

PROJECT INFORMATION

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EXECUTIVE SUMMARY

The IUDP project has been executed by Department of Urban Development and Building Construction, Ministry of Urban Development, Government of Nepal. Nalagad municipality of Jajarkot district in the Karnali Province (Province No. 6) is also one of the project areas of IUDP where it is expected to contribute overall development of the municipality in the long-run. The project comprises various aspects of urban planning and analysis by incorporating multi-sectoral issues of development, which includes physical, social, economic, financial, environmental and institutional. The project is the comprehensive analysis of regional attributes, local needs and aspirations, urban services and future prospects of this municipality for the subsequent 5, 10 and 15 Years. The rationality and scope of the project thus lies in the new context of state-restructuring and urban planning.

Methodological approach: Both the qualitative and quantitative nature of data have been used from primary and secondary sources. The process includes three sub-sequent phases: a) literature review and desk study; b) field study and primary data collection; and c) analysis and planning. The data collection tools include participatory rapid appraisal (PRA) and focused group discussions (FGDs), key informant interviews (KIIs), and questionnaire survey. These tools were mutually adopted and endorsed into the field along with Induction workshop, SWOT analysis, discussion of vision setting and ward analysis. The field analysis then includes sectoral workshop and consultation, linkage analysis, trend analysis, spatial analysis, gap analysis which further proceeded with preparation of development plans as per the given ToR.

Opportunities and Challenges: In the new federal context of state-restructuring, recently elected local government after a long political turmoil has been a great opportunity for Nalagad municipality. Abundant of natural resources in the municipality to foster socio-economic development is the most potential opportunity for overall development in the long run. However, apart from these opportunities, there are some challenges in the municipality. The challenges include: increasing out-migration trends; haphazard settlement and absence of land use plan; lack of urban scale health and educational institutions; low availability of recreational activities/ services, and institutional problems related to capacity building and infrastructural development of the municipality in the changing context of local development and federal set-up. Hilly remote topography, low transportation connectivity, low development indices and weaker market linkages are the most challenging aspects of economic development of this municipality in the changing context of local development and federal set-up.

Long-term vision setting: From the analysis of different opportunities and possible threats along with the subsequent discussions of municipal stakeholders, the planners have concluded the lead sectors of Nalagad municipality as: 1) Health and education; 2) Agriculture; and 3) Tourism; 4) Infrastructure; and 5) Industry. Though remaining far from the mainstream development of the country, this Municipality bears a huge potentiality in development in future. Making a long term vision— **समृद्ध र सफा नगर : दिगो बिकास र सुसासनको लहर**— “prosperous and peaceful city; a wave of sustainable development and good

governance”—it truly clarifies that the municipality wants to promote sustainable development with good governance.

Trend Analysis:

The consultants studied the trend analysis of the municipality which includes the review of prepared maps and other information which gives historical development pattern in three sub-subsequent points of time, i.e. 2004, 2011 and 2018. The trend has been analyzed in terms of settlement structure, and changes in forest coverage, land use, cultivation, and water bodies. The settlement area is also increased by 0.03% in 9 years' period. There is minimum increase in the settlement area. Similarly, cultivation land is decreased by 0.008% from 2004 to 2011 and again increased by 0.063% from 2011 to 2018. Following this, the percentage of land covered by forest in 2004, 2011 and 2018 are 25.868%, 26.108% and 26.540% respectively. There is a nominal (i.e. 0.672%) increment in the forest area from 2004 to 2018. Similarly, water body in the municipality is decreased by 0.023% from 2004 to 2017.

Ward analysis:

Some of the observed information and views collected from the local people and from different focused group discussion are placed in the ward analysis. It was conducted in every wards, and there was a set of ten criteria for the analysis. The ranking (A, B and C) was compared with the number (0-13 for this municipality) in the cumulative frequency assigned for each criteria in each wards. The ward analysis of Nalagad municipality shows that the wards having 'C' ranking (i.e. 2, 7, 11 and 12) are the most developed wards in comparison to other wards. As the wards 1 and 6 fall to the category of "A", it shows that they lacked basic infrastructural services and urban facilities to the greater extent. Then after, ward 3, 4, 5, 8, 9, 10 and 13 have low facilities as having grade "B" with intermediate level of development status. The wards with the ranking 'A' should be prioritized first in development plans which then should be followed for categories of 'B' and 'C'.

Spatial analysis:

The spatial analysis has been one of the important outcomes of this project for this project. The planners have endorsed different analytical components to make a comprehensive spatial analysis. This include:

Easy Accessibility Analysis: Accessibility analysis has been done bringing together all aspects of transport system as per distribution of population and road network along with spatial distribution of various infrastructures such as education facilities, health facilities, market places etc. in different land zoning.

Linkage Analysis: Linkage analysis of the municipality indicates adjacency of the municipality with its hinterlands in terms of social mobility and movement of goods, services and people in and out involving both inter and intra regional perspectives.

Site Suitability Analysis: The demand for new residential areas in the municipality is rapidly increasing because of increasing population, migration and urbanization. The identified suitable settlement sites can be delineated on map, which shows the spatial distribution of topographically suitable and safe, climatically pleasant and environment friendly area for settlement, based on topographical, hydrological and environmental data. Similarly, flood & drought susceptibility analysis, forest fire

analysis, stream order analysis, buffer analysis, Population served analysis have been also included to compliment the spatial analysis.

Gap analysis: On the basis of infrastructure and necessities, a demand analysis has been also included involving the parameters of population size, space requirement, and road types, etc. as defined by Planning Norms and Standard 2013. The gap of infrastructures between existing scenario and planning norms is studied which helps further for the planning of the municipality.

Multi-Sectoral Investment Plan (MSIP): Among all the development plans proposed with the IUDP in this municipality, the MSIP has been a summarization of detail projects and investment attributes for different years both in short term and long-term. It comprises specific investment plan with respect to defined sectoral goals, objectives, strategies and activities to fulfil the long-term vision of the municipality. In total, the projected MSIP budget for 15 years in this municipality is NPR 46556.53 million, which has been allocated for different plans and sectors. For completion of most of the strategic projects, time frame ranges from 1-5 years to maximum time frame of 1-15 years particularly for physical infrastructures.

Detail engineering design of prioritized Major Projects: With consultation of local stakeholders and municipal representatives, Detail Engineering Design of two projects has been recommended from two different sectors. They were selected among the prioritized list of different projects. The selection of two projects and their detail project reports (DPRs) has been made out of the different project lists in the municipality which were then analyzed on the basis of criteria provided by the DUDBC. The recommended DPRs in this municipality are: a) DPR-I (Road); and b) DPR-II (Multi-purpose municipal building). Each of the proposed DPRs contained a detail drawing, design calculation and cost estimation. These prioritized projects along with DPRs have been submitted to DUDBC in different Volumes (III and IV) and in the main report as well (Volume I).

Chapter outline:

Chapter 1 introduces the project “Integrated Urban Development Plan” with its goal and objectives, scope; and expected outputs.

Chapter 2 presents the brief summary of literature review reflecting global trends and national policies and practices on urban planning from the perspective of IUDP.

Chapter 3 provides the detail process of methodology involving data collection and analysis tools and techniques.

Chapter 4 provides municipal profile of Nalagad municipality in detail, comprising different dimensions of socio-economic, physical, institutional, land use, environmental and existing livelihood conditions.

Chapter 5 provides the critical analysis of the existing situation using various analytic tools and forecast a future need base demand by discussing Trend analysis, SWOT analysis, Ward analysis, and Spatial analysis.

Chapter 6 presents the thematic urban plans along with Logical Framework Analysis (LFA), viz. Physical Development Plan, Economic Development Plan, Financial Development Plan, Social Development Plan, Culture and Tourism Development Plan, Institutional Development Plan Environmental Management Plan, Disaster Risk Reduction Plan, Climate Change Adaptation Plan, and Multi-Sectoral Investment Plan (MSIP).

Chapter 7 concludes the report of IUDP project (Vol. I) with final remarks and summarization along with the informed recommendations.

ACRONYMS/ABBREVIATIONS

BOOT	Built Operate Own & Transfer
CBD	Central Business District
CBO	Community Based Organization
CBS	Central Bureau of Statistics
CC	Climate Change
CSO	Civil Society Organization
DDC	District Development Committee
DCCO	District Coordination Committee Office
DOR	Department of Road
DPP	District Periodic Plan
DPR	Detailed Project Report
DTMP	District Transport Master Plan
DTO	District Transport Office
DUDBC	Department of Urban Development and Building Construction
EIA	Environmental Impact Assessment
EZ	Economic Zone
FAR	Floor Area Ratio
FGD	Focused Group Discussion
FNCCI	Federation of Nepalese Council of Commerce and Industries
FUG	Forest User Group
GDP	Gross Domestic Product
GESI	Gender Equity and Social Inclusion
GIS	Geographic Information System
GON	Government of Nepal
GPS	Global Positioning System
IAP	Integrated Action Plan
IDP	Integrated Development Plan
IEE	Initial Environment Examination
INGO	International Non-Governmental Organization
IT	Information Technology
IUDP	Integrated Urban Development Project
LSGA	Local Self Governance Act
MHH	Mid Hill Highway
MoFALD	Ministry of Federal Affairs and Local Development
MoFAGA	Ministry of Federal Affairs and General Administration
MoUD	Ministry of Urban Development
MSIP	Multi-sectorial Investment Plan
NBC	Nepal Building Code
NGO	Non-Governmental Organization
NPC	National Planning Commission
NMD	Poverty Mapping of District
NT	New Town
NTPCO	New Town Project Coordination Office

PDP	Periodic Development Plan
PPP	Public Private Partnership
PRA	Participatory Rural Appraisal
QA	Quality Assurance
QMAS	Quality Management cum Assurance System
SWOT	Strength Weakness Opportunity & Threat
TDC	Tole Development Committee
TDO	Tole Development Organization
ToR	Terms of Reference
UN	United Nation
USD	United States Dollar
WUC	Water User Committee

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1 CHAPTER I: PROJECT BACKGROUND

1.1 Introduction

The world is undergoing the largest wave of urban growth in history, particularly since 1950s that accelerated further after 2000s. As per the estimation of UN agencies, more than half of the world's population now lives in towns and cities, and by 2030 this number will swell to about 5 billion. Much of this urbanization will unfold in Africa and Asia, bringing huge social, economic and environmental transformations (UNDESA, 2018). Nepal is one of the ten least urbanized countries in the world. However, it is also one of the top ten fastest urbanizing countries. In 2014, the level of urbanization was 18.2 per cent, with an urban population of 5,130,000, and a rate of urbanization of 3 percent. A simple projection is that for the period 2014-2050, Nepal will remain amongst the top ten fastest urbanizing countries in the world with a projected annual urbanization rate of 1.9 percent (UNDESA, 2014), which now switches around 60 percent urban population in recent years after the federal set-up in the country

Keeping in view of this context, the Government of Nepal has already enacted and has been implementing National Urban Policy since 2007. The policy is conspicuous by prioritizing investment to the lagging regions of the country, while fostering development of regional cities and intermediate towns as well. Therefore, with an objective with and objective of reducing migration to capital and other larger cities, encouraging planned development of potential hill cities and building infrastructures that can facilitate about one thousand populations in hilly cities. With the promulgation of new constitution of Nepal in September 2015, there has been subsequent changing in the local level unites in the federal context. The Constitution has provisioned a three-tier of government: federal at the centre, provincial at the meso-level and the local at the bottom (Art. 56, Part 5). The elections of all levels were held in 2017. Before that, the government of Nepal has set up 753 local units replacing old municipalities and Village Development Committees (VDCs). There are 460 rural municipalities and 293 municipalities, including 276 urban municipalities, 11 sub-metropolitan cities and 6-metropolitan cities in different parts of country. However, as a Nepal is experiencing a new political system of federalism, it is yet to be equipped with appropriate Acts and policies to foster the spirit of development and constitution at large.

Nepal's urban areas have the potential to drive economic growth to the benefit of the entire country. Form the ancient hill towns in the west to the compact historic city cores of the Kathmandu valley, Nepal's urban settlements are rich in cultural heritage and located at mid-unparalleled natural beauty, the intangible heritage that flourishes in the cities – art, music, dance and elaborate public celebrations and religious observances – add vitality and meaning to build heritage , both tangible and intangible, can be a catalyst for urban revitalization by preserving city livability, and creating a wide range of income-earning opportunities, especially for the poor (The World Bank, 2013).

Whatever, Nepal has experienced some settlement planning attempts since 1944; the first city Rajbiraj was planned to resettle people from Hanuman Nagar. In 1956; first National Periodic Plan (Economic Development Plan) was originated. At present, 13th Plan is in implementation.

During 1960s, many people from hill and mountain (especially displaced from natural disaster, national parks etc.) were resettled in Tarai plains. In 1969, Preparation of Physical Development Plan of Kathmandu Valley was a turning point in urban planning sector of Nepal. After this, so many development plans of Kathmandu Valley were prepared but never implemented due lack of institutional and legal mechanism and financial resources. In 70s, Regional Development concept was initiated in Nepal; master plan of four regional headquarters (Dhankuta, Pokhara, Rolpa and Dipayal) was prepared and implemented in some extent. In the late 80s, structure plan of all designated urban centers was prepared. Similarly, IAP was popular in 1990s before the Local Self-Governance Act, enacted by government of Nepal.

In the changing context of federalism, the Local Governance Operation Act (2074 BS) is now operating in the local units. Moreover, as a long-term policy initiative, GoN is providing technical and financial supports to facilitate the integrated development plan (IDP) of the local units. Integrated Urban Development Project (IUDP) is highly prioritized policy approach adopted by Department of Urban Development and Building Construction (DUDBC), Ministry of Urban Development. Following this, the present report is based on the IUDP of Nalgad municipality, which lies in the Jajarkot district, Province No. 6.

1.2 Objectives

The main objective of the proposed assignment is to prepare Integrated Urban Development Plan including Building By-laws of Municipalities. The other objectives are as follows:

1. To set out Long-term Vision and overall Goal, Objectives and Strategies for Municipalities (for 15 years' period) defining the status of the municipality where it could stand after 15 years' period.
2. To prepare Physical development plan, Social, Cultural, Economic, Financial, and Institutional Development Plan; Environment Sensitive Plan, Urban Transportation Plan, Multi-Sectoral Investment Plan (MSIP) etc. on the basis of vision, objectives and strategies.
3. To prepare building By-laws to regulate development in the municipalities integrating Land Use and road network-plan and long-term vision of the municipalities.
4. To prepare Detail Engineering Design of prioritized 2 sub-projects in each municipality amounting not less than 30 crores for each project.

