

CHAPTER-ONE

1. INTRODOCTION

This section of thesis presents vignette of rural road development through routine maintenance of rural roads in the study area of Nepal. The evident of changes of rural roads after routine maintenance in the country, their effect in rural community will be explored the linkage of rural development strategies in the contemporary scenario with evident. Economic and social status of routine maintenance workers will be assessed in the study area.

1.1 Background of the Study

Nepal is one of the least developed country in the world with lowest per-capita income \$1 per day. Nepal is a small country having an area of 1, 47,181 sq. inhabited by 2, 31, 514, 23 people (Population Census 2001). Out of total population 86 percent live in rural areas as well as 14 percent live in urban areas. (Census, 2001). Poverty has reduced significantly in Nepal over the past decade. Between 2003/04 and 2010/11, the poverty headcount rate fell from 49% to 25% of the population. An overwhelming major poverty of this poverty reduction (over 90%) took place in rural areas, where 83% of Nepal's population lives. In order to continue this positive trend and to achieve significant development gains it is necessary to continue the effort to improve connectivity in rural areas.

Nepal's topography and geology, combined with a rural population distribution significantly complicate effort to provide all weather connectivity to many rural communities. For example, the World Bank's Logistic Performance Index found the quality of Nepal's road infrastructure is particularly poor relative to lower income countries. Approximately 80% of respondents ranked Nepal's roads as low or very low quality and 100% of survey respondents ranked the cost of road transport as high. Access to markets, social and economic services, and assistance during emergency events directly depends on the quality of transport infrastructure available to rural communities.

In 2011/12 spending on rural transport infrastructure was approximately NPR 26 billion (US\$ 265 million or 6% of the national budget). Roughly 80% of this funding came from central government, primarily via the Ministry of Federal Affairs and Local Development (MoFALD). Decentralized implementation and resource transfers from central to local governments are the defining characteristics of GON's rural transport programs.

Routine maintenance involves small maintenance works to be carried out in all seasons on all roads on a regular basis, comprising simple categories of maintenance works. Routine maintenance includes the cleaning and clearing of different road elements to ensure that they work properly and that damage to the road is avoided. Recurrent maintenance involves small maintenance works not falling under routine maintenance that are carried out a few times a year in all roads to repair minor damage resulting from traffic and rainfall. Recurrent maintenance includes minor repairs to the road surface and other road elements to bring them back to their proper condition.

The road network serves as a principal foundation for the effective functioning of transportation and contributes in delivering a wide range of economic and social benefits. Adequate maintenance of the road infrastructure is essential to achieve and preserve those benefits. The significance of road maintenance is acknowledged by most commentators including key political decision makers. Such acknowledgement however, hardly translates into adequate funding and appropriate management of these national assets to ensure effective and optimum value is derived from road networks. Insufficient levels of expenditure or poor management of the road network often has serious consequences for the contribution made by the road assets.

1.2 Statement of the Problem

The Government of Nepal (GoN) aims to provide all-weather road access to all VDCs by gradually upgrading the District Core Road Network (DCRN) and providing proper maintenance with the aim of promoting economic growth, providing access to services and creating sustainable decent jobs in rural areas. Currently a large majority of roads are only fair-weather and in poor condition, with a large portion of roads not trafficable. Insufficient maintenance is being carried out, further aggravating the situation.

In this context, GON with support of World Bank is implementing the SNRTP project to strengthen the DCRN with a emphasis on the "Maintenance First" approach. This project will furthermore cover the upgrading and rehabilitation of rural roads as well as the construction of new river crossing structures to bring the roads to an all-weather maintainable standard. The project Covers 33 districts. Among them, Rasuwa district is also included.

Many local road linkages only offer seasonal access on account of inadequate drainage, low quality surfacing, or the absences of crossing structures. Nepal's rainy season (June-September) isolates many communities that only have access to seasonal roads. Under SNRTP project, Window 1 will support routine and periodic maintenance of roads and crossing structures using a simplified output based disbursement approach in which support works within existing rights of way along existing roads.

So routine maintenance through community worker is needed to maintain rural road to all weather road with socio economic growth of the local community.

1.3 Objective of Study:

The general objective of the study is to find the rural road development of district through routine maintenance of rural roads.

The secondary objectives are as follows:

- To study the of rural road developments through routine maintenance.
- To study the impacts of road through routine maintenance.
- To study the success stories of routine maintenance workers.

1.4 Conceptual Framework

The major investigation of study on the rural development of roads through routine maintenance & livelihood condition of condition of routine maintenance workers in the study area. The rural development livelihood is studied through routine maintenance basically in two sectors; rural development through routine maintenance & social-economic sector of routine maintenance workers. In rural development, access of road, development of market centre, increase in public transportation, continuous development

of roads & in socio-economic sector remains income, employment, education, drinking water, food habit, security, health, etc.

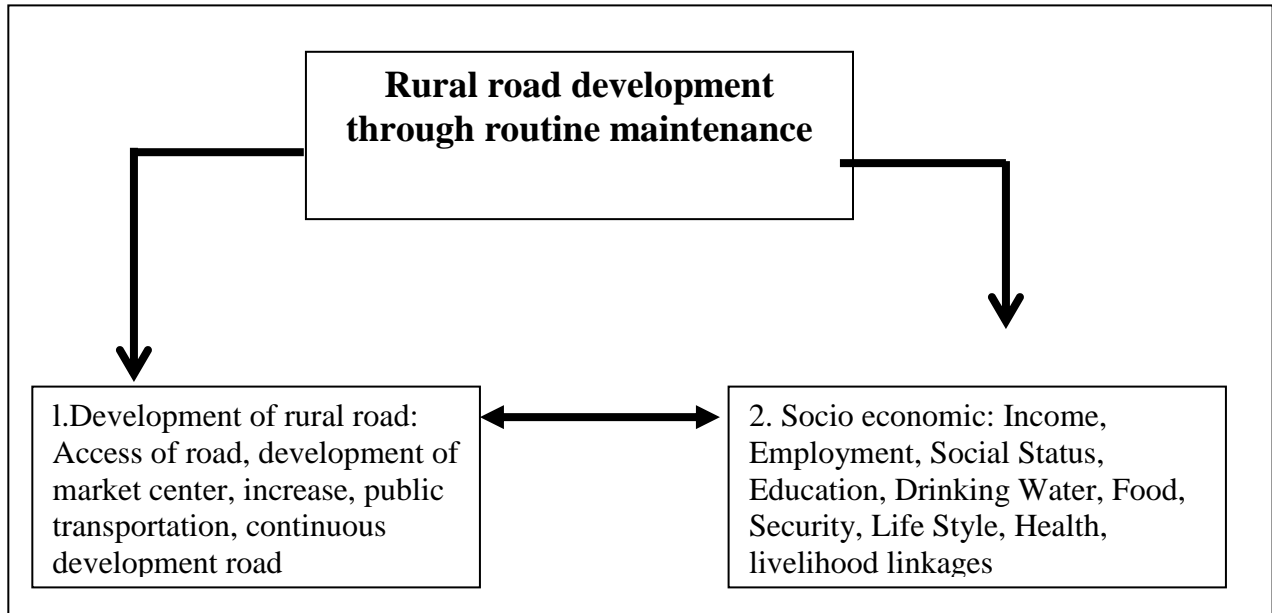


Fig No. 1 Rural road development through Routine maintenance

1.5 Rational of the study

This research provides the recent trends of use of rural road and problems on maintenance of it. Also, the study will find social and economic status of routine maintenance workers. It explore the problem and prospect of livelihood system of routine maintenance workers so this research may help for those organization, who works on routine maintenance of rural roads to prepare the appropriate program to uplift the socio-economic condition of routine maintenance workers. This study would be helpful as a literature to the forth coming researchers and those who are interested to know about routine maintenance of road.

1.6 Limitation of the study

Due to the constraints of funds, time and level of research to be conducted the descriptive study is the only option. This study is confined with socio economic practices of routine maintenance workers in Rasuwa district. Thus, the result drawn from this study will represent the selected district only. This conclusion may not be generalized to the whole

routine maintenance workers in all over the country. But the inference might be valid to some extent to those routine maintenance workers, who have a similar geographical setting and similar settlement.

CHAPTER-TWO

2. LITETARURE REVIEW

In this chapter, the related literatures have been reviewed. The reviewed literatures are books, journals, seminars papers, newspapers clippings and yearly publication related to my study.

The importance of addressing road maintenance properly is now well understood and is illustrated by the consequence of neglect. It is acknowledged that roads enhance mobility, taking people out of isolation and therefore, poverty. For example, the World Bank as one of the organizations who perform and fund various studies has assessed the 85 countries receiving support for their roads, and found that the cost of re- construction has ranged between three and four times the cost of the preventative maintenance that should have been carried out earlier. In its study on road policy, the World Bank estimated that \$45 billion worth of road infrastructure had been lost due to the absence of adequate maintenance in those 85 developing countries.

The study also suggested that such a loss could easily have been avoided by spending \$12 billion (or the equivalent of 25% of the impact of the lack of maintenance) on preventative maintenance. Worldwide, it is a political advantage to be in favour of investing money in constructing new roads. On the other hand, maintenance does not have the same prominence or does not offer the same opportunity to stakeholders or decision- makers to present themselves to the public. Even though the need for maintenance is broadly shared globally, it is still not being adequately addressed.

