

CHAPTER ONE

INTRODUCTION

1.1 Background

Development and expansion of transport facility is the most important prerequisite for the development of a remote and village dominated country like Nepal. Road construction is considered one of the major key activity for the infrastructure development and then to the overall development of the area. This is further expected to open up the opportunities in Direct Productive Activities (DPA) and then uplifting the socioeconomic status of the people of the local area directly and to the people of the catchments area of the road indirectly.

Economic development is generally associated with the increase of real per capita income. In order to realize this, it is necessary that an increased proportion of the national product should be devoted to capital formation. Transportation is an important component of capital formation.

If agriculture and industry are the body and bones of national organisms, the transportation systems are nerves. The economic development of country largely depends up on the adequate provision of means of transport. Without developing the modern transportation system, development of agriculture and industries would be difficult though not impossible. Transportation is the true agent of industry. It brings resources together and distributes end products, mobilize inputs, the provision of goods and services in best way at the right point and at the right time.

In 1951, the year of democracy, Nepal had total length of road equal to 376KM; influenced number of population was 21250 per kilometer and 0.3 KM of road per 100 square kilometer. By the year 2002, the length of road in the country sums to 16834 km influencing 1375 people by each kilometer and density of road is 11.4 per kilometer (HMG, 2002).

Nepal is perhaps the most road deficient country in the world with only 0.4 km road per 1000 populations as compared to 1.89 km in India and 1.8 in Bangladesh. Nepal

has 5 km of road for every 100 square kilometer as compared 112 km in Bangladesh and 4.13 in India(Mahat, 2004)

The tenth five year plan of Nepal has taken the long term vision of the road sector as the road sector projects will be selected, formulated and developed to help alleviate poverty, and achieve high and economic sustainable growth through effective mobilization of resources and its justifiable distribution, both on geographic and social basis(NPC, 2002)

The road network can be taken as an important basic infrastructure that is essential for the socio economic development of the country. Studies conducted to measure the incidences of poverty have pointed out that the lack of road access is the main cause of rural poverty. Road access reduces development gap between the urban and rural making qualitative improvement of the rural livelihood and increasing cost effectiveness (NPC, 2002)

The construction of Banepa-Sindhuli- Bardibas Road (The B P Highway) started in November 1996 with a grant assistance of Government of Japan. This road was conceived in early 1960 by the then Road Transport Organization (RTO) as one of the feasible and appropriate road which was also reconfirmed by the feasibility study carried out in 1986(Nepal Patria, 2057). The main objective of this road is to connect capital city of Kathmandu with the eastern Terai and hence linking to neighboring cities in India. This road is not only expected to provide an alternate link to Kathmandu with the Eastern Terai, it is expected to bring considerable socio-economic changes along its corridor. This road joins Dhulikhel along the Araniko highway to Bardibas along the East West Highway with a length of about 158 km. For the construction purpose this road has been divided into four sections.

The opening of the section II of this road project has enabled people living in this remote area enjoy better access to the markets of Sindhuli Bazar and the cities of the Terai plains(Embassy of Japan, 2004)

1.2 Statement of the Problem

The first phase of Banepa-Sindhuli-Bardibas road project (Bardibas-Sindhuli) has been constructed; the IV phase (Dhulikhel-Nepalthok) has also been completed ; the II phase (Sindhuli Bazar-Khurkot) is under construction, but a 26 km long segment of the Sindhuli Road (Section II: Sindhuli Bazar-Khurkot) has been opened for road traffic use (Embassy of Japan, 2005). The II section has designed for single lane at present (4.75m formation width) with a design speed of 20 km per hour (EIA, 1999). Sindhuli district, having only of 95.7 km of road, is looking for the better future with the completion of the proposed road linking to Kathmandu. The road density of Sindhuli is only 4 km/100 sq. km. compared to that of country's road density record. Nepal's road density is 11 km/100 sq. km (Nepal Road Statistics, 2002). And the number of people influenced by per kilometer of road is also the lowest in the Sindhuli district (2924 km per km) among the districts of Janakpur Zone.

The second phase of the Banepa-Sindhuli-Bardibas road project (38.8 km Sindhuli Bazar-Khurkot section) passes via one municipality (Kamalamai) and three VDCs (Bhadrakali, Ratanchura, and Bhimeshwar). 15 settlements lying within the road project are Ratmata, Rammadi, Dhungrebas, Hirapani and Mallagaun in Kamalamai municipality; Chiyabari, Pipalbhanjyang and Dhungrebhanjyang in Bhadrakali VDC; Kavre Nigale, Sutarchhap and Khaniya Kharka in Ratanchura VDC; and Tallobara, Palase and Khurkot in Bhimeshwar VDC. The total population of all these settlement sums to about 9000. The road construction was to affect about 3750m of irrigation channels at fourteen different locations, about 2.6 km of transmission at three different locations, few drinking water facilities (EIA, 1999).

Prior to the road construction, people had to walk for hours to arrive to the market as well as the administrative centre, the Sindhulimadhi. People were in isolation from communication and transportation. Locals were even happy when they heard that the road is being constructed via their village, a shorter road that will join to Kathmandu. And they had begun to think of doing some sort of commercial activity, perhaps, they had dreamed many more for their better future with the unload of construction equipment in their homeland.

It was felt necessary to answer the questions-

1. Is the people's expectation being met by the road?
2. What sort of changes has the road brought in the livelihood of the local people?
3. Are there any adverse impacts of the road in the local people?
4. What is the situation of the people whose land was acquired by the road project with some compensation?

All these questions need an answer so that further plan can be made to better exploit the road access in favor of local people.

1.3 Objectives

The overall objective of the study is to assess the socioeconomic impact of the section II of the Banepa-Sindhuli-Bardibas road project on the local people. This study measured whether the expected outcomes (as explained in the EIA report) of the road are met or not. The EIA study was carried out prior to the construction of the road that recommended some mitigation measure for the control of potential adverse impact of the road construction.

The specific objectives of the study are:

-) To analyze the impact of the road construction on the employment and income of the local people
-) To assess the increment in the social service sector
-) To explore the adverse impacts of road on the local people.

1.4 Rationale

Based on the mentioned objective, a more critical view on the impact of the road has been felt necessary. The road is always expected to uplift the socioeconomic status of the locales. There might have adverse impacts brought by the road together with the positive support to the local people. Road, in some places, has kept no meaning as expected for the development of the area. And the road access facility can be exploited tremendously if planned and managed in proper way.

In Sindhuli-Khurkot road section and particularly in the 26 km segment where the public vehicles are plying for more than a year, the road construction has tremendous impact on the local people. When it is measured in terms of value, the access that it provided to the neighboring people has eased them to go to hospitals and market centers when needed that can foster the agricultural activity rapidly in the rural areas and increase production and productivity. Road access is always oriented to attract other development activities in the settlements, access to higher education, increased price of the land and rural people's contact with the outside world.

But the other adverse impacts like brain drain, destroyed community forest land, displacement of the local people from the acquisition of their private land by the road project, trade deficit of the pre established businessman whose business has been affected due to the displacement brought by the new road only in the bus/truck/tractor station. Porters may have lost their job together with the vehicular transport services available in the area.

Based on these grounding information, the further in depth information is always important to mitigate the adverse impacts and achieve the fullest benefit from this kind of project specifically the road and generally any kind of road project that will be implemented in the future.

There have been a number of researches carried out on the impact of road projects; but most of them are studied prior to the construction of the road as an Environmental Impact Assessment (EIA). The government of Nepal has made a compulsory provision of carrying out EIA prior to construction of any road project. The consequences of the road project on the local people after the construction has been rarely measured. In this context, this study as a post construction impact study preserves the significant importance so as to measure the targeted goals of the road are achieved or not.

1.5 Limitation of the Study

The study has been carried out in the villages of the first 26 km of the handed over road. The study is as much as representative as the sample has been taken from all the settlements lying in the VDCs of the road. The settlements of the municipality have not been entertained for the core investigation in the process of study as the study is very much guided by the rural development perspective.

The study being carried out in a part of the Banepa-Sindhuli-Bardibas road project, it may not necessarily represent the entire project's impact. This will be the first research study undertaken solely by the researcher himself. So, lack of experience may have influenced the results of the study though his intensive theoretical concept will help to generate concrete results.

1.6 Organization of the Study

The first chapter is the introductory chapter, which discusses about the background information, statement of the problem objectives etc. Literatures related to road and its impact on development has been reviewed on the second chapter under the heading of ' literature review'. Third chapter is all about the research methodology applied for this research. Chapter 4, 5 & 6 are the analysis of data. Chapter four is about the introduction of the study area; chapter five discusses about the impact of the road on the local people and chapter six is the summary, conclusion and recommendations.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Road and Development

The highest development priority of the area is the road (Mahat, 2004). The road has its best economic activities, the off-season vegetable and vegetable seed initiatives, which sustainably multiplied the income of thousands of families. Social, economical and infrastructure development activities become more economical and more sustainable once road are built; the disposable income of the families increases the moment the road access is established – the products they buy become cheaper and they receive more income from what they sell(ibid.).

In people's perception, the development denominator for the area is the road access. They said "without road everything fails". People consider road as a catalyst for social progress. In areas where roads are built, changes become immediately visible. People become more dynamic and forward looking, get confidence to change things. Road access remains a prominent election issue practically in all constituencies of all levels, more so, in hills and mountains (ibid).

People prefer to have the road to be built in their area keeping in mind that they will have a pleasant travel: what also can be thought for is how the road can be most utilized for the overall progress of the area in general and people of the area in particular. People on this sense are understood as the people of all strata. There are as many as places in Nepal that are lying just beneath the road and other development activities are not in progress as can be expected.

The road sector has played an important role in the socio-economic development and regional integration of Nepal. However, the road sector has yielded low economic returns because it requires huge investment, but suffers from low traffic volume and lack of integrated approach in the development efforts (Tenth Plan, 2002). This statement of the tenth plan reveals the fact that there are no much economic activities generated by the road in Nepal.

For people living in rural areas, development means education, health, road access, electricity, drinking water, irrigation, and better income. And development expenditure has no meaning for them unless there are visible improvements in fulfilling these necessities.

When roads are built, other development activities are easier to establish (ibid). Although newly constructed road makes the other development easier to cater, this has been not necessarily true in many cases of Nepal.

When roads are built, land values rise and those who are wealthier and more influential often move in if they can (Chambers, 1983). This can result in to the displacement of the local people depriving them from enjoying the fruits of the road project; they might have to be migrated to the other rural areas again and wait to have the other road to build in their new destination.

Chambers admits the view that lack of road access is the major cause for divorcing the rural sector from its urban counterpart. If tarmac and roadside biases are existed among the development workers and researchers, with the new built road, the people's problems and voices are going to be heard sooner or later.

Factories, offices, shops, and official markets all tend to be located at the sides of the main roads (ibid.). This is only a necessary condition but not a sufficient. Small villages which have the black top road in their corridor has not yet evidenced that these kinds of institutions are established due to road.

It is obvious that rural areas without access to urban centers and services can not prosper (Bista, 2000). This statement of Bista reveals the connectivity between rural and urban centers, is prerequisite for the development of the rural areas. There exists a continuum concept between urban center and its hinterlands and always adopts a complementary relationship. There are certain objects which are being offered by urban centers and vice versa.