1.3 Scope of Work

The scope of consulting services for the preparation of Integrated Urban Development Plan is wider and comprehensive from all dimension, including legal, developmental, ownership of the local government, support of the federal governments, identification of the problems/ challenges, creation of base maps, formulation of different kinds of planning, preparation of DPR for most potential two projects, and so on:

- *Formulate state of vision of the municipality separately:* The overall vision of the municipality has included the desires of the municipality and their citizen and guided

with the principles. This vision has been also reflected in the subsequent development plans.

- *Study and formulate a detailed plan:* Different development plans as per the given ToR have been prepared on the basis of base data and consultation of local stakeholders for last 5 years and forecast for 5, 10 and 15 years.
- *Identify potential area for urban development based on land suitability and other factors:* This has been further followed with the analysis of present and future housing needs/market, stock, conditions and recommend strategies for land acquisition, distribution of land and housing in future.
- *Conduct studies on present and future (5, 10 and 15 years) demand in infrastructures:* It is carried out through a detailed institutional survey and public consultation regarding the different kinds of infrastructures, including transportation, communication, electricity, water supply and sewerage system /treatment plant, solid waste management, landfill site etc. Analysis of demand should be in different scenarios and aspects with facts and figures. Consultants have thus recommended major and minor roads, highways, arterial roads, traffic circulation, truck yard, bus bays and bus parks etc. The network plan of infrastructures, both existing and proposed have been also shown in the base map.
- *Conduct studies on existing social infrastructure;* including health, education, sports, communication, security center and other community facilities by addressing present deficiencies and future demands. The location and the requirement of land for all these infrastructures can be identified in base map.
- *Identify and assess critical, sensitive and other natural resources;* including parks, green belts, recreational area, along with strategies for their conservation and stewardship against the adverse impact of future development and land use changes. It shows location and helps in calculation of requirement of such resources.
- *Verify Government, Guthi and Public Land;* for future development and expansion of the urban areas including land required for government and public purposes. Moreover, preparation of appropriate plan and policies has been prepared to protect such land from private/public encroachment and others.
- *Proposed Land Use Plan policy;* for 15 years in the existing base map (plans) based on vision policy of the municipality.
- *Building and Planning By-laws;* is prepared for the construction of building and other infrastructures with land use zoning i.e.,
 - i. Residential zone
 - ii. Institutional zone
 - iii. Industrial zone

- iv. Preserved zone
 - v. Airport zone
 - vi. Recreation zone (sport, cinema theatre, swimming etc.)
 - vii. Urban expansion zone
 - viii. Stream/river banks zone
 - ix. Green zone
 - x. Apartment housing
 - xi. Petrol pump/Electric line/Cinema theatres and
 - xii. Mixed zone and others as per requirement.
- The planning and building By-laws include the following areas:
 - a) Minimum plot area
 - b) Minimum width of roads
 - c) Maximum ground coverage
 - d) Maximum floor ratio (FAR)
 - e) Maximum building height
 - f) Maximum no of floors
 - g) Right of way of roads
 - h) Setback in four sides of building
 - i) Minimum parking area
 - j) Lift (Elevator)
 - k) Minimum distance to be left on the both sides of stream/river
 - In accordance with the “Basti Bikas, Sahari Yojana tatha Bhawan Nirman Sambandhi Adharbhut Nirman Mapdanda, 2072”, the Building and Planning By-laws is prepared.
 - *Detailed engineering design*; prepared for at least 2 prioritized projects in each municipality, each projects should not be less than 30 crores.
 - *Executive summary of IUDP*; for each municipality in Nepali and English language is prepared for the purpose of approval from government of Nepal.

1.4 Expected Output

The complete Integrated Urban Development Plan includes the following output:

Municipality profile: An up to-date municipality profile has been prepared, comprising of base-line information of the existing physical, social, economic, demographic, environment, financial and organizational state of the municipality. Apart from the key statistics, such base line information has also included textual descriptions, maps, charts, diagram, and key problems prevailing in the settlements and the municipality.

Analysis: The Plan includes different types of analytical components. To mention:

- **Trend analysis:** The analysis has revealed among other things growth trend of population, migration, land use, infrastructure provisions, import-export of goods, agricultural outputs, jobs, and other economic opportunities of last 10 years.

- **SWOT analysis:** This reveals potentiality of the municipalities based on its strength and opportunities. The analysis shall also reveal the weaker side of the municipalities which tends to pose threat to the future development of the municipalities.
- **Spatial analysis:** The analysis clearly presents demand and supply situation of vacant land, besides including land develop-ability analysis. The analysis, therefore, shows the location where the future growth can be channelized.
- **Financial analysis:** The analysis reveals income potential (revenue and non-revenue) and financing sources including expenditure pattern of the municipalities for the past recent years and forecast for the future.
- **Municipal vision:** To make the vision operational, necessary development principles to guide the sectoral activities also need to be outlined. Vision and principles have been formulated in consultation with municipality/Municipal body, local stakeholders.
- **Sectoral goals, objectives, output & programs:** These plans are being formulated mainly using Logical Framework Approach (LFA), and supplemented by performance indicators by means of verification of such indicator as far as practicable. Sectors, which are required to be included are - environmental, social, economic development, disaster management, financial mobilization, and organization development. Such sectoral plans and programs may be formulated in consultation with municipality, local stakeholders and programs have to be prepared giving due attention to national concerns such as poverty reduction and social inclusion.

Long-term Physical Development Plan (PDP): Physical plan generally reveals the future desired urban form of the Municipality, keeping in view of planning horizon of 15 years and also classify the municipality land revealing broadly urban areas, urban expansion areas, natural resource areas and also calamity prone areas. Such physical plan would be separately supplemented by the relevant data and thematic maps of existing land use, environmentally sensitive areas, and infrastructure services such as road network with parking spaces, transportation, water supply and drainage system, sewerage network, solid waste management including landfill site, telecommunication network and electricity distribution network. A classification of the open space has also been justified within municipality areas. Plan should also be supplemented by social and economic data and thematic maps revealing the social and economic infrastructures of the Municipality. New concepts such low carbon city, food green city, garden city etc. have been also recommended wherever it is required.

Social Development Plan: Social development plan significantly contributes to bring qualitative improvement in the lives of the common people. Attention shall be given focus on social development program when social development program is getting priority in the present context. The plan has been under formulation on the basis of the analysis of social condition of municipal area. This essentially covers the following aspect:

- Education
- Public health
- Security (physical as well as social)
- Cultural and Sports

- Parks & open spaces
- Other urban social service centers (information, library, and space for social gathering, etc.)
- Others as per Municipality requirements

Conservation, Cultural & Tourism Development Plan: Cultural development plan significantly contributes to bring qualitative improvement in the conservation of local cultural heritage, art and architecture. Similarly, more attention should be given to the preservation of tangible and intangible cultures. Cultural planning has been integrated with other planning. This plan essentially covers the following aspect:

- Identification and preservation of important Cultural heritage sites within the Municipality
- Identification of specific non-material (in tangibles) cultures in the area
- Plan for conservation of both material and non-material cultures and linked them to tourism development plan
- Culture centre (local craft, paint, architecture, museum, culture exchange, exhibition, etc.)

Economic Development Plan: Economic development plan is based on the economic potentiality of the municipalities or we can add new features for its identity e.g. Sport city or IT City or Tourism City or Commercial city, Smart city etc. Such plan has covered the following aspect:

- Economic development plan: Areas of comparative advantage
- Industry development (as per comparative advantage of the municipality / hinterland): Trade promotion, Tourist development
- Employment generation, poverty reduction
- Regional competitiveness of the municipality
- Agricultural development (commercialization of agro-forestry products- cold storage, vegetable market, etc.)
- Rural urban linkage- strategic location of different market centre/ product collection centers
- Micro/small industry and business promotion
- Possible EZs based on local economic growth potentials (driving forces)
- Others as per municipality requirements

Financial Development plan: The following aspects are kept considered while formulation the financial plan:

- Analysis and projection of municipality's income and expenditure, revenue improvement action plan,
- Financial analysis and assessment of possible financial resources for the implementation of IUDP in the municipality.
- Allocation of development budget (for coming five year), cost sharing among sectoral agencies, and expenditure management action plan
- Promotional strategy of private sector and civil society (PPP)

- Financial and economic analysis of proposed prioritized projects. Other's as per municipality's requirements.

Institutional Development Plan: Human resources development plan and organizational development plan are the areas of the institutional development plan. Following factors have been considered in the formulation of institutional development plan.

- Decentralization, good governance and mobilization of people's participation
- Appropriate and optimum use of local skills,
- Review the existing human resources and propose the institutional setup to implement the IUDP,
- Institutional coordination and establishment of network,
- Organizational capacity and capacity building.

Building By-laws: The complete planning and building By-laws should be formulated with the overlay of cadastral map of the municipal area. This should be based on the municipal vision and objectives. This may cover following;

- General definition
- Zoning classification and By-laws/ regulations
- Implementation mechanism & procedures etc.

Multi-Sectoral Investment Plan (MSIP): The MSIP has revealed short and long-term programs/projects, tentative cost estimate, and probable financing sources prioritized in sequential manner for the planning period of each five years. Such programs/projects have catered to both the short-term, mid-term and long-term needs of the municipality and the wards, and should be consistent with the long-term development plan, sectoral goals and objectives, and the vision. Furthermore, MSIP has clearly revealed programs/projects for each fiscal year for the first five years. The municipal level plan/projects (Mega project) and the projects that could be implemented exclusively by municipality also should be clearly mentioned in MSIP. It is suggested that the plan/projects that have to be implemented by different line agency in MSIP, included after thoroughly consultation with the concern offices.

Detail Engineering Design of Prioritized Major Projects: In order to prepare reliable project banks for the recent execution of different projects in municipality, the project has prepared Detail Engineering Design of minimum 2 projects in different sector in each municipality. It has contained detail engineering and architectural design, detail cost estimate and BOQ. The prioritized projects were identified in consultation with concerned municipalities but with the rationale and discussed and approved by DUDBC. The cost estimate of each project has been above 30 crores. Soil test was also conducted for DPR project as per necessity. Necessary details engineering drawings have been accordingly submitted in separate volumes (as presented in Volume III-DPR 1, Sections A, B, C & D; Volume III-DPR 2, Sections A, B, C & D).

Urban Transportation Management Plan

The following parameters have been integrated with proposed land use plan:

- Road classification with right of way.
- Road network.
- Traffic management plan.
- Parking management.
- Road safety.

Preparation of Base Map

The Base map of the municipality has included (as also presented in Volume II):

- GIS based base map including: existing streets (with coding system), building footprints with building use, occupancy and general demographics based on the latest archive satellite image.
- Population density and growth rate
- Existing land use (housing, commercial, industrial, agricultural, natural, mixed use, *guthi* land, public space, squatted land...)
- Slope and watershed analysis.
- Transportation (roads with classification – national highways, feeder roads, district roads and urban roads (administrative classification), parking space, bus park, public transportation routes, frequencies and stops, airport and destinations)
- Water supply, sewerage system (sewerage network, discharge points, treatment plant if any).
- Solid waste (coverage of public and private collection system, formal and informal waste management sites, recycling points).
- Electricity (production and transportation infrastructure, grid power coverage, street lighting)
- Public services (health, education, police, rescue services, cemeteries, administrative services)
- Environment (erosion, pollution, forest, water bodies)
- Culture and tourism (temples, museums, cinemas, views, monuments, performance places, festival routes)

2 CHAPTER II: LITERATURE REVIEW

2.1 Urbanization in Nepal

According to the National Population Census 2011, the annual growth rate of population is 1.35 percent and the total population has recorded about 26.5 million with sex ratio 94.2 (CBS, 2018). The current population of Nepal is 29.80 million as of Monday, January 21, 2019, based on the latest United Nations Population Estimation Survey Reports. Nepal population is equivalent to 0.39% of the total world population, which is 7.71 billion in the same date. Nepal ranks number 49 in the list of countries by population.¹ Geographically, it is divided into, 7 Provinces and 77 districts, about 460 Rural Municipalities, 276 Municipalities, 11 sub-metropolitan Municipalities and 6 Metropolitan Municipalities.

Nepal having poverty-stricken rural countryside communities, local development and efficient public service delivery are the main agendas of development. The census 2011 estimates the population at which over 83% live in the rural villages, where maximum of the rural population is devoid of any infrastructure facilities. It is estimated that now, about 40% populations of Nepal are urban people (NUDS, 2017) living in the urban areas, including municipalities, sub-metropolitan cities and metropolitan cities. Nepal has been ranked as the eighth least urbanized country in the world. The percentage of urban population increased from 3% in 1954 to 14% in 2001 and to about 17 % in 2011.

In 2017 the poverty incidence rate was 21.6 percent, which has been targeted to be reduced to 17% in 2019 by the current fourteenth periodic plan in the country. But, the newly adopted multidimensional poverty index (MPI) shows that 28.6% of Nepalese are still multidimensionally poor – meaning that their lives are battered by several deprivations simultaneously. The report was published in 2018 and was adjusted with the geographic clusters of newly federally-set up local units. It also reveals that Nepal actually halved its official MPI between 2006 and 2014, from 0.313 to 0.127. MPI in rural area is 33.2 percent and in urban area just as 7 percent, reflecting a huge rural urban gap and inequality (NPC, 2018).

Following this, urban development in case of Nepal is characterized through unplanned urban growth at the center and adhoc urban expansion in the hinterlands stimulated by urban sprawl. Nepal's urbanization is imbalance mostly characterized with undesirable effects of autonomous urbanization and urban centers in Nepal are yet to be recognized as engines of economic growth while most of them suffer with demands of basic infrastructural services. With the establishment of Ministry of urban development, the Government of Nepal, has set itself to work on comprehensive and holistic set of urban development. Before federalism, Nepal's urban development was mostly concentrated in within the capital center, with very few significant urban developments outside the capital. Due to this within the country, Nepal suffered the adverse effect of regional disparity and adhoc development.

¹ UN Population World meter, 19 January 2019; see at: <http://www.worldometers.info/world-population/nepal-population/>

Urbanization in Nepal is dominated by a few large and medium cities with an excessive population concentration in the Kathmandu Valley. High urban growth is occurring in the Kathmandu Valley, the Pokhara Valley, the Inner Tarai valleys, and in market and border towns located on highway junctures between the east-west highway and the five main north-south corridors. Urban growth centres are also emerging close to the border with India (MoUD, 2015; Muzzini & Apericio, 2013).