The Road Maintenance Group (RMG) is the group of people formed to maintain road under routine and recurrent maintenance by complementing major maintenance (emergency, periodic and specific maintenance) to delay and even halt the deterioration

of rural roads. This type of team based approach firstly introduced in Latin America for the minor repairs of unpaved and paved roads.

According to Chiris Donnogs(2007), Rural roads are often treated as the last link of the transport network. Despite this, they often form the most important link in terms of providing access for the rural population. Their permanent or seasonal absence will act as a crucial factor in terms of the access of rural communities to basic services such as education, primary health care, water supply, local markets and economic opportunities. Road deterioration due to lack of maintenance has become a growing issue in a number of developing countries. The problem has been discussed at length and the results of a lack of maintenance have been well defined and quantified. Nevertheless, the extent of the problem is not fully appreciated and the solutions are still not commonly understood. Equally, the measures required to rectify the shortcomings are under-estimated. These include the scale of support and capacity development required, and the time-scale necessary for establishing an effective road management system. Such a system should halt road network deterioration and ensure that financial, material and human investments are made in a manner which maintains the quality and value of the assets and, in addition, improves the network in relation to the demands and priorities of the users.

Maintenance of road should be carried out as per the guidelines provided by the DOR (Routine, Recurrent, Periodic, Rehabilitation and Reconstruction) -NRS 2070.

According to Ashoke K. Sarkar (2017), Maintenance of roads should be considered a part of the overall road asset management system. Asset Management may be defined as minimizing the life cycle cost of managing deteriorating road facilities, including construction costs, while maintaining the level of service provided to road users with limited financial and human resources, maintaining the existing road assets in good condition, and clearly explaining these activities to the public. The asset management process includes the maintenance, renewal and up-grading of existing assets; the creation of new assets.

He concluded that when developing a sustainable system of road maintenance, it is necessary to approach the system from two different angles. The first is to develop guidelines, manuals, standards and policies that clear and well defined. This would ensure uniformity and eliminate confusion on the part of field engineers which would in turn minimize the time needed for decision making. And the most important aspect of ensuring sustainability is to develop ownership among the users of the rural roads. It is essential to involve the community in every aspect of a new road, from planning and design, to construction and maintenance. Efforts have been made in this direction with mixed success. Unfortunately, this degree of community involvement is usually not considered to be of value. However, if it was encouraged early on, perhaps less effort would be required later to elicit support from the community regarding road maintenance.

To enhance reliable transport infrastructure and access for rural communities in Nepal, the Project for Strengthening the National Rural Transport Program (SNRTP) has been prioritizing routine maintenance works in 36 out of 77 districts across the country. The project overachieved the original set target of 3,067 km routine maintenance works in 2015. The additional routine maintenance works are being carried out in 5,500 km of roads. The project is engaging 2,870 road maintenance worker groups (RMGs) out of which, over 70% are women belonging to vulnerable and deprived segments of local communities, according to World Bank, Nepal-Empowering Women through jobs to maintain roads.

According to the Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR), Nepal has 6,683 rural roads, the combined length of which is 50,943 km. Of these, 1,575 km are blacktop, 14,601 km are gravel and 34,766 km are earthen fair-weather roads. At present, 73 districts headquarter out of 77 have access to roads. The country has a road density of about 34.41 per 100 sq km, whereas effective population kilometers per 1,000 is 1.91. The national road network in Nepal (excluding all local roads) is worth about NPR 90 billion (USD 900 million), which represents almost 20% of the country's GNP. These roads comprise a substantial investment, underscoring the need to maintain these roads.

There is a backlog of maintenance on more than 50,943 km of rural roads under the Local Road Network. As a result, a large proportion of the roads are in 'poor' condition and beyond routine maintenance. These roads require reconstruction/rehabilitation. Nepal Road Standards 1971 (Second Revision in 2014) is applicable to all strategic roads in rural areas being constructed within Nepal. For non-strategic (local roads) and urban roads, separate standards are applicable.

CHAPTER-THREE

3. RESEARCH METHODOLOGY

This chapter discusses a set of methods, which are employed to conduct the research. The whole study is carried out based on primary as well secondary data reliable and relevant study can be made possible only by applying scientific method. Hence, the primary purpose of this chapter is to discuss and design the framework for the research. Different procedures have been followed:

3.1 Study Methodology

The following methods had been used for the research work.

Table No. 1. Study Methodology

Methods	Basis	Output
1. Literature Collection & review	Books, Published and unpublished Documents, Reports, Programs	Relevant materials are collected.
2. Road Selection	Field visit, Location map, Selected belt of district	Previous condition of rural roads & recent condition
3. Reconnaissance survey of case study area	Information of study area by routine maintenance worker, Drivers & experts involved in related field	Historical as well as recent information
4. Discussion with Expert; institutional level integration	DTO Office, SNRTP staff & ILO staff	Routine maintenance activities & programs happening in rural road
5. Household Level Survey of Routine maintenance workers	Questionnaire on the research fields	Existing physical, social and cultural situations
6. Data Analysis	Data analysis from the date collection from questionnaire survey of RMG	Identification of development of rural road & socio economic status of RMG
7. Recommendation	Existing plan, program and policies	Plan, Program & Policies

3.2 Selection of study area

The present study has been carried out in Rasuwa district, which is located in Bagmati Zone in Mid Development Region of Nepal. The socio-economic status of this district is normal. In district all of District core rural road and village roads have an earthen surface. Most of rural roads are fair weather road so routine maintenance through SNRTP in 2014 implemented. The present study aims to evaluate the development of district through routine maintenance by Rural Maintenance Groups (RMGs).

The reason for selecting Rasuwa as the study area is that the researcher is familiar to the study area. Also, familiar with the routine maintenance implemented by International Labour Organization (ILO) through SNRTP. Therefore, by selecting of this area, it is believed that more accurate information could be collected during the study.

3.3 Research Design

The research is based on the exploratory and descriptive research design. It is exploratory because it has tried to accumulate the primary data and it is descriptive as the study describes the different causes for and against the routine maintenance. Hence it is of importance that various conditions prevailing in the respective road under SNRTP selected for the study after routine maintenance with the conditions. The historical and other references are also taken for assistance of the micro level. In order to fulfill the objectives, information has been collected from the field survey, questionnaire, interview and observations which were the main techniques that have been used to obtain the information from the road user and the labor.

3.4 Sources of Data

Based on nature, both qualitative and quantitative data has been agglomerated. The age, sex, occupation, income, belong to the quantitative nature, whereas, why and how the labor and community are benefited routine maintenance is collected hereby in qualitative

nature. Based on both primary and secondary sources data has been collected during the entire research process.

3.4.1 Primary Data

This study is based on primary information obtained from field survey which is one of the main sources of primary data collection. The primary data have been collected during the field survey by structured questionnaire, field visit and observation, interview with routine maintenance workers & vehicle drivers who travel through those rural roads. The responses from the RMG and drivers are regarded as the major sources of field information.

3.4.2 Secondary Data

In addition to primary data, secondary data also have been used, wherever relevant to complete the study, such secondary data have been collected from different offices such as CBS (Central Bureau of Statistics), TU Central Library, different books earlier research reports, and DoLIDAR and ILO guidelines, research paper and publications.

3.4.3 Universe and Sample Size

The universe of the study was the RMG workers worked in the Rasuwa district through SNRTP. There are total 87 routine maintenance workers in 19 rural roads. Among them the total number of workers is 55 who were involved in 13 roads from lower belt of district for routine maintenance selected as sample road. The sample road is about 68% of total road in Rasuwa district. Whole road under SNRTP is taken including the socio-economic status of workers.

3.5 Techniques and Tools of Data Collection

Mainly primary data were taken for the study and this study has been collected from the field survey. Questionnaire was used to estimate and analyze the road condition and socio-economic impact to the worker involved on routine maintenance. The questionnaire served as the chief source of primary data while secondary data were taken from the

concerned stakeholder, publication and books. Following techniques has been used for data collection.

3.5.1 Questionnaire Survey with RMG

Detailed structured questionnaire was prepared to collect data such as socio-economic characteristics of the rural maintenance group, impact of the road after routine maintenance. The approved questionnaire served as basic tools of data collection. Out of 87 routine maintenance workers of 19 rural roads, questionnaire survey is done on 55 routine work workers of 13 rural roads considering the lower belt of rural roads of Rasuwa districts.

3.5.2 Observation

Some of the roads were observed directly to have better idea in routine maintenance with different in before and after routine maintenance of road with the help of secondary data.

Observation included following:

- Impact of rural road development after routine maintenance
- Vehicular movement along rural roads after maintenance
- Socio economic changes of routine maintenance workers
- Success stories of rural maintenance worker.

The direct observation provided information about how the status changes to the workers before and after working in SNRTP. Similarly, the accessibility to community by using maintained road after maintenance.

3.5 Methods of Data Analysis

Information collected from questionnaire have been transformed into a master sheet and data is tabulated based on master sheet. Information is grouped, sub-grouped and classified as per the necessity to meet the objective. After the completion of data collection data has been processed with the help of computer. It has been analyzed by

using manual chart, diagram and classifications of the variables. After analyzing data, it has been carried out to maintain consistency.

