Shivapuri National Park is located on the northern fringes of Kathmandu valley. It is about 12 Km from main city (Ratna Park) and is surrounded by 23 VDC of three districts, Kathmandu, Nuwakot and Sindhupalchowk. It lies between 27^0 45' to 27^0 52' east latitude and 85^0 15' to 85^0 30' north longitude.

4.2.2 Area

The size of the protected area is 144 Km^2 stretching about 9 Km from north to south, and about 20 to 24 km from east to west.

The highest point is the Shivapuri Peak, 2,732, above sea level, sloping down to less then 1,000m above sea level at Likhu River in the northern valley, and to about 1400m at the southern (Kathmandu) valley. Geologically, Shivapuri area occupies the Inner Himalaya region. The soil of the area ranges from loamy sand on the northern side to sandy loam on the southern slope. Entire area is characterized by its steep topography. More than 50 percent of the area has greater than 30 slopes.

4.3 Flora and Fauna

Shivapuri lies in a transition zone between subtropical and temperate climates. The vegetation consists of varieties of natural forest types including pine, oak, rhododendron etc. depending on altitude and aspect. Besides that 129 species of mushroom has been identified in the park. Chilaune (*Schema Walichii*), Katus (*Castronopopsis indica*), Rhododendron (*Rhododendron arboretum*), Khote sallo (*Pinus walichii*), Juniper (J*uniperus recurva*), and Utis (*Alnus nepalensis*) are found in this park.

Shivapuri National Park is also a natural habitat of wild lives. Recorded wildlife in the park includes mammalian species such as Himalayan black beer, clouded leopard, jungle cat, and rhesus monkey, wild boar, barking deer, yellow threatened marten, Indian hare and several rodents. The park is also home to 177 species of birds, including 9 threatened species, 102 species of butterflies with a number of rare and endangered species, such as the Kaiser-I-Hind (*Teinopalpus imperalis*).

4.4 Water Resources.

Shivapuri is one of the main sources of drinking water for Kathmandu Valley. About 30 million liters of water per day are tapped from the Bagmati, Syalmati, Nagmati, Bishnumati, Sanla, Mahadev and Tusal Khola water courses into reservoirs at Sundarijal, Panimuhan, Tokha, Alle, Dhakal Chaur and Paanch Mane and is fed through pipelines to Kathmandu. The quality of water originating from the national park is clean and unpolluted Water from these streams is also used for irrigation during dry season.

4.5 Culture and Religion

Shivapuri is an important religious plane for Hindus and Buddhist. The sacred mountain is a permanent abode of sadhus and saints. A well known saint named

Shree Govindanand Bharati popularly known as Shivapuri Baba used to live here about 40 years on a hillock of Shivapuri. Ge died in 1963 at the age of 137 years. In this national park, exist some shrines, stupas and vlonastenes viz. Budhanilkantha, Manichour, Shivapuri Tarakeshwor mahadev, Nagi Gampa, Baghdwar and Bishnudwar. Two major rivers of Kathmandu valley, the Bagmati and the Bishnumati originate from here. On the Nepalese New Year day which falls in mid-April, devout persons from Kathmandu valley and neighboring valleys flock to Baghdwar and Bishnuwar.

4.6 Park Regulation

Visitors are requested:

- Not to walk in the park between sunset and sunrise.
- Not to disturb flora and fauna as they are fully protected by law.
- Not to buy animal or plant products. It is illegal.
- Not to carry non-biodegradable items such as plastic bags and bottles.
- To pay an entry fee of NRs, 250 (for foreigners) or NRs. 10 (for Nepalese) at the park's entrance gate.
- To place trace in rubbish bins.
- To respect religious and cultural sites

4.7 Mulkharka of Sundarijal VDC

Mulkharka, Sundarijal VDC of Kathmandu district is located at the southeast side of the Shivapuri National Park and accessible from Bus Park in the capital city with a 15 km black-topped road. The VDC is spread over 35 sq.km. Major portion of VDC is characterized by mountainous topography with gentle to steep slope ward no 1 to 6 lies inside the park which are mountainous in nature wards 7, 8 and 9 lie outside the park.

Sundarijal VDC constitutes people of different castes and ethnic groups. The total population of this VDC is 2499, out of which, 1602 are Tamang, 280 Newar, 268 Brahmin, 168 Chhetri, 58 Gurung, 47 Sherpa and others. Tamang is the largest ethnic group of the VDC. Agriculture is the main source of income. Wards 4, 5 and 6 are known as Mulkharka.

4.8 Climates and Rainfall

Climate and rainfall of Shivapuri National Park is more or less similar to the Kathmandu valley in southern slope of national park. Generally, it has monsoon type climate. More than 80 percent of annual precipitation occurs during the summer monsoon season that normally occurs between mid-June through late-September. According to climatic data the mean monthly maximum temperature are 22.7 degree Celcius in mid-May to mid-June and a minimum of 0.3 degree Celcius in mid in mid-December to mid-January. The mean annual precipitation is 2727 mm with most of this occurring between June and September.

Chapter – Five

SOCIO-ECONOMIC CONDITIONS OF PEOPLE IN MULKHARKA

5.1 Age Structure

Table 1: Age Group and percentage composition of people in Mulkharka

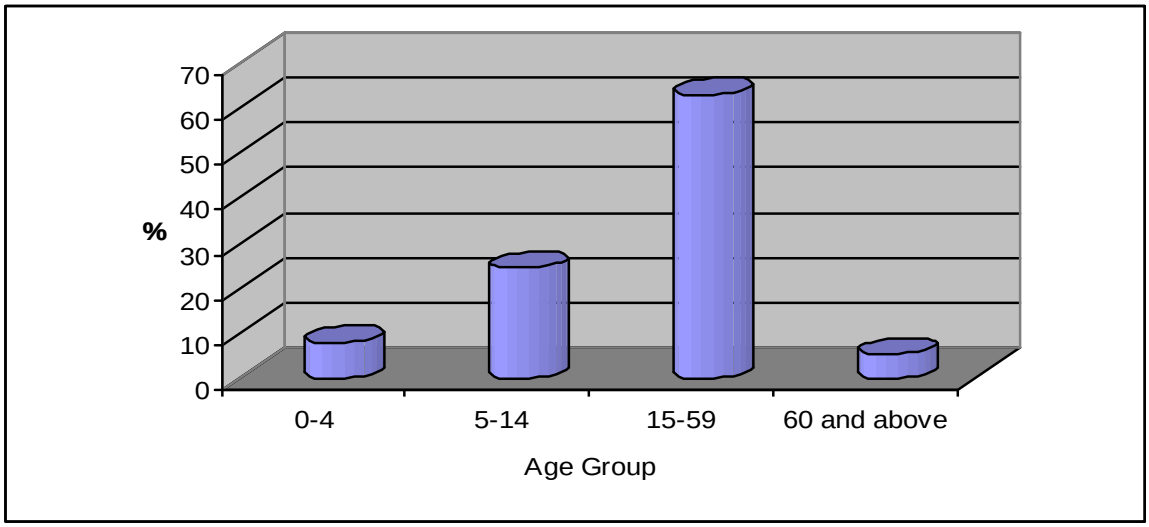
Age group	Ward 4	Ward 5	Ward 6	Total	Percent
0-4	2	12	4	18	7.83
5-14	26	20	20	56	24.34
15-59	58	42	44	144	62.60
60 and above	2	2	8	12	5.22
Total	78	76	76	230	100.00

Source: Field Survey, 2006

There are 230 inhabitants with 120 female and 110 male at Mulkharka of Sundarijal in total 36 sampled households. The household size of sampled households range 4 to 9 person with an average 6.3 persons.

Table 1 show that the sample households consist of population 230. Out of which 7.83 percent are children below 5 years of age. 24.34 percent are of 1-14 years age group. 62.60 percent are of 15-59 years age group, there are economically active people. 5.22 percent people are of 60 and above year's age group. These are old group of people. The economically active population is higher in ward no 4 in comparison of other two wards.

Figure: 1 Group of Economically Active and Inactive People



Source: Field Survey, 2006

5.2 Educational Status

Education makes people aware of their situation. It modifies their beliefs, skills, technology, attitudes and so on, in the sense that educated people may choose a better way of life. Thus, in agriculture people who have gained better technical knowledge can get better output than those have not. Likewise, it is widely known that literacy is the degree of reading and writing capacity of people. While measuring the development of the country, it is assumed as key indicator.

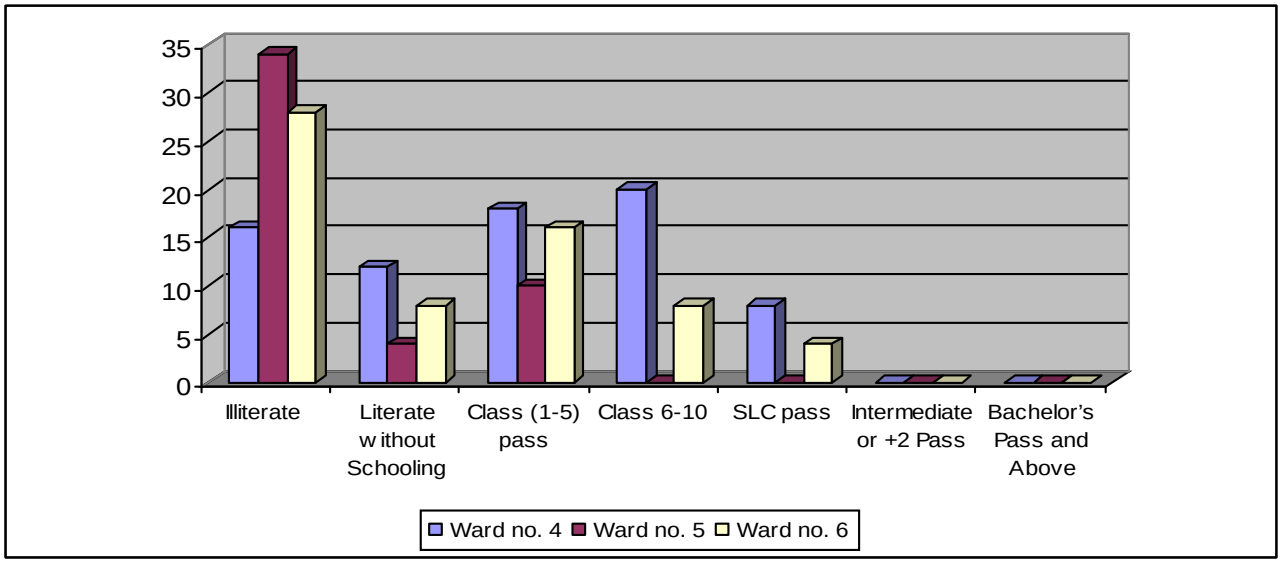
Table 2: Education and Literacy of Selected Households.

Wards	4	5	6	Total	Percentage
Illiterate	16	34	28	78	41.93
Literate without Schooling	12	4	8	24	12.90
Class (1-5) pass	18	10	16	44	23.65
Class 6-10	20	0	8	28	15.05
SLC pass	8	0	4	12	6.45
Intermediate or +2 Pass	0	0	0	0	0
Bachelor's Pass and Above	0	0	0	0	0
Total				186	100.00

Source: Field Survey, 2006

The literacy rate of surveyed households is 58.07 percent. The literacy rate has been calculated by excluding the 0-9 years age group, i.e., people of age above 10 years are included. Of the total 230, only 186 or 80.86 percent were above 10 years. Sundarijal is not so far from capital city though the literacy rate is not so satisfactory. Thirteen percent are literate without schooling by informal education classes. In households survey, the people having higher education, i.e., intermediate and Bachelor's degree, could not be found.