Table 1: Basic requirements of the urban areas in Nepal: a political-comparison

Metropolitan city	Sub-metropolis	Municipality
<ul style="list-style-type: none"> • A minimum population of 200,000 • A minimal annual income of NPR 40 crores • Facilities like electricity, drinking water and communication • Main roads and other link roads are pitched • Availability of special health services like hospital, medical college • Has physical facilities for conducting international sports and games • Sufficient opportunities for higher education and at least one university 	<ul style="list-style-type: none"> • A minimum population of 150,000 • Minimum annual income of NPR 10 crores • Facilities like electricity, drinking water and communication • Main roads are pitched • Facility of higher education and health service • Has minimum physical facilities for conducting national and international sports and games • Facilities like gardens, parks and city hall 	<ul style="list-style-type: none"> • A minimum population of 20,000 (10,000 for those within hilly regions) • A minimum annual income of NPR 40 lakhs • A semi-urban area possessing electricity, road, drinking water, communication and similar other basic facilities

(Source: https://en.wikipedia.org/wiki/List_of_cities_in_Nepal, 2018)

With the promulgation of new constitution in 2015, Nepal is all set to move towards a federal system of governance which has a significant implication for urban growth and regional development. The Government of Nepal has already been involved in the development progress by implementing National Urban Policy since 2007 and National Urban Development Strategy, 2017. The policy comprises to carry out development works in the lagging regions of the country with the target of reducing poverty and upgrading urban physical facilities. This development work is prioritized by GoN through DUDBC, new town project to invest in urban center lies in Country.

Though several municipalities show some improvement in physical aspects, progress is still found lagging in several critical development sectors such as education and health. Issues such as sustainability, social exclusion or deprivation, urban poverty, environmental conservation, economic development, financial mobilization and municipal capacity building in resilience have remained largely unattended in the previous planning efforts. An intelligent and rational form of decision making becomes inevitable as a means of reducing waste, of producing greatest return from the employment of resources and of ensuring efficiency in the utilization of resources to achieve maximum economic growth and national development.

2.2 Concept of Urban Planning

Urban planning is defined as the integral composition of urban components i.e. physical, social and environmental, in particular. In planning, “thinking before acting” plays vital role. There needs planning in each and every step of life to enhance the living standards of our life. Various plans are formulated on the limitations of our budget and resources to optimize the goals from proper activities. Such plans help to achieve satisfaction, comfort etc.

Some significant steps which help to make better plan are:

- Environmental analysis
- Formulation of Objectives
- Premises Development
- Determination & evaluation of alternatives
- Selection of best alternative
- Formulation of a derivative plan
- Budget formulation
- Implementation of a plan
- Follow up action

Under this IUDP project, there are different development plans formulated as short-term (5 yr), medium-term (5 yr) and long-term (15 yr). For example, Physical Development Plan, Social Development Plan, Environment Development Plan, Disaster Management Plan etc. are categorized by their sectorial nature and long term plan, mid-term plan, short term plan on the basis of time.

2.2.1 Concept of Settlement Planning

Proper planning of settlement is essential for human development. Settlement structure is the core area of geographical and sociological studies, which is suited for the development human living. On the basis of its nature, pattern and types, settlements are divided into various types.

The United Nations held its first conference at Vancouver, 1976 which emphasizes the issue of physical and spatial organization of human life on this planet, and on the national and international actions needed to accommodate the growing number of population in urban and rural communities. This conference, called UN-Habitat. The second United Nations conference on human settlement was held in April 1996 at Istanbul, Turkey become famous as name “City Summit” targets about the sustainable human settlements through the involvement of high level representatives of national and local government, private sector, NGOs, research and training institutions and the media.

Some modern concept to enhance the settlement standards are provision of sustainable and affordable housing, application of zero-carbon city concept, green roofs provision, sustainable transportation etc.

2.2.2 Concept of Spatial Planning

The spatial planning is defined as the coordination of practices and policies affecting spatial organization. It includes land use, urban, regional, transport and environmental planning. It

takes place on local, regional, national and inter-national levels. Spatial planning gives geographical expression to the economic, social, cultural and ecological policies of society. It is at the same time a scientific discipline, an administrative technique and a policy developed as an interdisciplinary and comprehensive approach directed towards a balanced regional development and the physical organization of space according to an overall strategy (Wikipedia).

On the sustainable perspective, Spatial planning plays vital role to enhance the integration between various sectors such as housing, transport, energy and industry for the development of urban and rural systems.

The Spatial Planning aims to:

- ❖ To provide sustainable stability in different sectors like economic, social, environment etc.
- ❖ Enhance and protect natural resources and natural heritage
- ❖ Improve the relationship between the town and countryside.
- ❖ Promote more balance accessibility
- ❖ Develop access to information and knowledge
- ❖ Enhance cultural heritage as a factor for development
- ❖ Emphasize on the environmental issue to provide healthier environment

Transport and Spatial Organization: The spatial structure influences geography. Spatial organization relies on two dimensions. The first relates to spatial differentiation where attributes such as location, size, and density are illustrative of the distribution inequalities of a feature. This differentiation is the outcome of a cumulative process as several elements of the spatial structure such as urban areas are the outcome of a long process of accumulation, which tends to change slowly. The second relates to spatial interactions where attributes such as origins, destinations, and flows are also illustrative of inequalities. Transportation not only favors economic development but also has an impact on the spatial organizations. Throughout history, transport networks have structured space at different scales. The fragmentation of production and consumption, the locational specificities of resources, labor and markets generates a wide array of flows of people, goods and information. The Structure of these flows in terms of origin, destination and routing is closely related to spatial organizations. Space shapes transport as much as transport shapes space, which is a salient example of the reciprocity of transport and its geography (Rodrigue, 2009).

2.3 Planning Efforts in Nepal

History shows about the urban settlements of Lichhavi dynasty at the middle of 5th century at Kathmandu Valley; the headquarter of Nepal. Deupatan located at bank of Bagmati river, is popular name for town planning followed by Lichhavi (Tiwari 1999). It has evidence of sustainable planned town of Kirat dynasty too. But the Nepalese architecture and planning are seemed to be flourished in Malla dynasty. For example, Patan city and its famous durbar square, Bhadgau (Bhaktapur) with durbar square etc.

Some of the advance planning techniques used in Nepal are: -

- GLD (Guided Land Development)

- Site & Services
- Land Pooling

In the late 1980s, sites and services schemes were implemented at Kuleshwor. Land Pooling and Guided Land Development (GLD) replaced site and services method, while Integrated Action Planning (IAP) was adopted in municipalities. In some extent, IAP and periodic plans continue to guide communities in selecting their projects at present. Land pooling and GLD programs were implemented after 1990. These played a significant role in financing urban infrastructures and improving the living conditions in many communities. Land Pooling is widely accepted in Kathmandu valley although it has been applied outside the valley. Some successful Land Pooling Projects at Kathmandu Valley are Gongabu, Sintitar, Dally, Saibu Bhaisepati, Naya Bazaar, Sinamangal, Ichhangu, Kamal Vinayak, Liwali etc.

2.3.1 Planning Practices in Nepal

Master Planning Approach, Structure Plan, Integrated Action Plan, Periodic plan etc are some of the major planning practices adopted in Nepal, especially in Kathmandu. These approaches & plans are briefly explained here.

Master Planning Approach

This master planning approach is important for the application of zoning concept in cities, municipalities, small areas on the consideration of land use pattern. The master plan acts as comprehensive long range plan which covers all the relevant sectors of urban areas related to community's population, economy, housing and infrastructures. "The Physical Development Plan for the Kathmandu valley" in 1969 also called Master Plan is the first comprehensive planning document in Nepal.

Structure Plan

Structure plan was introduced in 1988-1991 for the development of Municipalities as a alternative to master plan. The supportive organization for structure plan was Department of Housing and Urban Development (DHUD). Structure plans were prepared for 33 municipalities but limited to policy statements only. Implementation of these plans did not get popularity, since details were not worked (Joshi, 2008)

Integrated action Plan (IAP)

Integrated Action Plan is defined as community driven, highly participatory and needful planning process. It plays vital role for development through implementable and realistic project. It includes all the regular activities of municipalities. So, it makes easy to prepare Multi Sector Investment Plan (MSIP) of municipalities to allocate their annual development budget. (Mattingly & Winarso, 1999). IAP planning is suitable in Nepal as urbanization is rapid, resources are constraint, institutional capacities are inadequate and planning processes need to be simplified in short duration (Joshi, 2008). While preparing IAP, problems are identified and prioritized on the basis of collected information, projects are formulated with solutions to each problem. On the basis of social, physical, topographical and financial feasibility, formulated projects are analyzed and tested. The applicable projects are said to be implemented. IAPs consist two major tools i.e. MSIP (Multi-Sectorial Investment Plan) for fulfill the public needs

and PEDP (Physical and Environmental Development Plan) helping to sustain municipality ecologically.

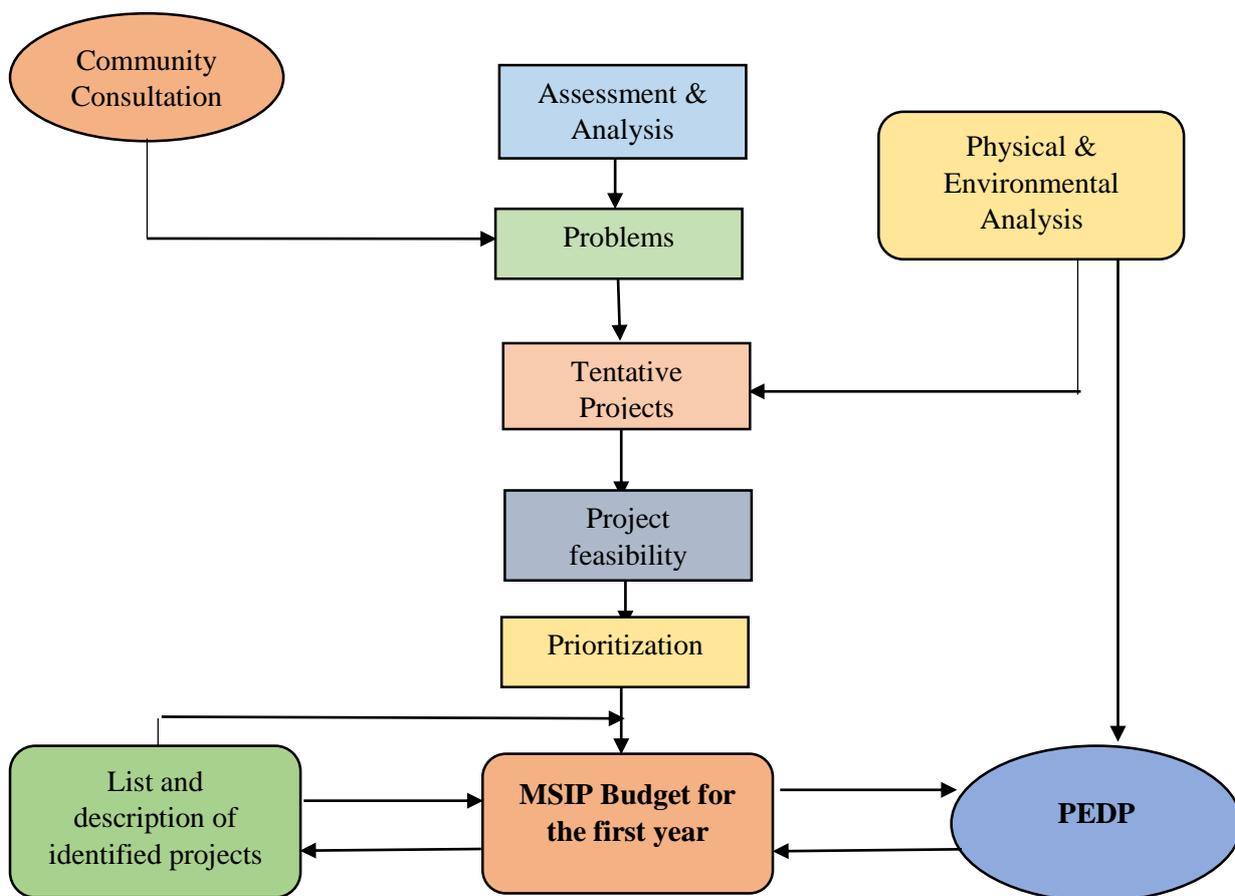


Figure 1: Flow Chart of Integrated Action Plan

Due to the lack of manpower, resources and urban awareness, municipalities found difficulty to implement urban projects under IAP. Mattingly & Winarso 1999 argue that; changes occur in local government revenue source has destroyed the foundation behind many investment plans and increased many times the difficulties of estimating future municipal incomes which enforced to realize a failure about potentials of IAPs.

Periodic Planning at the Local Level

Periodic plan is a long term development plan, acceptable in local level. It is seemed to be a reasonable planning option for municipalities. It is generally prepared for 3-5 years. It includes development of various sectors related physical, social, environmental, financial, economic, institutional etc. On the basis allocation of budget and task for responsible ling agencies, Periodic plan includes plan, policies and regulations related to the programs, investments and implementation of the programs. Periodic plan integrates various thematic maps related to infrastructures. In Nepal, first five-year periodic plan was prepared in 1956 for 1956-1961. Periodic plans have been formulated by National Planning Commission (NPC), and executed by Government of Nepal. However, there is no specific planning institution or government’s entity in local level. The concerned stakeholders of the respective municipalities get support

for the implementation of overall periodic planning process. It became complex issue in the federal context after 2015. It can be taken as ‘participatory and inclusive plan’ before 2015.

This plan has some weakness. Planning processes of this plan have been experienced extremely slow due to endless data collection, lack of local representation, weak institutional capacity, unwillingness to make decisions due to political changes and conflict within the country. It has some benefits, such as: i) integrated nature of planning, ii) legal and financial base for planning and budget allocation, & iii) enhancement from foreign agencies about the participatory approaches and institutional building of municipalities.

Dang Valley Long Term Development Plan, 2012:

Dang Valley Long Term Development Plan is the comprehensive plan including Long Term development plan and MSIP for the strategic projects. Dang Valley Long Term Development Plan is prepared for the Dang valley including two municipalities Ghorahi & Tulsipur and 23 rural Municipalities. The long term development plan includes short term, medium term & long term projects and programs. The major coverage of the plan is the existing Land use of the valley, transportation plan, settlement development plan, urban rural linkage, role of the settlement and their hierarchy, physical development plan and MSIP.

Master Plan of Kavre Valley, 2011:

Kavre Valley master plan is the comprehension plan including Long term development plan and MSIP for the strategic projects. Kavre Valley master plan is prepared for the kavre Valley including three municipalities Banepa, Dhulikhel & Panauti and 15 Rural Municipalities forming a single watershed. The master plan includes short term, medium term & long term projects and programs. The major coverage of the plan is the existing Landuse of the Valley, transportation plan, settlement development plan, urban rural linkage, role of the settlement and their hierarchy, physical development plan and MSIP.

Planning Concept of Rajbiraj

Rajbiraj is a middle type municipality, situated at Province No. 2 in the south-eastern region of Nepal. It is the district headquarter of Saptari. It is the eighth largest city of Province no. 2. The city area is spread over 55.64 sq.km. and comprises 16 wards (Wikipedia). Rajbiraj is the first planned city in Nepal. The adopted planning pattern of this city is same as of Indian city Jaipur. The traditional style adopted for planning is known as Parastara Style which is based on grid-iron pattern.