CHAPTER- FOUR

4. GENERAL INFORMATION OF STUDY AREA

This chapter deals with the introduction of study area and socio-economic condition of the Rasuwa district. General description, geography, climate, household, population, Caste/ethnicity, occupation, family size, education status, land holding pattern, livestock holding and population are the main variables considered in this study.

4.1 Brief introduction of study area

This study is related to the Rasuwa District, a part of Province No. 3, is one of the seventy-seven districts of Nepal. The district, with Dhunche as its district headquarters, covers an area of 1,544 km² and has a population (2011) of 43,300. As per census 2011 total households in Rasuwa district is 9,778. It is the smallest district by area, among 16 districts in the Himalaya region of Nepal. The administrative division of Rasuwa comprised 5 Rural Municipalities. They are i. Gosaikunda Rural Municipality, ii. Kalika Rural Municipality, iii. NauKunda Rural Municipality, iv. Parbati RM and v. Uttargaya Rural Municipality. Rasuwa is accessible by bus from Kathmandu (national capital) via Pasang Lhamu highway (H21), with its headquarters (Dhunche) being about 120 km from Kathmandu.

The total household of this district is 9741 with average household size 4.45 and total population is 43300. Among which 49.6 are male and 50.4 female (census, 2011).

Despite being most of the people in the study area speak Tamang, Nepali language some ethnic group like Tibetan, Gurung, Sherpa and other speak their own language. Agriculture is the main occupation of people consequently some are involved in business, service etc.

4.2 Geography and Climate

Rasuwa district lies in Himalayan and mountainous region. Its territory has elevations ranging from 614 to 7,227 meters (2,014 to 23,711 ft) from mean sea level. Forests cover 31.43% of the land while 16.63% is always snow-covered. Steeply varying territory and plenty of natural blessings make Rasuwa a famous tourist destination in Nepal. Sightseeing places including Gosaikunda Lake and Mt. Langtang plus one of the hot springs in Nepal (locally called Tatopani) are located in the district.

4.3 Ethnicity/Caste distribution

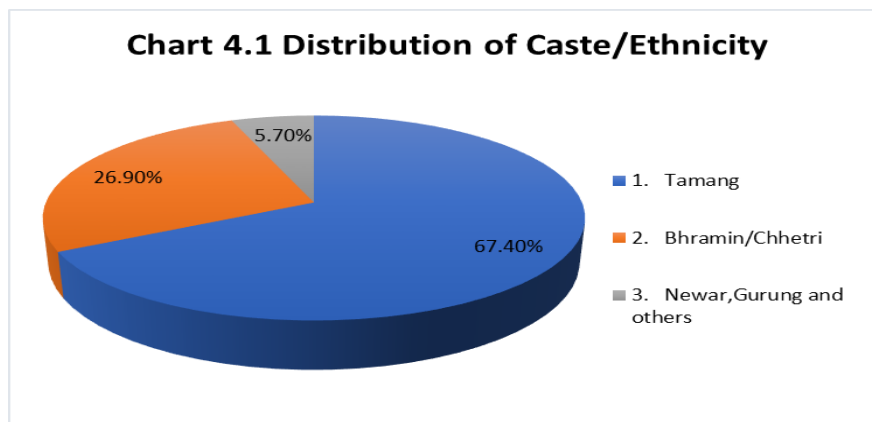
There are different caste and ethnic groups in Rasuwa district. The data on ethnicity of households is given in table No.4.1

Table 2: Ethnicity/Caste of Households

S.N.	Ethnicity/Caste	No. of Households	Percentage
1.	Tamang	29168	67.4
2.	Bhraman/Chhetri	11659	26.9
3.	Newar, Gurung and others	2473	5.7
	Total	43300	100

Source: Profile Data, 2011

The above table shows that majority of people were Tamang (67.4%) and others are Bhraman, Chhetri, Newar, Magars and others.



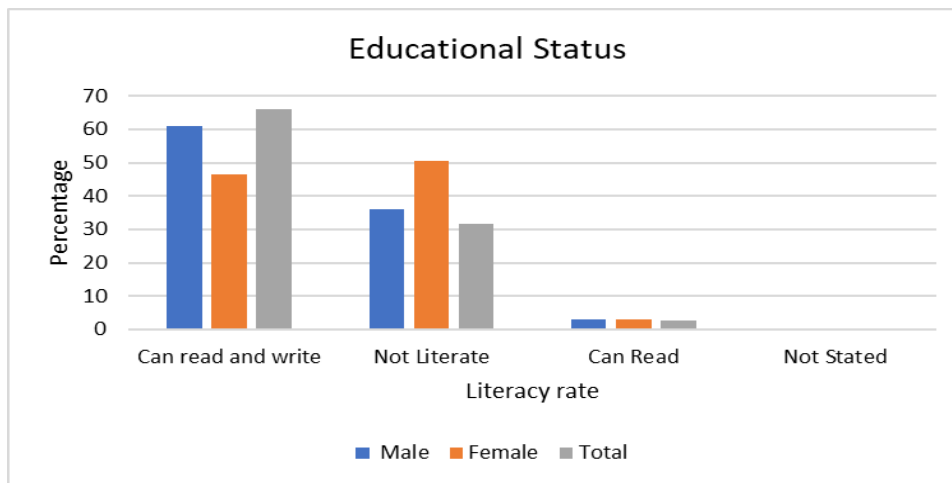
4.4 Educational Status

In the district, the literacy rate is quite poor. Only 54% are literate. Educational status of peoples are as below table.

Table 3: Educational Status

S.N.	Educational	No. of person				Total	
		male	%	female	%	number	%
1.	Can read and write	11906	60.9	9291	46.5	21197	65.9
2.	Not Literate	7065	36.1	10083	50.5	17148	31.5
3.	Can Read	586	3	570	2.9	1156	2.5
4.	Not Stated	8	0.005	36	0.2	44	0.1
	Total		100		100		100

The data presented in table 4.2 reveal that majority of the people can read and write in which male are more than women. Female are quite less literate even the education status of this area is satisfactory.

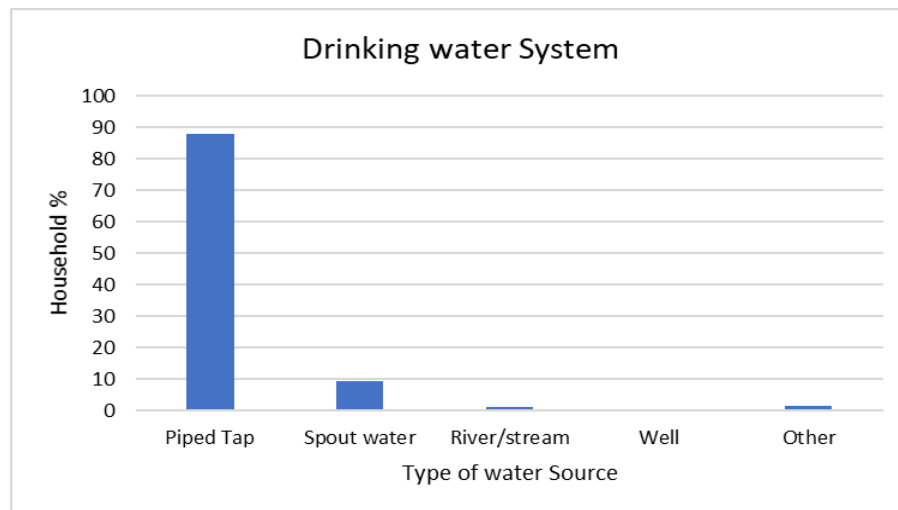


4.5 Drinking water system

In Rasuwa district there is water source and supply system is satisfactory compare to another district of Nepal. 88 % people have access to safe drinking water which is nearly double to overall Nepal data. Most of source are spring water and they are almost piped system. Even some households have to depend on river/stream, spout and other sources which is as below table.

Table 4 Drinking water source

SN	Type of source	Household Percentage
1	Piped Tap	87.9
2	Spout water	9.3
3	River/stream	1.1
4	Well	0.1
5	Other	1.6



4.6 Human Development

The main occupation of the study area is agriculture and very few are involved on services and business. Almost 36% of the area is covered by forest and remaining some portion are covered by snow all time. So cultivable land is very low at Rasuwa district. Almost 32% of household are below poverty line index which is 1.4 times greater than the poverty rate of Nepal.

4.7 Tourism

Rasuwa is rich in natural resources. Langtang mountain range stands to the north of Rasuwa. The northern parts of the area largely fall within the boundaries of Langtang National Park. Gosainkunda Lake, and Tamang village in Bridim are the major highlights of Rasuwa for tourism. The Gosainkunda Lake, also known as "Frozen Lake", one of the most beautiful mountain lakes lies in the Langtang region. There are about 108 kundas (lakes) in this area. Saraswati Kund, Bhairab Kund, Surya Kund and Gosainkund are most important ones. Langtang valley is another attraction in Rasuwa which is aptly called the valley of glaciers; mountains rise soaring toward the sky. The valley offers pine forest, swift mountain streams, rugged rock and snow-capped peaks, grassy down and meadows strewn with daisies and wild animals.