Figure 2: Educational Attainment



Source: Field Survey, 2006

5.3 Household Size

Table 3: Household Size of Selected Households at Mulukarka.

Ward no.	<4	4-6	6-8	>8
4	0	4	2	6
5	0	6	2	4
6	0	4	6	2
Total	0	14	10	12
Percentage	0	38.88	27.77	33.33

Source: Field Survey, 2004

Table 3 shows that 38.88 percent of the respondents have family size of 4-6 persons, 27.77 percent have family size of 6-8 and 33.33 percent have more than 8 persons. The average family size of the Mulkharka is 6.3. Because of illiteracy and ignorance about family planning, the average family size is large.

Figure 3 Household Sizes of the Selected Households.

Source: Field Survey, 2006

5.4 Occupation Pattern

Table 4: Primary Occupational Pattern of Sampled Households

Primary Occupation	Ward 4	Ward 5	Ward 6	Total	Percent
Agriculture	7	8	6	21	58.33
Livestock Rearing	1	1	1	3	8.33
Government Service	1	0	1	2	5.55
Labour	1	2	2	5	13.88
Small Business	2	1	3	5	13.88
Total	12	12	12	36	100.00

Source: Field Survey, 2006

Table 5: Secondary Occupation Pattern of Sampled Households

Secondary occupation	Ward 4	Ward 5	Ward 6	Total	Percentage
Agriculture	0	0	2	2	5.55
Livestock rearing	6	6	4	16	44.44
Small business	2	2	2	6	16.66
Government service	1	0	1	2	5.55
Labour	3	4	3	10	27.77
Total	12	12	12	36	100.00

Source: Field Survey, 2006

Tables 4 and 5 show the primary and secondary occupations of people of Mulkharka. According to table 4, agriculture is major occupation which comprises 58.33 percent and is main source of income. Out of 36 respondents 8.33 percent depend upon livestock rearing, 5.55 percent on government service, 13.88 percent on labour and 13.88 percent on small business. The livelihood of people is vulnerable. The agricultural productivity is very low so that people should search another complementary occupation.

Table 5 reveals that people of Mulkharka are compelled to search secondary occupation for livelihood. Out of 36 respondents, 44.44 percent depend upon livestock rearing as subsidiary occupation. Similarly 5.5 percent depend upon agriculture, 16.66 percent on small business, and 5.55 on government service and rest of 27.77 percent on labour.

These data reveal that the primary occupation only can not sustain the livelihood.

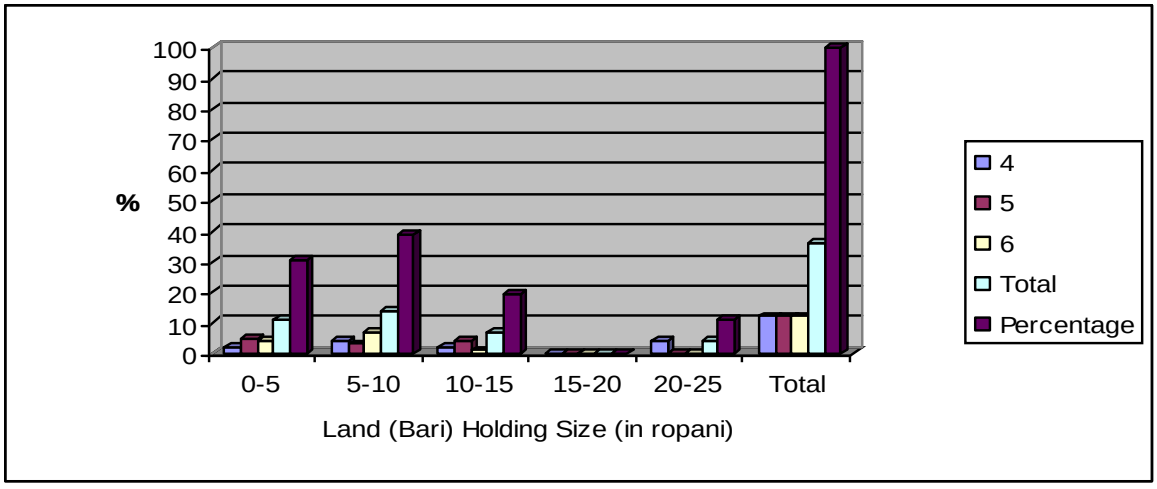
5.5 (A) Land Holding Size (Bari)

Table 6 (A): The Land holding Size (Bari) of the Head of the Households (in Ropani)

Ward	0-5	5-10	10-15	15-20	20-25	Total
4	2	4	2	0	4	12
5	5	3	4	0	0	12
6	4	7	1	0	0	12
Total	11	14	7	0	4	36
Percent	30.56	38.89	19.44	0	11.11	100.00

Source: Field Survey, 2006

Figure 5 (A): Land (Bari) of the Selected Households



Source: Field Survey, 2006

There are four series of land holding size presented in table 6(A). The first column shows that 30-56 percent of the respondents have Bari between 0-5 ropani who have got so difficulty to subsist their life only from its earning. Second column reveals that 38-89 percent respondents have Bari 5-10 ropani. They are also in trouble to subsist from the production. The respondents having Bari between 10-15 ropani are 19.44 percent and rest of respondent 11.11 percent have 20-25 ropani. The farmers of the Mulkharka can be considered as subsistent because of

low productivity and large family size. Hence the respondents of Mulkharka have not sufficient Bari for their livelihood.

The settlement of respondents is inside the national park. Almost all of the Bari is sloppy and infertile. The crop planted in their Bari has been destroyed by wild animals.

5.5(B) Land Holding Size (Khet)

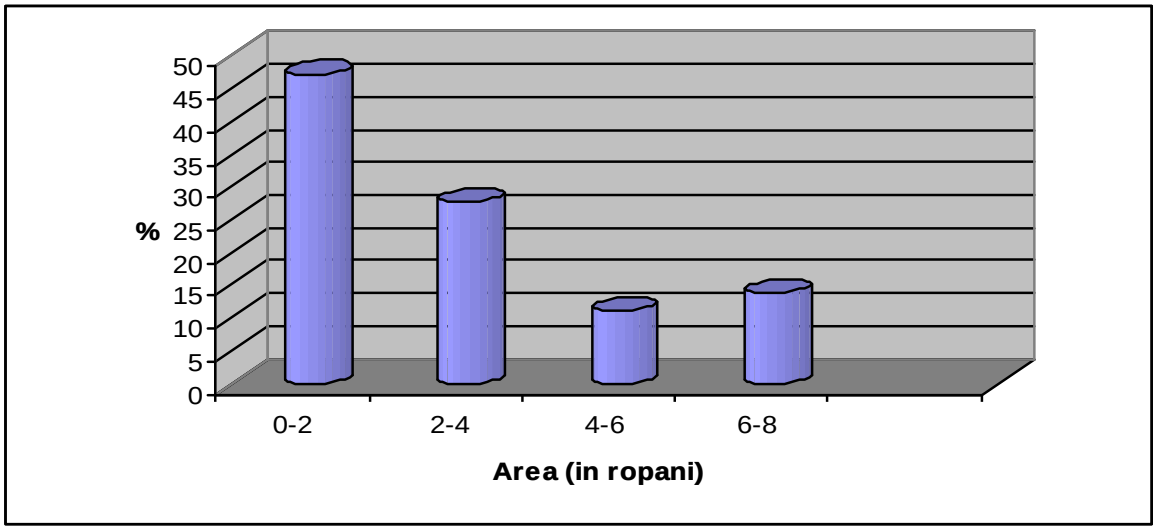
Table: 6 (B) Land Holding Size (Khet) of Selected Households.

Ward	0-2	2-4	4-6	6-8	Total
4	6	3	0	3	12
5	4	4	2	2	12
6	7	3	2	0	12
Total	7	10	4	5	36
Percentage	47.22	27.78	11.11	13.89	100

Source: Field Survey, 2006

Table 6(B) shows that major percent i.e. 47.22 percent respondents have 0-2 ropani Khet. Out of this 47.22 percent 8 households do not have Khet. 27.78 percent respondents have 2-4 ropani, 11.11 percent have 4-6 ropani and 13.89 percent have 6-8 ropani Khet. Out of this 13.89 percent 2 households have their Khet outside the national park. The Khet inside the national perk is marfinal in comparision of Khet outside the Park. The productivity of paddy inside the park is too low so the most of the respondent eat Dhindo as their meal.

Fig: 5(B) Size of Land (Khet) Holding of Households



Source: Field Survey, 2006

5.6 Cropping Pattern

Table: Crop Production by the Surveyed Households

Crop	No. of households by production category (in kg)						
	0-200	200-400	400-600	600 & above	Total	Surveyed	Percentage
Paddy	6(16.67%)	6(16.67%)	6(16.67%)	2(5.55%)	20	36	55.55
Maize	8(22.22%)	10(27.78%)	10(27.78%)	8(12.22%)	36	36	100%
Wheat	12(33.33%)	2(5.55%)	2(5.55%)	0	16	36	44.44
Millet	8(22.22%)	10(27.78%)	12(33.33%)	6(16.67%)	36	36	100%
Other	6(16.67%)	0	0	0	6	36	16.67%

Source: Field Survey, 2006

Agriculture is the main base of livelihood of people; it is base of livestock rearing, cash crops and other major occupation. But the production of crops from the field is not sufficient to overwhelming proportion of the sampled households. All the households need foods from market in smaller or higher amounts.

Paddy, maize, millet wheat are the major crops cultivated by the sampled households of Mulkharka. Out of total surveyed households only 55.55 percent

households produce paddy. Hence, 44.45 percent of total respondents do not produce paddy because of lack of Khet. The land as Khet is also marginal, yielding low productivity. Besides paddy, the major crops are maize and millet. Out of 36 surveyed households, 100% respondents produce maize and millet. Table-7 reveals that 22.22 percent produce 0-200 kg maize, 27.78% produce 200-400 kg, 27.78% produce 400-600 kg, and 22.22 percent produce more than 600 kg up to 1000 kg.

Similarly, 44.44 percent of total respondents produce Wheat. Among them, 33.33 percent produce between 0-200 Kg, 5.55 percent produce between 200-400 kg and another 5.55 percent produce between 400-600 kg wheat in a year. Further, 22.22 percent respondents produce millet between (0-200) kg, 27.78 percent produce between 200-400 kg, and 33.33 percent produce 400-600 kg and rest of 16.67% produce more than 600 kg up to 1000 kg in a year. Millet is mainly used for alcohol and preparation by fermentation process.

Mulkharka has suitable climate for vegetable and other cash crop farming but the fear of destruction by wild animal farmers are not attracted toward new farming. Out of the total respondents, 16.67% only produces other vegetables like radish, potato, and green leaves. Some farmers cultivate vegetable for commercial purpose but most of the vegetables and crops are destroyed by wild animals.

Thus, the farmers of Mulkharka are marginal. Further, the lands are sloppy people lost their right of free access to natural resources of the park when it has been declared as national park. These make the life of people like the life of prison.