2.3.2 Climate Change Adaptability in Nepalese Context

Climate change is a critical global challenge facing humankind and local communities in mountainous regions. The mountains are particularly more vulnerable than the plains contributing mostly to rise in air temperatures leading to rapid melting of glaciers and increment of glacial lakes and unpredictable weather. Higher rate of warming is seen in last 50 years than the last 100 years (Sherpa et. al., 2015). Rapid changes in altitude and aspect along the latitude, creates a wide range of climatic conditions in Nepal. As a consequence, within a span of less than 200 km Nepal encounters almost all types of climates, subtropical to alpine/arctic. 80% of the precipitation in Nepal comes in the form of summer monsoon rain

and winter rains are more common in the western hills (DHM, 2015). Climate change is already hitting every corner of the nation including Nepal. Melting Himalayas has been the most highlighted issue of climatic change (Sharma, 2009). The poorest and vulnerable people are being affected the most (CBS, 2017).

Adaptation is the only strategy to become climate change resilient. Efficient use of water and energy and promoting local resources and indigenous knowledge can be the bases for developing adaptation strategies to climatic changes (Sharma, 2009). Reducing vulnerabilities, developing coping mechanisms and implementing adaptive measures are the only solutions to the problem of climatic changes (Sharma, 2009). In Nepal, the people are adapting to climate change knowingly or unknowingly as the impacts of climate change is affecting their day to day life due to lack of knowledge and resources to cope with the changing climate (Sherpa et. al., 2015).

2.3.3 Community Based Disaster Management in Nepalese Context

The Community Based Disaster Management Project (CBDMP), a UNDP funded project, has been doing just in Nepal. The main goal of the Project is to enhance the safety of women and men vulnerable to natural disasters and to protect common property as well as community resources in select disaster prone areas. The Project has helped build a model earthquake resistant school in Hetauda and Community Centers in Sarlahi, two districts that are prone to disasters. The people were fully involved in building the school, which was built at a total cost of Rs. 750,000. CBDMP, along with Hetauda Municipality and DDC Makawanpur constructed a model earthquake resistant building with three rooms in Shramik Secondary School in Kara of Hetauda. They were unable to construct the whole building this way due to resource crunch. The residents of Jagatradevi formed a CBDMP and constructed stone walls in different parts of the village which were at risk of landslide. The villagers also planted trees for a more permanent solution (UNDP Nepal, 2010).

2.3.4 Risk Sensitive Land Use Plan in Nepal:

Risk Sensitive Land Use Plan (RSLUP) is defined as a planning tool which reduce the disaster risk. Multi hazard analysis is done to identify the possible risk in the area. Disaster risk reduction elements are obtained from disaster risk assessment and mitigation. The Risk-Sensitive Land Use Plan (RSLUP) integrates these elements by i) using available seismic hazard and risk information; ii) including emergency management parameters (e.g., evacuation roads), iii) prescribing a series of disaster risk reduction strategies and actions in the land use planning practice; and iv) delivering a rational risk-sensitive land use plan to guide the future development of Kathmandu. The need for the development of the RSLUP came about as the result of a previous study undertaken by EMI, KMC, NSET and other local and international partners to develop a risk management master plan (DRMMP) for Kathmandu during the period 2007-2009. (RSLUP, KMC, Jan 2010)

RSLUP was formulated on the basis of Local Self Governance Act (LSGA), 1999. But, on current practice, LSGA has been replaced by Local Governance Operation Act, 2074 BS. According to section 112 of LSGA, hazard assessment was initiated while preparing Resource

Maps. These maps include geologic maps, seismic and geotechnical hazard maps, soils map, geomorphologic maps, natural drainage map and soil cover map among others. These resources map, when used together, would indicate the protected areas, areas of high hazard risk, areas fit for building structures, gross carrying capacity for development. According to section 113 of the LSGA, helps to identify the vulnerability of environment and community when project feasibility study is done. It serves to emergencies and disasters, susceptibility to hazards, and the community's capacity to cope with hazards. The post-completion risk assessment of the proposed land use plan is important "for making the development of the municipal area balanced and planned" (Section 111(2)), and for making sure, that the projects identified are environmentally sustainable (Section 111(4) (f), LSGA).

The risk or vulnerability could then lead to the preparation of appropriate development and land use policies that would help prevent or mitigate emergencies and to prepare for emergencies "to lessen the loss of life and property caused by natural calamity." Section 96, (2), (m). The various important places of Kathmadu Valley for the application of RSLUP were identified at 2012 which are Thamel, Tyodaha, Asan, Indrachowk, Durbar Square, Bhimsenthan. For the promotion of RSLUP of growing urban areas, of out of Kathmandu valley: Pokhara Valley (Pokhara & Lekhnath), Chitwan (Bharatpur & Ratnanagar), Kavre Valley (Banepa, Panauti and Dhulikhel) were identified at 2015.

2.3.5 IUDP in Nepal

The Government of Nepal has endorsed Asian the Integrated Urban Development Project in recent years through the technical and finacial support of Asian Development Bank (ADB). It has been implemented by Ministry of Urban Development (MoUD) through the Department of Urban Development and Building Construction (DUDBC). The project aims to improve quality of life and to help achieve higher and socially inclusive economic growth in four key municipalities in Nepal, Neplagunj, Siddharthanagar, Janakpur and Dharan, through improved and affordable municipal services delivered effectively, efficiently and reliable by accountable local bodies.

The MoUD, the Executing Agency (EA) through the DUDBC has established a Project Coordination Office (PCO) for the project headed by project director. Dharan, Janakpur, Nepalgunj and Siddharthanagar Municipalities have been the implementing agencies (IAs) for the subprojects each with a project Implementation Unit (PIU) headed by a Project Manager (PM). Project Management Support Consultant (PSMC) will assist the PCO in overall management and implementation of the project, namely project Management Support Consultant (PSMC). Gender Equality and Social Inclusion (GESI) unit of the Ministry of Urban Development (MoUD) will engage GESI consultant to mainstream GESI in MoUD's operation. Similarly, four NGOs will also be engaged separately under the Project. Local NGOs will assist the implementation of Community Development Program (CDP) including awareness raising activities to provide health and hygienic education, promotion of household and /or community level 3R (reduce, reuse, recycle) activities, skill training for the poor, and gender sensitization. Design and supervision Consultants (DSC) will be engaged in each municipality to facilitate the effective project implementation at the municipality. The DSC

will provide all necessary support and coordination with the PSMC and the NGO to achieve the desired outputs and outcomes of the project at the concerned municipality level.

2.4 Legal Frameworks in Nepalese Context

For the proper implementation of plan, it must follow certain legislations, policies and guidelines. Government of Nepal, has formulated various acts, rules and regulations about different sectors to enhance the Nation's development on national level, provincial level and local level. In this concern, the following acts, regulations, policies etc. have been listed below:

- Constitution of Nepal 2015
- Local Government Operation Act, 2074 (*Sthaniya Sarkar Sanchalan Aain 2074*)
- Land Acquisition Act, 1977
- National Urban Policy, 2007
- National Urban Development Strategy, 2017
- National Land Use Policy (2015)
- Planning Norms and Standard, 2013
- Building By-laws, 2072 B.S.
- Land Survey and Measurement Act 2019 B.S.
- Nepal Urban Road Standard, 2071 BS
- Environment Protection Act (2053 B.S.)
- Solid Waste Management Act, 2068 (2011)
- Water Resources Act, 1992 (2049 BS)
- Forest Act, 2049 (1993)
- Disaster Risk Reduction and Management Act, 2074 (2017)
- Climate Change Policy, 2067 (2011)
- National Wetland Policy, 2069 (2012)
- National Agriculture Policy, 2061 (2004)
- Guthi Corporation Act-1976
- Ancient Monument Preservation Act (1956)
- Motor Vehicle and Transport Management Act (1993)
- Public Road Act (1974)
- National Road Standard (2070)
- Nepal Urban Road Standard prepared by DUDBC (2071)
- Nepal Urban Drain Standard prepared by DUDBC
- Town Development Fund Act 2053
- Industrial Enterprise Act (1992)
- Labor Act (1992)
- National Environmental Impact Assessment Guideline, 2050 (1993)
- Public Procurement Acts 2063 and Regulations 2064
- Public Roads Act, 2031
- National Transport Policy, 2001
- National Agriculture Policy, 2004
- Soil and Watershed Conservation Act, 2039 (1982)
- Tourism Policy, 2008

- National Industrial Policy, 2011
- National Ambient Air Quality Standards, 2069 (2012)

Out of listed acts and policies, some important acts are described as below:

2.4.1 Constitution of Nepal

The latest Constitution of Nepal is adopted in September 2015, establishes Nepal as a federal republic. This constitution divides the nation into seven provinces. It is divided into 35 parts, 308 Articles and 9 Schedules. According to this constitution, Nepal is defined as “independent, indivisible, sovereign, secular, inclusive, democratic, socialism-oriented, federal democratic republican state.” The rights of gender and sexual minorities are protected by the new constitution with provisions of special laws to protect, empower and develop minority groups as well as allowing them to get citizenship in their chosen gender. The rights of women were explicitly recognized, the constitution stating that “women shall have equal ancestral right without any gender-based discrimination.” Similarly, it consists some relevant statements i.e. “Every citizen shall have the right to live in a clean and healthy environment”, and “Every citizen shall have the right to an appropriate housing.” The constitution has provision three tiers of governance system- the federal at the center, the provincial at the meso-level and the local at the bottom-up. The local level government includes 753 units in total involving rural municipalities and municipalities.

2.4.2 Local Governance Operation Act (2074)

The Constitution of Nepal (2015) promulgated in September, 2015. This started a new paradigm of politics in Nepal since the Nepal has been going into federal structure. The constitution has set powers and jurisdiction separately for three tiered governments – federal government, province government and local government. Accordingly, the government of Nepal restructured local bodies into local levels into different phases on the basis of report of LLRC. The government announced the date of local election before enacting the Local Level Operation Act. Therefore, the government passed the Ordinance for Local Government Operation on 2nd May, 2017. The local election was completed in three phase. After the local election, the government of Nepal enacted LGOA, 2015.

The main objectives of this act is to implement the powers and rights of local level provisioned by Constitution of Nepal promoting co-operations, co-existence and coordination between federal, province and local levels ensuring people participation, accountability, transparency in cost effective and qualitative service delivery, to strengthen democratic republican governing system from local levels, and to strengthen local governance developing local leadership to institutionalize legislative, executive and judicial practices at the local level. The act details out the definition of rural municipality its criteria, municipality, its criteria, role of local level. Likewise, it presents different sector wise function of then municipality and the rural municipality. It highlights powers and function and jurisdiction of ward offices to ensure administrative convenience to the local people.

2.4.3 Land Acquisition act, 2034 (1977)

This act provides legal provision for acquiring land for public purpose. It ensures the justice to individual and community in the regarding land property as no one; even government can arbitrarily acquire private land without compensation. Land Acquisition Act, 1961 was passed to provide legal provision and procedure to acquire private land. With changing condition and time requirement, this act was revised in 1977 and enforced as “Land Acquisition Act, 1977” in 2034/5/22 (1977/09/07). It has 43 Sections including sub sections too.

2.4.4 National Urban Policy, 2007

National Urban Policy (NUP) has proposed several strategies to fulfill the objectives: - i) achieve a balanced national urban structure through proper guidance to development and investment in the infrastructural facilities, ii) raise the living standard of the urban residents through development of clean, secure and economically vibrant urban development, and iii) achieve effective urban management through institutional strengthening and legal empowerment of the local bodies, as well as through promotion of proper co-operation and co-ordination among the different institution involved in urban development.

2.4.5 National Urban Development Strategy 2017

To enhance the National Urban Policy (NUP) on rapid pace implementation, National Urban Development Strategy (NUDS), 2015 has been formulated. It includes 8 thematic areas, which includes 4 themes and 4 mechanisms. The themes are urban system, urban infrastructure, urban environment and urban economy. Similarly, the mechanisms are urban investment, urban finance, governance and urban land management.

The following strategies for urban development has been proposed by NUP: -

- Develop local bodies as prime institutions implementation of plan and programs by strengthening their institutional capacity.
- To build necessary legal and institutional mechanism to set up an integrated urban planning and monitoring system.
- Execute special programs for conservation and protection of cultural heritage and sensitive natural resources.
- Develop plans related to land development, housing, and regularize land market.
- Develop inclusive plan for physically disabled, women and aged people
- Develop sustainable public transportation system.
- Prepare disaster-management plan
- Redefining the designation of Municipalities

2.4.6 National Land Use Policy, 2015

Nepal is one of the disaster-prone country in the world. The earthquake that hit severely on April 2015 is a recent evidence that raised the issue of land management and resettlement. In terms of use, Nepal has about 27% agricultural land, 39.6% forest land, 12% pasture land, 17.2% snow covered and rocky land, and 2.6% water area out of the total land. In recent times, rapidly growing population and uncontrolled use of land resources have shown symptoms of

land resources being scarce that would need to cope with the need for sustainable future of the country. Therefore, due attention would be required, timely, to make its proper use and management. It is not possible to bring such worsening situation of land use and management under control in absence of a guiding policy initiative from the government. Realizing this fact, the Government has already enacted 'National Land Use Policy, 2072 (2015).

The mission/goal of this Policy is to manage lands in a sustainable manner by developing a specific land use system through Land Use Plans (LUPs). The objectives are:

- 1) To categorize/classify entire lands of the country into various Land Use Zones (LUZs);
- 2) To devise of level wise (Federal, Provincial and Local) Land Use Plans (LUPs);
- 3) To ensure of the use of Land and Land Resources(LLRs) on the basis of land use plans (LUPs) for protection of agricultural land, hygienic, beautiful, well-facilitated settlement and sustainable urbanization, and for forests areas including natural heritages, bio diversities and historical, cultural and religious, archaeological and areas of strategic importance;
- 4) To mitigate natural and human created-disastrous hazards;
- 5) To assess and apply minimum property valuation and progressive tax system on lands on the basis of specific use after getting prepared of plot based records.

The NLUP 2015 has replaced the previous land use policy 2012. The policy has outlined 10 different kinds of land categorization: Agricultural zone, residential zone, commercial zone, industrial zone, mines and minerals zone, cultural and archaeological zone, river and lake-reservoir zones, forest zones, public use and open space zone, building materials (stone, sands, concrete) excavation zone & other zones as specified as per necessity.

2.4.7 Nepal Urban Road Standard, 2071 BS

It includes the conceptual diagram of urban structure and urban road network including hierarchy, which can serve as a guideline for planning and design of urban roads as well as land development projects, the systematic classification and standardization of urban road and its elements applicable to Nepal.