4.8 Road status at District

4.8.1 Total road network of Rasuwa

Rasuwa district has an estimated road network of 308.57 kilometers, including 73 kilometers of strategic roads managed by DOR and 155.87 kilometers of rural roads and remaining 79.5 kilometers of village roads managed by Rasuwa DCC and the RMs. The strategic road is blacktop and all the District Core rural roads & Village roads have an earthen surface.

Table: 5 Roads in the district (km)

Road Class	Total length	Blacktop	Gravel	Earthen
Strategic road network				
Highways	73	57	16	-
Feeder roads	-	-	-	-
Urban roads				
No Municipality	-	-	-	-
District road core network	155.87	0.88	21	133.99
Village roads	79.5	-	-	79.5
Total	308.57	57.88	37	213.69

The District Road Core Network (DRCN) in Rasuwa District is shown on the map on the next page. The existing 19 DCRN consists of a total of 153.87 Km with all earthen road surfaces.

Table: 6 District Core Road Network (km)

Code	Description	Total length	Blacktop	Gravel	Earthen	All weather	Fair weather
29DR001	Ronga-Pajung-Mendogaun-Thuman- Rasuwagadhi Hydro	4.18			4.18		4.18
29DR002	Ronga-Kerabari-Thambuchet-Gatlang	0.69			0.69		0.69
29DR003	Bahundanda-Goljijing-Thambuchet	5.71			5.71		5.71
29DR004	Syafru-Gatlang-Somdang	39.89	-	-	39.89	-	39.89
29DR005	Satdobato-Thulogaun-Dandagaun-Haku-Gre-Gatlang	11.54			11.54		11.54
29DR006	Rudraganga-Charan-Bhotekoshi	0.57			0.57		0.57
29DR007	Sole-Bhimali-Hakubensi	6.00			6.00		6.00
29DR008	Kalikasthan-Dhunge-Kami dada-Banuwa	9.73	-	-	9.73	-	9.73
29DR009	Timure-Khaide	0.09			0.09		0.09
29DR010	Lingling-Pelko-Bridhim-Khamjijing-Lama Hotel	6.00			6.00		6.00
29DR011	Bharkhu-Brawal-Thulo Syafru-Langtang	6.00			6.00		6.00
29DR012	Syaubari-Lokil-Lambu-Thangdor-Simbandi-Doklang	18.00	-	-	18.00	-	18.00
29DR013	Kalikasthan-Jivjibe-Sarsui Road	6.00	-	-	6.00	-	6.00
29DR014	Jipjive-Rupsepani-Bhadaure-Dharapani	8.80	-	-	8.80	-	8.80
29DR015	Dasmurechautari-Dhuseni-Bktole-Tallorupsepani	4.80	-	-	4.80	-	4.80
29DR016	Koldada-Aapchaur-Chithi-Khalchet- Sarsym	7.20	-	-	7.20	-	7.20
29DR017	Bogatitar-Simle-Bhorle-Parchyang-Yarsa	18.00	-	2.00	14.00	2.00	10.00
29DR018	Lachyang (Nuwakot)-Saramthali-Parchyang	8.80	-	-	8.80	-	8.80
29DR019	Lachyang (Nuwakot)- Nirku Bhangyang-Yarsa	8.00	-	-	8.00	-	8.00
Total		161.87	-	2.00	159.87	2.00	153.87

The existing 18 Village roads consist of a total of 92.7 Km with all earthen road surfaces.

Table: 4.6 Village Roads

Code	Description	Total length	Blacktop	Gravel	Earthen	All weather	Fair weather
29VR001	Ronga Khola-Pajung-Tatopani-Sangjen	1.50	-	-	1.50	-	1.50

	Khola						
29VR002	Syafrubesi-Ghodatabela-Langtang-Kyanjung-Ganjala Himal	2.00	-	-	2.00	-	2.00
29VR003	Santibazaar (Nuwakot) - Mailungbesi - Hakubesi-Syafrubesi	12.00	-	-	12.00	-	12.00
29VR004	Laharepauwa- Betang-ghormu	9.00	-	-	9.00	-	9.00
29VR005	Shiva Mandir – Hospital-Nagung Sadak	3.50			3.50		3.50
29VR006	Bogatitar-Chaukitar-Banuwa	3.00	-	-	3.00		3.00
29VR007	Parchyang-Ghichet-Yubra-Yarsa	0	-	-	0		0
29VR008	Pairebesi-Kuwapani-Bhalayadanda-Manigaun	6.00	-	-	6.00		6.00
29VR009	Ramche-Palep-Bandare-Grang	2.00			2.00		2.00
29VR010	Mailung-Siruchet-Karmaryang-Khadku-Dadagaun	2.00			2.00		2.00
29VR011	Simle-Salimebhitta-Pairegaun-Thulogaun-Dandagaun	6.00	-	-	6.00		6.00
29VR012	Laharepauwa-Dikhet-Bhorlekhet-Sadhi khola	5.00	-	-	5.00		5.00
29VR013	Betini-upallopauwa-Chhap	3.00	-	-	3.00		3.00
29VR014	Sanukhola-Danusara-Partykharka	4.00	-	-	4.00		4.00
29VR015	Betini-Sahakari-Belchaur-Taruke-Kudullephat	3.00	-	-	3.00		3.00
29VR016	Hapselidada-Jyanglang-Aledada-Lokil	7.20	-	-	7.20		7.20
29VR018	Dharmaxxa-Wangdel-Bridhim	6.00	-	-	6.00		6.00
	Total	92.7			92.7		92.7

The district inventory identified a road network of 260.71 Km in length, including 64.95 Km. of strategic roads, 152.76 km of Class A type District Road Core Network and 43 Km. of class B Village Roads including new constructions. The existing DCRN roads link up 12 of the 18 VDC to headquarters. Most of the district roads are earthen surface. Therefore, most all of the roads are fair weather roads. So it is very challenging job to run all fair weather roads into all weather roads.

Routine maintenance of rural road came is Rasuwa through SNRTP in 2014 in order to convert all fair weather roads to all weather roads.

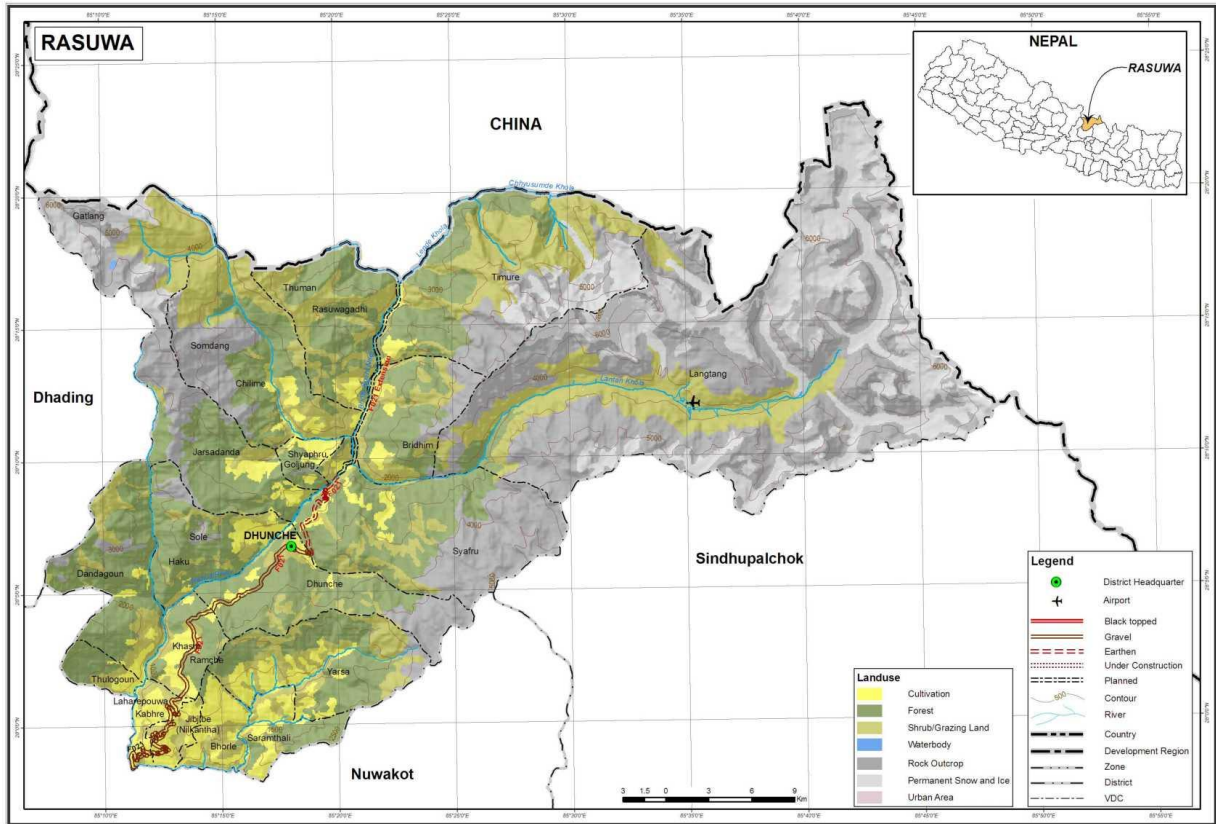


Figure 1: Location Map of Rasuwa District

Before preparation of ARMP, Road Condition Survey is done. The road condition survey done in 2014 is as follows:

Table: 8 Selected Roads for Research

S. No.	Road Name	Road Code	Earthen [km]	Condition (Poor, Fair, Good)	Construction Year	Additional notes
1	Kalikaasthan-Dhunge-Karmi Danda-Banuwa Road	29A001R	10.000	Good	2010	Road is passable by normal car.
2	Bogatirar-Simle-Bhorle-Parchyang	29A002R	6.300	Good	2012	Road is only passable by 4X4 bus and truck
3	Bogatirar-Simle-Bhorle-Parchyang	29A002R	5.700	Fair	2012	Road is only passable by 4X4 bus and truck
4	Syaubari-Laukil-Doklang-Yarsa	29A004R	15.000	Very Poor	2012	Road is Impassable by 4 wheeled vehicle.
5	Gatlang-Gre-Neshik-Haku Road	29A006R	5.000	Poor	2012	Road is Impassable by 4 wheeled vehicle.