The impact of the Sunauli-Pokhara Highway on the Regional income and Agricultural Production of Pokhara Valley, Nepal studied by the Mark Cabot Waldo (1971) has

studied the impact of the road concentrating the overall development of the valley rather than the narrow effects to reduced transportation costs on existing trade. The study reveals an economic analysis of the traditional subsistence economy in transition toward a more dynamic economy.

A study was carried out during the early construction period in 1970 with the title "An economic study of the Area Around the Alignment of the Dhading-Dadeldhura Road, Nepal" conducted by Dr. Ratna S.J.B. Rana, under CEDA study series for the National Planning Commission Secretariat. Its construction was started during the period of the plan.

The main purposes of this study were to make an assessment of the area within the influence of the road and to compile the basic information on the economic structure and developmental activities of the region. The findings of the study were that the road could not traverse an area of readily exploitable resources, physical or human a basic prerequisite.

The main objective of the study was to develop a method to measure the regional income with particular emphasis on the agricultural sector and to economic forces resulting from price changes, new technology, and government programs and finally, to provide information which could be used for formulating a development plan for the region.

The study concluded that the improved transportation and communications changes a broad range of relationship especially when the improvement is as drastic as the Pokhara case.

Still, many small villages have experienced no change as expected in the lack of capital and potentiality of the area in terms of economy and social sector development. A separate component to raise the income level of the people from small villages should be looked for exploiting the road intensively. There are still many cases that people are suffering to afford the bus fare and making a walk along the blacktopped road to reach the destination.

A feasibility study titled "UN /HMG Road Feasibility Study for the Kathmandu-Birgunj Corridor" has recommended that the road construction is better with both capital and labor intensive method, analyzing the cost benefit analysis.

Labor intensive method for construction project is always preferred by the local people as the vast unemployment problem exists in the developing countries and specifically in the developing region of the area.

Shrestha (1998) has expressed the significance of road transportation system in Nepal's economy and describes about the restriction of the road transportation system and provide some valuable suggestion for its improvements.

Researches have stated that in developed areas like the United States, Canada and Western Europe, investment in transportation facilities constitutes 10 to 14 percent of annual gross domestic investment. A rough estimate for Canada suggests that the value of its capital assets in transportation amounted to about 17 percent of total gross capital stock both social and industrial in 1955. In underdeveloped countries, the proportion of total expenditure devoted to transportation and communication generally ranges between 20 and 40 percent.

From the above quotation, it becomes clear that investment in transportation has to be given more emphasis in underdeveloped countries than in developed nations. Developed countries have already crossed that stage which the developing countries are facing. The utility of transportation should not be considered in purely economic terms only because it provides many non-economic benefits such as national cohesions, political and social unity.

Studies conducted to measure the incidence of poverty have pointed out that the lack of road access is the main cause of rural poverty. The road helps to enhance the rural people's access to the social services like education and health, find market for their local products, and promote rural employment through the promotion of income generating activities. Well-formulated and managed road programs can make remarkable contributing in alleviating poverty by achieving high economic growth and extending social services. Similarly, the extension of road network to remote districts contributes to bring the deprived communities in the mainstream of the development through the process of socio-economic reunification. (NPC, 2002).

In the recent situation of Nepal, there has been record of only 5 to 6 percent of total national investment made on the sector of transportation. This shows a vivid situation of development of road sector in Nepal and then the plan of developing the nation.

For efficient production, distribution and consumption, transport is indispensable. With the increased tempo of industrialization, the quantum of production is bound to increase, but the production and distribution are totally dependent upon efficient transport, and transport in turn, depends upon flourishing production and distribution.

Change immediately become visible in areas with roads, people become more dynamic, forward looking, and gain confidence to change things. Key social institutions such as school and health centers need qualified teachers and health personnel. However, such people are not willing to work in remote places that are without roads (Mahat, 2005).

This is generally true that the government staff intend to be transferred to the areas which have road accessibility.

Blake, Careron and Seddon have used neo Marxist perspective to show how the road constructin have increased not only Nepal's dependence on India, but also the internal central-periphery relationships at local and regional levels(Blake, Careron and Seddon, 1980). It has highlighted the impact of road construction on the growth of socio-economic and spatial inequalities and environmental degradation. It has elaborated of replacing local artisans and manufacturers by Indian products. It makes an conclusion that the road construction benefited a tiny population leaving the vast majority of people untouched.

2.2 Commodity and People Flow

Barbara Haering Zuerich has measured the road's impact on the settlements of Jiri- "although it is expected to reach Jiri in few years, the anticipation of this new connection has already had an important impact on the recent development of Jiri". Many new houses have been constructed within a short time; the new houses are bigger in size (business purpose?) than the traditional houses (Zuerich, 1980). As Jiri and the proposed study site have similarities of the geography, Zuerich observes the potentialities of tourism in Jiri once the road is in operation. He writes, in this contexts, a second category of tourists should be expected in Jiri: tourists who do not

intend to go on a long trek but would like to visit the hills, have glimpse of the Himalaya and may be take the opportunity of short one or two day hike(ibid). The EIA report has revealed the potentiality of attracting the tourists in Sindhuligadhi, a historical place that lies on the proposed study area.

Chatterjee has studied nature of commodity flow of market in the fringe area of Calcutta Conurbation of India. The study has concluded that high movements of commodities have been found from production areas to consumption areas. The consumption area has been characterized by high urbanization and good roads facilities have been major pull and push factors of commodities flow although intervening opportunity exists there.

Kayastha and Singh (1972) have analyzed some aspects of transportation in Dhanbad, India. This study has concluded that population and space distance are two major controlling factors of the flow of goods and traffic.

Pradhan (1979) has studied the highway traffic flow and market centers along the Siddhartha and Prithvi highway in mid western hilly region of Nepal. The study has found that population and distance are the controlling factors of the movement of people and commodity. The interaction between two market centers is higher in the context of movement of passengers' but the interaction is decreasing with increasing distance.

The population size of the study area being so small has its meaning with flow of commodity and people themselves.

In the context of the study of the human ecology of Arun valley, Central Department of Geography (1999) has studied about the people and commodity flow of the region. The people flow has been analyzed on the basis of volume, distance, duration, purpose etc. Similarly, the flow pattern of goods also analyzed on the basis of items, volume etc. The major items involving in the movements are good grain, salt, kerosene and mixed ship supply goods and non-convenience goods like constructional materials such as cloth and fertilizer. The import goods cover 92 percent and outflow goods covers only 8 percent. The mobility pattern of goods in the Bashantapur Road and its flow pattern have changed drastically. Not only the flow direction but also the types and volume of commodity and people flow have been changed.

2.3 Market Center and Hinterland Relations

Walter Christaller (1933) was pioneer in explaining the process of hierarchical development of market centers on the basis of top down central place.

Central place is the main basis of understanding the relationship between market centers and hinterland. The basic unit in the central place system is a settlement. Settlement is defined in two ways-one is central settlement which is central place of the region. The other one refers to the disperse place, which are not central settlements. In the definition of the central place, settlement may be used to refer to hamlet, village and town. There are hierarchical ranking of settlement, which can be distinguished according to functions and associated hinterland areas, and transportation network.

Each central place provides goods and services to an area larger than itself. The service may be extensive or limited, but the service function is common of higher central places. Hinterland areas are of higher and lower order. Lasch (1954) has modified Christaller's central place theory on the basis of bottom up approach.

There is no regularity and real applicability of central place theory and its distribution due to the diversity of production in different places and the variability of distribution of resources or goods. Many market centers are developed in linear pattern where affected by the relief features. In essence, there is no actual applicability of central place theory in the formation of its structure in the case of Nepal. However the thin concept of modified form can be expressed to match with.

Shrestha (1998) has studied rural urban linkage in the Hindu-Kush Himalayan region of Nepal. This report concentrated with the rural urban linkage in the context of large urban centers on the basis of marketing systems, demographic linkages, transport network, service distribution and flows. This report in general point out that while agriculture land resource is the pre condition of the growth and development of market centers in the mountain region, accessible transport route provide effective means of service delivery to rural areas through market centers.

Geography Institution Committee (1994) has examined the growth and development of small market towns, and their socio-economic impacts on the rural region in the Dang-Deukhuri valley in the Mid Western Region of Nepal. This study identified on

how the change in the mode of road has brought about the change in the role and function of small towns and their impact on the lives of people in their hinterland region on the basis of functional characteristics of market towns.

Pradhan (1998) has examined the specific analysis of market centers and their significance role for the hinterland relation in two ecological regions, valley and hill of Lalitpur district. The study has focused sphere of influence, spatial linkage, socio-economic dimensions and service delivery system on the basis of population, hinterland resource base, flow of goods and services and road accessibility. The study has concluded that two factors such as topography and accessibility are important factors to the relation between market center and hinterland.

Many researches have been carried out on the mobility pattern of goods and people, transportation system, market center and hinterland relation. These studies are specific analysis of single issue.

Pradhan (2003) has presented various measures of urban and rural relations. He has explained the impact of transport network on economic development of a nation. The connectivity and accessibility measures of transport network and the method involved in evaluating the different indices of these measures are also described in the book. These methods are used in this work to analyze the development of road transportation at the different political and geographical regions of Nepal.

2.4. Development of Road in Nepal

Roads are definitely the most feasible and important means of transportation in Nepal as it is a land locked and rugged mountainous country. Railways are more suitable to countries with plain geographical landscape. Waterways have very limited potential in the a landlocked country like Nepal. Air transportation is significantly expensive in a nation where a vast majority of people can not afford to utilize such services.

Nepal has made some progress in the development of road transportation. According to history of Road Department, the development phases can be divided into three periods. The first or the Early Decades of Democracy can be taken as the period before the popular 1951 democracy. The period between 1951 and 1971(2027 BS)

can be taken as the Second Period of the Development. The last period termed as the Third Period of Transition is the period after 1971(HMG/N, 2002). HMG of Nepal has started a planned development policy since 1956. All of these plans have given top priority to transportation development. The country had only 376 kilometers of road prior to the year 1951. Nepal has total of 16834 km. of roads at present (ibid.).

The historical development of road transportation system has followed a particular trend. There were only a few government offices responsible for construction and management of the nation's roads during the period of Rana regime (ibid.). Repair works of the road in Kathmandu were done by semi-military organizations. Towards the end of the Rana regime, a new office named Naya Bato was established to creating new roads. This office surveyed a road to connect Hetauda with Kathmandu via Bagmati valley. Butwal-Bhairawaha, Bhimphedi-Amlekhgunj roads were the only stone paved roads. Paved roads with bricks or stones only existed in Kathmandu and few Terai towns(ibid.). There was no black top road in the country. After 1951 democracy, army engineers built a motorable road, the Tribhuvan Rajpath (highway), connecting Kathmandu and Bhairahawa. This was the first motorable road outside Kathmandu. In 1956, the 77 km Hetauda- Narayangadh road was constructed, which was an all weather double-lane gravel road(ibid.).