5.7 Livestock

Table 8: Livestock Holding of the Households

Livestock	Ward			Total	Percentage
	4	5	6		
Cows	3	2	2	7	1.78
Goats	44	46	62	162	38.58
Chickens	98	25	43	166	42.13
Oxen	8	8	8	24	6.09
Buffalos	17	11	9	37	9.39
Other	2	5	3	8	2.03
Total	172	95	127	394	100.00

Source: Field Survey, 2006

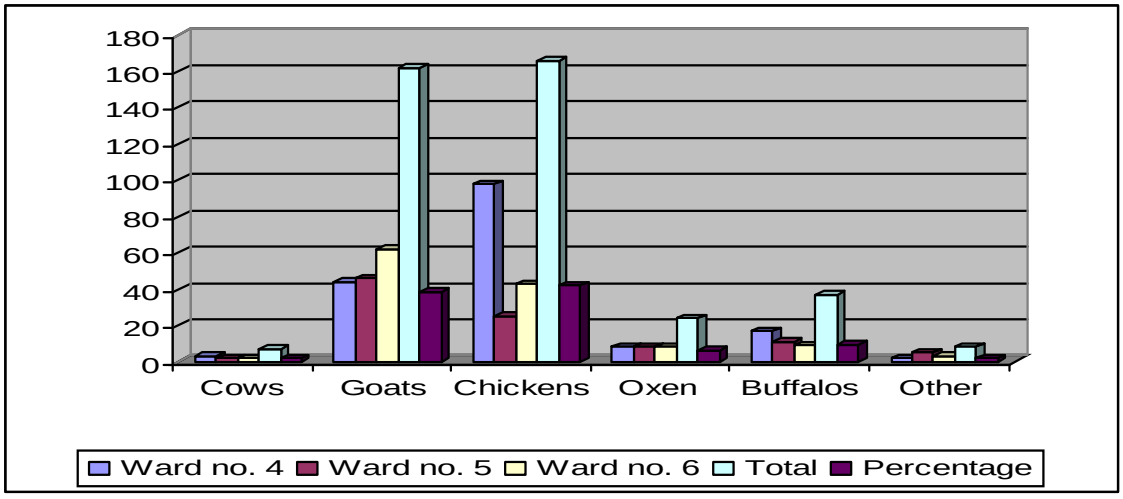
The livestock play an important role in the livelihood of farmers. The farmers keep livestock for different purposes, e.g. income, milk, meat, and ploughing. Livestock rearing is secondary occupation of respondents. It is seen that the farmers who have more land keep more livestocks but farmers who have less land keep less number of livestocks.

Table 8 indicates the wordwise distribution of livestocks at Mulkharka of Sundarijal VDC. One household has kept chickens as commercial purpose but most of the chickens have been kept as tradition. Out of total 394 livestocks 42.13 percent are chicken. After this the major part of livestock rearing is goat keeping. Goat gives remarkable income to the farmers in a short span of period. 6.09 percent livestocks are oxen which are mainly used for ploughing the land at Mulkharka of Sundarijal. Buffalo comprises 9.39 percent and used for milk meat and fertilizers. The portion of cow keeping is least in preference of the respondents being the settlement of Tamang. Cow comprises 1.78 percent of total livestocks.

There are other livestocks other than mentioned above, e.g. pig, and duck which comprise 2.03 percent of total.

Though livestock rearing plays remarkable role in livelihood, respondents are not free to the access of forest resources. There is problem of grazing. People collect grasses and fodder front the national park and feed their livestock illegally.

Figure 6: Wardwise Distribution of Livestocks



Source: Field Survey, 2006

5.8 Feeding Pattern of Livestock

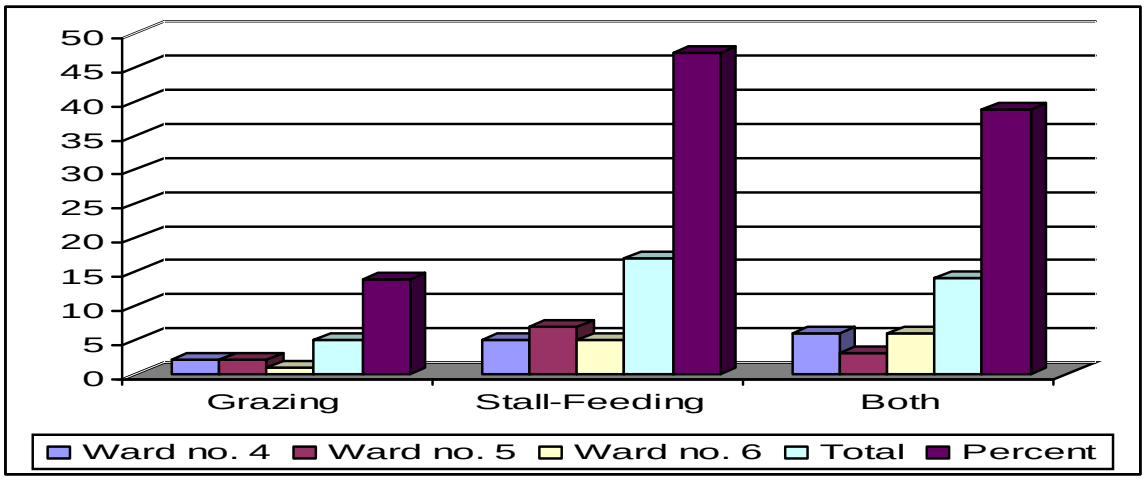
Table 9: Livestock Feeding Pattern at Mulkharka

Wards	Ward 4	Ward 5	Ward 6	Total	Percentage
Grazing	2	2	1	5	13.89
Stall-Feeding	5	7	5	17	47.22
Both	6	3	6	14	38.89
Total	12	12	12	36	100.00

Source: Field Survey, 2006

Table 9 shows the feeding pattern of livestock of the sampled households at Mulkharka, Sundarijal. Out of 36 respondents 13.89 percent have used to graze their cattle on the sides of farmland and near to their settlement. After declaration of national park grazing inside the park is restricted. 47.22 percent respondents have practiced on stall-feeding at home and rest of 38.59 percent practice both system of feeding. This indicates that stall-feeding practice is increasing due to restriction of grazing inside the park. Villagers should pay fine if they grazed their cattle inside the park. But they collect grasses and fodder from the park illegally. This causes the conflict between park and people.

Figure 7: Livestock Feeding Pattern at Mulkharka



Source: Field Survey, 2006

5.9 Houses and Settlement Pattern

In rural Nepal, houses and types of roof are the symbols of prosperity. If the owner of the house id richer or local landlord then in almost all cases, he own bigger huse with small brick tiles or corrugated zinc sheet, but at Mulkharka of Sundarijal VDC very large and facilated house can not be found except ex-chairman's and ex-vice-chairman's houses. There two households not included in survey. Always all houses are traditional and some of them are very old.

Table 10: House and Roof Types

House type	Ward 4	Ward 5	Ward 6	Total	Percentage
Very old house	3	2	2	7	19.44
Total	9	10	10	29	80.56
Roof type	12	12	12	36	100.00
Thatched	2	2	2	5	13.89
Zinc sheet	10	10	10	31	86.11
Total	12	12	12	36	100.00

Source: Field Survey, 2006

Table 10 shows that the houses at Mulkharka are traditional. Out of 36 households, 19.44 percent houses are very old and remaining 80.56 percent houses are traditional. Among the traditional houses, 13.89 are thatched and 86.11 percent are covered with zinc sheet.

Settlement pattern is itself a very dynamic in nature. It always changes with time. The settlement pattern in the study area are scattered but settlement on the trek route are quite congested. The constructions of new traditional houses are increasing year by year with the growing of population.

5.10 Toilet Use Pattern

Toilet is essential for making environment clean and being people healthy. The ignorance and illiteracy of respondents, construction and use of toilet practice is quite low. This practice disturbs the beauty of the Sundarijal and produces multiple effects to the health and environment.

Table 11: Status of Toile of Surveyed Households

Toilet	Ward 4	Ward 5	Ward 6	Total	Percentage
Yes	5	7	9	21	58.33
No	7	5	3	15	41.67
Total	12	12	12	36	100.00
Toilet Type					
Temporary	3	4	4	11	52.38
Permanent	2	3	5	10	47.03
Total	5	7	9	21	100.00

Source: Field Survey, 2006

Table 11 shows that out of 36 households only 58.33 percent have toilet and remaining 41.67 percent do not house. The respondents who do not have toilet they go to the farm land nearest to their house. Among the toilet having 52.38 percent toilets are temporary and only 47.63 percent are permanent:

5.11 Public Health

Situation of public health in the study area is not satisfactory. Out of total sample households 41.67 percent do not toilet. Among the toilet having, 52.38 percent toilets are temporary and in bad condition. The 95 percent of sampled households have traditional cooking sampled households have traditional cooking stoves; all the smoke remains inside the house. Only 5 percent have made chimney for management of smoke. Nobody has filter and total population drink water directly without boiling and treating. The some young people of school going brushes their most of the people do not brush the tooth.

There is only one Sub-Health Post in the study area with the facility of Assistant Health Worker (AHW). Villagers go to the health post for general treatment of fever, common cold, headache etc. They can see the doctor in the city hospital or

any social organization conduct health camp at the village. There is no access of medicine shop and pharmacist. People should buy medicine from the medicine shop near to the bus park located one and half hour walk. The medicine shop has been conducted by Assistant Health Worker (AHW) of neighbouring VDC.

People have strong belief on shamanism. When somebody becomes sick, first of all they call *Jhakri* instead of Doctor. Some herbs like *Chiraito* are also used to control fever and *Banmara* to control bleeding. People do not check their health at all without being ill. This is main cause of illiteracy and lack of awareness.

During field visit researcher found that one boy was suffuse of thirteen years was suffering from polio and one old man of 76 years was suffering from paralysis. In such a situation the respondent is not consulting to the doctor but they have spent large amount of money for treatment by Jhankri.

Out of the toilet having 21 respondents, 71.43 percent, i.e., 15 households manage human waste by dumping in their field and remaining 28.57 percent (or 6 hhs) make open drainage to their land during rainy season. This drain is mixed into the Bagmati River which is source of drinking water of Kathmandu Valley. This is due to lack of awareness. For information and entertainment, 72.22 percent respondents have access to radio and only 55.55 percent to television.

5.12 Fuel Use Pattern

Fuel is essential matter for livelihood of people. The main source of fuel in the study area is firewood, agricultural residue and animal dung. Agricultural residue and animal dung use is negligible but the firewood is the most important source of furl. Out of 36 households of Mulkharka, only one house has constructed a bio-gas plant with the financial assistance from Bhagwan Youth Club of Aalapot. All households use firewood collected from the national park. The settlement is of

tamang community domestic use and selling purpose so large amount of firewood is consumed in alcohol making.