6	Lachyang-Nuwakot-Saramthali-Patikharka-Parchyang	29A011R	2.700	Fair	2012	Road is only passable by 4X4 bus and truck
7	Lachyang-Nuwakot-Saramthali-Patikharka-Parchyang	29A011R	4.500	Good	2012	Road is passable by normal car.
8	Lachyang-Nuwakot-Saramthali-Patikharka-Parchyang	29A011R	0.950	Poor	2012	Road is Impassable by 4 wheeled vehicle.
9	Jipjive-Rupsepani-Bhauaure-Dharapani	29A011R	0.200	Fair	2012	Road is Impassable by 4 wheeled vehicle.
10	Jipjive-Rupsepani-Bhauaure-Dharapani	29A011R	0.200	Poor	2012	Road is Impassable by 4 wheeled vehicle.
11	Aapchaur-Badahare-Chiti-Khalchet-Lamachet-Sarsiu Road	29B004R	0.490	Fair	2012	Road is Impassable by 4 wheeled vehicle.
12	Dasmure-Setidevi Ma.Vi.-Rupsepani Agriculture Road	29B010R	0.110	Fair	2009	Road is Impassable by 4 wheeled vehicle.
13	Kalikastan-Jivjibe-Sarsyu Road	Missing No. in DTMP	5.6	Fair	1988	Road is passable by normal car.

CHAPTER- FIVE

5. DATA ANALYSIS AND INTERPRETATION

Road is one major factor of development of any part of the country. Development starts from the access of road in the area. Data were collected from 13 rural roads where routine maintenance continues since 2014. During the research period, a lot of data were collected which indicates the development factors. Among them, two types of development factors are categorized. They are Rural road development through routine maintenance and socio-economic change through routine maintenance.

5.1 Development of rural roads

Following are the rural road development observed for five years period after routine maintenance in Rasuwa.

5.1.1 Increments in Vehicle

After the continuous routine maintenance of rural roads for five years, there is a drastically changed in the road. A lot of road components are well improved. After the improvement rural roads, the numbers of vehicle users are increased. Specially nos. of motorbike users are highly increased. Local people are attracted to buy motorbikes for daily service holders and other light & heavy vehicles in order to transport goods from village to market center & vice-versa. Hence a lot of local service holders purchased motorbikes & scooters and the local businessmen purchased light vehicles & heavy vehicles as their business purpose.

5.1.2 Increments in number of Shops

After the easy access on roads, it is very comfort to transport goods & materials from local place to the market center & Vice-Versa. Thus the number of shops are highly increased at the centers location along the roadside. The numbers of shops are highly increased along the roadside of Kalikasthan-Dhunge-Karmidada Road, Simle-Bhorle-Parchyang Road, Jivjive-Rupesevani-Dharapani Road and Kalikasthan-Jivjive-Sarsyuu road. Nowadays, Bhorle Bus park, Sarsyuu Bus park, Saramthali & Lachyang are

developing as small market centers whereas Kalikasthan is developing is medium market center in the study area.

5.1.3 Increments of Settlement

After the earthquake, a lot of local people constructed their residential buildings along the road side for the easy access of transport. Besides it is very economy on the transportation of construction material along the road side. These two factors pull the local people to settle their residential around the periphery of their suitable rural roads. Besides local people attracted to construct the buildings along the road side for the business purposes. Due to these reasons, ribbon development of buildings on both sides of rural roads and turned into settlement. According to them, the transportation cost of construction material cost is reduced after improvement of road too. In this way, many new settlements are increased. The scatter settlements are gathered in their appropriated sides of rural roads.

5.1.4 Reduce in travel time:

After the improvement of road through routine maintenance, local people feel that there is highly reduction of time during travel the local bus. Nowadays local bus arrived on time without any obstacles on road. The questionnaire is done for some local vehicle driver about the travel time in rural roads before & after routine maintenance. Some interviews with drivers are done. Among them, two best interviews are selected.

Twenty nine years old Mr. Raj Kumar Tamang is from Dhaibung VDC, Rasuwa. He is in driving profession since seven years. Nowadays he is driving Min Tata vehicle with number Ba. 3. Kha 9128 since five years. He supplies goods & materials to several VDCs of Rasuwa, Nuwakot and Dhading. During his supply business, he frequently travels Kalikasthan-Dhunge-Karmidada-Banuwa Road with road length 10 Km.

According to him, it was very difficult to travel along this road before started routine maintenance. The road surface was very rough & difficult to travel along this road. A lot of ruts & rill with gullies & potholes made difficult to travel. Besides water ponding & poor water management made the road in worse condition.

He said, " Routine maintenance activities made the road surface smooth with the provision of earthen drain. But the nature of drain seems temporary nature indicating the earthen drain created by routine maintenance group. Before routine maintenance it take about one hour to travel 10 km road. Nowadays, Mr. Tamang feels very comfortable on travelling this road without any obstacles. According to him, routine maintenance activities reduces the travel time 25 minutes while travelling this 10 km road. While inquiring him about his opinion about routine maintenance activities, he replied, " Routine maintenance activities is very effective in rural roads for the regular mobility of vehicles. It would be better if routine maintenance activities continued in all rural roads of district."

Similarly, Mr. Sanu Tamang, age 31 from Bhorle, Vehicle driver of Bolero explained about the travel time. He has been travelling vehicles since six years. He frequently travel the Syaubari-Lokil-Doklang-Yasra Raod. Five years ago it was very difficult to travel 16 km road which took 2.5 to 3 hours. After the intervention of routine maintenance, the shape of road is drastically changed. The road surfaces are smooth & provision of earthen drain along the road made proper water management even in rainy season. Nowadays, he can easily travel with in one hour along this road. It meat the travel time is reduced by 1.5 hour to travel 16 km road.

5.1.5 Reduce in transportation cost:

Before started routine maintenance, the road surface was very rough & many obstacles in different road section. It is very difficult to travel along road by bus & light vehicle. Drivers feel that maintenance cost of vehicle was very high before routine maintenance. So they were forced to increase the transportation cost than normal transportation cost. Due to the poor road condition, vehicle drivers from outside reject to travel on these roads. Nowadays, the transportation cost is reduced to normal transportation cost & vehicles users are also increased. The number of trips is also increased due to easy access of road.

5.1.6 Changes in Road condition

Before routine maintenance, the condition of rural roads are as follows:

Table 9 Changes in road condition

<i>S. N.</i>	<i>Road Name</i>	<i>Before</i>	<i>Additional notes</i>	<i>After</i>
1	Kalikasthan-Dhunge-Karmi Danda-Banuwa	Good	Road is passable by normal car.	All weather Road
2	Bogatirar-Simle-Bhorle-Parchyang	Good	Road is only passable by 4X4 bus and truck	All weather Road
3	Paribesi-Bhalayadada-Manigaun Road	Fair	Road is Impassable by 4X4 bus and truck	Good
4	Syaubari-Laukil-Doklang-Yarsa	Very Poor	Road is Impassable by 4 wheeled vehicle.	Road is passable by normal car.
5	Gatlang-Gre-Neshik-Haku Road	Very Poor	Road is Impassable by 4 wheeled vehicle.	Road is passable by normal car.
6	Jyanglang-Aledada-Lokil Road	Fair	Road is impassable by 4X4 bus and truck	All weather road
7	Lachyang-Nuwakot-Saramthali-Parchyang	Good	Road is Impassable by 4X4 bus and truck	Road is passable by normal car.
8	Lachyang-Nirkubhanjyang -Yarsa	Very Poor	Road is Impassable by 4 wheeled vehicle.	Road is passable by normal car.
9	Simle-Salimebhitta-Thulogaun-Dadagaun	Very Poor	Road is Impassable by 4 wheeled vehicle.	Road is passable by normal car.
10	Jipjive-Rupsepani-Bhaudaure-Dharapani	Poor	Road is Impassable by 4 wheeled vehicle.	All weather road
11	Aapchaur-Badahare-Chiti-Khalchet-Road	Fair	Road is Impassable by 4 wheeled vehicle.	All weather road
12	Dasmure-Setidevi Ma.Vi.-Rupsepani Road	Fair	Road is Impassable by 4 wheeled vehicle.	All weather road
13	Kalikastan-Jivjibe-Sarsyu	Fair	Road is passable by normal car.	Road is passable by normal car.