Late King Mahendra declared a revolutionary call to the nation to build an east west highway. This was a huge step forward in the development of road transportation in Nepal. The construction of east-west highway called Mahendra highway began in the year 1961. This important highway runs along the Terai and connects Mechi zone in the east to the Mahakali zone in the west. The construction was completed in the year 1995.

Out of the tenth plan target to connect 70 districts with the road network, until now 60 district headquarters have access to road facility (MoF, 2005). Even after the restoration of democracy in 1990, still 15 district headquarters are not connected with the road facility. Extreme geographical situation have lagged the country to make a wider road network.

No progress however could be made during the first 8 months of FY2004/05 on the target of linking 4 district headquarters by the end of FY2004/05 because of security reason (ibid.). The ten years of Maoist insurgency also have contributed for the slow development of the road sectors in Nepal.

Total road length at the end of FY 2003/04 stood at 17182 Kilometer (km), of which black-top road was 4871 km, graveled 4697 km and earthen road 7614 km. Only 35 km. (6 km graveled and 29 km. fair weather) road could be added to the total road network during the first eight months of FY 2004/05. With this addition, the total length of road has now reached 17217 km, breakdown of which is given in the following table:

Table 2.1: Status of Road in Nepal

S.N.	Types	FY 2003/04	FY 2004/05*	Total by mid-March 2005**	
				Km	Percentage
1.	Black topped	4871	0	4871	28.3
2.	Gravel	4697	6	7403	27.3
3.	Fair-Weather	7614	29	7643	44.4
	Total	17,182	35	17,217	100.0

Source: Department of Roads, Kathmandu.

Note: Roads constructed by Department of Roads is only included.

*First eight months

** Total of mid-March 2005

2.5 The Banepa-Sindhuli-Bardibas Road Project

A cover article published on the "*Nepal Rastriya Pakshik, 2057BS*" says regarding the Banepa-Sindhuli-Bardibas road that the construction of this road project was started back in 1950 when the then prime minister B.P. Koirala inaugurated the road. This road will make the capital city Kathmandu closer to the eastern Terai and uplift the livelihood of the people of the districts lying on the highway. The article, published at the beginning of the construction of the road, had expected the impact like promotion of local tourism, development of market centers, and hike in the price of land in the

road side areas. The article further proves it with: people from other part of the country have begun to come to buy the land in and around the road. The traditional houses being replaced by the cement houses, local people's intended interest on the commercial activities than subsistence agricultural activity, timely health treatment, market for local products, easy access to agricultural inputs.

But many villages in Nepal lying beneath the road accessibility have shown that their living standard has not been raised in lack of increased economic activities that can exploit the road facility.

Environmental Impact Assessment (EIA) report of the study site (section II of the Banepa-Sindhuli-Bardibas road: the Sindhuli Bazar-Khurkot section) was thoroughly reviewed with full emphasis. The report was carried out prior to the road construction and has recommended some mitigation measure for the likely adverse impacts that the study had pointed out. Though the report basically focuses on environmental issues pertaining the road construction, it has also covered some of the socioeconomic issues.

Once the road will be constructed about 1500 vehicles will ply everyday in this road by the year 2006(EIA, 1999). This means the road has tremendous value to be measured with regard to local people whether they are going to benefit out of it or just be victim of pollution created by the vehicular movement.

The EIA report has stated of developing social services such as health and education, promote biological resources and enhance technical skill. The report had made some recommendations to augment the beneficial impacts:

-) Involving local people and by providing employment opportunities to the affected people contributing the project fund for community development
-) Providing extracted forest products to work force and local people at subsidized rate
-) Providing training on road construction and maintenance
-) Ensuring road maintenance and rehabilitation works timely
-) Encouraging institutions to promote product development
-) Providing technical assistance to income generation activities

) Treating ecologically and vulnerable sites through bio-engineering applications

) Providing safety measure to work force

The report has recommended the socioeconomic impacts to be minimized by compensation for land acquired, providing counseling services to affected families for the best use of money and providing training for income generation activities.

Recommendations and measures for addressing adverse impacts of the construction project as made by the report is required to be implemented to make the locals to benefit from the road better.

A 26 km long segment of the Sindhuli Road (Section II: Sindhuli Bazar-Khurkot) has been opened for road traffic use. The opening of this segment of the road has enabled people living in this remote area enjoy better access to the markets of Sindhuli Bazar and the cities of Terai plains. After the completion of Sindhuli Road Construction Project, segment by segment, it is expected that this strategic road will not only contribute to increasing socio economic development in the areas adjoining the road, but will also provide easy access to basic human needs such as health, education, food and basic infrastructures for the local people(Embassy of Japan, 2004).

The section II of Banepa-Sindhuli-Bardibas road (Sindhuli Bazar-Khurkot section, a 38.8 km. road) is affected by a total of about 1.69 km. long of landslide at different stretches. Landslide and soil erosion is likely to increase due to the earth works in excavation and disposal of spoils (EIA, 1999). This states that there is problem of land slide in the area with possibility of increasing.

The road passes from dense and undisturbed forests about 20 km, of which 5.6 km. will pass from community forests. About 100 ha of forest will be directly affected (ibid.). The road construction is likely to affect about 3750 m of irrigation channels at fourteen different locations, few drinking water facilities (ibid.). These all meaning that the construction of road is hugely affecting the forest and public services such as drinking water and irrigation.

The road construction is likely increase employment opportunities and income level, promote trade and business, increase agriculture and livestock product, develop social services, enhance technical skills and promote the management of biological resources during the construction period. Once the road is open for public vehicles, it

will provide all weather transportation facility, will also likely develop tourism and growth centers, increase education and health facilities, and enhance economic activities. Involving the participation of local and affected people can augment these beneficial impacts (EIA, 1999)

The EIA report prepared the before the construction of the road and has recommended for the supplement for the affected people due to road. The report also has projected the likely benefits of road on the local people. It is always important to see if the road is able to bring such positive impacts on the local people.

The report also has made recommendation for mitigation measure for the likely adverse impacts of the road. It has emphasized on regulating the land use, minimizing the environmental pollution, stabilizing the road slopes, managing the drainage outlet, restoring the infrastructure facilities and safely disposing the spoils. In addition, report states forest clearance should be minimized to the extent possible and about 50 ha of land recommended to be planted and managed as compensatory plantation.

For the effective use of compensation money, counseling services to the affected households has been recommended by the report. It has been also recommended to make the additional physical facilities such as drinking water supply, health post, school etc.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

This research study has attempted to analyze the results of the road on the local people. Thus this can be called an evaluative research together with its descriptive character. The environmental impact assessment of the study site, which was carried out prior to the road construction, will be used adequately to measure the changes. Besides this, the respondents' recall of before the road has formed a basis to visualize the results that the road brought in the area.

3.2 Study Site

The settlements lying within the road catchments area are the sites for the study. As the study basically oriented to rural development perspective, settlements lying within the village development committees of the first 26 km segment of Sindhuli-Khurkot section of the Banepa-Sindhuli-Bardibas road project, i.e. 26 km from the Sindhuli District head quarter has been primarily taken for the investigation. The population of the study sites uses the administrative, market and health services together with the higher education services offered by the Sindhuli Bazaar(district head quarter).

Thus, Chiyabari, Pipalbhanjyang, and Dhungebhanjyang are the settlements particularly chosen for the assessment of this impact study as these settlements lies in the section II of the Banepa-Sindhuli-Bardibas road project where public vehicles are plying for few years and construction work started before 6 years.

3.3 Sampling Design

The sampling, due to its advantages like saving time, money and human resources, has been adopted in this proposed research. The population of the proposed area is dispersedly located in different settlements of Chiyabari, Pipalbhanjyang, and Dhungebhanjyang. Household from the each settlement has been included in the sample on the weight basis of the respective settlement. The researcher had made a

preliminary visit to the study site in order to identify the representative settlement for study.

The household is the sampling unit of the study. A total of 25 households will be the sample size. In the preliminary visit to study site, the each settlement have the following number of total household has been identified:

Chiyabari: 40 households

Pipalbhanjyang: 12 households

Dhungrebhanjyang: 25 households

So on the weight basis, 13 household from Chiyabari; 4 household from Pipalbhanjyang; 8 household from Dhungrebhanjyang has been selected for study based on probability sampling. First household was selected randomly and the next household for the study was selected leaving two households, which mean every third household.

3.4 Techniques of Data Collection

The data has been collected from both primary and secondary level. The household survey is applied to generate primary level of information. Focused Group Discussion (FGD) was conducted to solicit the information in depth. Information gathered from field observation has been intensively used as a primary data in order to back up the information collected from questionnaire survey and FGD. Local people who are likely to have directly affected by the road project will be contacted to seek additional information. Informal discussion at Chautara and local tea shop has also been taken in to consideration to elucidate the information collected through different instrument.

Secondary level of information will be obtained from different published and unpublished literature. Internet will also be used to get the information related to the proposed undertaking.

3.5 Analysis and presentation

The gathered data has been categorized, tabulated and analyzed using different methods. The quantitative data is analyzed using a standard computer program, like Excel. Statistical tools such as frequency, average, percentage etc have been used for the analysis of data. Qualitative data has been analyzed so that the real situations can be mirrored. Photographs also have been attached in the report to visualize the situation.

CHAPTER FOUR

INTRODUCTION OF THE STUDY AREA

4.1 Location

Bhadrakali VDC of Sindhuli district lies on the east of the district headquarter. The Proposed Banepa-Sindhuli-Bardibas Road Project passes through Bhadrakali. The three settlements of the Bhadrakali VDC have been chosen for study. The settlements are Chiyabari, Pipalbhanjyang and Dhungrebhanjyang which are situated along the road side. The distance of the three different settlements from the Sindhuli District headquarter is as follows.

Table 4.1: Distance from Sindhuli Bazar to the Settlements

From	To	Distance(km.)
Sindhuli Bazar	Chiyabari	8
Sindhuli Bazar	Pipalbhanjyang	12
Sindhuli Bazar	Dhungrebhanjyang	17

Source: FGD, 2006

Chiyabari is the first settlement after crossing the Kamalamai Municipality through the road which is 8 km. north-west from Sindhuli Bazar. Similarly, Pipalbhanjyang and Dhungrebhanjyang are 12 km. and 17 km. respectively in the same direction.

4.2 Age and Sex Composition

The economically active part of population of Bhadrakali VDC comprises 52% taking the age group of 15-59 years. Similarly 49% of the total Population represents the male and remaining 51 female. Sex composition of Bhadrakali is very near to the national sex composition of Nepal.

Table 4.2: Sex and Age Composition of the Population of Bhadrakali VDC, Sindhuli

Category	0-14	15-59	60& over	Total	Percentage
Male	961	1126	154	2241	49
Female	909	1270	171	2350	51
Total	1870	2396	325	4591	100
Percentage	40.73	52.19	7.08	100	

Source: Population Census Report, 2001

4.3 School Attendance

Among the total population of 6 years of age and above of Bhadrakali VDC, 66% is attending school. Where as 34% is not attending school of the same age. Among the total attending of the age, 54% are male and 46% are female. Similarly, of the total not-attending of the age, 60% are male and 40% are female. This shows that among the not attending, female comprise less.