Table 12: Fuel Use Pattern in Selected Households

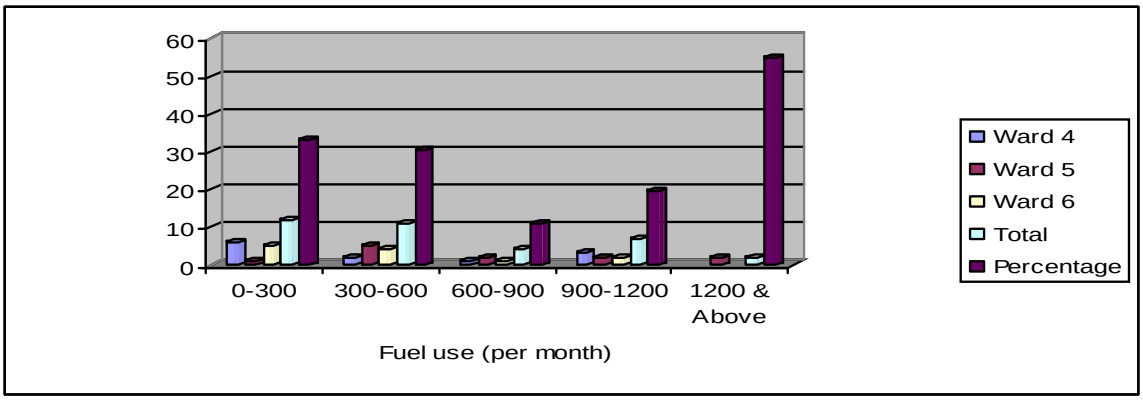
Firewood use per month (in kg)	Ward 4	Ward 5	Ward 6	Total	Percentage
0-300	6	1	5	12	33.33
300-600	2	5	4	11	30.56
600-900	1	2	1	4	11.11
900-1200	3	2	2	7	19.44
1200 & Above		2		2	55
Total	12	12	12	36	100.00

Source: Field Survey, 2006

Table 12 reveals that out of 36 sampled households 33.33 percent use firewood between 0-300 kg, 30.56 percent use between 300-600 kg, 11.11 percent use 600-900 kg, 19.44 percent use between 900-1200 kg and 5.56 percent use more than 1200 kg firewood per month.

Thus, the people of Mulkharka, heavily depend on firewood for energy generation

Figure 8: Fuel (Fire wood) Use Pattern of Selected Households



Source: Field Survey, 2006

5.13 Firewood Collection Pattern

Table 13: Firewood Collection Pattern at Mulkharka

Source	Ward			Total	Percentage
	4	5	6		
Private Tree	0	0	0	0	0.00
Tree from Park	7	8	9	24	66.67
Both	5	4	3	12	33.33
Total	12	12	12	36	100.00

Source: Field Survey, 2006

Table 13 shows that people of Mulkarka do not have private forest but possess some private trees on their farmland. Out of 36 respondents 66.67 percent collect firewood stealing from national park alone and remaining 33.33 percent collect firewood from national park and private trees from farmland. Thus, the villagers are dependent heavily on national park for firewood, fodder and grasses which causes the conflict between park and people.

5.14 Gain and Loss from National Park

National parks are established mainly for the conservation of bio-diversity, environment and nature, Mulkharka of Sundarijal VDC is located inside the National Park, and it is settlement of tamang. As already mentioned, tamang of Mulkharka have low rate of literacy. They are not much aware about the conservation tasks of government, so analysis of gains and losses is quite weak. When questions arise about gains, they stress about the losses due to park.

In the view of respondents following are benefits and losses due to park:

Benefits

i. People can get firewood for fuel.
ii. Fodder and grass can be obtained for cattle.
iii. Timber for construction of houses and furniture can be achieved.
iv. Fresh air and water can be achieved

Losses

i. Main loss is crop damage by wild animals.
ii. Cattle and human are attacked by wild animals.
iii. No free movement and lacking access upon resources.
iv. People should pay fine when disobey the rules.
v. No grazing land for cattles.
vi. No development activities in the village.
vii. Lang time required for collecting grosses, fodder and firewood.

5.15 Knowledge about environment and bio-diversity conservation of head of the households

Table 14: Knowledge about Environment and Bio-diversity Conservation

Environment Conservation	Total	Percentage
Yes	22	61.11
No	14	36.89
Total		100.00
Bio-diversity Conservation		
Yes	10	27.78
No	23	72.22
Total		100.00

Source: Field Survey, 2006

Table 14 shows that, out of 36 respondents 61.11 percent have knowledge about environment and its conservation and 36.89 percent do not have knowledge all.

Similarly, 27.78 only percent respondents have very little knowledge about bio-diversity, its conservation and importance of national park but majority of respondents i.e. 72.22 percent do not have knowledge and awareness about bio-diversity and national parks at all.

5.16 Opinion of the Head of the Households Regarding Close National Park and Rules to be changed

Table 15: Opinion of Respondents Regarding Close National Park and Rules to be Changed

Park to be closed	Total	Percentage
Yes	5	13.89
No	23	63.89
No idea	8	22.22
Rules to be Changed		
Yes	12	33.33
No	12	33.33
No idea	12	33.33

Source: Field Survey, 2006

Table 15 shows that 13.89 percent of the respondents are in favour of closing the park, 63.89 do not want to close whereas 22.22 percent have no idea about closing and opening the national park.

Similarly, the first 33.33 percent have perception for changing the rules of the park, the second 33.33 percent do not want to change the rules and remaining 33.33 percent do not have any idea about the rules and regulations of the park.

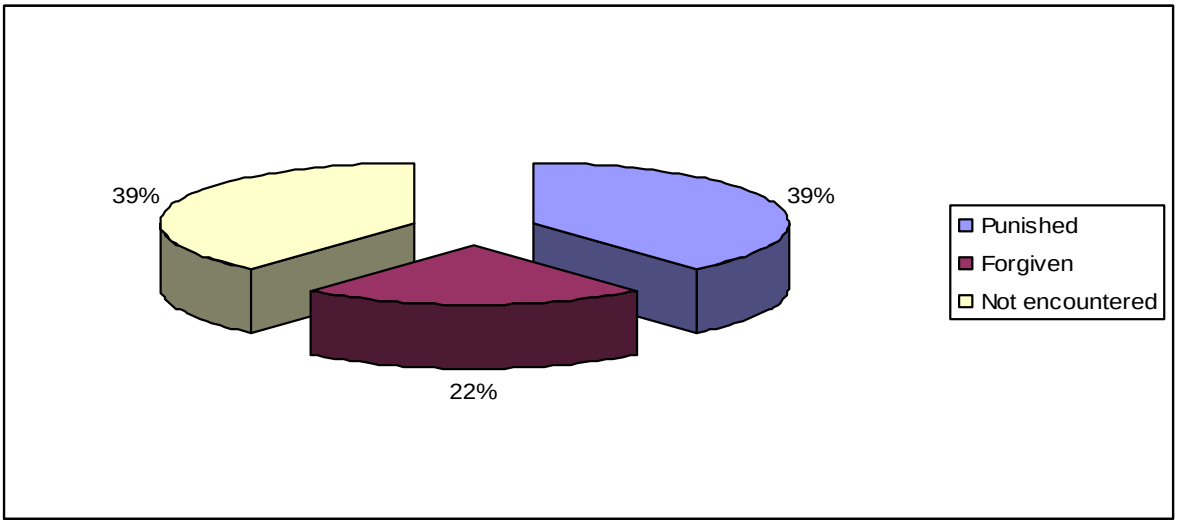
5.17 Punishment/Forgiving as Who Disobey the Rules of the Park for the First Time:-

Table 16: Punished or Forgiven Disobeying the Rules First Time

	Total	Percentage
Punished	14	38.89
Forgiven	8	22.22
Not encountered	14	38.89
Total	36	100.00

Information in the Table 16 shows that 38.89 percent of the respondents has been punished for the disobeying the rules of the park and 22.22 percent has been forgiven. The remaining 38.89 percent has not been encountered with the park staff yet.

Figure 9: Punished or Forgiven Disobeying the Rules First Time



5.18 Respondents Expectation from Park

As the awareness level of the respondents is low, there are different expectations. After analyzing the expectation, some major points are as follows:

i. Most of the respondents want compensation for the damaged crops by wild life.
ii. They want road facility from Sundarijal Bus Park to the village, (Now it has been started).
iii. Pure drinking water should be provided.
iv. Awareness programs should be launched.
v. Wall should be constructed by demarcating certain area (i.e. buffer zone) to fulfill necessary resource.
vi. Fine should not be charged.
vii. Fully facilated health centre should be established
viii. Wild life should be controlled.
ix. There should be regular patrolling.
x. Correlation between park and community should be promoted.
xi. Otherwise, the settlement should be transformed with good compensation.

Chapter – Six

GOVERNMENT'S POLICIES AND PROGRAMS FOR PROTECTED AREAS

6.1 Background

Nepal is endowed with rich and varied biodiversity. Altitudinal variances in short distance give Nepal's biography variety that range from lush moist forests and sparse alpine deserts to luxurious grassland in lowland terai. The mountainous country also shelters some of the world's rare animals. Sagarmatha national park and Chitawan national park with typical natural, cultural and landscape characteristics were listed as world heritage sites in 1979 and 1984 respectively. The koshi Tappu wildlife reserve a wetland of international significance was declared a Ramsar site in 1987. Similarly, other three weland of international important outside protected areas Bishhazari Tal (chitwan), Jagadishpur reservoir (Kapilbastu) and Ghodaghodi Tal (Kailali) were declared as Ramsar sites in 2003.

Nepal embarked on the modern era of wildlife conservation with the enactment of National Park and Wildlife Conservation Act in 1973. The Department of National Parks and Wildlife Conservation presently works within a network of nine national parks, three wildlife reserves and three conservation one hunting reserves including nine buffer zones around National Parks, covering total area 28585.67 sq. km or 19.42 percent of country's total land. It was established to conserve, restore and mange the rich and varied fauna, flora and the landscape of mountainous country Nepal. An office had been set up in 1972 under Department of Forest, Government of Nepal, to intake the task before it was formerly upgraded as a department in 1982.

The Government of Nepal has realized that the conservation effort should be in favour of human being, local communities should be benefited with the establishment of protected areas and conservation tasks should be done with the help of local communicates. With this realization, the National Park and Wildlife Conservation Act 1973 was amended by including Buffer zone management in 1993. In Buffer Zone local communities use and conserve the required resource in sustainable manner and 35 to 50 percent of the annual income of National Park goes to local community for community development activities. The concept of Buffer Zone has given the significant result in declared areas.

6.2 Objectives

The primary objectives of the DNPWC are:

i. To conserve the countries major representative ecosystems.
ii. To conserve unique natural and cultural heritage and give protection of the valuable and endangered wildlife species.
iii. To encourage scientific research for the preservation of wild genetic diversity.
iv. To promote tourism development minimizing the negative impact natural recourse.

6.3 Policies

The DNPWC has formulated to achieve the targeted objectives as follows:

i. Expansion and establishment of protected areas representing the ecosystems of nation for the conservation of biodiversity.
ii. To implement the management planning for sustainable conservation of bio-diverting in protected areas (including buffer zones), improve conserve and promote the natural habits of endangered species,

identification, conservation and management of corridors and connectivities, managing the sustainable use of natural recourse through achieve participation of local communities making the ecological processes for the welfare of human being by study and research.

iii. Effective implementation of treaties and conventions like CBD, CITES, Ramsar, WHS being the supporting nation for conservation of bio-diverging and Environment.

iv. To authorize for the reproduction, research and wildlife veering to increase the income and employment opportunities through the promotion, and sustainable conservation and utilization of wildlife to NGO and persons.

v. To hand over the management of national parks, wildlife Reserve or Conservation Areas to NGO for the improvement of environment and biodiversity conservation.