2.4.8 Environment Protection Act, 2053 (1997)

Initial Environment Examination (IEE) and Environmental Impact Assessment (EIA) are environmental assessment. Article 3 mandates IEE/EIA study for development projects; Article 4 prohibits implementation of projects without approval procedures, Article 7 prohibits emission of pollutants beyond the prescribed standards; Article 9 and 10 stipulates provisions for the protection of natural heritage and Environmental Protection Area; Article 17 stipulates compensation provisions arising from the discharge of waste and pollution; Article 18 has provision of punishment for actions against the Act and rules, guidelines and standards formulated under the Act; Article 19 stipulates the rights to appeal to the concerned appellate court against the decision of concerned authority.

2.4.9 Solid Waste Management Act, 2068 (2011)

Article 5 under this act enforces to reduce the amount of solid waste by individual or businesses as much as possible. Article 18 has provision that the local body may impose and collect service fee from the concerned person, institution or body for the management of solid waste. According to article 38 it shall be deemed to have committed an offence if anyone discharge solid waste in ways other than the time and place prescribed by the local body, use solid waste deposited in containers in unauthorized manner, disrupt and cause damage container, throw, keep or stack any kind of harmful materials in a solid waste collection center, container or solid waste dumping area, etc. Article 39 has provision of punishment if commits any of offence mentioned in article 38.

2.4.10 Water Resources Act, 1992 (2049 BS)

Article 3 under this act stipulates the water resource right to the Government; Article 4 prohibits use of water resources without obtaining license except the specified uses under the Act; Article 7 establish the priority order on the utilization of water resource; Article 8 stipulates procedure for water resource licensing; Article 16 empowers government to utilize the water resources and acquisition of others land and property for the development of water resource as stipulated in the Act; Article 18 stipulates the right of the government to fix the quality standards of water; Article 19 prohibits pollution of water resource above prescribed pollution tolerance limits; Article 20 stipulates not to cause harm and adverse effect on environment while developing the water resource project.

2.4.11 Forest Act, 2049 BS (1993)

Forest Act recognizes the importance of forests in maintaining a healthy environment. The Forest Act requires decision makers to take account of all forest values, including environment services and biodiversity, not just the production of timber and other commodities. The Act empowers the government to permit the use of any part of government managed forest, community forest, leasehold forest, if there is no alternative except to use the forest area for the implementation of a plan or project of national priority without significantly affecting the environment (Section 65). If the road pass through the protected areas (national park, wildlife reserve, conservation area, hunting reserve or strict nature reserve or declared watershed area), the National Parks and Wildlife Conservation Act, 2030 and the Soil and Watershed Conservation Act, 2039 and their rules have been also be attracted.

2.4.12 Disaster Risk Reduction and Management Act, 2074 (2017)

Article 3 under this act stipulates the formation of national council for disaster risk reduction and management. Article 4 stipulates the council meeting at least two times in a year as per the time and location indicated by the chairperson. Article 6 stipulates the formation of an executive committee for the implementation of the approved plan and polices from the council. Article 8 stipulates the work, responsibility and right of the executive committee. Article 10 stipulates National Disaster Risk Reduction and Management Authority under the ministry to be formed for effective management of disaster. Article 14 stipulates the formation of Province Management Committee in each province for disaster management in chair of Chief Minister.

Article 16 has provision on formation of District Disaster Management Committee and Article 17 has provision of formation of Local Disaster Management Committee. Article 24 has provision of punishment for the actions causing disaster.

2.4.13 Climate Change Policy, 2067 (2011)

This policy envisions a country spared from the adverse impacts of climate change, by considering climate justice, through the pursuit of environmental conservation, human development and sustainable development all contributing toward a prosperous society.

2.4.14 National Wetland Policy, 2069 (2012)

The primary goal of National Wetland policy is to conserve and manage wetlands resources wisely and in a sustainable way with local people's participation. The policy also aims to put the conservation and management aspects of wetlands conservation within the framework of the broader environmental management. The major objectives of the policy are to involve people in the management of Nepal's wetland and conserve wetlands biodiversity with wise use of wetland resources. The policy has identified wetlands of protected areas as a major wetland category in Nepal. The policy has emphasized on the conservation and wise use of wetlands. It also emphasizes to conduct regular studies on the status of wetlands that lie within the protected areas or buffer zones.

2.4.15 National Agriculture Policy, 2061 (2004)

The National Agricultural Policy, 2061 follows an objective of creating enabling environment for agriculture-led rural development. The policy aims at increasing productivity and promoting natural resources to utilize them in the interest of farmers. The long-term vision of the agriculture sector is to bring improvement in the living standards through sustainable agriculture development by transforming subsistence agriculture system into a commercial and competitive agricultural system.

The policy intends to facilitate the farmers of both types: (a) the farmers who have access to means and resources, and (b) the farmers who have comparative low access to the means, resources and opportunities. Emphasis is given for enhancing agricultural production and productivity, development commercial and competitive agricultural system, and protecting as well as promoting the use of natural resources without effect to environment.

2.4.16 National EIA Guideline, 2050 (1993)

To address environmental impact assessment as envisaged by the National Conservation Strategy (NCS) 1987, National Environmental Impact Assessment guideline was endorsed by the Government of Nepal on 27 September 1992 and gazette on 19 July in 1993, Volume 43, Number 5. The guideline provides criteria for project screening and Initial Environmental Examination. This includes scoping, preparation of terms of reference for EIA, methods of EIA report, impact identification and prediction, impact mitigation measures, review of the draft EIA report, impact monitoring, evaluation of impact studies, impact auditing, community participation and schedules and annexes to IEE and EIA.

Many of the guideline provisions are now included in the Environment Protection Act, 1997, and Environmental Protection Regulation, 1997. EIA in Nepal has now become legally mandatory. However, as the National Environmental Guidelines, 1993 have not been issued under the Environmental Protection Act (1997); they do not have any legal force. It is a policy guideline issued by the Government that is still followed in matters which are not covered by the Environment Protection Act (1997) and Environment Protection Regulations (1997).

2.4.17 Soil and Watershed Conservation Act, 2039 (1982)

The mismanagement of watersheds leads to the degradation of valuable land by flooding, water logging, and accelerated silt in storage reservoirs. Section 4 provides that a watershed conservation officer has the authority to implement the following works in protected watershed areas:

- Construct and maintain dams, embankment, terrace improvements, diversion channels and retaining walls;
- Protect vegetation in landslide-prone areas and undertake forestation programs, and
- Regulate agricultural practices pertinent to soil and watershed conservation. SWCA outlines the essential parameters necessary for proper watershed management (including (including both rivers and lakes). The Act is applicable only to protected watersheds.

2.4.18 National Ambient Air Quality Standards, 2069 (2012)

The National Ambient Air Quality Standard was introduced in 2003 and updated in 2012. It has set air quality standard for nine parameters: TSP, PM10, sulphur dioxide, nitrogen oxide, carbon mono-oxide, lead, benzene, PM 2.5 and ozone for the maintenance of the ambient air quality.

2.5 Planning Practices in Global Context

2.5.1 Garden City

Garden City is defined as self-contained communities based city surrounded by greenbelts containing proportionate areas of residences, industry, and agriculture. Concept of Garden City was initiated in 1898 by Sir Ebenezer Howard in the United Kingdom. A garden city is defined by Howard as, "a town designed for healthy living and industry of a size that makes possible a full measure of social life but not larger, surrounded by a rural belt; the whole of the land being in public ownership, or held in trust for the community". As shown in figure, there are six garden cities around the central city. The population of each garden city had 32000, having area 6000 acres (2400 ha) planned on a concentric pattern with open spaces, public parks and six radial boulevards (Wikipedia).

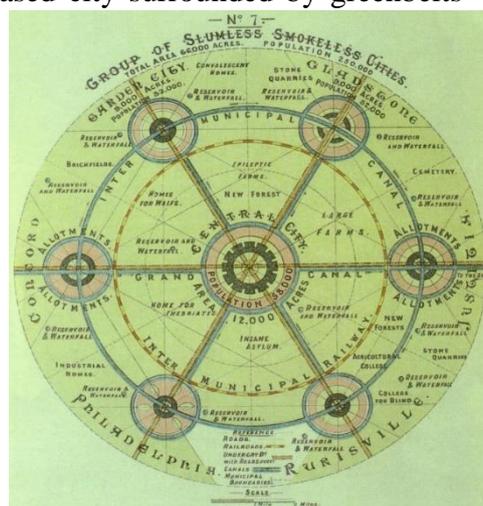


Figure 2: Garden Cities

The first garden city was Letchworth, established in 1903. The second garden city was Welwyn. It is located approximately 20 miles (32 km) from Kings Cross, London. It was founded in 1920. Welwyn Garden City was designated a new town under the New Towns Act 1946. This city has 46,619 populations at 2011 and 51,735 in 2016. City experiences an oceanic climate.



Figure 3: Welwyn Garden City, England

2.5.2 Concept of Environmental Sensitive Areas (ESAs)

Environmentally sensitive areas (ESAs) are landscape elements or places which are vital to the long-term maintenance of biological diversity, soil, water or other natural resources both on the site and in a regional context. They include wildlife habitat areas, steep slopes, wetlands, and prime agricultural lands. When ESAs are interconnected, they could form greenway corridors consisting of networks of linked landscape elements that provide ecological, recreational, and cultural benefits to a community (Ndubisi et al., 1995).

Integrated ESAs defines an area containing various ecosystems that play an important role in ensuring the well-being of the environment as well as society. Three groups of ESAs are ESA of Heritage Value, ESA associated with Hazards and ESA that is important for Life Support Systems.

At the national level, the concept of ESAs was first introduced in Malaysia in the early 1990's as "Critical Areas" in the National Conservation Strategy (EPU 1993). Critical Areas provided an operational framework and guideline for conservation of natural resources and the environment throughout the planning and implementation process. The Critical Areas identified were undisturbed habitats which serve as catchment areas and play an important role in soil stabilization, biological diversity and research, natural habitats which were managed to support human activities and environmental functions, areas with steep slopes, catchment areas, areas of historical, archeological or geological value, and several other categories with special values in the future (Pereira et al., 2006).

Ten basic categories of ESA are identified at the national level, for land use planning i.e. Biological diversity, Highlands and steep slopes, Catchment areas, Wildlife protection, Rivers, Wetland, Coastal margins, Permanent forest reserves, Geological & landscape heritage and Cultural & architectural heritage. In addition, it was recommended that the scope of ESAs be enlarged to incorporate aspects such as existing mining and quarrying areas, examining areas, areas with potential mineral resources, waste disposal sites, aquaculture, important marine resources and agriculture (Hashim et al., 2007).

2.5.3 Master Plan of Chandigarh, India by Le Corbusier

Chandigarh was the first planned city after independence from British rule in 1947. It is capital city of the states of Punjab and Haryana. One of the popular urban planning experiments of the 20th century is master plan of Chandigarh. This master plan was made by Le Corbusier based on grid iron pattern. This city has become a symbol of planned urbanism. It gains its popularity for its landscaping as for its architectural ambience. It became Hi-tech city as the provision of I. T. park and regional hub centre of political and bureaucratic activities of Punjab, Haryana & Himachal Pradesh.

Le Corbusier planned the Chandigarh in human scale in representative way. In short it is briefed as: head (Capital, place of power), heart (the city centre), stomach (the commercial area), arms (university and industrial zone), lungs (leisure valley, open spaces, sector greens), arteries (network of roads). There are four major functions i.e. living, working, care of the body and spirit & circulation, on which the concept of City is based. The concept was elaborated through different sectors as: residential sectors for living while capital complex, city centre, educational zone and industrial are for working. Similarly, leisure valley, gardens, sector greens and open courtyards etc. are for the enhancement of body and spirit.

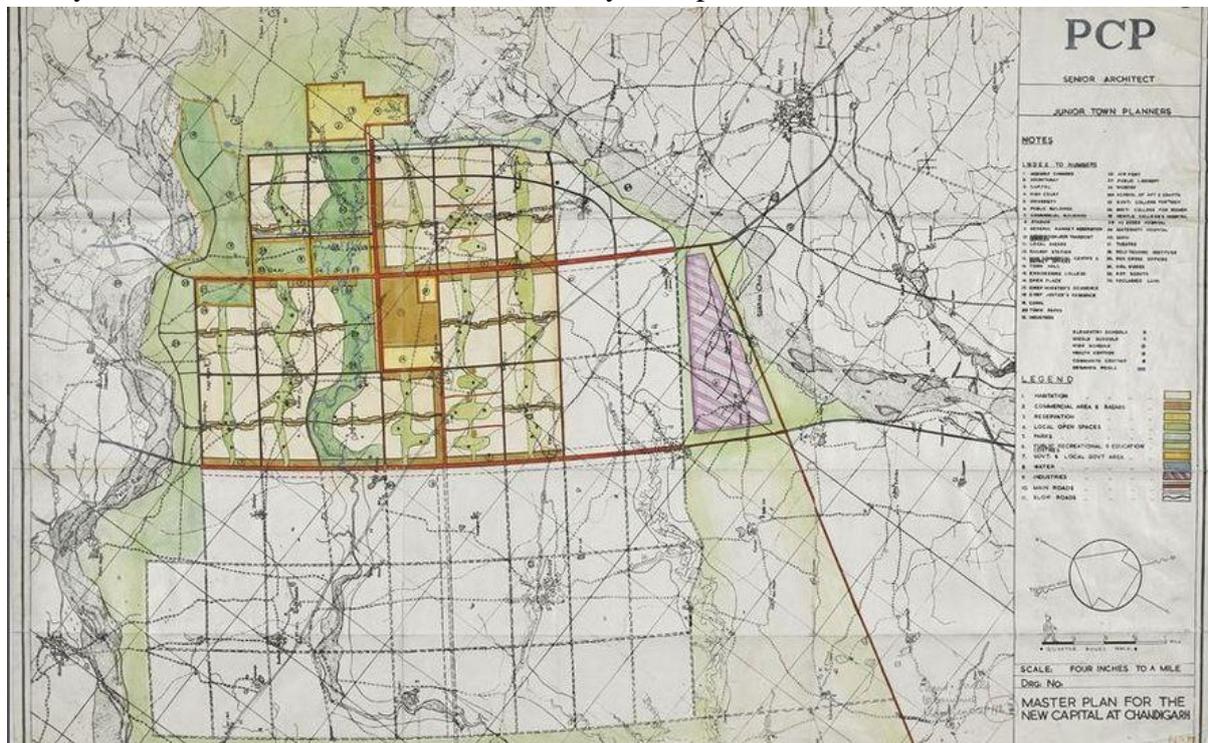


Figure 4: Chandigarh Master plan made by Le Corbusier

The roads of the city were classified into seven categories known as 7Vs: V1 (fast roads connecting Chandigarh to other towns), V2 (Arterial roads), V3 (Fast vehicular roads), V4 (Free flowing shopping streets), V5 (Sector circulation roads), V6 (Access roads to houses) and V7 (footpaths and cycle tracks).