Table 4.3: Population 6 years of Age and Over by Status of School Attendance for Bhadrakali VDC

Category	Total	attending total	attending male	attending female	not attending total	not attending male	not attending female
Population	2002	1314	716	598	688	413	275
Percent	100	65.63	54.49	45.51	34.37	60.03	39.97

Source: Population Census Report, 2001.

4.4 General Social Variables

Out of 25 households (HH), highest numbers of respondents belong to Magar (44%); the second highest (28%) belong to Chhetri and no household of Brahmin.

Table 4.4: Ethnic/Caste Composition of Respondents

Ethnic group	No. of Household	% of Total
Magar	11	44
Chhetri	7	28
Newar	4	16
Tamang	2	5
Damai/Kami	1	4
Brahmin	0	0
Total	25	100

Source: Field Survey, 2006

Majority of the people belong to the ethnic group. Among the so called upper caste, Chhetri comprised 28% of the total households and the rest lies in the minority caste of Nepal.

Table 4.5: Age Distribution of the total members

Category	Nos. of Population	Percentage
01 to 14	72	41
15 to 35	65	37
36 to 59	25	15
60 and above	13	7
Total	177	100

Source: Field Survey, 2006

The total population of the selected 25 households is the 177. Out of 177 populations, the highest (41%) comprises to the age group of 01 to 10 years. Age of 60 and above comprises to only 7%. Age between 15 to 35 and 36 to 59 sums to 37% and 15% respectively.

Table 4.6: Educational Status

Category	Number	Percentage
Literate	56.21	56.21
Illiterate	35.95	35.95
SLC and Above	7.84	7.84
Total	100.00	100.00

Source: Field Survey, 2006

About 64% of the total populations of school age (6 years of age and above) are literate; this evaluation comprises the two components (Literate plus SLC and above) of the Table 5.6. Literacy rate of these settlements is higher than that of the national literacy rate which is only 53.7%. People having their education SLC and above is 8%.

Table4.7: Residential Status

Status	No. of Population	Percentage
Home	147	83.05
Other Cities	28	15.82
Other Countries	2	1.13
Total	177	100

Source: Field Survey, 2006

Most of the members of the family are residing in the village (about 83%). About 16% of the total population is living in the other cities of the country and only about 2% in other countries. The population leaving their home country is very low.

Table 4.8: Occupational Distribution

Category	Number	Percentage
Farming	43	54.43
Local Business	9	11.39
Work in Kathmandu	3	3.80
Service in Nepal	6	7.59
Porter/Labor	7	8.86
Army/Police	9	11.39
Work in other countries	2	2.53
Total	79	100

Source: Field Survey, 2006

Occupation has been evaluated taking an account of the economically active part of population; students are not incorporated in this analysis of occupation distribution. Majority of the population (about 55%) have farming as their occupation. People involved in local business and people working in the field of security forces (army and police) are equal (about 12%). Only about 4% of the working population of the study area is living in Kathmandu for work. Porter/Labor counts to about 9% of the population.

4.5 Other Available Services

Drinking water

A non-governmental organization has constructed few drinking water services (taps) in Chiyabari. Due to its unsustainable technical management, all of the taps are not functional. Temporary pipe water is the main source of drinking water in Chiyabari for the moment although few households depend upon stream.

Availability of drinking water is more difficultier in Pipalbhanjyang. Going down in the stream for fetching drinking water is the only option for the people. For now the

road project is providing water to the roadside villagers with their water tank, which is also very temporary of nature.

Dhungrebhanjyang has good facility of drinking water. It has 10 taps well operated for the moment.

School

There is school in all the three settlement. Chiyabari and Dhungrebhanjyang have primary school and Pipalbhanjyang has the lower secondary school. Number of teacher and students are given below in the table.

Table 4.9: Status of School

Category	School	Teacher			Student		
		Male	Female	Total	Male	Female	Total
C.Bari	Primary	1	1	2	51	33	84
D.Bhanjyang	L.Secondary	6	1	7	102	196	298
P.Bhanjyang	Primary	2	3	5	50	55	105

Source: Field Survey, 2006

Other Government Institution

There was private arrangement of cordless telephone in Chiyabari until last year. Reasoning this as a security problem, government did not allow operating it in the village. Post office is not existed in either of the settlement.

Health post is located in the VDC office of Bhadrakali. Neither of the settlement receives the health facility from this health post as Sindhuli district hospital provides better facility and easy access.

Regarding other government facilities such as agriculture extension, irrigation in these 3 settlements, there is nothing available of this type of services from government.

Development activities of Non-Governmental Organization (NGO)

A local NGO named Community Development Program (CDP) is working in Chiyabari in the field of community development.

In Pipalbhanjyang, Impact Nepal is implementing its program on income generating activities through goat keeping program.

In Dhungrebhanjyang, none of the NGOs are working.

CHAPTER FIVE

IMPACT OF ROAD ON LOCAL PEOPLE

5.1 Impact on Agriculture

5.1.1 Land Holding and Land Acquisition by Road

Land holding size depicts the economic and social status of the people living in the rural areas. Majority (54%) of the HHs have less than 10 *Kattha* of land. Households having less than 1 *Kattha* of land comprise to 24% and households having 10 *Kattha* and more accumulate to 36%. Paddy farm field is very rare in Pipalbhanjyang and Dhungrebhanjyang. In the hilly region, the highest land value in agricultural perspective is for the paddy field.

Table 5.1 : Land Holding and Land Acquired by Road

Land Holding			Land Acquired by Road	
Category	Number of HH	Percentage	Number of HH	Percentage
< 1 <i>Kattha</i>	6	24	10	66.67
1- 4 <i>Kattha</i>	5	20	1	6.67
5-9 <i>Kattha</i>	5	20	3	20
10 <i>Kattha</i> and above	9	36	1	6.67
Total	25	100	15	100

Source: Field Survey, 2006

Many household had to lose their land for the highway of national importance. Among the land acquired households whose less than 1 *Kattha* of land was acquired by road project for the construction of road sums to about 67%. The road has acquired 10 *Kattha* and above land of about 7% of the households among the total land acquired households. About 10% of the total 15 households lost their land between 1-4 *Kattha*.

Another analysis from the above table is that out of 25 households, 60 % (15) of the household had contributed their land to the road project with some compensation.

5.1.2 Use of Compensation and Food Sufficiency

The Banepa-Sindhuli-Bardibas Road Project, as according to the law of private land acquisition of Nepal, has paid compensation to the households whose land or/and house was acquired by the road. There is no provision of compensating for the *Aailani* land utilized by the private people; this was complained by the local people during the field visit.

For those households who have received money as compensation, it is expected that this money is used for buying land or starting a small business.

Majority of the households (33%) used the compensated amount in their family expenses. About 14% of households have to expend the compensated money for food as their almost land was acquired by the road, same number of households bought television from the compensated amount.

Table 5.2 : Use of Compensation

Category	No. of HHs	Percentage
Family Expenses	5	33.33
House Construction	4	26.67
Food	2	13.33
Bought Land	2	13.33
Television	2	13.33
Total	15	100.00

Source: Field Survey, 2006

With not having good irrigation facility and paddy not growing in the farm of all the three settlements, 44% households have sufficient food from their own land only for less than 3 months. Only 20% household has sufficient food grown from their own land for 12 months. Food sufficient for 6-9 months comprises 12% and 24% of total households for 3-6 months.

Table 5.3: Food Sufficiency

Category	No. of HH	Percentage
12 Months	5	20
6-9 Months	3	12
3-6 Months	6	24
< 3 Months	11	44
Total	25	100

Source: Field Survey, 2006.

5.1.3 Cropping Pattern

With the advent of road facility, it is believed that cereals will be replaced by cash crops. But only 12% of the household reported that they have changed their cropping pattern in the field. The new crops introduced include onion farming, emphasis on vegetable farming, cabbage and hybrid paddy. A big percentage (88%) said that they do not have changed the cropping pattern following the road accessibility.

Table 5.4: Change of Cropping Pattern

Categories	No. of HH	Percentage
Yes	3	12
No	22	88
Total	25	100

Source: Field Survey, 2006

5.1.4 Agricultural Extension Services

When road accessibility is connected, government office staffs are expected to visit the place which have vehicular service. But these settlements have not experienced such.

Only 12% of households reported that they have met JTA following the road construction, whereas a large number of households (88%) have never met JT/JTA. About 55% of the population reporting their occupation as farming (**Table 5.5**) and they are hardly getting agricultural extension services is a another exploration of the reality.

Table 5.5: Visit of JT/JTA

Categories	No. of HHs	Percentage
No	3	12
Yes	22	88
Total	25	100

Source: Field Survey, 2006

The number of households using the chemical fertilizer in their field has been increased dramatically. It has been increased by about 43% following the advent of road.

The table shows, though, the average use of chemical fertilizer by household is decreased, this is all due to the decrease of land quantity of the households as their big part of land was acquired by the road project.

Table 5.6: Use of Chemical Fertilizer

Categories	Prior to Road	After Road	Increase (%)
No. of HHs to use	14	20	42.86
Average use by HH(kg)	51.5	51	-0.97

Source: Field Survey, 2006

5.1.4 Livestock Rearing

The data below also shows the total livestock rearing until before 5 years (before construction of road started) and now (after completing the road construction).

While comparing the situation of livestock rearing in the same community with the advent of road, comparison between before road construction and after road, it is clear that overall livestock rearing has been decreased by about 43%.

People keeping chicken either to maintain their small family expenses has been decreased by about 50%. This can be also because the demand of chicken in the area has been increased as the construction of road is continued and a large number of outsiders are working in the area. Keeping ox for ploughing their farm field has been decreased by about 28%. Cow rearing has been decreased by the second highest percentage (about 45%).

Table 5.7: Status of Livestock Rearing

Categories	Prior to Road	After road Construction(Now)	Decreased By (%)
Buffalo	22	14	36.36
Cow	44	24	45.45
Ox	33	24	27.27
Goat	166	115	30.72
Chicken	349	176	49.57
Pig	6	4	33.33
Total	620	357	42.42

Source: Field Survey, 2006

People who sell their livestock for income have been counted here for the analysis for the average annual earning of the household from the sale of livestock.

44% of the total households sale livestock for income, while 56% of the total households do not sell at all. Sale of livestock in these settlements generally means the sale of chicken, goat and pig. Among the not selling group, they do rear livestock but consume themselves.

Among the households who sell livestock, the average earning annually is NRs 6181.00 where minimum earning is NRs. 2000.00 annually and maximum earning is NRs. 20000.00 annually.

Majority of the households (48%) eat meat for once in a week, 44% eat meat once in two weeks and remaining 8% of the total households reported once in a month.

Table 5.8: Sale and Consumption of Livestock Products

Annual earning from Livestock			Meat Consumption	HHs	Percentage
Categories	No. of HHs	Percentage	Once in a Month	2	8
Sell of Livestock	11	44	Once in a Two Weeks	11	44
Average Earning(NRs.)	6181		Once in a Week	12	48
No Sell of Livestock	14	56	Total	25	100

Source: Field Survey, 2006

5.1.6 Sale of Land

Following the advent of the road, this is universal that the price of land in the area goes high and as a result households start selling their land.