6.4 Activities

The DNRWC'S present priority stresses a participatory management in bio diversity conservation. The specific activates of the Department are:

i. Conservation of endangered wildlife flora and fauna.

ii. Scientific Management of habitat for Wildlife Species.

iii. Establishment of Buffer Zones in and around parks and reserves.

iv. Regulate Eco-tourism to improve socio-economic condition of local communities.

v. Increasing conservation Awareness through conservation education programs.

6.5 Partnership in Bio-diversity Conservation:

Various projects has been conducted by NGO, and INGO with Government's authority for conservation of bio-diversity and environment. These projects has played significant role in conservation and socio-economic upliftment of local people residing adjacent to protected Areas.

6.5.1 The King Mahendra Trust for Nature Conservation (KMTNC)

KMTNC was established in 1982. The trust is mandated as an autonomous, non profit and nongovernmental organization to work in the field of nature conservation.

For over two decades, KMTNC has successfully undertaken over 100 small and large projects and nature conservation, biodiversity protection, natural resource management and sustainable rural development. The trust's focus is on holistic and integrated conservation and development programs with participatory involvement of local people. The programs undertaken by the Trust are divided into three geographical areas- the mountain program with the focus on mid-hills and high mountains, the Terai Environmental program focusing on the lowland Terai and the Kathmandu Valley. The Annapurna conservation Area project (ACAP) and monoslu conservation Area Project (MCAP) are two major projects in mountain environment. Likewise, the Trust's activities in the lowland Terai are in and around chitwan National Park Bardia National Park and Sukla Phanta Wildlife Reserves the only project of the trust in kathmandu valley is the management of control zoo.

6.5.2 Annapurna Conservation Area Project (ACAP)

Launched in 1986 as a pilot program, the objective of Annapurna Conservation Area Project (ACAP) has the objective of integrating conservation and community

ACAP in first protected area that has allowed local residents to live within the boundaries and maintain their traditional rights and areas to the use of natural resources.

ACAP has completed the preparation of management plan. The plan focus on building local infatuations to carry out ACAP'S activities Moreover, it focuses and the withdrawal of the KMTNC in future local people themselves will manage ACA with minimal interventions from the government or NGO. With the application of participatory approach the main ACAP activities include natural resource conservation program, conservation and extension program, sustainable community development program alternative energy program and agricultural development program. Other areas of focus include programs such as livestock development, sustainable tourism development, motivating women in conservation and development, cultural heritage conservation and reproductive health.

6.5.3 Manaslu Conservation Area Project (MCAP)

KMTNC has been working in the Manaslu region since January 1997 through Manaslu Eco-region Development Project that is supported by Asian Development Bank (ADB) through the Ministry of Tourism and civil Aviation's second Tourism infrastructure Development Project (STIDP).

Government of Nepal has handed over the management responsibilities of MCAP to KMTNC for 10 years. With the objectives of addressing various issues related to people and conservation, an integrated conservation and development program has been developed and implemented in MCA. The project activities included bridge construction and trail improvement, construction of sign posts to facilitate trekkers, progress in community owned micro-hydro electricity project, and the establishment of kerosene depot. The other activities are related to wonder

development. Such as running literary classes and formation of women's groups as well as construction of community camp sites and sanitation improvement.

The activities related to agricultural development are distribution of seed/seeding and construction of vegetable demonstration plots. Other community development works include drinking water schemes, monastic conservation, and support for public health and school, operation of conservation area awareness camps, formation of conservation area management committees and capacity building for local people.

6.5.4 Bardiya Conservation Project (BCP)

Launched in 1979, the main objectives of BCP are to conduct scientific research on prey and predators in Bardia National Park. The focus of the Project also lives an ecological crocodile the BCP undertaken by the KMTNC included five components of Bardia Integrated conservation project (BICP) implemented with the funding support of the Government of Netherlands through WWF Nepal program. The five components included sustainable agriculture and forestry, animal husbandry and livestock management, natural forest regeneration, alternative income generation schemes and nature – based tourism.

6.5.5 WWF Nepal Program

Nepal has been a pivotal country for WWF'S Global programs since 1967, when rhino conservation program was lunched in chitwan, and the three decades of WWF involvement in Nepal has evolved with the change in policy of government. From early 1967 through 1984, WWF'S support focused on species research, protected areas, and capacity building and conservation education. Between 1985 and 1992, it introduced the concept of integrated conservation and development program (ICDP), while continuing to support biodiversity conservation and capacity building WWF entered into the third era of involvement in Nepal since

1993, when it opened its field office in Kathmandu, following the General Agreement with Government of Nepal. WWF support continues for ICDP including buffer zone development, capacity building and species conservation. From the late 1990s the focus has extended to trans-boundary conservation, eventually culmination in landscape level approached in conservation.

6.5.6 The Terai Arc Landscape (TAL) Program

The Terai Arc Landscape (TAL) program has been joining implemented by Department of Forest (DOF), DNPWC and WWF Nepal program in collaboration with local communities and NGOs, following Grant Agreement between the Ministry of Forest and Soil Conservation and WWF Nepal program on 13 July 2001.

The program has two project components: Terai Arc Landscape – DNPWC and Terai Arc Landscape – DOF. Both DOF and DNPWC have set up their field offices at Bardia National Park and Dhamgadi, Kailali District. After July 3001, the western Terai churiya conservation program (Tiger, Rhino and Elephant Complex) better known as WETTREE was merged into TAL program.

The achievements during the year include establishment of agro – forestry nurseries with capacity o f producing 330,000 seeding, plantation in 161.5 ha of land, handling over five community forests to local communities, formation of 26 community forest user groups, removal of encroachers from 5500 ha. of land in Basanta Forest Corridor, and the preparation of GIS baseline data. Other activities were management of 250 ha grassland in Suklaphanta Wildlife Reserve and Bardia national Park, and contraction of 5 waterholes and the support for the operation of anti-poaching units in the four protected areas of TAL. The other important achievement is the demarcation with the support of local people.

6.5.7 The Northern Mountains Conservation Program

In collaboration with DNPWE and the final sup[port of USAID, WWF Nepal Program implemented the project in shey Phokusndo National Park and in its buffer zone with the objective of biodiversity conservation. The main propose of the project is to facilitate local management of natural resources and to improve the living conditions of local people, while safe guarding the unique natural heritage of the region.

The major achievement of the project during the fiscal year include training workshop for community Forest user Groups, support for the establishment of community plantation and nurseries training for buffer zone management committees, completion of non-formal classes, and the formation and strengthening of women's groups. The other activities were increased saving and credit activities, environmental and conservation education in local schools, support for eco clubs, continuation of agro-forestry programs and training for local hotel owners.

6.5.8 People and Plant Project

Support by WWF-UK and DFID and implemented through WWF-nepal program in Shey Phoksundo National Park. The objectives of people and plant project are

i. Strengthening professional and institutional capacity in applied ethno botany in Nepal and contribute to the wider development of ethno botany and
ii. Strengthening community-based conservation and management of medical plants in Shey-Phoksundo National Park and Buffer zone.

The project aims to improve local health care services through the sustainable management of medical plants. A traditional health care center has been set up in

park where *Amchis*-traditional Tibetan doctor-produce medicines from medicinal plants. Works are also underway to improve the availability of medicinal plants along with the cultivation of herbal species highly threatened by over harvesting and uncontrolled trade. A committee has been formed in the southern buffer zone of the peak to initiate cultivation of key species of medicinal plants along with a strong community based management and monitoring of harvesting of medicinal plants in the wild.

The people and plants initiatives continued to provide support for in-situ and ex-situ conservation of MAPs. The project also held a Everest conference of the Amchis in Sagarmatha National Park, Namche Bazar in which several Amchis from neighboring countries like India and china were participated.

6.5.9 Participatory Conservation Program (PCP)

The Participatory Conservation Program (PCP) is a joint undertaking of Government of Nepal and UNDP. The program is a follow up of the UNDP supported Parki and People Program (PPP) (1994-2001) implemented by the Department of National Park, and Wildlife Conservation in and around seven national parks and wildlife reserves and their buffer zones through people-centered developed initiatives.

Objectives of PCP

The overall goal of PCP is to support he conservation of biodiversity in and around the seven parks/reserves and their buffer zones through the active participation of the local communities and, at the same time, improve the socio-economic condition of there communities.

The specific objectives are:-

i. Institutionalizing Buffer zone management at the central and field levels for the effective management of PA resources.
ii. Mobilizing BZ communities to contribute effectively towards the conservation and sustainable use of Park and BZ resources.
iii. Enhancing the capacity of park/reserve personnel to foster a lasting partnership with the local communities so as to work together for improved management of Park and BZ resources for sustainable development.
iv. Supporting the socio-economic development of BZ communities, especially that of special Target Groups (STGs) and the poor.
v. Mainstreaming gender in conservation and development.
vi. Providing institutional support to the Ministry of Forests and soil conservation for enhancing its capacity to implement the Nepal Biodiversity strategy (NBS) and the Nepal Biodiversity Strategy Implementation Plan (NBSIP).

Activities

The major activities carried out by the program during the year largely revolved around additional area coverage (taking the total VDCs covered to 113, encompassing all the 20 districts that fall in the BZs), laying the necessary ground work for the declaration of the BZs of Suklaphanta and Koshi Tappu wildlife Reserves and realigning that of Parsa wildlife Reserve, fine-tuning the revided BZ policies in consultation with all the stakeholders and bringing it to its final draft form for approval, increasing DNPWC's linkages with its BZ partners by holding the 3rd BZNF meeting, providing institutional support to MFSC and DNPWC, giving as many households of the BZ as possible in conservation and development initiatives, formation of new UGs, providing capacity building and skill enhancement training programmes to UG and UC members, institutionalizing the

savings and credit scheme as well as facilitating the mobilization of BCF, conducting training and orientation on co-operative management as well as community forestry to CBD members productive investment, supporting park/reserve management as well as improving the natural recourse base of the BZs, among others.

After analyzing these activities the major activities conducted by PCP are:

i. Institutional capacity development of community based organization.
ii. Community capital mobilization through establishment and promotion of co-operatives.
iii. Management of natural resources and promotion of alternative resources.
iv. Women empowerment through compulsory participation of women in various activities
v. Conservation education to the people and establishment of eco-clubs in community and school.

Achievements

i. Capital formation through co-operatives in BZ community.
ii. Establishment of autonomous banking system.
iii. Easy loan facility to members for income generating programs.
iv. Decrease in interest rate of in formal sector.
v. Increase in income and employment opportunities.
vi. Search of new source of income opportunities.
vii. Increase in awareness level of conservation.
viii. Active participation of local people in conservation program.
ix. Establishment of self-reliant and capable institutions in local level.
x. Increase in activeness of users groups.
xi. Management of conflict between local people and national parks/reserves.

xii. Decrease in dependency upon protected areas for daily needs.

xiii. Improve in management of food supply.

xiv. Overall improve in living standard.

6.5.10 Biodiversity Landscape Project

In appreciation of Nepal's firm commitment to biodiversity conservation, the Ministry of forests and soil conservation has been entrusted with the task of preparing a full-size project proposal to be funded by GEF and other co-financiers through the Nepal Biodiversity Conservation Landscape Project (NBLP). The project is to conserve the country's globally significant biological diversity through a landscape level approach in conservation.