From the above table, we can see than only three roads among 13 roads are passable by normal car, but after routine maintenance it is noted that six roads are converted to all

weather roads. Similarly, six roads can passable by normal car. Remaining one road is in good condition from very poor condition.

5.1.7 Conversion of non- maintainable road to maintainable road

In the sense of maintainable & non-maintainable roads, by the routine maintenance, many maintainable roads are improved into all-weather roads. Besides few non-maintainable roads are also converted into maintainable condition through routine maintenance.

Table 10 Conversion of non- maintainable road to maintainable road

S.N.	Road Name	Before	After
1.	Dasmure-Setidevi Ma.Vi.-Rupsepani	Non- Maintainable	All weather road
2.	Lachyang- Nirkubhanjyang-Yarsa	Non- Maintainable	Maintainable & Road is passable by normal car.
3.	Simle-Salimebhitta- Thulogaun-Dadagaun	Non- Maintainable	Maintainable & Road is passable by normal car.
4.	Gatlang-Gre-Neshik- Haku Road	Non- Maintainable	Maintainable & Road is passable by normal car.
5.	Paribesi-Bhalayadada- Manigaun Road	Non- Maintainable	Maintainable & Road is passable by normal car.
6.	Syubari-Laukil- Doklang-Yarsa	Non- Maintainable	Maintainable & Road is passable by normal car.
7.	Lingling-Pelko- Briddhim Road	Non- Maintainable	Maintainable & Road is passable by normal car.

From the above table, it is noted that one non-maintainable road is totally converted to all weather road after continuous routine maintenance of road. After the improvement of this Dasmure-Setidevi Ma. Vi-Rupsepani Agriculture Road, it is also decided for periodic maintenance of this road for better improvement of road.

Similary, another six non-maintainable roads are converted to maintainable roads & Roads are passable by normal cars. These roads are specially used for the reconstruction of residential buildings. Befere routine maitenance in 2104, it is rarely reached the

vehicles to the end point of the road due to the difficulties on the road. Now a lot of vehicles move on these road smoothly. Local Road user committees are trying for local public transportation for public people.

5.1.8 Development of Market Center

After the routine maintenance work of rural roads of Rasuwa, all the rural roads are motarable during September to June, to the Kalikasthan area, which lies at the Pasang Lhamu highway. As the district headquarter lies at Dhunche, which lies upper part of Rasuwa, Kalikasthan area is developed as market centre due to easy access. All the rural roads of lower belt is connected to the Kalikasthan Area.

Before 2014, there is only one bank of Class "C" type i.e. ICFC Bank at Kalikasthan area. After the development of rural roads & easy access to Kalikasthan area, following Banks are established.

Table 11 Additional Bank List after Development

S.N.	Bank Name
1.	Janata Bank Limited, Kalikasthan Branch
2.	Rastriya Banijya Bank, Extension Counter
3.	Vibor Society Development Bank Limited, Kalikasthan Branch
4.	Lumbini Development Bank, Kalikasthan Branch
5.	Prime Bank Ltd, Kalikasthan Branch

5.1.9 Additional Local Transportation Vehicle:

Before routine maintenance roads, local transportation are availabe in 3 roads only.

1. Kalikasthan-Dhunge-Karmidada Road through out road from Ktm
2. Bogatitar-Simle-Bhorle Road upto Bhorle Bus Park
3. Kalikasthan-Jivjive-Sarsyuu Road upto Sarsyuu Bus Park

After the routine maintenance since 2014, other rural roads have also easy access. Local people have demand of pubic transportation after the development of rural roads. Addressing the public demand, some bus routes are extended to new destinations as well as some public transportations are added in some rural roads. The following table shows the recent public transportation available rural roads.

Table 12 Current Local Transportaion

S.N.	Name of Rural Road	Access upto
1.	Kalikaasthan-Dhunge-Karmidada Road	Ktm to along this road daily.
2.	Bogatitar-Simle-Bhorle Parchayang Road	Upto Parchyang daily
3.	Kalikaasthan-Jivjive-Sarsyuu Road	Sarsyuu Buspark from Ktm daily
4.	Lachyang-Saramthali-Parchyang Road	Ktm to Parchayang daily
5.	Jivjive-Rupsepani-Dharapani Road	Trishuli to Jivjive daily
6.	Dasmure-Setidevi-Dhuseni Road	Trishuli to Dhuseni daily

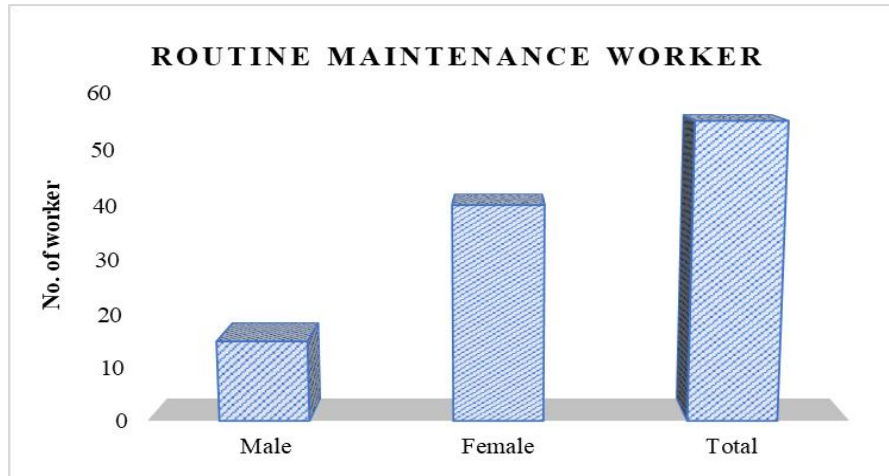
5.2 Socio-Ecomomic Change of Routine Maintenance Workers

The Socio-economic changes of Routine maintenance Workers is found out from the data collection available from the questionnaire survey. Data were entried in excel format & studied deeply as per our research requirements. From those data, socio-economic data were analyzed as per the requirement of research purpose.

The socio economic changes were based on questionnaire surevey of 55 routine maintenance workers.

5.2.1 Ratio of Male /Female

Among 55 routine maintenance workers, 15 nos. are male & 40 nos. are female. From this data, it is observed that more than 70% routine maintenance workers are female. The female routine maintenance workers feel proud on the maintenance work of rural roads. They also seem that they can also earn money.

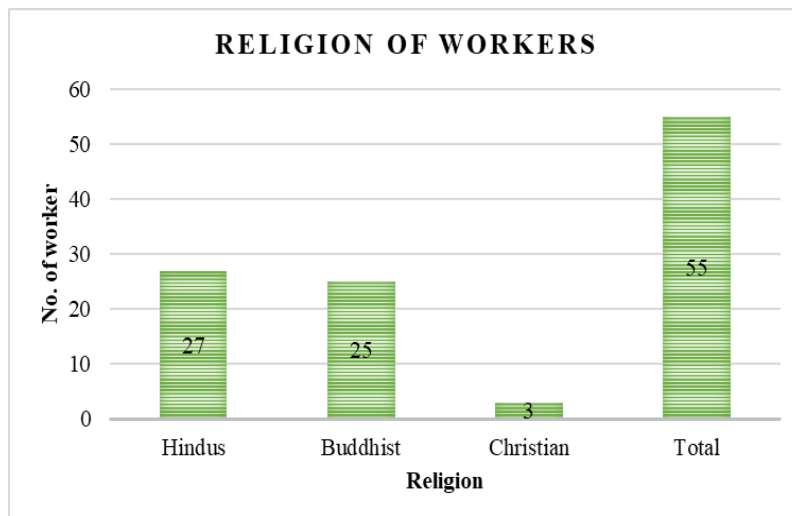


5.2.2 Equal Wage:

The wage of routine maintenance workers is equal for all. Wage of male & female is not different. Hence, female routine workers feel proud as they can also contribute as male routine maintenance worker.

5.2.3 Religion:

Among 55 routine maintenance workers, 25 nos. are buddhist, 27 nos. are hindus & 3 nos. are christain. From this data, it is observed that 50% of routine maintenance workers are hindus, 45% of routine maintenance workers are buddhist & 5% are christain.



5.2.4 Caste/Ethnicity:

Among 55 routine maintenance workers, 40 nos. are from tamang community, 4 nos. from Dalit community, 8 nos. from Bhramin Community, 2 nos. from chhetri community and 1 from Newar community. From this data it is observed that more than 72% routine maintenance workers are from Tamang community, 15 % from Bhramin community, 7% from Dalit community, 4 % from Chhetri community & 2% from Newar community.