Table 5.9: Sale of Land

Category	No. of HH	Percentage
Yes	2	8
No	23	92
Total	25	100

Source: Field Survey, 2006

But in these settlements, this has not been the case. Only 8% of the households have sold their land and majority 92% of the households remain with not selling of land.

5.2 Market

5.2.1 Market Service

Majority of households (72%) said that they have nothing as goods to sale in the market. 16% of the total households reported them selling their products locally while 12% visit Sindhuli Bazar for selling their products.

Households using local market service to buy things comprise to 32%, while using both local and Sindhuli Bazar is 24%. 44% of the total households visit Sindhuli to buy things.

Table 5.10: Market Center Service

Category	Market to sell			Market to Buy		
	Sindhuli Bazar	Local	Don't Sale	Sindhuli Bazar	Local	Both
No. of HH	3	4	18	11	8	6
Percentage	12	16	72	44	32	24

Source: Field survey, 2006

5.2.2 Source of Loan

Table 5.11: Source of Loan

Categories	Bank	Local Merchant	Friends	Bank & Merchant	Merchant & Friends	Friends & Bank	All	Total
Yes	1	3	6	1	5	2	2	20
Percentage	5	15	30	5	25	10	10	100
No	0	0	0	0	0	0	0	5

Source: Field Survey, 2006

80% of the households receive loan and remaining 20% reported of not getting any loan.

Among those of receiving loan, most of the households (30%) receive loan from friends and relatives. Friends, relatives and local merchant are preferred to avoid the administrative burden and lack of right collateral to show in bank and financial institution.

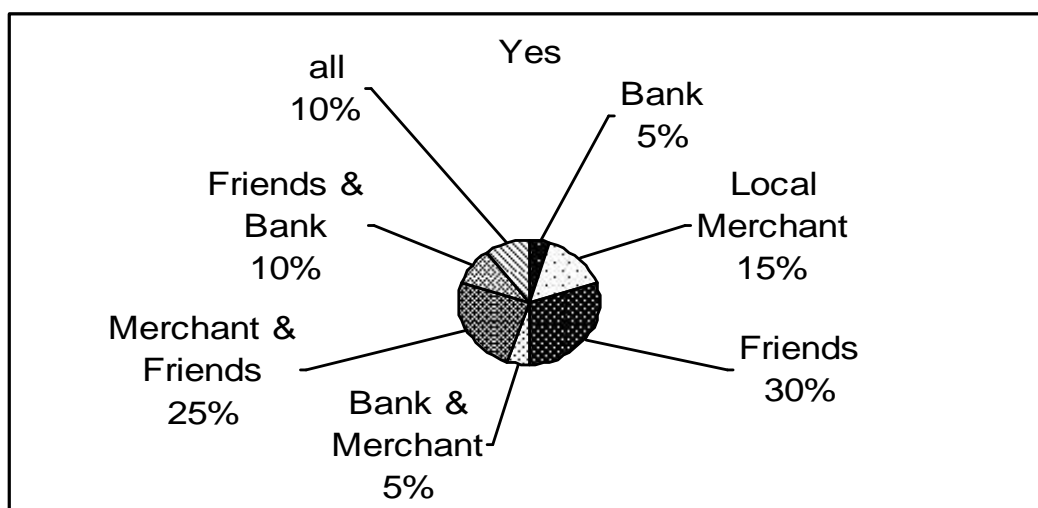


Figure 1: Source of Loan

People receiving loan from bank only is 5% only and receiving from bank and merchant is also 5%.

5.2.3 Visit to Sindhuli Bazar

There is an general understanding that When road accessibility is available, frequency of visiting the marketing and service center will be increased comparing to the previous condition of walking.

Table 5.12: Frequency of Visit to Sindhuli Bazar

Categories	1/month	2/month	3/week	2/week	1/week	6/week
Before Road	3	8	3	3	8	0
After Road	6	9	2	1	5	2
Before Road %	12	32	12	12	32	0
after Road %	24	36	8	4	20	8

Source: Field Survey, 2006

But the situation in this case has been a different. 12% of households stated of visiting Sindhuli Bazar once in a month before the road and after the vehicular facility, 24%.

32% of the households used to visit Sindhuli Bazar twice in a month prior to road construction, while 36% of the households reported that they visit Sindhuli Bazar once in a month.

No one used to visit Sindhuli 6 days a week prior to the road facility, but 8% of the household visit 6 days a week after road construction.

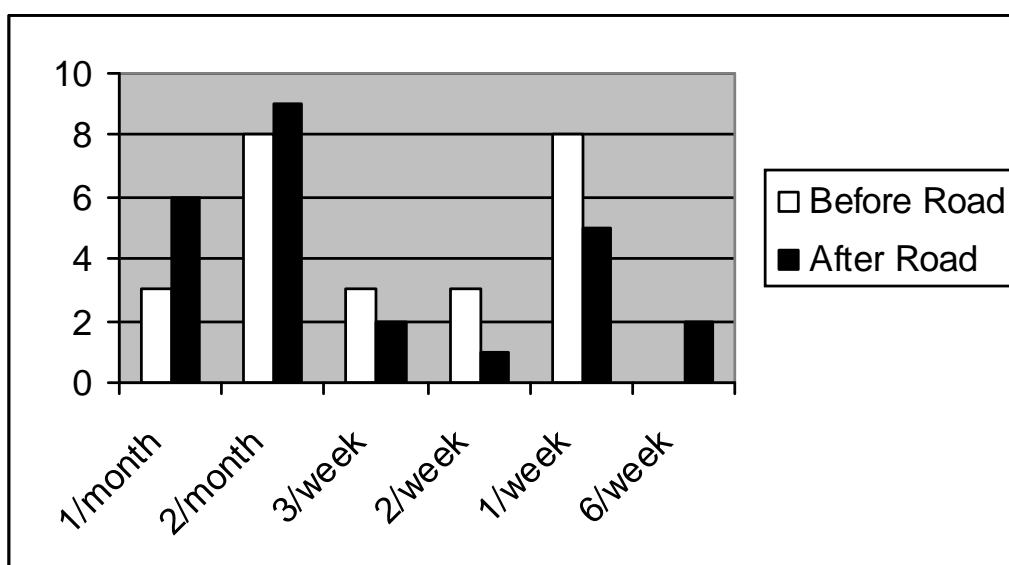


Figure 2: Visit to Sindhuli Bazar

5.2.4 Fare Affordability

6% of the total households reported that the vehicle fare is affordable to them. Households who are running a small shop in the village and who are employed in Sindhuli answered that the fare is affordable.

Households saying that the fare is not affordable comprised 76%. They have managed this problem by reducing their travel frequency, traveling the one way and walking the way back to home, sale of chicken etc.

Table 5.13: Fare Affordability

Categories	No. of HHs	Percentage
Affordable	6	24
Not Affordable	19	76
Total	25	100

Source: Field Survey, 2006

5.2.5 Inflation of Local Products

Table 5.14: Price of the local product in the local market

Category	Chiyabari	Pipalbhanjyang	Dhungrebhanjyang
Milk(before road)/Liter	20	10	16
Milk(Now)/Liter	20	20	24
Increased by%	0	100	50
Chicken(then)/kg	120	75	110
Chicken(now)/kg	150	140	150
Increased by %	25	86.67	36.36
Goat Meat(then)/kg	120	120	120
goat meat now/kg	160	160	160
Increased by%	33.33	33.33	33.33
Buff(then)/kg	70	60	50
Buff(now)/kg	80	80	80
Increased by %	14.29	33.33	60.00

Source: Field Survey, 2006

A comparative question raised in the Focused Group Discussion (FGD) carried out in all the three settlements in order to explore the rate of inflation following the road

construction. Price of the chicken has been increased largely following the road construction- by 25% in Chiyabari, by about 87% in Pipalbhanjyang, and by 37% in Dhungrebhanjyang. Price of milk also has been increased by 20%, 20% and 24% in Chiyabari, Pipalbhanjyang, and Dhungrebhanjyang respectively.

5.3 Health and Hygiene

5.3.1 Households having Toilet

Out of total 25 households, 52% of the households have toilet in their house yard. About 77% of the households (10 HHs) have built toilet during the last five years. The five years is the period when many outsiders visited the villages who have come for construction of road purposes.

48% of the households do not have toilet yet.

Table 5.15: Household having Toilet

Categories	No. of HHs	Percentage	Constructed in the last 5 years	Constructed before 5 years
Yes	13	52	10	3
No	12	48		
Total	25	100		

Source: Field Survey, 2006

5.3.2 Source of Drinking Water

Out of the total 25 households, most of the households have tap as a major source of drinking water. 20% of the households still depend on the stream and 12% on well/*Kuwa*. People who have drinking water source of pipe water are 16%; pipe water is a rough management of drinking water, without digging the pipe in the ground.

Table 5.16: Major Source of Drinking Water

Categories	No. of HH	Percentage
Pipe water	4	16
Tap water	13	52
Well/ <i>Kuwa</i>	3	12
Stream	5	20
Total	25	100

Source: Field Survey, 2006

5.3.3 Drinking Water Sufficiency

52% of the total households said that existing sources of drinking water is not sufficient while for remaining 48% the source is sufficient

Table 5.17: Drinking Water Sufficiency

Categories	No. of HHs	Percentage	Reason for Not sufficient		
			Increased Population	Sources Dried	Not maintained
Yes	13	52	0	8	4
No	12	48			
Total	25	100			

Source: Field Survey, 2006

Intending to examine the reason for not having sufficient water, reason for not sufficient was asked. Out of 13 households who said it is not sufficient, 8 households said it is due to the sources dried following the construction of road. They also think deforestation has been increased and as a result the water sources are dried. 4 households out of the 13 said the existing drinking water sources are not managed well.

5.3.4 New Food Habit

When road is built, a change in food habit is also obvious as new shops are opened and outsiders are frequently taking the packed food as their snacks in the village. A new culture of new food habit replacing the existing is not an irregular in this case.

72% of the households said that they have changed their food habit. Mostly, this transform has been clear on their snacks (*Khaja*). Their original food as for the *Khaja* was fried-maize(*Bhuteko Makai*), *Chiura* (beaten rice) which has been replaced by noodles widely known in Nepal as *Chau-chau*.

From hygienic perspective, their original food for snacks seems better than the new.

Table 5.18: New Food Habit

New Food Habit	No. of HHs	Percentage
Yes	18	72
No	7	28
Total	25	100

Source: Field Survey, 2006

5.3.5 Place for Treatment

No one reported of visiting the nearest health post for treatment. One single household visits different places for treatment for different time and cases, so in the analysis, frequency of reported places have been taken in account.

People visiting nearest hospital (Sindhuli District Hospital) are the highest at rank with about 35%. About 28% of frequency, the second highest on priority is for the *Dhami/Jhankri*. About 17% of the households reported that they directly visit pharmacy for treatment for few times. About 15% of the household reported that indigenous method of treatment(using herbs and plants) is also in practice.