The Ministry has choosen three priority areas for undertaking landscape level planning initiatives in Nepal. There sites include the area between Bardia National Park and Sulkaphanta wildlife in Western Terai and the Makalu Barun National Park and the Kanchanjunga conservation landscape complex in East Nepal.

6.5.11. The Kanchanjunga Conservation Area Project (KCAP)

Initiated in March 1998 implemented by the DNPWC with the technical and financial support of WWF Nepal Program, the primary goal of the Kanchanjunga Conservation Area Project is to conserve the biodiversity of Kanchanjunga Conservation Area (KCA) through integration of natural resources conservation with sustainable community development.

The project aims to achieve this by strengthening local community capacity to manage their natural resources while improving their socio-economic condition, The project activities implemented by KCAP include forest management species conservation and protected area management, sustainable development, conservation education and capacity building and communication

The major achievements of the project include production of seedling of various species of plants and distribution for plantation purpose in community and private land. The other activities include forest management training for community user groups, monitoring of snow leopard and conservation awareness of the importance of show leopard conservation.

6.5.12. Sagarmatha Community Agro-forestry Project (SCAFP)

The Sagarmatha Community Agro-forestry Project (SCAFP) is a multifaced community based conservation project was launched in 1996 in Namche, Khumjung VDC's in the buffer zone of the Sagarmatha National Park and Chauri-Kharka with objective of reducing forest pressure through community forestry, sustainable management of forest resources and promotion of alternative energy.

6.5.13. The Mountain Institute and Eco-Himal

The mountain Institute, formerly the Woadland Institute, initiated the preparation of the management plan of makalu Barun national Park and Government of Nepal endorsed the plan to run the national park and conservation area for 10 years. After the completion of the project cycle the conservation are was declared as the buffer zone of the national park.

At present Eco-Himal, an INGO run with the support of Australian government has implemented community forestry and community development activities such as formation of co-operatives and improve socio-economic conditions of local people.

6.5.14 Tourism for Rural Poverty Alleviation Program (TRPAP)

Implemented under the Ministry of Culture, Tourism and Civil Aviation (MoTCCA) with the technical and financial support of UNDP, SNV and DFID,

the goal of Tourism for Rural Poverty Alleviation Program (REPAP) is to contribute to the poverty alleviation objectives of the government. The project aims to accomplish the task through review and formulation of policy and strategic planning for sustainable tourism development.

The project organized tourism and conservation oriented various activities such as environment awareness programs, appreciative participatory planning and action oriented workshops and development wheel workshop during the fiscal year. It also organized oriented training for trainers on buffer zone and community forestry.

6.5.15 Himalayan Trust

Sir Edmund Hillary established the Himalayan Trust with the objective of providing educational and health care services of the local people of Khumbu region. The Trust's works has been further strengthened following the declaration of the buffer zone of the Sagrmatha National Park and formation of user groups, user committees, and buffer zone management committee.

6.6 Programs on Shivapuri National Park

In 1985 the Government of Norway, through Food and Agriculture Organization of the United Nations, started assisting HMG/N with the "Shivapuri Watershed Management and Fuel Wood Plantation Project". GCP/NEP/041/NOR(first phase), with a total contribution of US$ 2.5 million. Main emphasis was on erosion control and afforestation as well as involving the population in awareness campaigns, conservation farming and creating alternative sources of income.

This was followed in 1992 by a 2nd phase titled "Shivapuri Integrated Watershed Development Project, GCP/NEP/048/NOR, with a contribution of the US$ 2.3

million. This second phase scheduled to end in April 1998 stretched to 1999 November. Accomplishments of the second phase were:

i. Ensure environmental protection and sustainable management of natural resources with emphasis on safe guarding the biological and scenic valves of the natural forest and the water supply to Kathmandu Valley.
ii. Increase in the living standard of the people through increased land productivity and households income, in harmony with the environment; and
iii. Capacity enhancement at village level as well as at institutional level to plan operates and monitors watershed management activities in a participatory manner.

6.6.1 Poverty Alleviation

The declaration of the protected area in 1976 meant at first an important reduction in income of already poor communities. This has to certain extent been alleviated by the reserve, but it was estimated in 1998 that still same 25 percent of households suffered from 4 to 12 months of food deficits. Many families are not able to produce sufficient food grain for their annual requirements from their own landholdings. The reasons for this include the high population density and low productivity of the land. Food deficit areas are spread around the periphery of the Reserve (Now declared national park) concentrated in wards lying immediately adjacent to the Reserve at higher elevations.

Apart from food deficits, the local communities, especially on the northern slopes are relatively backward in other terms, such as education and literacy, especially female literacy.

Several successful activities to improve living standards and land productivity of the surrounding people have been carried out like promoting:

a. Horticulture programmes (1200 hhs of 30 village in 18 VDC);
b. Vegetable and vegetable seed production (650 hhs);
c. Mushroom production (128 hhs);
d. Conservation farming;
e. Apiculture (45 hhs);
f. Sericulture (122 hhs in 12 VDC);
g. Rabbit keeping (56 hhs);
h. Improved cooking stoves (1200 hhs); and
i. Towards community forestry, several forests outside the park with an area of 297 have to date been handed to local communities (681 benefiting hhs), while another 5 forests of 39 have been prepared for handover (224 benefiting hhs). Community forestry plantations were carried out in many of these forests.

Even though it had not been included as an objective or output, the project's activities have resulted in a general improvement of the position of women in the local communities. Many farming, income generating, extension and community forestry activities have been particularly targeted at women and women groups. There are now 26 women groups in the area, including 132 women forest user groups. Substantial forests have been handed over to women groups which is highly significant in a society where women do not usually own land.

At present, the concept of buffer zone has been raised no other programs are being implemented by Shivapuri National Park.

Chapter - Seven

LIVELIHOOD CHANGE IN HOUSEHOLDS AND VULNERABILITY CONTEXT

The livelihood approach is a way of thinking about the objectives, scope and priorities for development. A livelihood is sustainable when can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.

DFID aims to increase the sustainability poor people's livelihoods through promoting:

- Improved access to high quality education, information, technologies and training and better nutrition and health;
- A more supportive and cohesive social environment;
- More secure access to financial resources;
- A policy and institutional environment that supports multiple strategies and promotes equitable access to competitive markets for all; (www.livelihoods.org)

Livelihood of the people in the study area is mainly based on agricultural activities like producing food crops, keeping livestocks and agricultural labouring. An activity is linked with other activities. A same or different activity of family members of the households in a collective form is the livelihood source of households. Each members of a family support another member. When situation changes the livelihood strategies of the people also change significantly. There are one or more than one agents to change the situation. One agent of change affects the livelihood of people but do not change the livelihood strategy drastically for example Shivapuri National Park as a change agent, affect the livelihood of the

people but there are other agents like agriculture, livestock etc. which are supporting continuously on the livelihoods. Thus livelihood is the holistic approach.

The livelihood of local people has been after the establishment of Shivapuri National Park. People used to sell firewood in urban area before establishment of Park/Reserve, but now collection of firewood for selling purpose has been terminated. Thus, livelihood is directly related with the park. This research is mainly concerned with the major role played by Shivapuri National Park on livelihood of local people.

7.1 Production and Consumption

Agriculture is the main base of livelihood of people, but the production of crops from the field is not sufficient to overwhelming proportion of the sampled households. All the households need foods from market in smaller or higher amount. Paddy, maize, millet, wheat are the major crops cultivated by the sampled households of Mulkharka. The production of paddy is very low because the Khet is marginal, yielding low productivity. Maize and millet are produced by total households. As already shown in Table 7 of Chapter Five, 22.22 percent produce 0-200 kg. another 27.78 percent produce 200-400 kg, another 27.78 percent produce 400-600 kg, 22.22 percent produce more than 600 kg up to 1000 kg yearly.

The production of millet is as follows: About 22 percent of the respondents produce between 0-200 kg, 27.75 percent produce between 200-400 kg, 33.33 percent produce between 400-600 kg and 16.67 percent produce more than 600 kg up to 1000 kg in a year.

Only 55.55 percent of the respondents produce paddy and 44.44 percent respondent produce wheat. The production of paddy and wheat is lower than the

production of maize and millet. The produced food is not sufficient for whole year. Millet is also used for alcohol making by fermentation.

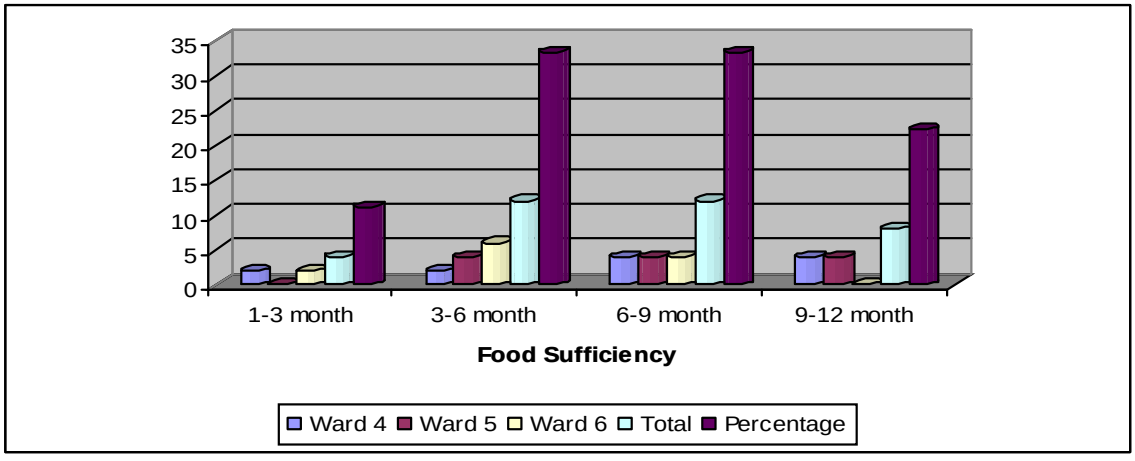
Table: 17 Food Sufficiency From own Production

Food sufficiency	Ward 4	Ward 5	Ward 6	Total	Percentage
1-3 month	2	0	2	4	11.11
3-6 month	2	4	6	12	33.33
6-9 month	4	4	4	12	33.33
9-12 month	4	4	0	8	22.22
Total	12	12	12	36	100.00

Source: Field Survey, 2006

Table 17 shows that, out of 36 respondents, 11.11 percent depend for 1-3 months, 33.33 percent depend for 3-6 months, another 33.33 percent depend for 6-9 months and 22.22 percent depend for 9-12 months from their own production. This shows that the production is not sufficient throughout the year. To cop the insufficiency, people use their saving or borrow from neighbour to buy rice from market.

Figure 10: Food Sufficiency on Selected Households



Source: Field Survey, 2006

7.2 Income and Expenditure

Agriculture is main source of income in most of the households, where livestock sells and alcohol selling play significant role for income generation. Agricultural products mainly millet and wheat are used to produce alcohol and it is taken into the market. There is no household which does not prepare alcohol. For preparation of alcohol especially women are engaged. There is no system of selling of food grains. Mainly there are different sources of income some of them are salary, wage, pension, Business, livestock selling and alcohol selling. Income ranges from Rs. 7200 to 76000 per annum and expenditure ranges from Rs 25,300 to Rs. 71,145. The major expenditure items are chemical fertilizer, wage food, clothing, education, social activities, cigarette/alcohol etc. Among such items respondents spend large amount of money in social activities like weeding, festivals and alcohol drinking.