Figure 5: Typical scenic view of Roads and Round-about in City

The city of Chandigarh was developed in 3 phases by dividing the sectors in numbers: Phase – I completely developed in 1975, included sectors 1 to 30, phase-II have been developed for 31 to 47 sectors, Phase III has been taken up includes 48 to 56 sectors (Chandigarh –planning and its transformation).

2.5.4 Evolution of Zoning Regulations in Ahmedabad, India

In India, zoning was first established at Ahmedabad in the development plan, prepared in 1954. It was based on the Bombay Town Planning Act (1954), which for the first time allowed for the creation of a development plan to manage growth of urban areas. The previous Bombay Town Planning Act (1915) only allowed for the creation of town planning schemes to facilitate the improvement of existing urban areas.

Zoning is included within the development regulations prepared as a part of the overall development plan for urban development areas (UDAs). The UDA is defined in accordance with the Gujarat Town Planning and Urban Development Act (GTPUDA) established in 1970. (Evolution of zoning regulations in Ahmedabad, India, n.d.) There are a total of over 20 zones identified in the development plan. The core walled city zone includes the old city of Ahmedabad. The Gamtal zone includes various urban villages, which are now part of the greater Ahmedabad development area. The general fabric of the city falls under R1 or R2 zones, which are mixed residential zones. R3 is a more restrictive residential zone usually found on the periphery of the city where higher intensity of development is not encouraged. Development in the city is mainly focused in the R1 and R2 zones. In these zones, the base floor space index (FSI) is 1.8 and 1.2. Until the recent development plan, the height restriction for development was 40 meters. With the new development plan, this maximum height has been raised to 70 meters for plots that front on 40-meter wide roads and on all plots in the central business district overlay zone.

There is a formal process of requesting a variance if a developer wants to build higher or wants to request a relaxation in one of the other regulations (open space, parking, setbacks, allowed use, and so on) (Evolution of zoning regulations in Ahmedabad, India, n.d.).

2.5.5 Smart City

In brief; smart city is defined as the city which use information and communication technologies (ICT), to be more intelligent and efficient in the use of resources, resulting in cost and energy savings, improved service delivery and quality of life, and reduced environmental footprint - all supporting innovation and the low carbon economy. In other words, a city that monitors and integrates conditions of all of its critical infrastructures, including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, power, even major buildings, can better optimize its resources, plan its preventive maintenance activities, and monitor security aspects while maximizing services to its citizens. (Madakam & Ramaswamy, 2013). There are some special characteristics of smart cities i.e. smart economy, smart people, smart governance, smart mobility, smart environment and smart living. Lavasa is the India's first smart city. It is a private planned city being built near Pune. The other Indian smart cities are GIFT (Gujarat International Finance Tec-City), Kochi, Bangalore etc.

2.5.6 Low Carbon City

Low Carbon City also called Zero-carbon city runs entirely on renewable energy having no carbon footprint. Thus, implementation of such concept does not cause harm to the planet. Energy is produced by burning coal, oil and gas in many cities of the world. To become a zero carbon city, an established modern city must collectively reduce emissions of greenhouse gases to zero. As eliminating environmental impact, zero-carbon cities maintain optimal living conditions. The low carbon city is a city where people live a simple but high quality lifestyle, emphasizing family and community ties, and in harmony with nature, with minimum emission of CO₂. Some specific characteristics of low carbon city are minimization of carbon in all sectors, emphasize a simpler lifestyle that realizes a richer quality of life, Co-existence with nature (ISKANDAR Regional Development Authority, n.d.).



Figure 6: Development of Low Carbon city in Iskandar Malaysia

One of the world's first zero-carbon cities, called Masdar City, is being constructed in Abu Dhabi. It is set to house 50,000 people. Dongtan city, situated in China and Malacca in Malaysia are another similar examples. Once created these cities will become living examples of sustainable development, which demonstrate optimal resource utilization.

2.5.7 Tourism City

Tourism is one of the largest and dynamically developing sector of nations, acts as a backbone for economic growth. It plays vital role to generate employment, to earn foreign currency for the host community, etc. The outcome of increasing tourism has been found to be a critical and crucial catalyst in accelerating the rate of socio-economic development. Tourism is not just an economic activity; but also influences local inhabitant's everyday lives and helps to make the image and identity of the city on international level.

City tourism development plan should be prepared as an integral part of global economic and social development plan of the city, with the main aim to integrate the tourism in existing urban economic development. Well tourism development plan of city attracts different market segments. Similarly, Cultural heritage of the city attracts more educated population of tourists. Young people, are attracted to the excitement found in the city, the entertainment, and the night life and sport events. Business people come because of business activities, meetings, trade exhibitions, permanent education and different logistic services that are available in the city.

2.5.8 Sports City

Sport cities are one of the latest manifestations of global sport. A broad and widely used term, it has typically been applied to rationalize the costs of new sporting infrastructure, to extend the economic benefit from major sport event legacies, or as a city branding venture. There is currently little research that critically interprets the social aspects of sport cities, or the social benefits in sport city planning. In this paper we propose a conceptual framework that integrates concepts from the fields of urban planning and sport. The social benefits of sport cities framework provide a research structure through which to explore whether, and to what extent, social benefits have been considered in sport city planning.

2.5.9 Integrated Urban Development Plan in Global Context

Integrated Urban Development Plan (IUDP) is a process in which spatial, sectoral and territorial aspects of key areas of urban policy are coordinated. As an Implementation oriented planning tools, it mainly assists to description of strength/weakness of municipalities, definition of consistent development objective, development visions, coordination and spatially focus the use of funds by public/private sector plays, coordination at local and city regional level involving citizens and other partners, co-ordination/collaboration of different sectoral plans, policies, and ensure planned investments to promote balance development of urban areas. IUDP as an integrated plan for sustainable urban development comprises a system of interlinked actions which seeks to bring about a lasting improvement in the economic, physical, social and environmental conditions of a city or an area within the city. The key to the process is "integration", meaning that all policies, projects and proposals are considered in relation to one another.

3 CHAPTER III: METHODOLOGY

This chapter briefly narrates the whole methodological approach and process adopted during the data collection, analysis and planning for the IUDP. Both the qualitative and quantitative nature of data have been used from primary and secondary sources. As reflected in the Figure below, the process includes three sub-sequent phases: a) literature review and desk study; b) field study and primary data collection; and c) analysis and planning.

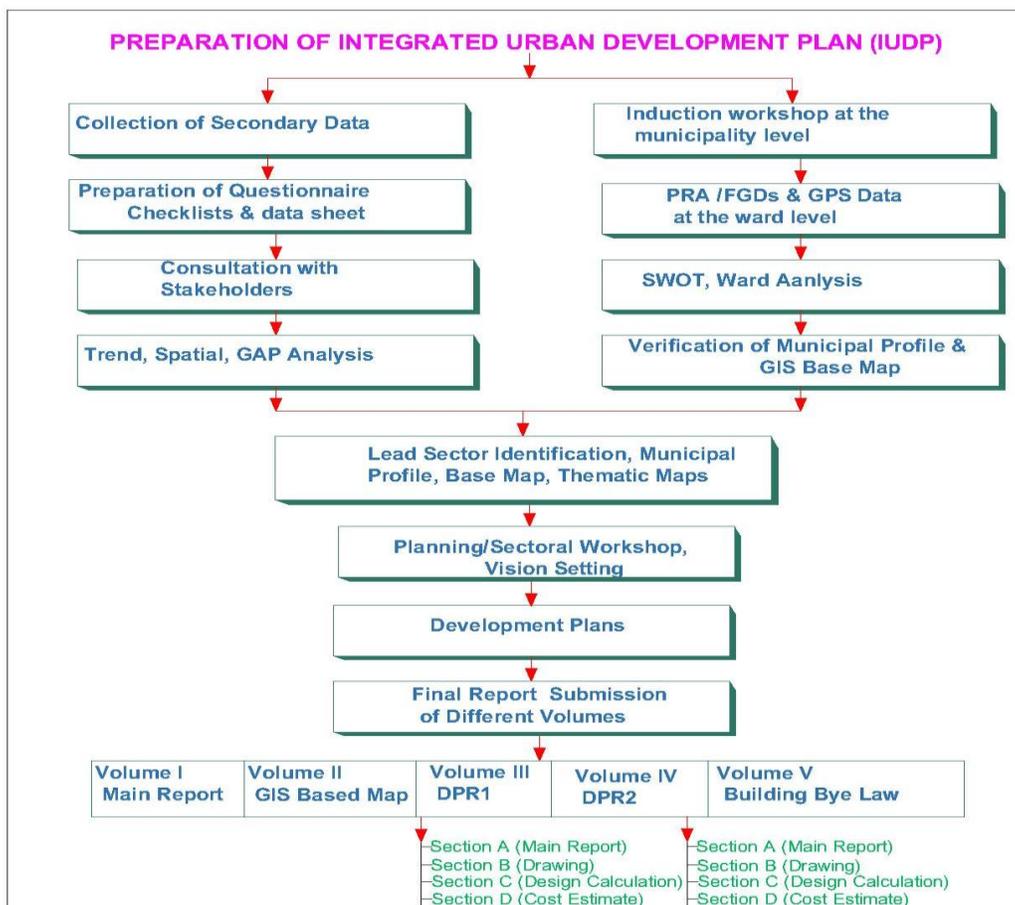


Figure 7: Methodological flow chart during IUDP Project

3.1 Collection of Secondary Data

The available maps and past data were collected from government and non-government organizations such as Survey Department of Nepal, Central Bureau of Statistics, Department of Urban Development and Building Construction, Municipality office etc. From Survey Department, the available Topographical maps, District maps, Aerial photographs, Digital Maps, Municipality Boundary etc. were collected. Furthermore, Internet based research was done through which Google Earth, Google Map, Open Street Map etc. for map and MoFALD, Data in Nepal, official Municipality Website, Rajpatra etc. were referred for the preparation of municipal

profile. All these maps and data were used to understand the geographical location, climatic condition, road networks, existing topographical condition, demographic status, economic & financial status, ethnic groups, settlement etc. Also, the prepared Municipality Profiles and their Plans, Periodic Plan of District Coordination Committee (DCC), other relevant plans & different reports of the stakeholders, were collected from municipal/ward level offices and critically reviewed.

Similarly, relevant acts, regulations, planning norms & standards, guidelines etc. were also summarized properly to visualize the concept of Integrated Development Plans and Building By-laws for Nepalese context.

3.2 Collection of Primary Data

3.2.1 Preparation of Questionnaire and Checklists:

The compilation of secondary data and maps was done after the Literature Review. Findings of obtained secondary information were incorporated into larger database system and cross-tabulated. On the basis of literature review and scope of work, checklists and questionnaires were also prepared to collect primary data from field. The tools used for primary data collection were Focus Group Discussion (FGD), Participatory Rural Appraisal (PRA), Global Positioning System (GPS), Induction & Sectoral workshops etc.

Focus Group Discussion was held with different stakeholders like local people, local leaders, Women group, Dalit, Janajati, Business community etc. Similarly, a Key Informant Survey Questionnaire was also prepared to collect data from individuals, experts and different institutions (i.e. municipalities/wards offices, DUDBC Division office, NGO/INGO, municipality/district different line agencies etc.). These questionnaires and checklists has been attached in annex section.

3.2.2 Consultation with Stakeholders

The consultants made an intensive consultation with the local stakeholders such as representatives of municipalities, TDOs, user's committee, concerned line agencies, local people residing within the study area. An interaction was made with the local stakeholders about the project being carried out by the consultant. They were fully informed about the objective and the scope of the project. The consultant tried to eliminate any negative rumors about the project during the discussion. Also, they tried to clarify the ambiguities about project. The consultant not only expected the co-operation from stakeholders but also tried to achieve participatory approach in execution of the project. The objective of consultation was to gather information, sensitize local stakeholders and identify problems which are done through.

3.2.3 Induction Workshop at the Municipality Level

A one-day induction workshop was organized in the Nalgad municipality on Shrawan 19, 2075 BS. The concerned stakeholders were invited and they took participation, including municipal

council members, political leaders, people's representatives, civil society groups and government officials in the municipality.



Photo 1: Consultation with Municipal Authorities at Nalgad Municipality

An introductory power point presentation was held by the consultant depicting the concept and need of planning, potential and prospects of the settlement and its possible lead sectors.

The major achievements and activities during the inductive workshops were:

- Familiarization for the IUDP project
- **SWOT analysis** (discussion about strength, weakness, opportunities and threats)
- **Ward analysis**
- Discussion for **Vision Setting** (desire for changes, planning implications in different sectors for the sustainable development of the municipality)
- Formation of directive committee for the IUDP under the chair of chairperson of the municipality
- Formation of sub-committees in different themes:
 - Land use plan and building code sub-committee
 - Road bylaws sub-committee

- Sub-committee for education, health, infrastructure, housing, disaster management, security, water supply and sanitation, livelihood, environment and climate change.

3.2.4 PRA and FGDs at the Ward Level

Strategic resources/project at major settlements/village centers were ascertained through Participatory Rural Appraisal (PRA) by holding citizens gathering/meeting. The PRAs were carried out in each ward of the municipality, which were further converted to the FGDs. The vision of the integrated urban development was duly considered while performing the PRA and FGDs involving the people's representatives and local stakeholders, including Tole Development Organizations (TDOs) and their subcommittees.

Following participatory methods, it then collected physical environment, social, economic, financial, and institutional were gathered from sources such as office records or archive, municipalities reports, ward profile, published academic or professional reports, and data published by CBS. Then the analysis included both trend, spatial analysis using GIS, and interpretation of aerial photographs. During the FGDs, the perception of local people and institutions was collected.

During the FGDs, different issues such as the economic potentialities, possibility of future expansion of the settlements, rural-urban linkages, major problems facing/may face in the future and key projects were focused during the focus group discussion. The information from FGD and PRA were helpful to identify the potential sectors and major problems of the settlements. Furthermore, such obtained information also suggested to choose DPR projects from all the selected projects of the particular settlement.





Photo 2: FGD at ward level of Nalgad Municipality

Key Informants Interviews (KIIs)

Key Informant Interviews (KIIs) were conducted to gather the firsthand knowledge by selecting representatives from civil society, political parties, local focal person, and ward members. Information related to land use changes, local practices for developmental works, potential sectors of the settlements, economic, social linkages etc. were collected through this method.

Survey fill-up after the FGDs

After the completion of FGD, an Institutional Survey was conducted with a prepared set-up of the questionnaire check-list. The information regarding educational, financial, social institutions and others private and governmental agencies were collected using the checklist. In addition, data related to open spaces, name of major settlements, touristic destinations, agriculture practices, major market centers etc. were collected during the process.