Table 5.19: Place of Treatment

Categories	No. of HHs	Percentage ranking
Nearest Hospital	24	35.29
Health Post	0	0
Pharmacy	11	16.18
Aurvedic	2	2.94
<i>Dhami/Jhakri</i>	19	27.94
Allopathic	2	2.94
Indigenous method	10	14.71
Total	68	100.00

Source: Field Survey, 2006

5.3.6 Contraceptive/Family Planning

Table 5.20: Use of Contraceptive/Family Planning

Categories	No. of HHs	Percentage
Yes	7	28
No	18	62
Total	25	100

Source: Field Survey, 2006

When asked you or any of your family members have used contraceptive or family planning methods, only 28% of the households replied 'yes' and 62% of the households said 'no'. Among the households whose members are using contraceptive or family planning methods, most of them receive this service from Sindhuli (the district headquarter) and other few have reported of receiving this service from Bardibas, Mahottari.

5.3.7 Ambulance and Road

When road is built, people in all the three settlements identified accessibility of ambulance service is a big benefit. Ambulance is stationed in Sindhuli (the district headquarter). And when the people from these settlements need ambulance service, one has to commute to Sindhuli Bazar in order to bring the ambulance in the village- if it is night or not in bus time, they have to walk to come to Sindhuli to call the ambulance in the village. This is all because there is no service of telephone available in the village.

When asked about the ambulance arriving to the village in the Focused Group Discussion (FGD) carried out in all the three settlements, all participants of the focused group discussion stated that in average 2 to 3 times a month, ambulance come to or pass by the road in their village.

5.4 Other Socio-Economic Issues

5.4.1 Household Amenities

A total of 25 households were interviewed. Once single household may own more than one amenity which is not excluded for analysis in this report.

Table 5.21: Household Amenities

Category	Television	Radio	Private Tap	Pressure Cooker	Kerosene Stove	Sewing Machine	Watch	Bicycle
HHs	11	20	5	9	3	5	22	3
% of HHs	44	80	20	36	12	20	88	12

Source: Field Survey, 2006

44% of the households own television in their house. 80% of the total households have radio. Only 3% of the households have bicycle as the road is in the hilly areas

and driving bicycle uphill is very difficult in the area. 12% of the households own kerosene stove which is used for business purposes of running a tea shop or *Dal Bhat* shop.

5.4.2 Average age of Marriage of the Women

Average age of Marriage of the women in the family is 18.23 years. This evaluation has been made on the basis of daughter and daughter-in-law who have got married in the last 5 years. 5 years of the period has been taken for comparative analysis as the road construction work was started before 5 years.

5.4.3 Years of Residence

Newly migrated to the village comprised to only 8% which tells us that the road facility has not been able to attract other people to migrate in the area. A big part of households (44%) are residing in the village for one and more than one generation. And a person residing in the village for less than five years but not crossing the generation is 48%.

Table 5.22: Years of Residence in the Village

	No. of HHs	Percentage
<=5yrs	2	8
> 5 yrs	12	48
One generation and more	11	44
Total	25	100

Source: Field Survey, 2006

For those who have migrated to the area in the last five years reported that reason of migration is road facility, school and business during and before the road construction.

5.4.4 Type of House and Years of Construction

32% of the total houses are constructed in the last five years. This is satisfactory number. 68% of the houses were constructed before 5 years.

Type of the house is one of the indicators of determining status of one in the village. Still 28% of the houses are of the type having grass roof. Tin and tile roof are new

practices in rural areas of Nepal. Households having tile and tin as a roof are 28% and 20% respectively. Stone roof is of old type in the village, which comprised 24% of the total houses.

Table 5.23: Construction of New House and Type of House

Category	No. of HHs	Percentage	Category	No. of Houses	Percentage
Five Years Before	17	68	Tile Roof, Wooden-	7	28
Within the Last Five Years	8	32	Stone Roof	6	24
Total	25	100	Tin Roof	5	20
			Grass Roof	7	28

Source: Field Survey, 2006

5.4.5 Change of Occupation

24% of the total households stated that they have changed their occupation in the last five years. 3 people out of 6 who have changed their occupation in the last five year have made a shift from their traditional occupation of farming to the new occupation such as running a shop, joined government job. And the remaining 3 have made a shift to the work in road project.

Table5.24: Change of Occupation

Categories	Nos.	Percentage
Occupation changed	6	24
Not Changed	19	76
Total	25	100

Source: Field Survey, 2006

5.4.6 Employment in the Road Project and Preferences

60% of the households had received the direct/indirect job in the road project. And 40% of the total household had not worked in the road project. This 40% of

households saying that they did not have worked means either they did not have job or all of the family member of them were unable of working in the road project such as age old.

Among those who had got job, only about 14% had got skilled job such as surveyor. Some among these had previously learned skill and some had learned during their job. A large percentage of the people (about 87%) were unskilled laborers.

Table 5.25: Employment in the Road Project

Employment in the Road Project			Type of Work		
Category	Nos. of HHs	Percentage	Category	Nos.	Percentage
Yes	15	60	Skilled	2	13.33
No	10	40	Unskilled	13	86.67
Total	25	100	Total	15	100.00

Source: Field Survey, 2006

52% of the total household thinks that there was no any preference to the local people for the employment and while 48% of the total household said there was preference. Among the who said that there was no preference, they had got job in the road project after they made an agitation or delegation to the authority for employment. Among the 52% who said that there was no preference, 46% had taken part in the agitation like blocked the road for 4 hours and delegation to the manager of the road project for employment.

Table 5.26: Preference to Local for Employment

Category	No. of HHs	Percentage	Agitation for Work		
			Category	Nos.	Percentage
Yes	12	48	Yes	6	46
No	13	52	No	7	54
Total	25	100	Total	13	100

Source: Field Survey, 2006

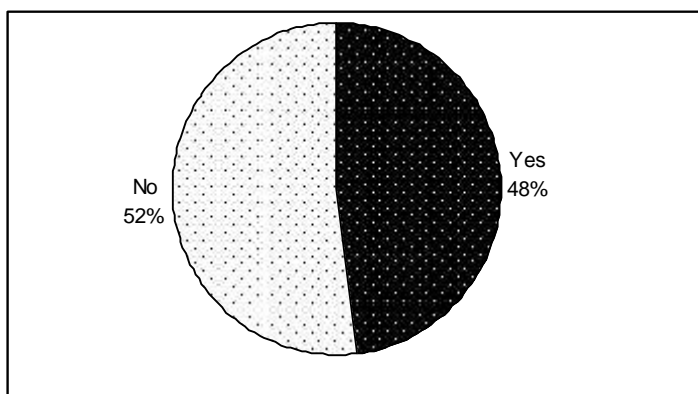


Figure 3: Preference to Local for Employment

5.4.7 Situation of Forest

92% of the respondents think that the situation of forest is deteriorating after the construction of the road. Only 8% of the households said that the situation of forest is same as before the road construction.

Among those who said deforestation has been increased following the road construction, about 61% reasoned it as an outcome of road construction. About 13% of the respondents stated that it is due to population increased, similar response that the increased demand for forest products during the construction period has caused deforestation comprised about 9%. About 13% households think it is due to the advent of the Forest User Group (FUG).

Table 5.27: Situation of Forest

Categories	No. of HHs	Percentage
Population Increased	3	13.04
Road Construction	14	60.87
Advent of FUG	3	13.04
Increased Demand	2	8.70
Landslide	1	4.35
Total	23	100
Categories	Nos.	Percentage
Deforestation	23	92
Same as before	2	8
Total	25	100

Source: Field Survey, 2006

5.4.8 Role of Women

Only few number (20%) of respondents stated that there has been some different in the role of women following the road construction. They have developed no hesitation to talk with outside people when they are in the home. But a big part of the respondents (80%) think that there is no change in the role of women following the construction of road project.

Table 5.28: Change in the Role of Women

Categories	No. of HHs	Percentage
Yes	5	20
No	20	80
Total	25	100

Source: Filed Survey, 2006

5.5 Impacts in General

5.5.1 General Positive Impacts

When asked an open question to the each respondent about the positive impact of the road, each respondent has stated more than one positive impact. To make an analysis, such reported impact has been analyzed on the basis of frequency of each response.

Most of the respondents (about 41%) reported that road has given them the transportation facility. About 19% of the reports have been given for ambulance service due to road, which is second highest in the ranking. About 10% of all the reports is related to the saving of time. Employment during the road construction has been also reported as the positive impacts of the road (7%). Similar importance has been given to the education in Sindhuli as a positive impact of road. Food availability in the village has also been reported as the benefit of the road to the local people. About 3% of the total response has been reported for rise of land value due to road as positive impact. People also have reported that they have easier going to Sindhuli and making a phone call from there.

Economic activities have been less spoken by the respondents as the positive impact of the road. Most of the respondents think that road has replaced their foot walk by

bus service. It is not expressed that road has made their income increased. Neither has been reported of starting a economic activities.

People who don't know the positive impacts of the road summed to 12% of the total households, three respondents said that they don't know the positive impacts of the road.

Table 5.29: General Positive Impacts

Category	Frequency	Ranking (by %)
Transportation	17	40.48
Ambulance	8	19.05
Time save	4	9.52
Employment during	3	7.14
Education in Sindhuli	3	7.14
Food Availability	3	7.14
Telephone in Sindhuli	2	4.76
Access to Market	1	2.38
Land Value	1	2.38
Total reports	42	100.00
Don't Know	3	12

Source: Field Survey, 2006

5.5.2 General Negative Impacts

Many people had to loss their land as for the purpose of road construction. Few households have loss almost of their land. Road acquiring the private land and compensating according to the government rate of land has been a major complains of the people who lost land.

About 19% of the total respondents reported that acquisition of the private land without proper compensation as a major negative impact of the road. Loosing land has made some household to face huge scarcity of the food.

Prior to road construction, people were walking the way, they had time, and with this they were saving money. When a bus is running along the trail, they feel that they are compelled to ride in the bus and pay money increasing their expenses. About 16% of the household has noticed that road has increased their expenses.

Another 16% of the households have admitted the cause of the increased land slide for the last 5 years is the road construction. About 10% of the respondent loss of pasture

land as the result of road. Pasture land has been either occupied by the road(the lane) and the cement used in the walls of the hills to control flood.

About 10% of the households identified road dismissing the trails, they showed a high sentimental relation with the trails. Pollution in their area as a result of road construction has been identified by the 7% of the total respondents. Road has been reasoned for deforestation of the area by about 3% of the respondents. Similar number of answer has been given for the dry water source due to road.

Local business men have experienced bitter reality with the advent of road. During the construction period, their business had gone little high, but has been come down with the shift of the market center.

About 7% of the household has identified road to be the reason for growing prostitution. 3% of the total answer on negative impacts of road said that robbery has increased.

16% of the total respondents said that they don't know the negative impacts of the road.

Table 5.30: General Negative Impacts

Category	Frequency	Ranking (by %)
Land Acquired by Road	6	18.75
Increased Expenses	5	15.63
Land Slide	5	15.63
Loss of Pasture Land	3	9.38
Shift of Market center	3	9.38
Collapse of Trails	3	9.38
Prostitution	2	6.25
Pollution	2	6.25
Deforestation	1	3.13
Dried Water sources	1	3.13
Robbery	1	3.13
Total reported(21)	32	100
Don't Know	4	16

Source: Field Survey, 2006

5.6 Other Development Needs of the Village after Road

5.6.1 Further Needs of the Village in Response of Road

When people were asked about what can be the other program which will make the local people to better harness the road facility, most of the respondents emphasized for the income generating activities which will enable them to afford fare. Skill training has been pointed out by the largest number of respondents (about 35%). In order to raise their income level through traditional occupation, agricultural services has been reported by about 24% respondents. Similarly, goat keeping has been reported by about 6% of the respondents.