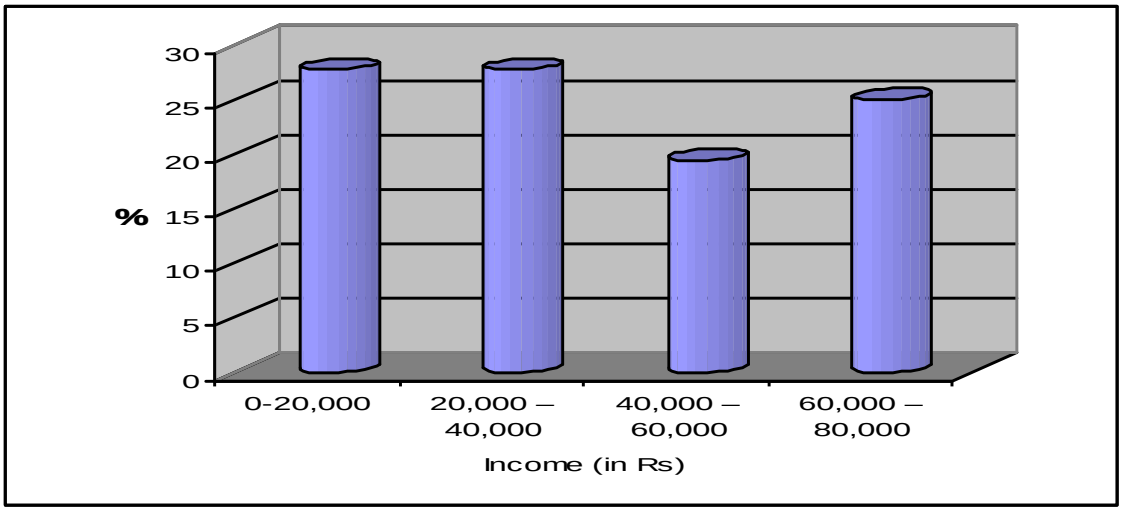
Table 18 Annual Income of Surveyed Households

Income	Number	Percentage
0-20,000	10	27.78
20,000 – 40,000	10	27.78
40,000 – 60,000	7	19.44
60,000 – 80,000	9	25.00
Total	36	100.00

Source: Field Survey, 2006

Table 18 shows that out of 36 households 27.78 percent have income between Rs 0-20,000 per annum. Another 27.78 percent have between Rs 20,000 – Rs. 40,000, 19.44 percent have between Rs. 40,000 – Rs. 60,000 and remaining 25 percent have between Rs 60,000 – Rs. 80,000. After analyzing the income pattern, it an be seen that more than 50 percent respondents have income less than Rs, 40,000 per annum. This indicates the vulnerability of livelihood.

Figure 11: Annual Income of Surveyed Household



Source: Field Survey, 2006

Though the income level is low, the respondent's expenditure is higher than income. The major portion of income goes for buying the food grains from market and for celebrating social activities like weeding, festivals, brata bandhan etc. One household spends Rs. 5000 to 20,000 annually in such ceremony. The expenses are maintained by borrowing from informal sectors.

Table 19: Annual Expenditure Pattern of Surveyed Households.

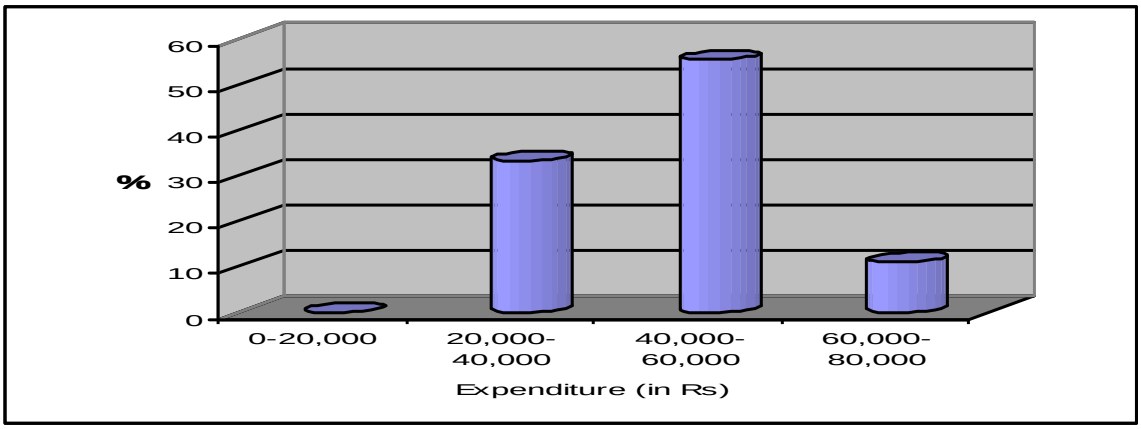
Expenditure (in Rs)	Number	Percentage
0-20,000	0	0.00
20,000-40,000	12	33.33
40,000-60,000	20	55.55
60,000-80,000	4	11.11
Total	36	100.00

Source: Field Survey, 2006

Table 19 shows that there are no households making expenses between Rs 0-Rs. 20,000. Out of 36 households 33.33 percent make expenses between Rs. Rs.

20,000 - Rs. 40,000, 55.55 percent spend between Rs. 40,000 – Rs. 60,000 and remaining 11.11 percent spend between Rs. 60,000 – Rs. 80,000 annually.

Figure 12: Expenditure Pattern of Surveyed Household.



Source: Field Survey, 2006

Before the establishment of Shivapuri National Park and Reserve, forest based resources were the main source of income like selling firewood, timber, carpentry etc. Firewood and timber were easily sold in market and daily needs were maintained. But now situation has been changed. Forest – based resources are restricted to sell. Alternative source of income has to be searched but there are only two households which get regular income from service. Right now, Shivapuri National Park has launched no programs for upliftment of living standard of people. People are compelled to stay as a prisoner in a jail.

7.3 Vulnerability Context

The vulnerability context represents the external environment in which people live. Trends, shocks and seasonality are external factors over which people have no or limited control. Trends comprise, for instance resource stocks, population density technology, politics, and economics. Shocks comprise destruction of assets, economic shocks and conflicts. The seasonality may include prices, production, employment opportunity and migration.

All these factors affect people's livelihoods by influencing the availability of assets and the options people have to persue beneficial livelihood outcomes. Shocks may, for instance, destroy assets directly (e.g. destruction of crops by wild animals) or force people to abandon assets (e.g. People leave their home and land because of the government decision to establish a park and protected area). Trends may be less disastrous because they are more predictable, but they have an influence on the rates of returns (economic or otherwise) of chosen livelihood strategies.

The effects on the people's livelihoods are not always negative: Trends in governance may benefit poor people and new technological innovations may be valuable to poor people too. However, the term vulnerability context draws attention on the fact that many of these external factors are directly or indirectly the source of hardship for poor people in developing countries. Poor people's livelihoods are fragile and therefore less resilient to external stresses. Additionally, they are less able to reduce those stresses by manipulating their environment. Consequently, their vulnerability increases. Moreover, the poorest are often unable to capitalize on the favourable trends because they lack assets and strong institutions working in their favour Phuyal, (2004). Those people are more vulnerable who have no land or have smaller piece of land, who have no livestocks, who do not have job and do not get salary, who do not get any pension and social allowance, who do not get any remittance, whose family members could not earn anything by working as a labour, who have several small children in the house and have no fixed income, when economically active people become sick and spend days on beds are very vulnerable.

After the declaration of public forest of Shivapuri hill as a protected area the access to the forest – based resources that was the main source of livelihood of local people finished. After the protection of the forest as a national park the

resource stock is increased significantly but the local people could not use it. There is no provision to distribution resources to the local people.

People are very poor to use new technology to their daily life. All agricultural inputs and tools which are used till date are very traditional. People are very poorly informed about the invention and availability of new technology. No newspaper comes to the village. No access of telephone. Most of the people have access of radio. Poor economic condition and very weak household management and very low level of education (e.g. more expenditure than income, more expenditure in festivals and social activities than in health and education) are another important cause of keeping them far from new technology. Their nonagricultural products like bamboo baskets, *Nanglo* and such types of other things, forest wood based utensils and other products and their profession as a carpenter and mason declined due to the lack of raw materials remarkably after the establishment of the Shivapuri National Park.

The number of wild animals has been increased significantly and now they come out from the park boundary and damage crops especially maize, millet, wheat and other vegetables planted by farmers. Among the wild animals, wild pigs, deers, monkey's porcupines are mainly responsible for the damage of the crops. The movements of wild animals to raid the crops are very uncertain and irregular. Nobody knows when they come, in which number they come and from where they come and damage the crops. It is also very risky to keep domestic animals outside for grazing. People are also often terrorized when they are working in the agricultural field or moving around the village. Between the plantation and harvesting time of maize, millet and wheat, people spend their nights in *Machan* to keep watch to prevent raids of the wild animals in the field.

Chapter Eight

SUMMARY, CONCLUSION AND RECOMMENDATIONS

8.1 Summary

Protected areas are those areas that are established for conservation of nature, environment and biodiversity. In recent years, due to depletion of biodiversity with the degradation of environment there is an imbalance in nature. The livelihood of people, adjacent to such areas is vulnerable. The conflict between such areas and people is very arising day by day for the use of natural resources. Protected areas can be known in various forms, i.e., National Parks Buffer zones, Strict Nature Reserves, Wildlife Reserves, Conservation Areas, and Hunting Reserves. Depletion of biodiversity affects the existence of human life, so establishment of protected areas plays significant role in conservation of nature and existence of mankind in this planet.

Shivapuri National Park is a new park and was established in 2002. It was the main source of fuel wood, fodder and timber for the local people before declaration of Wildlife Reserves. The Government of Nepal tried to check the problems of deterioration of natural ecosystem in 1976 and established development project on guidance and supervision of Shivapuri Development Board. Later, the area was gazetted as Shivapuri Watershed and Wildlife Reserve in 1984. This is only one of Nepal's Protected Area that lies entirely within the Middle Hills physiographic zone.

This study relates to the Mulkharka area of Sundarijal VDC in Kathmandu district. It analyzes the policies and programs relating to the Shivapuri National Park: The survey was conduced in 36 households by using simple random sampling method. Group discussion, observation and interview were applied for data collection.

The literacy rate of surveyed households is 58.07 percent. Among the total respondents 12.9 percent are literate without schooling. The percent of S.L.C passed is 6.45. There is no person who has passed I. A., B.A. and above

The primary occupation of the respondents is agriculture which comprises 58.33 percent and other respondents are engaged in livestock rearing, small business and labour, maize, millet and wheat are the major crops in the study area.

Livestock rearing is also one of main source of income of the respondents. This is also secondary occupation and comprises 44.44 percent. Fodder and grazing have been restricted. 13.89 percent of respondents are rearing their livestock by grazing, 45.22 percent are practicing on stall feeding. The respondents collect fodder grass both from the farm land and national park.

Total respondents are dependent on firewood for fuel. Only one household has constructed bio-gas plant. Most of the respondents prepare alcohol, so consumption of firewood is very high. Over 33 percent of the households consume firewood between 0-300 kg per month and 30.56 percent consume 600-900 kg per month. The knowledge about alternative source of fuel is very poor in the local people. Firewood is collected from park illegally.