5.2.5 Agricultural Product

The agricultural product obtained from their land to sustain their life in time period month is as follows which is studied from the questionnaire survey is as follows:

Table 13 Agricultural Product of RMG

S.N.	Month sustain from Agricultural product	No. of Household	Percentage
1.	No agriculture land	1	1.8
2.	1 month	3	5.5
3.	2 month	6	10.9
4.	3 month	23	41.8
5.	4 month	3	5.5
6.	5 month	3	5.5
7.	6 month	12	21.8
8.	8 month	4	7.3

From the above table it is seen that none of the routine maintenance workers have sufficient agricultural products for 12 months. Among 55 routine maintenance workers, 1.8 percentage have no land for agriculture whereas about 42 % routine maintenance workers have agricultural products for 3 month only. About 22 % have agricultural products for 6 months & only 7.3% have agricultural products for 8 months. About 11% have agricultural products for 4-5 months & about 16% have agricultural products for 1-2 months only.

5.2.6 Family Type

Among 55 routine maintenance workers family, 15 nos. of routine maintenance workers family stays in joint family with 6 to 10 numbers of family members. 40 nos. of routine maintenance workers are in Nuclear family with 2 to 7 number of family members. It is observed that 27 percent of routine maintenance workers are from Joint family & 73 percent are from Nuclear family. It shows that less than one third is in joint family & more than two third is in Nuclear family. From these data it is analyzed that people are enjoying Nuclear family rather than Joint family.

5.2.7 Family Size:

Among 55 routine maintenance workers, the family size with numbers of family members are as follows:

Table 14 Family Size of RMG

S.N.	Numbers of family members	Nos. of Routine Maintenance Workers
1.	2 family members	1
2.	3 family members	5
3.	4 family members	7
4.	5 family members	18
5.	6 family members	9
6.	7 family members	5
7.	8 family members	7
8.	9 family members	2
9.	10 family members	1

From the above table, it is observed that average family members of routine maintenance workers is 5.

5.2.8 Academic Qualification

Generally, it is not required academic qualification for routine maintenance workers howerve the academic qualification of routine maintenance is studied as follows:

Table 15 Academic Qualification of RMG

S.N.	Academic Qualification	Nos.
1.	Below Class 5	44
2.	Class 5	8
3.	Above class 10	3

From the above table it is observed that 80% of routine maintenance workers's academic qualification is below class 5 i.e. just read & write where as 14.5% routine maintenance workers had studied up to class 5. Only 5.5% routine maintenance workers had studied above class 10. From this data, we can analyze that most of the people below class 5 are attracted to the job of routine maintenance worker & people having above class 10 are less attracted to the job.

5.2.9 Animal Husbandry:

Out of 55 routine maintenance workers, 48 nos. of routine maintenance workers have animal husbandry of goat, ox, buffalo, cow, hen etc. It shows that 87 percent of routine maintenance workers have different animals of animal husbandry. Among them, only one routine maintenance worker have more than 20 goats & six routine maintenance workers are engaged in poultry farm. It shows that only 13 percent routine maintenance workers have animal husbandry in the form of business.

5.2.10 Insurance & Regular Health Check up:

In routine maintenance, it is mandatory to do their medical check up before joining the job because the insurance of all the routine maintenance workers are done by District Technical Office. The amount of insurance is Nrs. 5 Lakh per routine maintenance worker. This insurance is done for each and renew in the start of fiscal year for the period of one year. During renew the routine maintenance contract in every six months, it is compulsory to submit their medical report. Health checkup are done in free of cost from

the local health posts & received the medical reports. Regular health checkup is done whether routine maintenance workers are affected by any diseases due to the impact of routine maintenance impact.

5.2.11 Income status

Among 55 routine maintenance worker, the income level status is as follows:

Table 16: Income Level of RMG

S.N.	Income	Number of Households				Business
		Agriculture	Wage	Service	Skill	
1	Less than 5000	1	0	33	43	34
2	5001-10000	9	0	13	9	8
3	10001-20000	23	55	4	3	5
4	20001-30000	6	0	2	0	1
5	30001-40000	12	0	3	0	6
6	40001-50000	4	0	0	0	1
7	50001-above	0	0	0	0	0

From the above table, it is observed that 42% of RMG have income level from agriculture in range 10001-20000, 100% RMG wage in the range of 10001-20000 and 60% RMG have income level through service less than 5000. Similarly, about 78% RMG have income level less than 5000 from skill & 62% RMG have income level less than 5000 through business.

About 22% of RMG have income level 30001-40000 through agriculture, 5.5% RMG have income level 30001-40000 through service, 5.5% RMG have income level 10001-20000 through skill & 11% RMG have income level 30001-40000 through business.

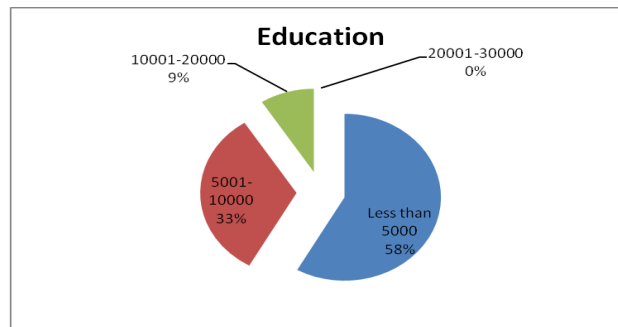
From the above table, it can be analyzed that most RMG family depend on agricultural product & wage through routine workers job. Only about 25% RMG have income from Service, Skill & Business.

5.2.12 Monthly Expenditure

The monthly expenditure of RMG is given in table below.

Table 17: Monthly Expenditure of RMG

S.N.	Expenditure	Education	Fooding	Clothing	Festival
1	Less than 5000	32	0	37	33
2	5001-10000	18	51	18	22
3	10001-20000	5	4	0	0
4	20001-30000	0	0	0	0



Expenditure in Education: About 58% RMG spend less than 5000 in education, 33% RMG spend 5001-10000 & 9% RMG spend 10001-20000 in education.

About 93% RMG spend 5001-1000 per month for food & 7% RMG spend 10001-20000 per month for food.

Similarly, about 67% RMG spend less than 5000 per month in clothing and about 33% RMG spend 5001-10000 per month in clothing.

About 60% RMG spend less than 5000 per month in festival where as 40% spend 5001-10000 per month in festival. The monthly expenditure in festival is calculated from the yearly expenditure of festival & converted in monthly wise expenditure.

5.2.13. Monthly Saving

Routine maintenance workers had monthly saving from the beginning of their job. They had saved money in local community, finance, local groups & saharis. From the questionnaire survey it is found that Routine maintenance workers save money from Rs. 100 to Rs. 6000 per month. The saving status is as follows:

Table 18: Monthly Saving of RMG

S.N.	Saving Amount (Nrs.)	No. of RMG
1.	100 to 500	8
2.	500-1000	26
3.	1001-2500	11
4.	2501-4000	6
5.	> 4001	4

From the above table, 13% RMG save 100-500, 50% RMG save Nrs. 500-1000, 20% RMG save 1001-2500, 10% RMG save 2501-4000 & 7% RMG save more than 4001.

5.2.14 Success Stories of Routine Maintenance Workers

During questionnaire survey, some success stories of routine maintenance workers is collected during research period. Among those collected success stories, two best success stories is included as below:

5.2.16.1 Struggle of Distress Women
Status of beneficiary before intervention by routine maintenance programme
<p>36 years Old Ms. Kumari Gurung belong to ward no. 5 of Thulogaun VDC. There were five members in her family, her husband, 10 years old son & two daughters. Their agriculture products sustain 4 months only. Her husband engaged on local labour work. On animal husbandry, they have one buffalo & one goat. Her husband is taking full responsibility of their family. Her three children are studying in school. They were happy in their family.</p> <p>On earthquake of 25 April, 2015, her husband & 10 years old son died during collapsed of their own home. Ms. Kumari Guring had great shock of losing his husband & 10 years old son. Besides she become homeless & she had the full responsibility of two small daughters.</p>
Effort/Support provided by SNRTP
<p>As highly earthquake victims, she was selected as routine maintenance worker in " Cash for Work Program". She started to earn Nrs. 10,920 per month. This income made her certain relief for the education of her daughters as well as fooding & clothing.</p> <p>As soon as "Cash for Work Program" was terminated, she was again selected as routine maintenance worker in Simle-Salimebhitta-Thulogaun-Dadagaun Road. Through SNRTP program, she is involved in routine maintenance of road.</p>
Present Status of beneficiary (Changed/result of beneficiary after intervention by SNRTP)
<p>Nowadays she is earning Nrs. 14,000 per month & handling her family. Her two small daughters are studying in school. She is saving certain money for future. Recently she built the temporary shed for living & small cowshed for animal husbandry. She got the great financial support on her life. She is managing the education of her children as well as fooding & clothing.</p> <p>Besides she is managing the animal husbandry with one Buffalo & few goats. Animal husbandry is her source of livelihood. She thought that SNRTP Program is the god gift for her & her future plan is to give the higher secondary education to her daughters so that her daughters would not face the the struggling for life as she is facing.</p>