Loan facility has been reported by about 6% of the respondents. Need of telephone is identified as the need of the village by about 18%.

Table 5.31: Further Need of the Village in terms of Road

Category	Frequency	Ranking (in %)
Skill Training	6	35.29
Agriculture services	4	23.53
Telephone	3	17.65
Hat Bazar	2	11.76
Loan Facility	1	5.88
Goat Keeping	1	5.88
Total	17	100.00
Don't Know	10 HH	

Source: Field Survey, 2006

5.6.2 Other Development Needs of the Village

To identify what the local people say about other need of the village when road is constructed, a question was asked. Telephone has been stated by the highest number (about 27%) of the respondents. Well managed and sustainable drinking water service has been identified by 23% of the respondents. School has been stated by about 23% of the respondents. School in this village means an upper level school as Chiyabari has lower secondary school already and Pipalbhanjyang and Dhungrebhanjyang has primary school.

About 8% of the respondents stated for health post as the need of the village, about 4% of the respondents reported for medical shop(pharmacy), and about 8% of the respondents reported for nursery/park as many people from nearest Bazar come to this place to see the road and they could entertain from these kind of park.

Table 3.32: Other Needs of the Village

Category	Frequency	Ranking (in %)
Agriculture Services	2	7.69
Telephone	7	26.92
Nursery/Park	2	7.69
Drinking Water	6	23.08
Medical Shop	1	3.85
School	6	23.08
Health Post	2	7.69
Total	26	100

Source: Field Survey, 2006

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATION

6.1 Summary

1. Nepal is a one of the most road deficient country with the reality of having only 0.4 km. road per 1000 populations. By the year 2002, the length of road in the country sums to 16834 km influencing 1375 people by each kilometer and density of road is 11.4 per square km.
2. Banepa-Sindhuli-Bardibas Road project is a strategic highway of national Importance. This strategic high way will connect Kathmandu with eastern Terain of Nepal. National highway has its long term sustainable economic relavency. For the time being, a 26 km. part of section II of this high way has been completed and public vehicles are plying on the road for more than a year.
3. The road project had acquired the private land of 60% of the respondents with some governmental rate of compensation. People are not found to be satisfied with the rate of compensation provided to them. Only about 14% of the households have bought land from the compensated amount. About 33% of the households used the money in family expenses, 27% households spent on constructing house. 13.33% of the families used the compensated money in food as their large part of land was acquired by road.
4. 43% of the total households have food sufficient produced from their own land for less than 3 months. Most of the households have to look for alternative life strategy other than farming in the field but many of them work as a labor to reach the food sufficiency for 12 months.
5. Cropping pattern has not been changed, only 12% of the households reported that cash crops such a vegetable(cabbage) has been introduced by them in their field. 88% of the household said that they have not seen the JT/JTA in the village even after the construction of road.

6. Households has been increased by 42% to use the chemical fertilizer following the road construction in order to meet the increasing demand for food.
Although the average use of chemical fertilizer by each households has been decreased because a big part of their land has been acquired by road.
7. Livestock rearing in the village has been decreased by about 43% compared to the situation of before the road construction.
8. When road is constructed, it is obvious that the land value rises. And as a result households start selling their land. But this has not been the case of these settlement. Only 8% of the households have sold their land following the road construction.
9. 72% of the households said they do not have goods to sell. 44% of the households use Sindhuli district headquarter for the market service while 24% use both local and Sindhuli district headquarter for market service. 32% of the household stated that they use local market service.
10. Many goods/commodities are available locally following the road construction. This has made the frequency of visit to Sindhuli Bazar decreased following the road construction compared to the situation of no-road there. Bus fare is an additional element in the list of villagers' expenses, 76% of the respondents said that the fare is not affordable to them.
11. Prices of local products such as milk and chicken has risen up following the road construction.
12. A good sign of health and hygiene has been reflected with the construction of good number of toilets, about 80% of the toilet are made in the last 5 years of period.
13. Only 52% of the total household have good drinking water facility, others are dependent on unhygienic source of water such as stream. 52% of the total households said the existing drinking water sources are not sufficient mostly due to sources dried.
14. Second highest priority for treatment has been given to *Dhami/Jhakri*. The first priority is certainly for Sindhuli District Hospital. Third priority is directly visiting pharmacy when sick and importantly the fourth on indigenous method of treatment.
15. The traditional *Khaja* such as *Chiura* and *Makai* and fried rice is being replaced by noodles known as *Chau-Chau* in the village.

16. Not many people have migrated to these villages following the road facility. Only 8% of the total households reported that they have migrated to the village in the last five years.
17. 24% of the respondents stated that they have changed their occupation to a work in the road project. But only 14% of them are skilled employee in the road project. This is also stated by 52% of the respondents that there was no preference to the local people for employment in the road construction project. Some household had made agitation for employment in the road project.
18. Other positive impacts in general as stated by the respondents involves rise of land value, easier access to education of Sindhuli, access to ambulance in the village, saving time of the villagers to reach Sindhuli, and employment during the road construction.
19. Some major negative impacts of the road as stated by the respondents include acquisition of private land, increased family expenses with the bus fare, increased land slide due to road, loss of pasture land, deforestation and dried water sources. Some local businessmen admitted their reality that the market center is shifting from the village to the other hub area.

6.2 Conclusions

Road had acquired private land of the local people and has deforested a lot of the community forest. Most of the people in these settlements have food produced from their land only sufficient for less than three months. The issue of land acquisition in these villages was not satisfactorily managed with regard to the local people.

Agricultural extension services are very poor in the village in spite of the road accessibility which can ease the concerned personnel to arrive in the village. Use of chemical fertilizer has increased rampantly in order to meet the growing demand of food and it is cheaper than before in the village.

Frequency of visit to Sindhuli Bazar for market services has been decreased following the road construction. More than 50% of the household enjoy market service of Sindhuli Bazar.

Drinking water facility has become difficultier; many of working taps are not functional now. Number of toilets has been increased in the village following the road construction. Many people still visit Dhami/Jhakri for treatment. Not having even a single telephone in the village has made the ambulance service almost impossible for some time.

There was not a perfect preference for local people for employment in the road. Among them only few had got skilled type of work. Local participation in the construction project was ignored.

The road project is obliged to conduct community development activities in the affected area of the road. Only few support of road project to public services has been reported.

6.3 Recommendations

1. An integrated approach together with road is better alternative for uplifting the socioeconomic status of the local people of the road affected areas. Road project must realize the fact that local people have to loss a lot from this kind of construction project.
The road project should allocate its budget to expend on social sectors of the affected areas. The project should implement its programs in sectors such as school, health post and public places like *Chautara*.
2. The issue of land acquisition has to be settled hearing the local voices. The rate of land in practice is much higher than that of the government rate. Once the road is built, the land value goes much higher.
3. An alternative option for income generating activities should be carried out in the village so that people will have money to pay for the bus fare and transportation
4. . Telephone services in the village will ease the local people for calling ambulance on time when in emergency. The telephone have a lot of other benefits.
5. Road project should give priority to local people for employment in road not only unskilled type of work. Appropriate candidates from local area should be trained in the process of construction to make them skilled.

Appendix 1

An Impact Study of the Banepa-Sindhuli-Bardibas Road Project Questionnaire for Household Survey

1. General Information:

VDC:

Settlement:

Ward:

Tole: _____

Name:

Ethnicity/Caste:

Religion:

2. Household Detail:

Relation with householder	Age	Gender	Marital Status	Residential Status	Educational Status	Occupational Status(primary)	Occupational Status(secondar

Legend:

01-Spouse	01- 1 to 14	01-Male	01-Single	01-Home	01- Illiterate	01-Farming	01-porter
02-Son	02-15 to 35	02-Female	02Married	02-Other cities	02-literate	02-Localbusiness	01-causal labo
03-Daughter	03-36 to 59		03Widow	03-Studying in 02	03-Grade 1-5	03-Business outside	03-others
04-Parents	04- 60 and above		04Divorce	04-Working in 02	04-Grade 6-10	04-traditional occupant.	
05-Uncle/Aunt			05-Working in India	05-SLC	05-job in India		
06-Cousins			06-Working in other countries	06- +2 and above	06-service in Nepal		
07-Others						07-porter	

3. Farming

Total Landholding		Land Acquired by road(area)	Major Crops(rank)	Major market to sell it(rank)	Major market to buy things	Land price in NRs. Per Katt	
Before road	After road					Before road	After road
		1	1	1	1		
		2	2	2	2		
		3	3	3	3		
			4	4	4		

Legend

01-Khet	Note directly in local unit area	01-Paddy	01-local	01-local	01- Khet
02-Bari		02-Maize	02-Sindhuli bazar	02-Sindhuli bazar	02- Bari
03-Road side		03-Wheat	03-Bardibas	03-Bardibas	03- next to road side
Please mention quantity directly		04-Others	04-others	04-others	

Impact of the Road

1. Have you sold land in the last 5 years? Yes / No
If yes, what was the reason?

1.Price increased	2. Involve in business
3.To pay for family loan	4.Others (specify)

2. If your land was acquired by the road project, where did you use your compensation?

3. The food produced from your farm field is sufficient for:

12 months	6 to 9 months	3 to 6 months	Less than 3 months

If not sufficient for 12 months, how do you overcome the problem of food deficiency of your family?

4. How many cattle/livestock do you have? (Write in detail of each animal)

	Buffalo	Cow	ox	Goat	Chicken	Pig	Pigeon	Others
Before 5 yrs								
After road								

Do you sell livestock? If yes, what are the livestock you sell and their number? And the equivalent money that you earn from these?

How often do you eat chicken/goat or any other meat in your family?

- a. Once a month..... b. Once in two weeks..... c. Once a week..... d.Others

How much milk do you keep for family consumption and how much you sell?

Liters for family consumption	Liters for sell	Cost of one liter of milk

5. Do you have experienced change in cropping pattern in your field with the construction of road?

If yes, what are the changes/replacement?

Crops until before 5 years in the	Crops since 5 years in the fields
-----------------------------------	-----------------------------------

Yes / No

field	

6. Have you ever met JT, JTA or agricultural extension workers?

If yes, how many times a year?

Prior to road construction	After the road construction

7. Do you use chemical fertilizer, pesticides, and insecticides in your field?

Yes / No

If yes, how much in quantity annually (please tell each item and quantity)

After road construction(now)	Prior to road construction

8. Do you have toilet?

Yes/ No

If yes, when did you make it? Years before: _____

9. What is the major source of drinking water for your family?

1. Pipe water____2. Tap water____3. Well or Kuwa____ 4. Stream____ 5. Others_____

10. Is the existing water sources/system sufficient for you?

Yes / No

If not, what is the reason?