The people in the study area heavily depend upon traditional farming and livestock rearing so there is no significant positive change on their livelihood. Crops are also damaged by wildlife. People do not get any compensation from park authority.

Government has made the provision of buffer zone in many protected areas but in this park, the buffer zone has not been declared yet.

This study shows that the livelihood of local people of Mulkharka is becoming more vulnerable due to loss of access to resources. In the present situation, there is no program of Shivapuri National Park for participatory conservation and mutual

co-existence. Conservation is not possible with exclusion the local people. Hence, the policy and program should be launched in favour of local people, which meet demand of local people as well as conservation objective of the park and government as well. The alternative sources of fuel should be found and promoted for sustainable livelihood of local people. The buffer zone should be declared as soon as possible for participatory conservation and sustainable utilization of resources which will minimize the conflicts between park and people and supports the sustainable development of the whole nation.

8.2 Conclusion

Establishment of protected areas play significant role for conservation of bio diversity and environment, but Shivapuri National Park has pushed the livelihood of local people toward more vulnerable situation. People were depending upon the forest resources from ancient period of time. The indigenous right has been curtailed with the establishment of the parks. People of Mulkharka, (Sundarijal VDC) are heavily depending upon the traditional system of agriculture and livestock rearing. The output from the traditional practice is very low. People are not aware about new technology with the lack of access to education and capital.

Livelihood of people has strong relationship with agriculture, livestock and forest. The declaration of National park has made the socio-economic status of people more vulnerable. The cultivated crops are destroyed by wildlife. There is no security of livelihood, though good access upon the resources but the rule of park made them inaccessible. In such situation, the conflicts between park and people are increasing day by day. The programs launched to mitigate the problems of the people can not be effective if they are not implemented with the active participation of local people. People are not aware about conservation task of government because of lacking conservation education, so it is necessary to disseminate the conservation education up to grassroots level of the people.

Basically, the settlement of Mulkharka is occupied by the Tamang community, back warded socio-economically and politically. Traditions and cultural practices are also pushing them backward. In such situation, national park has curtailed the access upon resources. Currently, the national park has not implemented any specific, people centered program for conservation and sustainable utilization of resources. The concept of buffer zone has not been practiced yet. Local people are totally excluded from conservation activities. The crops are damaged every year but the people do not get any compensation from any institutions. There exists no institution to help the people and to find alternatives. The park seems to have no concern about the vulnerability of local people. The concept of park and people for natural co-existence does not exist in the case of Shivapuri National Park.

The conservation practice is effective if and only if people are awarded and livelihood becomes less or no vulnerable, then the protected areas can get success to protect the biodiversity and nature in sustainable manner

8.3 Recommendations

Based on the findings and conclusion of the study the following sets of recommendations have been made:

- The awareness programs for conservation should be conducted with active participation of local community.
- Compensation of crops damaged by wild animals should be provided.
- Community development activities like building health centre high school construction of roads, pure drinking water supply should be provided minimizing the negative impacts to the park.
- Employment opportunities should be promoted by providing various skill development training.

- Free access to forest resources should be provided by demarcating the buffer zone quickly.
- Alternative source of energy should be developed instead of firewood. Improved cooking stoves and biogas plants are potential alternative sources, should be promoted.
- Raising awareness to conserve bio-diversity is very essentials. Local people should be encouraged to grow fast growing multipurpose tree species on their land.
- Mostly women collect resources from the forest, so women should be encouraged to involve in user group's and providing them with more economically gainful opportunities.
- Protective measures should be carried out against crop damage. Local people should be supported to build their own fences and to construct trenches near their croplands to control crop damage.
- Eco-tourism program should be promoted immediately for promotion of tourism and diffusion of benefits among locals. When ecotourism becomes main source of income of park, it is supposed to support the community development programs.
- High yielding crops and modern techniques of farming should be promoted. Especially cash crops should be promoted.
- Community capital mobilization should be instituted through co-operatives. Credit facilities should be provided to encourage off-farm activities such as handicraft development, training of house wiring, mid-wife, paper production etc.
- Regular and efficient monitoring and evaluation is needed to carry out different types of activities. Otherwise, the settlement should be transformed with provision of good compensation to the people.

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ANNEX

Protected Areas of Nepal's National Parks/ Wildlife Reserves/ Hunting Reserve/ Conservation Area and Buffer Zones

S.N.	Name of Protected Area/ National Park	Gazetted year	Area (Sq.km)
1.	Chiwan National Park (World Heritage Site 1984)	1973	932
2.	Langtang National Park	1976	1710
3.	Sagarmatha National Park(World Heritage Site 1979)	1976	1148
4.	Rara National Park	1976	106
5.	She-phoksundo National Park	1984	3555
6.	Khaptad National Park	1984	225
7.	Bardia National Park	1984	968
8.	Makalu Barun National Park	1991	1500
9.	Shivapuri NAtional Park	2002	144
Total			**10288**
Wildlife Reserves			
1.	Suklaphanta Wildlife Reserve	1976	305
2.	Koshi Tappu Wildlife Reserve (Ramsar Site 1987)	1976	175
3.	Parsa Wildlife Reserve	1984	499
Total			979
Hunting Reserves			
1.	Dhorpatan Hunting Reserve	1987	1325
Conservation Area			
1.	Annapurna Conservation Area	1992	7629
2.	Kanchanjunga Conservation Area	1997	2035
3.	Manasulu Conservation Area	1998	1663
Total			**11327**
Buffer Zones			
1.	Chitawan National Park	1996	750
2.	Bardia National Park	1996	328
3.	Langtang National Park	1998	420
4.	She-phoksundo National park	1998	1349
5.	Makalu Barun National park	1999	830
6.	Sagarmatha National Park	2002	275
7.	Suklaphanta National Park	2004	243.5
8.	Koshi Tappu Wildlife Reserve	2004	173
9.	Parsa Wildlife Reserve	2005	298.17
Total			**4666.67**

- The Protected Areas of Nepal covers a total of 28585.67 sq.km. Or 19.42% of country's total land.

- **Questionnaire for Household Survey**

- Household No: Ward No:
- 1. Name of Respondent: Sex: Age:
- 2. Occupation:
- i) Primary ii) Secondary
- 3. Household type: Nuclear/Joint/Extended.
- 4. Detail Household Description

Name	Age/Sex	Mother Tongue	Marital Status	Education			Occup.	Skill/Training
				Level Pass	School going Y/N	If Not Cause		

- **5. Land Agriculture and Livestock**

- 5.1 Land use Pattern and Ownership

Land Use	Area (Ropani)	
Houses Occupied	Own	Rented
1. House Occupied		
2. Cultivate Khet		
3. Cultivated Bari		
4. Pakho		
5. Other……		

- 5.2 Cropping Pattern

Season	Crops	Land (Khet.Bari/Pakho	Total Production(kg)	Selling (kg)
Monsoon (Ashad-				

Aswin)				
Winter (Kartik-Magh)				
Spring (FalgunJestha)				

-
- 5.3 Vegetables and Fruits

	Area Covered	Production (kg)	Sale (kg)	Transport Cost
Vegetable				
Potato				
Green leaves				
Cabbage/Cauliflower				
Other…….				
Fruits				
Guava				
Orange				
Pear				
Other……..				

-
- 5.4 Livestock

Livestock	Nos.	Feeding Habit
Cow		
Buffalo		
Goat/Sheep		
Chicken		
Duck		
Other……		

-
- 6. Household Assets:-
- 6.1 Roofing material of house and cowshed

Structure	Type		Slate/Stone	Thatch, Wooden
House	Concrete	Tin		
Cowshed				

-
- 6.2 Distance of Cowshed from house in meter:
- 6.3 Toilet Type

Toilet	Y/N
Temporary (pit fenced with thatch/wood	
Permanent Concreted	

- 6.4 If not owing toilet

Location		Distance (in meter	

- 6.5 Source and Availability of Drinking Water:

Season	Types of Source	Quality of Water	Fetching Time
Dry Season			
Other Season			

- 6.6 Family Owing items

Items	Nos
Radio	
TV	
Bulbs/Tubs Lights	
Gas Stove	
Solar heater	
Electric Heater/ Stoves	
Rive Cooker	
Other……..	

-
- 7. Income & Expenditure:
- 7.1 Income

Income Source	Amount Rs.
Salary	
Wage	
Pension	
Social Allowances	
Business/Shop	
Tourism	
Selling Cereal Crops/Vegetables/Fruits	
Selling Livestock	
Selling dairy Product (milk/ghee/curd	
Other……..	

-
- 7.2 Expenditure

Agricultural Expenses	Quantity	Cash Rs.

1. Agricultural Expenses Chemical Fertilizer Wage Seed/Pesticide Other….. 2. Non-Agri. Expenses Food Clothing Education Medicine Social Activities (Wedding, Festivals) Transportation Cigarette/Tobacco/Alcohol Other……. 3. Fuel Expenses Firewood/Agri. Waste (Straw, dung) Kerosene LP Gas Bio Gas Bio Gas Other……..		

- 8. Food Sufficiency from own Production:

(1-3) month	(3-6) month	(6-9) month	(9-12) month

- 9. If now sufficient for the whole year, how it is being managed:-

Coping Strategy	Y/N
Use Saving	
Sale of Assets	
Borrow Money/Food	
Others……	

- 10. Health Services

Health Services	Yes	No
Health post/Sub health post/centre		
TBA (Sudeni)		
Doctor		
Medicine shop		
Other…….		

- 11. Health Checking Behavior:

Particulars	Y/N	Disease	Reason
Go to health post			
Consult pharmacist			
Consult Dhami, Jhankri			
Use herbs			
Other……..			

- 12. Do you know about environment and its conservatio ☐ Yes ☐ No
- 13. If yes, what are measures to conserve the environment?
- i) …… ii) ……
- iii)…….. iv)……
- 14. Where do you go to collect fuel/fire wood? Own Tree Tree from NP.
- 15. How do you improve fertility of land?

☐ Composting ☐ Using chemical fertilizer

- 16. How do you drink water?

☐ Directly ☐ Boiling ☐ Purifying

- 17. How do you manage human wastes?
- 18. How many times do you check your health in a year?

i) Not at all ii) 1 time iii) when being ill

- 19. How do you manage domestic smoke?
- 20 Are your family members suffering from any disease?
- 21. Do you use any herbal medicine available in your locality? If yes wht they are and purpose?
- 22. Do the park animal attack your cattle/human?
- 23. What is difference between the situation before and after this park has been separated as protected area?
- 24. What you know about the national park and biodiversity conservation?
- 25. Is, there any program launched by park for local people? If yes mention…….
- 26. How does the park management behave with the local people?
- 27. What benefit do you gain or loss from park management?
- Gains:

- Losses:
- 28. Do you think that the park rules have to be changed? ☐ Yes ☐ No
- 29. Do you want the park to be closed? Yes No
- 30. If yes why do you want the park to be closed
- i) Can not cut the fine wood. ii) Bad behaviour of park staff.
- iii) Crop damage iv) Others
- 31. If you disobey the park rules and cut wood, are you punished or forgive the first time?
- ☐ Forgiven ☐ Punished
- 32. What do you aspect from the park and management?
- 33. What is your opinion about NP and management?