5.2.16.2 Story of Women
Status of beneficiary before intervention by routine maintenance programme
<p>31 years old Mrs. Laxmi Paudel is from ward no. 9, Bhorle VDC at Rasuwa. Her husband is missing since 11 years ago. She spent a lot of time to search her husband & yet unknown. She has two children i.e. one son & one daughter.</p> <p>During the birth of her daughter, she had to stay in ICU being critical delivery. For that treatment, she took 1.5 lakh loan at the interest of 18% from the women's group at VDC. She had one ropani land which hold about 2 month only. She had some goats which support her life.</p> <p>During earthquake, her house totally collapsed & become homeless.</p>
Effort/Support provided by SNRTP
<p>Mrs. poudel is working as routine maintenance worker in Jivjibe-Bhaudaure-Rupsepani-Dharapani Road through SNRTP since 5 January, 2015. Initially, she earned Nrs. 9100 per month & nowadays earning Nrs.10920 per month. From this income, she is paying loan in installment with 18% interest as well as the education of her children & fooding too.</p> <p>During supervision, she is found quite discipline & follows rules & regulations. She fully debuted on routine maintenance. Hence, she is nominated as the best routine maintenance worker.</p> <p>This job made her great financial support. She is the only job holder in the family & her two children are studying in school. She seems quite happy with this job.</p>
Present Status of beneficiary (Changed/result of beneficiary after intervention by SNRTP)
<p>She was paying the loan monthly & reduced the loan highly during 19 month period. By reducing her loan, she got great relief and nowadays she is saving Nrs. 1200 per month. Her income is the main source of the family. Recently she had reconstructed her residential building after earthquake with the support of earthquake victim's support, earning money from routine maintenance workers & certain loan from the bank.</p> <p>She had increased some goats as her children are also supporting on animal husbandry before school time. This animal husbandry is livelihood. Her future plan is to build her house & give education of her children. She felt that the job provided by the SNRTP as god. Before joining the job, she was taken as unsupportable sad women. Due to her patience on routine maintenance work, nowadays she was given high respect in the society. She is taken as the example of women empowerment in the society.</p>

CHAPTER-SIX

6. SUMMARY, CONCLUSION AND RECOMMENDATION

6.1 Summary:

After the routine maintenance of rural road, there is drastically changed in rural roads. Initially rural roads were made by local governments but never maintained properly. The culture of maintenance is developed by routine maintenance of rural roads. A lot of maintenance activities are done during routine maintenance such as creation of earthen drain, proper water management, filling rills & ruts, maintain road surface, creation of water bar, clearing bushes etc. These routine activities made smooth and regular development of rural road. Once the local body open the rural road, no maintenance occurred on those roads. Those rural roads were found non maintainable & non functional. By routine maintenance activities by Routine Maintenance Group, it is found that such non maintainable rural roads were converted into maintainable rural roads as well as functional roads. Routine maintenance made the road functional with minimum cost. Routine maintenance also made water management properly even in earthen drain during rainy season. Clearing of longitudinal drains and clearing cross-drainage works to allow free passage of water on rural roads made the rural roads all weather roads.

Routine maintenance also cover the emergency maintenance works for opening the regular traffic in rural roads. For the landslide protection, bio-engineering activities is also done by Routine maintenance Group. A lot of hazardous landslide prone area in Rasuwa district is protected by bio engineering activities. Grass & bush clearing around the drain as well as cutting branches of trees etc obstructing flow of traffic & line of sight in rural roads increases the beauty of rural roads. Repair, fill and compact potholes, depressions and ruts in earthen rural road made the road surface smooth.

It is summarized that routine maintenance is one efficient & effective tools for the development of rural roads with low cost using local resources & providing jobs.

6.2 Conclusion:

From this research, it is concluded that socio-economic growth & proper development of rural roads are the major output of routine maintenance.

6.2.1 Proper development of rural roads

- Routine maintenance is one effective method to provide all-weather rural road access to all parts of district with minimum cost.
- Routine maintenance provides easy access from local areas to services areas & local market centres.
- Routine maintenance converts non maintainable rural roads into maintainable rural roads & fair weather roads to all weather roads.
- Routine maintenance do minor repairs to drain structures and retaining/protection structures which makes the strength of rural roads.
- Routine maintenance decreases the cost of maintenance cost of rural roads.

6.2.2 Socio-economic growth

- Through routine maintenance, a lot of local people get decent jobs in rural areas as routine maintenance workers, that makes the promoting economic growth of local people.
- Routine maintenance provides access to services areas. Due to proper maintenance, vehicle users are increased & local people can easily sales their products to the market center. Local people increases their income by selling their local products in huge amount. They are involved on commercial agricultural products as well as animal husbandary products.
- Through the easy access of service areas through routine maintenance, a lot of economic activities also increased in rural areas. For example increases in the number of shops, increases in the construction of buildings & increase in the price of land.
- Through routine maintenance, mobility increases through local buses, private vehicles & motorbikes. The number of foreigners & local tourist increases to their local religion centre & caves. This activity also increases the economic growth.

6.3 Recommendation:

Through routine maintenance of rural roads, a lot of rural road development activities were developed directly & indirectly. Following recommendations are listed as follows:

- Routine maintenance is one effective tool of development of rural roads. Hence, this type of maintenance should be done regularly.
- Routine maintenance helps to expand local service areas. It promotes local business. Thus, routine maintenance should cover all the rural roads of the district.
- Routine maintenance converts non-maintainable roads to maintainable roads. Thus, routine maintenance should be done in new tracks also.
- Routine maintenance decreases the maintenance cost of rural roads. Hence, the remaining cost should be utilized for the construction of structures of roads.
- Routine maintenance also promotes local market products. Hence, a lot of local products should be done commercially in order to promote their economic growth.
- Routine maintenance also promotes tourism. As there are a lot of historical temples & caves in rural areas, it is recommended to start routine maintenance of rural roads connecting all tourist areas.

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APPENDIX-I

Questionnaire on Socio-economic change of Routine Maintenance workers : (A case study of Rasuwa District)

1. Name of Routine Maintenance Worker:-

Age: -

Sex: -

Educational status:-

Marital Status: -

Caste/Ethnicity: -

Religion:-

2. Family Background: -

S.No.	Age Group	Male	Female	Total
1.	0-5			
2.	5 to 15			
3.	16 to 60			
4.	60 and above			

3. Educational Attainment:-

S.No.	Age group	Male		Female		Total	
		Literate	Illiterate	Literate	Illiterate	Literate	Illiterate
1.	5 to 16						
2.	16 to 60						
3.	>60 years						

4. Sources of drinking water?

(a) Private Tap water

(b) Public Tap Water

(c) Well

(d) Others

5. System of Medical treatment.

(a) Hospital

(b) Traditional Medicine

(c) Both

6. Do you go to the health center/ health worker?

(a) Yes

(b) No

7. Number of family member

(a) Smoking.....

(b) Drinking alcohol.....

8. In which family do you live?

(a) Nuclear

(b) Joint

9. What is your major occupation?

S.No.	Particular	Primary	Secondary
1.	Farming		
2.	Fishery		
3.	Wage labors		
4.	Animal husbandry		
5.	Servant		
6.	weaving mates and ropes		
7.	Others		

10. Type of house.

(a) Modern

(b) Traditional

11. Which treatment pattern do you take?

(a) Guruwa

(b) Health Centre

(c) Both

12. What type of toilet do you have?

(a) Permanent

(b) Temporary

(c) None

13. Do you participate in local Politics?

(a) Participate

(b) Not participate

14. What is your main language?

.....

15. What is your Secondary Occupation?

.....

16. Do you have your own land?

(a) Yes

(b) No

17. How much land do you possess?

(a) Landless

(b) 0.1-10 Ropainies

(c) 11-20 Ropainies

(d) 21 and above Ropainies

18. Types of Land.

.....

19. Food Sufficiency.

(a) 3 months

(b) 6 months

(c) 9 months

(d) 12 months

(e) Excessive

20. What are your alternative sources of food?

.....

21. Livestock information:

S. No.	Types	Own	Sharing basis	Total
1.	Cow ,oxen			
2.	Buffalo			
3.	Goat			
4.	hen, ducks			
5.	Pig, wild bore			
6.	Others			

22. Do you think it is compulsory to send your children to school?

(a) Yes

(b) No

23. Income Level:

Income in R.S	Numbers of households				
	Agriculture	Wage	Service	Skill	Business
Less than 5000					
5001-10000					
10001-20000					
20001-30000					
30001-40000					
40001-50000					
50001-above					

24. Suggestions (If Any)

.....

APPENDIX- II
Some Photographs during Road Condition (Before Routine Maintenance)



Erosion of road surface



Erosion of road surface



Gully formation in the road surface



Landslide at left side of road



Drain at Left Side of Road	Erosion of road surface
	
Scoring of road side due to water flow	Scoring of road side at right side
	
Scouring of road surface by water	Movement of people along the road
	
80% road width slide down at R/S	Condition of road
	
Erosion of the road surface	Landslide along the road surface

APPENDIX-III

Some Photographs of RMG Working at Site under Routine Maintenance

	
RMG working at Site	RMG making preparation for Drain
	
RMG creating Earthen Drain	RMG Creating Earthen Drain
	
RMG filling rills & ruts	RMG maintaining shoulder
	
RMG maintaining road surface	RMG filling rills & ruts

APPENDIX-IV
Some Photographs of Routine Maintenance (Before & After)

Before	After
	
	
	