3.3 Analysis

3.3.1 SWOT Analysis

To identify the strength, weakness, opportunity and threat of municipality SWOT analysis was conducted. SWOT analysis was carried out at FGD in ward level and induction workshop at municipality level; to identify the lead sectors for vision setting.

3.3.2 Ward Analysis

Ward analysis of municipality was done to rank the ward about its development with the help of different 10 indicators. The used indicators were accessibility of motorable road, predominance of Dalit, Janajati and minority, poorest community or lowest livelihood opportunities, most affected wards by natural disaster, access to water supply, education, health, prevalence of disaster risk, access to government services, presence of INGO/NGO.

3.3.3 Trend Analysis

Trend Analysis was done through the help of CBS data, maps and discussions. The data of municipalities was provided through the sectorial workshop and induction report. The trend of migration was identified according to the study of growing market areas. The land use pattern of four different years was studied through maps and found out its land use changes. The increasing pattern of settlement was seen and developing sectors were identified through the land use map. The linkage of municipality and its market centers were studied through both ways i.e. inter region and intra region. The actual trend of flow of goods and peoples was studied during the analysis. Road network pattern was also analyzed. Developing scenario of infrastructures were also analyzed. The various jobs and economic opportunities from past and recent years; were also identified.

3.3.4 Spatial Analysis

Spatial analysis was conducted to identify and solve the complex location-oriented problems. Spatial analysis helped decision makers to understand any event and its present and future affects within its area of influence. Using spatial analysis, the information from many sources were combined, overlaid and derived new sets of information by applying sophisticated set of spatial operators. The spatial analysis has proven to be highly effective for evaluating service area of some features, the most suitable geographic location for specific purposes, observing accessibility of infrastructures and identifying new location, interpreting and understanding change pattern, and much more.

3.3.5 Infrastructure and Necessity

Planning Norms & Standard, 2013 was studied to find out the necessities of infrastructure on the basis of population.

3.3.6 GAP Analysis

The number of required infrastructures about different sectors like education, health, city hall, public library, security, movie hall, fire-station etc. were found on the basis of provided norms and standards by using existing population and projected population of municipality. The no. of existing infrastructures of municipality, were also calculated. On the basis of these existing and desired numbers, difference i.e. gap was found. This gap analysis, helped to find the required number of infrastructures to propose in plan. Similarly, others appropriate indicators were used to find the gap about solid waste, open spaces, road etc.

3.4 Municipal profile:

An up to-date municipality profile was prepared for Nalgad municipality comprising of base-line information of the existing physical, social, economic, demographic, environment, financial and organizational state of municipality. Apart from the key statics, such baseline information was also included in the form of textual descriptions, maps, charts, diagram, and key information & problems prevailing in the settlements and the municipality.

3.5 Base Map Preparation

A base map is the graphical representation of the spatial data and/or orthorectified imagery which serves as background settings for overlay, dissemination, analysis and delineation of spatial and non-spatial data.

3.5.1 GIS Base Map

Geographic Information System (GIS) is a computer based database system that contains location information along with other attribute information of the ground features. Various open source and proprietary programs such as QGIS, ArcGIS, Grass etc. can be used to retrieve information from data base, perform various spatial analysis and delineate the results in graphical and/ or in tabular form as per the requirement of the user. A graphical representation of the database system that serves as background layout is called GIS based base map. It contained location information, feature type information and attribute information in tabular form which can be accessed from any GIS program and delineated in graphical form as digital map. This graphical form can be printed in required layout format and scale to generate a paper map. The preparation of base map using high resolution satellite imagery involves various rigorous steps which are diagrammatically described below:

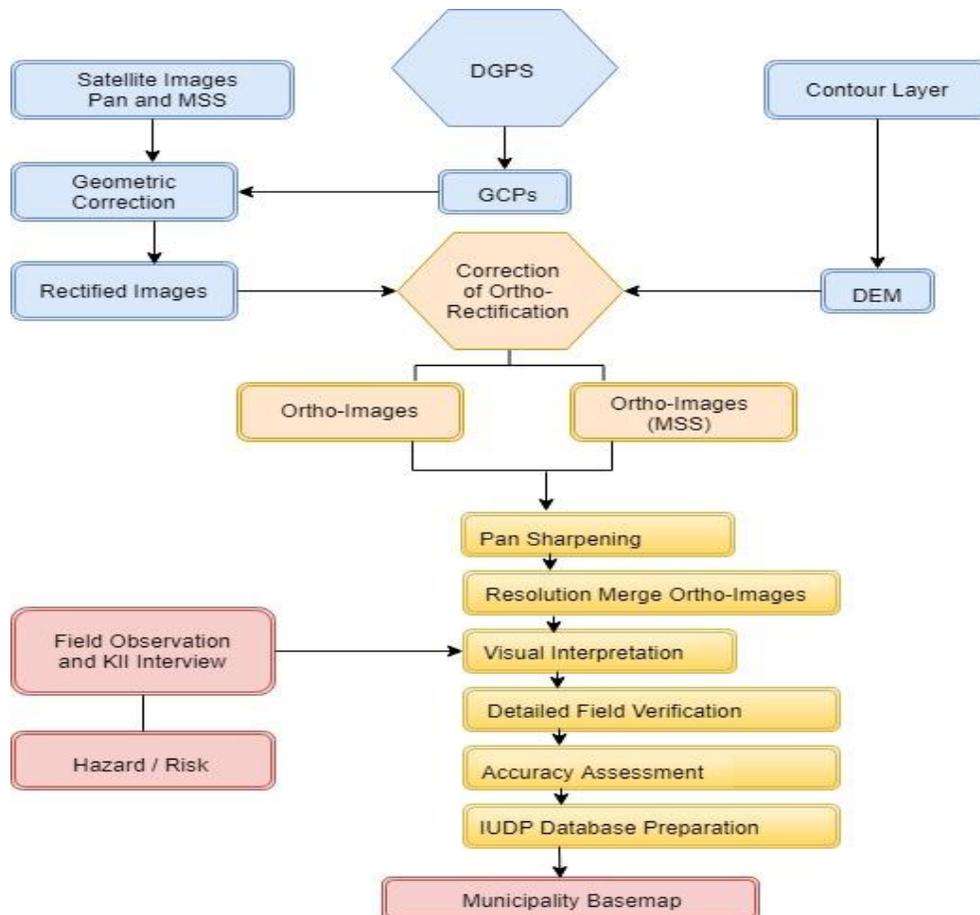


Figure 8: Flow Chart of Base Map Preparation Stage

3.5.2 Data Models

Various data models were developed to store the location, geometrical and attribute information of topographic feature in systematic order in geographic information system. Some of them were suitable for one purpose and some of them were suitable for another purpose.

3.5.2.1 Raster Data

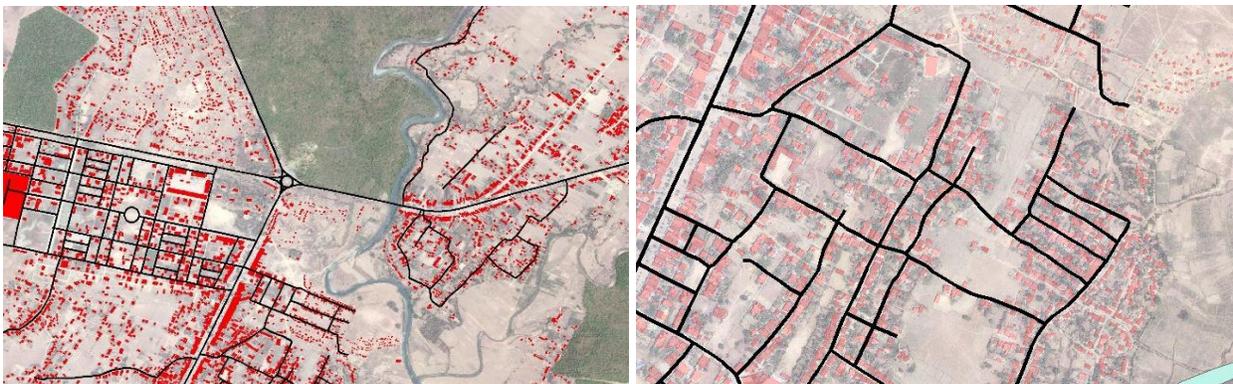
Within the study area of our municipalities, the common features were Buildings, Roads, Cultivation Land, Forest, industrial area, Water bodies etc. These features could be represented by a surface divided into a regular grid of cells having unique value to each cell. The value cartographic variables such as color, texture, intensity, pattern etc. of each cell corresponded to the ground feature. The GIS program could interpret the value while analyzing and displaying the data in graphical form. This data storage format is called raster data format.



Map 1: Raster Data of Municipality

3.5.2.2 Vector Data

Each urban features have some geometrical shape associated with it along with its specific non-spatial information. The geometry of the feature could be represented by set of point, line and polygon and the non-spatial information could be attached to each geometric figure in the form of attribute. Representation of ground feature using this method is called Vector data model.



Map 2: Vector data of Municipality

3.5.3 Geo-referencing

The image data from any satellite sensor contained error due to different factors such as climate, perturbation of satellite orbit, topographic undulations etc. In order to rectify the effects of these factors on the geometry of the ground features, Geo-referencing of the satellite image has been completed using the geodetic ground control points and DGPs points.

In Geo-referencing, several points of known coordinates with their known physical location on the surface of the earth were collected. In GIS program, the points were identified on the satellite image with the help of its D-Card and its coordinate is assigned. After assignment of the coordinates of several points on satellite image, each pixel of the image re-defined its coordinate on the basis of known coordinates. The detail of the coordinates of the ground control points and its D-cards are attached in the Annex IV.

DGPS

Several Ground control points with high spatial accuracy were established using differential global positioning system. These ground control points have been used for Geo-referencing of the satellite image.

Datum and Projection System:

The datum, generally used in Nepal is Everest 1830 Spheroid datum. It is an oblate ellipsoid of rotation formed by rotating an ellipse whose major axis and minor axis were nearly equal to that of the equatorial axis and polar axis of the Earth.

Spatial data

The geometrical as well as attribute information of ground features has been stored in a database called geo-database. GIS program has been used to retrieve the data and delineate it in the form of map.

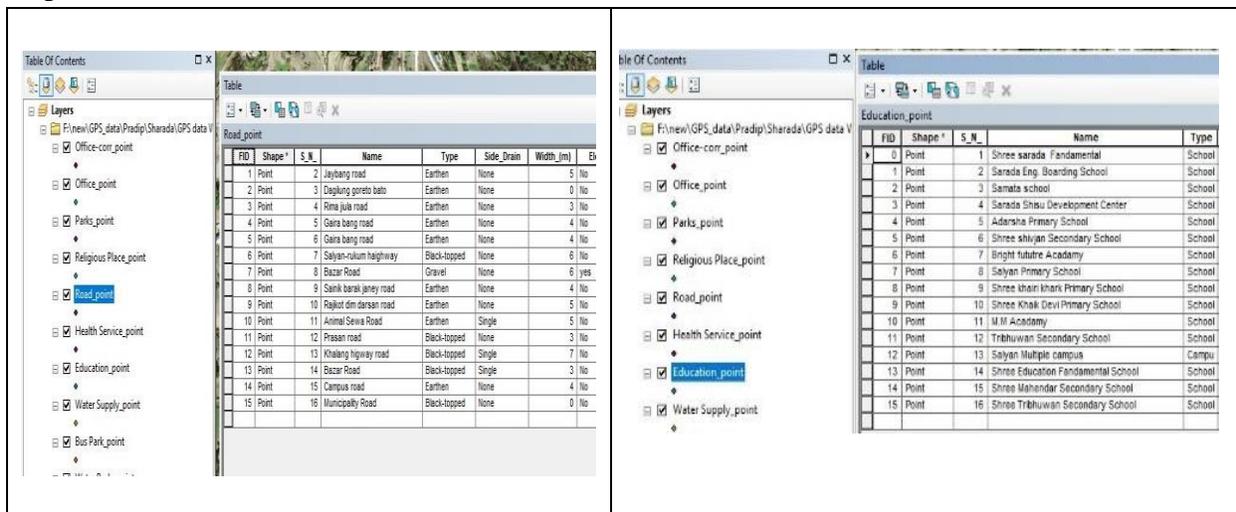


Figure 9: Spatial data of municipality

Non spatial data

The non-spatial data were delineated by using symbols corresponding to the service type of the feature. These symbol enhanced the information. The non-spatial data such as names, service type, ownership etc. of the ground features were acquired by physically visiting the site. For the geographical location of the feature its GPS coordinate was noted and the feature type itself were classified and recorded separately at the time of data collection. A data sheet was created for each feature type such as school, health service, Government offices etc. along with its geographical location. The sheet was added with the geometry table in GIS system. While delineating the data, GIS program has delineated geometry data with any attribute information associated with it as required by the user.

Geographical Location: Nalgad is one of the developing Municipality lies in Jajarkot District. It lies within the bounding box of coordinates (82°35'8.83", 29°1'2.79") and (82°11'46.34", 28°42'47.75") in modified universal transverse Mercator coordinate system.

Satellite Image:

Satellite images of cell size (0.2820024, 0.2820024) m in WGS84 containing the bounding box of Nalgad Municipality was secured in WGS84 coordinate system. In order to identify the political boundary of this municipality, political map of Nepal has been secured from cartographic division of Survey Department of Nepal. The datum of this GIS data was Everest 1830 datum and the projection system was Modified Universal Transverse Mercator (MUTM) system.