1. Consumers increased 2. Sources dried.....3 others.....

11. What are the most common diseases that your family members are suffered?

1. Fever 2. Cold and cough 3.TB 4.HIV

5.Others

12. Where do you go when you are sick?

1. Nearest Hospital	3 Pharmacy	5. <i>Dhami/Jhakri</i>
2. Health post	4. Aurvedic	6. Allopathic
7. Indigenous method	7. Others(specify)	

13. Do you or your family members use contraceptive means for family planning?

Yes / No

If yes, where do you get it?

a..... b. c.

14. Do you see changes in the food habit of your family following the advent of the road?

If yes, what are the new foods entered?

a. Noodles.....b. Biscuits..... c. Tea..... d.*Dalmoadh*.....e.

Others.....

15. Do you have following domestic amenities in your family?

Amenities	TV	Radio	Private tap	Pressure cooker	Kerosene stove	Sewing Machine	Watch	Bicycl
Since when								

16. What was the age of your daughter or daughter in law when she got married? (if

_____ married in the last 5 years)

17. Since when are you residing in this village?

If migrated in last the 5 years, what has attracted you to migrate in this village?

- 1.....
- 2.....
- 3.....

18. When did u make this house?

Type of the house:

19. When you need money, who do you consult?

Bank/ Financial institution	Local merchant/money lender	Friends and relatives

20. From how far do the people come share the market center that you use?

Where were they accustomed to going prior to the advent of the road?

Places					
Distance					

21. How often do you go to the nearest market center (Sindhuli Bazar)? Or any other (specify)

Before vehicular facility	After vehicular facility

22. Is the vehicle fare affordable for you? Yes / No

If not affordable, how do you overcome the problem?

23. Have you changed your occupation in the last five years? Yes/ No

If yes, how are the changes?

Previous Occupation	The new Occupation

24. Had/have you got job/work opportunities in the road project?

Yes / No

If yes, what kind of work?

a. skilled _____ b. unskilled _____

(Specify the work type.....)

24. Was there preference to the local people for the job in the road project?

Yes / No

If no, have you made any delegation/agitation? Yes / No

25. What is the situation of forest resources? Is afforestation increased or deforestation?

26. Do you have school/ 10+2/college age children in your family who are not going to the school/10+2/college?

If yes, what is the reason in spite of the road connectivity?

.....

.....

.....
...
27. Do you see/feel the changing role of the women in your family?
If yes, to what extent?
.....
.....
.....
.....

27. What are the positive impacts of the road?
- | | |
|----|-----|
| 1. | 7. |
| 2 | 8. |
| 3 | 9. |
| 4 | 10. |
| 5 | |
| 6 | |

28. What are the negative impacts of the road?
- | | |
|----|-----|
| 1. | 7. |
| 2 | 8. |
| 3 | 9. |
| 4 | 10. |
| 5 | |
| 6 | |

29. Together with the road, in your opinion, what are other common needs of the village in the context that the road can be better exploited?

30. What are the other development activities that your village needs?

Appendix 2
An Impact Study of

**Banepa-Sindhuli-Bardibas Road Project
 Focused Group Discussion (FGD)
 CHECK-LIST**

Name of the settlement:

Total number of household:

1. How is electricity in the village? (introducing the topic)

2. Has there been any environmental hazards/casualties in the village since the hydro project started its work? Yes / No

If yes, what are they? Human, land slide, flood

3. Could you provide the information regarding the installation of development programme?

Prior to and following the Khimti hydropower project?

Facilities prior to hydro plant construction	Facilities following the hydro plant construction
--	---

- | | |
|----|----|
| 1. | 1. |
| 2. | 2. |
| 3. | 3. |
| 4. | 4. |
| 5. | 5. |
| 6. | 6. |
| 7. | 7. |

4. Has the migration increased /decreased following the hydropower plant construction?

5. Has irrigation canal been destroyed due to the hydropower project?

If yes, provide some example.

Yes / No

6. What were the means of energy that have been in use which has been replaced by the electricity?

7. Has there been any community development activities carried out by the road project?

If yes, what are they?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

7.

8. Has the students of this village started commuting to Sindhuli Bazar for study following the road

accessibility? Or number of students commuting to Sindhuli for study has increased?

9. is there any magazine/newspapers regularly being supplied to this village?

If yes,

What are the magazines/newspapers being supplied?

Where it is supplied?

10. What is the situation of education service?

S.N.	Level of school	No. of School	No. of Teacher			No. of students		
			Male	Female	Total	Girls	Boys	Total
1.	Primary							
2	Lower secondary							
3	Secondary							
4	10+2							
5	Literacy class							

10. What do you think about the interest of the personnel (JTA, AHW, VDC secretary, school teachers) working in the service delivery institution following the road construction in your village?

Do they prefer being transferred to this village? Stay longer? Regularity?

11. Do you think local labors were sufficiently employed in the road construction?

12. Is there any cases of maternal death in the village in the last two years?

If yes, how many death? _____

12. How frequently does the ambulance come to your village?

14. Participation of backward group in the developmental activities?

	Women	<i>Dalit</i>	<i>Janajati</i>
Social and Cultural Development activities			
Users group			
Water Users' Group			
Water user group			
Forest user group			
Irrigation			

15. Is there any incidence of social evils such as community conflict, prostitution, drinking (*Raksi*) and gambling increased following the road construction?
If yes, to what extent?

16. How many taps/wells/stream is there in this village? (Specify numbers for each)

When were these constructed? _____

17. What is the situation of communication?

a. Post office _____ its type _____ since when _____

b. Telephone _____ since when _____

18. Availability of government and other facility? Fill the dates of establishment in the blank.

a. Police _____ b. forest _____ c. Irrigation _____ d.

Agricultural extension _____

e. Livestock office _____ f. drinking water _____ g. health

post _____

19 active users group?

S.N.	Name of the users group	Total member	Women(in %) In bracket participation in executive board	Dalit(in %) In bracket, participation in executive board

20. Development activities and their names?

S.N.	Project's activities	Implementing organization

21. Established cottage industries? (please mention the dates of establishment if possible)

a. water mill _____ b. Rice mill _____ c. Bread _____

d. Furniture _____

e. Shoe/leather _____ f. Tailor _____ g. Dairy _____ h. Gold

smith _____

i. Smith _____ j.

others _____

22. Shops and other services(how many)

a. food shop _____ b. Readymade and

garments _____ c. Cloth _____

d. Veg./Fruits _____ e. Dalbhat hotel _____

f. Tea

shop _____

g. Vessel shop _____ h. Barbour _____ i. Haat
 Bazar _____
 j. Agriculture cooperative _____ k.
 others _____

23. Transportation

S.N.	Type	Daily plying number	Transportation cost from Sindhuli(fare too)
1	Truck		
2	Mini Truck		
3	Bus		
4	Mini bus		
5	Tractor		
6	Jeep		
7	Motorcycle		
8	Horse		
9	Porter		
10	<i>Khachchad</i>		

24. Do you think price of the agricultural products has been increased or decreased following the

Road construction? To what extent?

- a. Crops
- b. Milk
- c. Chicken
- d. Goat meat
- e. Vegetable
- f. Buff

Appendix 3

Photos from the Field



Photo 1: Bus service on the new Road, Coming from Sindhuli to reach Khaniyakharka



Photo 2: How the bus service has a meaning for there children to reach their school at 10 am?



Photo 3 Road has made this shop situated on the trail to lose its business!



Photo 4: Isn't the television antenna in this house is also due to the road?

REFERENCES

- Bista, S.K. (2000). *Rural Development in Nepal, an Alternative Strategy*. Kathmandu: Uday Books.
- Blake, P.M., John Cameron and John David Seddon (1980). *Nepal in Crisis: Growth and Stagnation At the Periphery* (Revised and Enlarged Edition). New Delhi: Adroit Publishers
- CBS (2002). *Population Census of Nepal 2001*, Kathmandu: Central Bureau of Statistics (CBS), His Majesty's Government of Nepal (HMG).
- Central Department of Geography(1999). *The Study of Human Ecology in Arun Valley* (unpublished report). Bergen: University of Bergen, Norway.
- Chambers, R. (1983). *Rural Development: Putting the Last First*, Harlow: Longman Group Limited.
- Chatterjee, A.B.(1969). *Nature of Commodity Flow of a Market in the Fringe Area of Calcutta*, India: The Geographical Review of India, Vol. xxxi.3
- Christaller, W(1966). *Central Places in Southern Germany: Translated by C.W. Baskin*. Prentice Hall: Englewood, Cliffs,
- Department of Roads (1999). *Banepa-Sindhuli- Bardibas Road Project; Environmental Impact Assessment; Section II; Sindhuli Bazar-Khurkot Roads; Final report*. Kathmandu: Ministry of Works and Transport, Department of Roads.
- Embassy of Japan (2005). www.np.emb-japan.go.jp, (visited on 15 December, 2005)
- Gautam, R., Simkhada, D. (2001).*Hope generated by alternative highway (Baikalpik rajmarga le jagaeko Aasha)* Year-1, Vol.-16, Kathmandu: Nepal Rastriya Pakshik, Kantipur Publications.
- Geographic Institution Committee (1994). *Action- Oriented Assessment of Market Towns in Selected Mountain Areas of the Hindu-Kush Himalaya: A Case of Dang District, Nepal*: Department of Geography, Tribhuvan University
- Haering Barbara (1980). *Jiri today- Jiri tomorrow?; impacts of the new Lamosangu-Jiri road aims and possibilities of physical planning* (n.p.)
- HMG/N (2002). *The Tenth Plan (2002-2007)*. Kathmandu: National Planning Commission, HMG.
- HMG/N (2002). *Nepal Road Statistics*. Kathmandu: Ministry of Physical Planning and Works, Departments of Roads

ICIMOD(1986). *Report of the International Workshop on planned Urbanization and Rural-Urban Linkage in the Hindu-Kush Himalaya Region.*

K.C. Bal Kumar. and Pradhan P. K.(1981). *A study of Highway Market Centers in Siddhartha and Prithvi Highway.* Kathmandu: Geographical Journal of Nepal, Vol 3-4

Kayastha, S. L. and Singh D. N.(1972). *Some Aspects of Transportation in Dhanabad.* India: The National Geographical Journal of India, Vol. xxxi.3

Losch, August(1954). *The Economics of Location, Translated by W.F. Stopler.* New York: Yale University Press, USA

Mahat, R.S. (2004). *Road, the Development Denominator, Mirmire (Year 33, No#1).* Kathmandu: Nepal Rastra Bank, Banker's Club

_____ (2005). *In Defence of Democracy: Dynamics and Fault lines of Nepal's Political Economy.* New Delhi: Adroit Publishers

MoF (2005). *Economic Survey 2004/05.* Kathmandu: Ministry of Finance

Pradhan, P.K. and Routray J.K (1992). *Market Centers and Rural Development in Chitwan District, Nepal,* Bangkok: Asian Institute of Technology

Pradhan, P.K. (1979). *Highway Traffic Flow and Market Centers.* (Unpublished dissertation, Tribhuvan University)

_____ (1997). *Market Center and Hinterland Relation in Lalitpur District, Nepal* Unpublished Ph.D. dissertation, Klagenfurt University

Rana, Ratna S.J.B.(1970). *An economic study of the Area around the Alignment of the Dhading-Dadeldhura Road, Nepal.* Kathmandu: CEDA.