Datum Transformation:

In order to overlay the political boundary of municipality on the Image data, the spatial reference system of both the data must be same. Several transformation parameters were needed to transfer data from one datum to the other. For this purpose, we used 7-parameter Helmert Transformation which involves 3 translations along 3-axeses, 3 rotations about 3-axeses and one scale factor. The values of these parameter was obtained from geodetic division of Survey department of Nepal and is listed below:

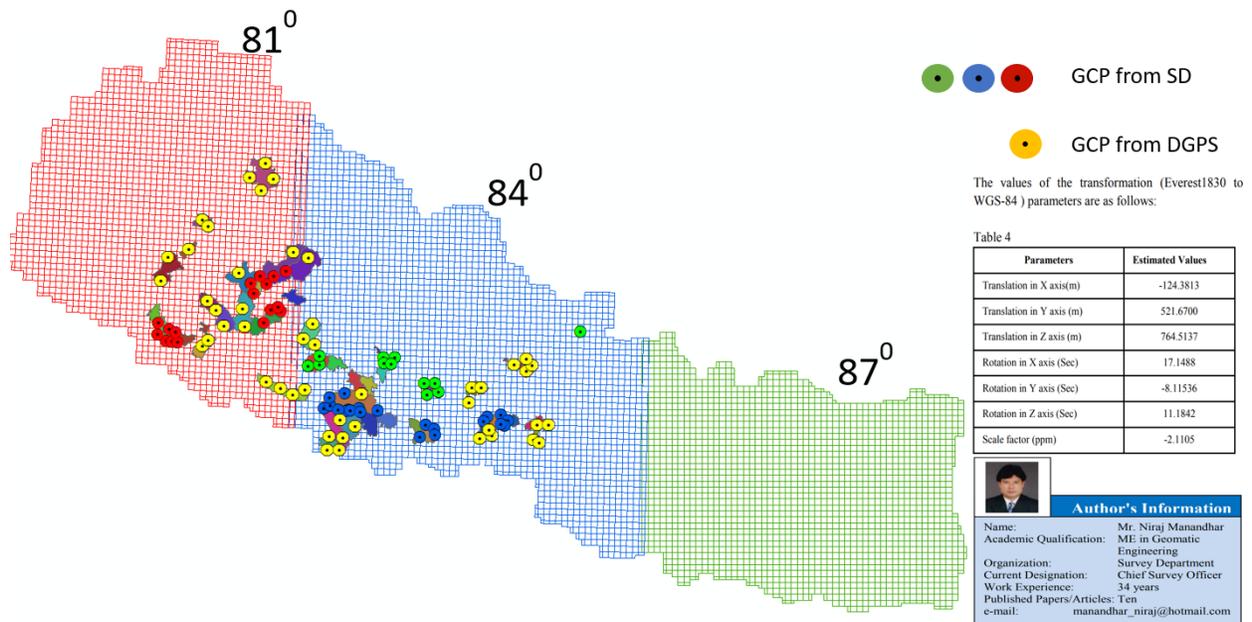
Table 2: Transformation Parameter from WGS84 Datum to Everest 1830 Datum

Parameters	Estimated Values
Translation in X axis(m)	124.3813
Translation in Y axis(m)	-521.6700
Translation in Z axis(m)	-764.5137
Translation in X axis(sec)	-17.1488
Translation in Y axis(sec)	8.11536
Translation in Z axis(sec)	-11.1842
Scale factor (ppm)	2.1105

Projection:

After changing the datum, the data was to be projected in modified universal transverse Mercator system. The parameters used to project Everest1830 datum into MUTM coordinate system are as follows:

- Datum: Everest1830 Ellipsoid
- Semi-major axis = 6377276.3449999997
- Semi-Minor Axis = 6356075.4131402401
- Prime Meridian: Greenwich
- Central Meridian: 81 or 84 or 87 for Nepal
- False Easting: = 500000.000m
- False Northing: = 0.000m
- Scale Factor: = 0.9999000000
- Latitude of Origin: = 0.000
- Linear Unit: = Meter



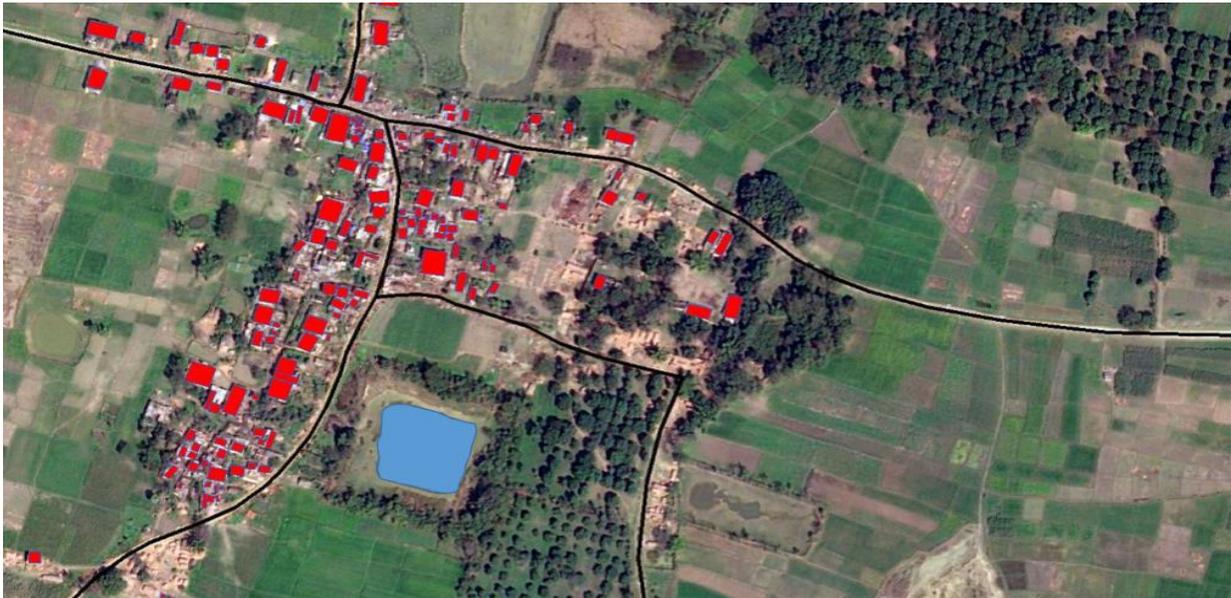
Map 3: Modified Universal Transverse Project system of Nepal

3.5.4 Digitization of Satellite Image

The high resolution satellite image of Nalgad Municipality was now sent into digitization phase. A Geo-database of classified features was created which contained the shape file layers of features of the municipality. The features were broadly classified into different classes namely Building (polygon data type). Road (polyline data type), Cultivation land (polygon data type), water body (polygon and polyline data type), Cross drainage structure (polygon data type). These classes were latter sub-classified on the basis of attribute information within same Geo-database.



Map 4: High Resolution Satellite Image



Map 5: Digitization of Satellite Image

3.5.5 Attribute Information Collection

In order to collect the attribute information of the ground features, a team of engineers was mobilized in each municipality. Each team took a measuring tape, a GPS device, a topographic map, data sheet and the base map of the municipality. This team has visited all the natural and artificial ground features of all wards of the municipality. The team recorded the geographical location of the feature from GPS and attribute information of the feature from direct measurement, visual appearance, inquiry with local authority or inquiry with local resident. The collected data sheet was digitized in excel sheet latter in the office. The spatial and non-spatial data from Excel sheet was uploaded in digitized layers of the features. The features classified in Geo-database were again sub-classified on the basis of attribute information using GIS program.

3.6 Sectoral Workshop:

After the completion of induction workshops and FGD/ PRA, the team of consultants engaged in data analysis, preparation of map and municipal profile. Then after, sectoral workshop was conducted at Ashwin 11-12, 2075 BS on municipality level. The consultant facilitated the workshop to set a long term vision for the municipality along with the identification of lead sectors. This workshop was based on the intensive discussions on the sectors of: -

- Lead Sectoral Identification
- Vision Setting
- Building By-laws
- Land Use Zoning
- MTMP
- Physical Development Plan



Photo 3: Sectoral workshop conducted at Nalgad Municipality

3.7 Preparation of Development Plans:

On the basis of various analyses (SWOT, Trend, Spatial, Gap, Ward etc.) and the identification of lead sectors, necessary activities of the different sectors were listed in Excel sheet with their budget and different time frame. The prepared checklist format for MSIP was filled at the field. This format became helpful to compile the important activities too. Thereafter, the different Logical Framework Approaches (LFAs) of different sectors were tabulated for the formulation of different development plans. The vision, goals, and strategies were determined for all development plans after fixing the objectives. Eventually, the consultants prepared different development plans, viz. physical development, social development, economic development, financial development, conservation and tourism development, institutional development, environmental management, disaster risk management plan, climate change adaptation plan and multi-sectoral investment plan. Thus, all these plans constitute an Integrated Urban Development Planning (IUDP) for this municipality.

- a. Physical Development Plan
- b. Land Use Plan
- c. Social Development Plan
- d. Economic Development Plan
- e. Financial Development Plan
- f. Conservation, Cultural and Tourism Development Plan
- g. Institutional Development Plan
- h. Environment Management Plan
- i. Disaster Risk Management Pan
- j. Climate Change Adaptation Plan
- k. Multi-Sectoral Investment Plan

4 CHAPTER IV: MUNICIPALITY PROFILE

4.1 Introduction

Nalgad Municipality is an urban municipality located in Jajarkot District in Karnali Province (Province no. 6) of Nepal. Nalgad municipality was previously called Tribeni Nalgad. The municipal office is situated at Khagenkot.

The municipality was established on 10 March 2017, when Government of Nepal restricted all old administrative structure and announced 744 local level units as per the new constitution of Nepal 2015. Dandagaun, laha, Khagenkot, Ragda and Bhagwati VDCs were incorporated to form this new municipality. The municipality is divided into total 13 wards.

Table 3: Current political-administrative division of Nalgad Municipality

Current Ward	Merged VDC Name	Previous wards
1	Dandaghau	1-3
2	Dandaghau	4-5
3	Dandaghau	6-9
4	Laha	3-4
5	Laha	6-8
6	Laha	1,2,9
7	Khagenkot	1-4
8	Khagenkot	5-9
9	Ragda	1-3
10	Ragda	4-6
11	Ragda	7-9
12	Bhagwati	1-5
13	Bhagwati	6-9

(Source: MoFALD, 2017)

Geography: Nalgad has elevation between the range of 760 to 5212m. The topography of the Municipality constitutes 10% of Gentle slope, 58% of Moderate slop, 31% of steep slope and 1% of very steep slope. With regard to the dominant soil type, there is 79% of *Eutric Regosols*, 11% of *Hunic Cambisols* and 10% of *Gelic Leptosols*.

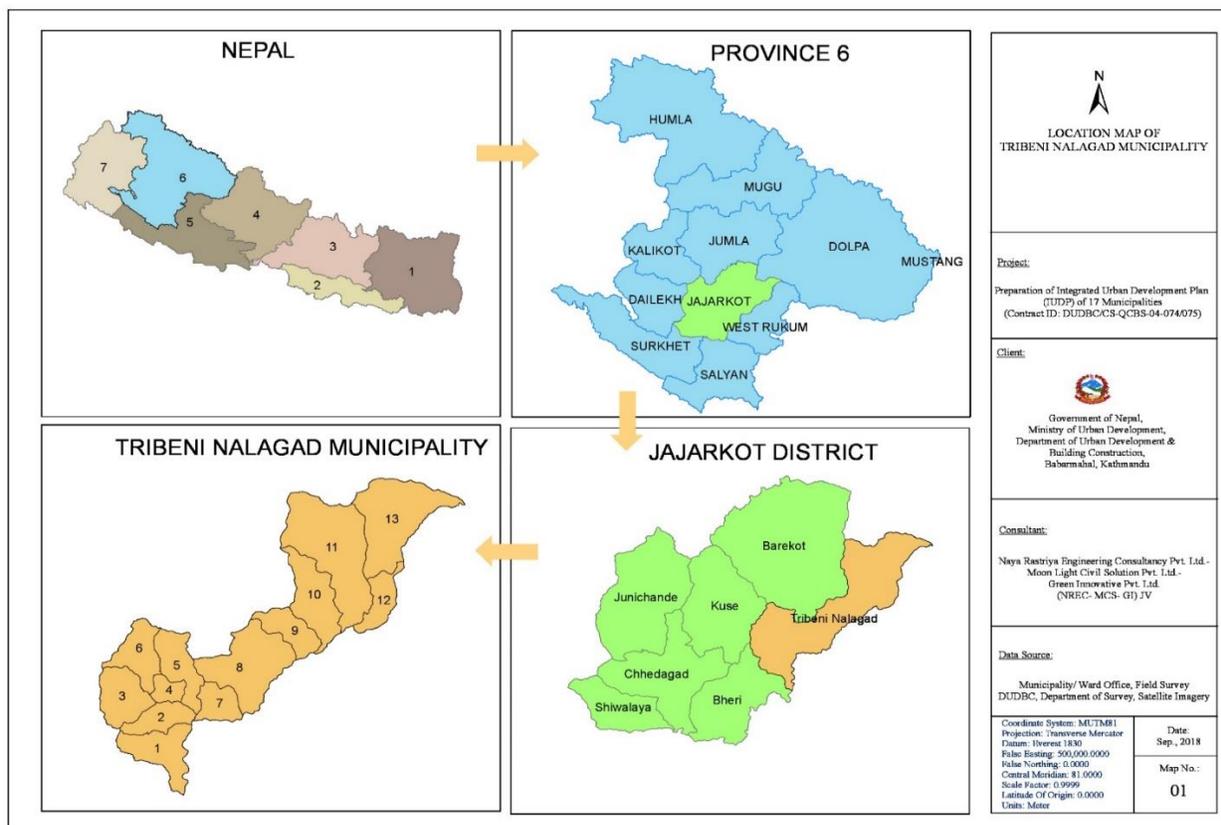
Size and location: Nalgad has an area 387.44 Sq. km (149.59 sq. mi). Nalgad is one of the developing Municipality. It lies within the bounding box of coordinates (82°35'8.83", 29°1'2.79") and (82°11'46.34", 28°42'47.75") in modified universal transverse Mercator coordinate system. The boundary of the Nalgadh has been delineated as follow:

East: Rukum District

West: Kuse Rural Municipality

North: Barekot Rural Municipality and Dolpa District

South: Bheri Municipality



Map 6: Location map of Nalgad municipality

History: Jajarkot is situated in Karnali province, one of the socio-economically important districts in the mid-western region of Karnali region. Political implication of the district is also unavoidable which counts not only in the district level or regional politics but in the national politics as well. The district is one of the ten districts of Karnali located about 338 kilometers (202 m) west of the national capital Kathmandu. The district, with Khalanga as its district headquarters, covers an area of 2,230 sq. km and has a population of 171,304 in 2011 Nepal census.

The majority of the people are Janjati, Dalits, Bahun and Chettris, and there are minorities which are Sarki, Magar, Thakuri, Dhimi, Sanyasi/Dashnami and Kaami. Majority of the people are Hindu. Others are Buddhists, Christians, and Muslims. The former villages of Jajarkot district are Archhani, Bhagawati Tol, Bheri, Bhur, Daha, Paink, Pajaru, Punama, Ragda, Ramidanda, Rokayagaun, Sakala, Salma, Sima, Suwanuli, Talegaun, Thala, Raikar, Dandagaun, Dasera, Dhime, Garkhakot, Jagatipur, Jhapra, Junga, Thapachaur, Karkigaun, Khagenkot, Khalanga, Kortrang, Lahai, Majhkot and Nayakwada. According to new structure Jajarkot district divided into 3 municipalities (urban) and 4 rural municipalities.

Table 4: Local level units in Jajarkot

S.N	Municipality	Rural Municipality
1	Bheri	Junichande
2	Chhedagad	Kuse
3	Nalgad	Barekot
4		Shivalaya

(Source: MoFALD, 2017)

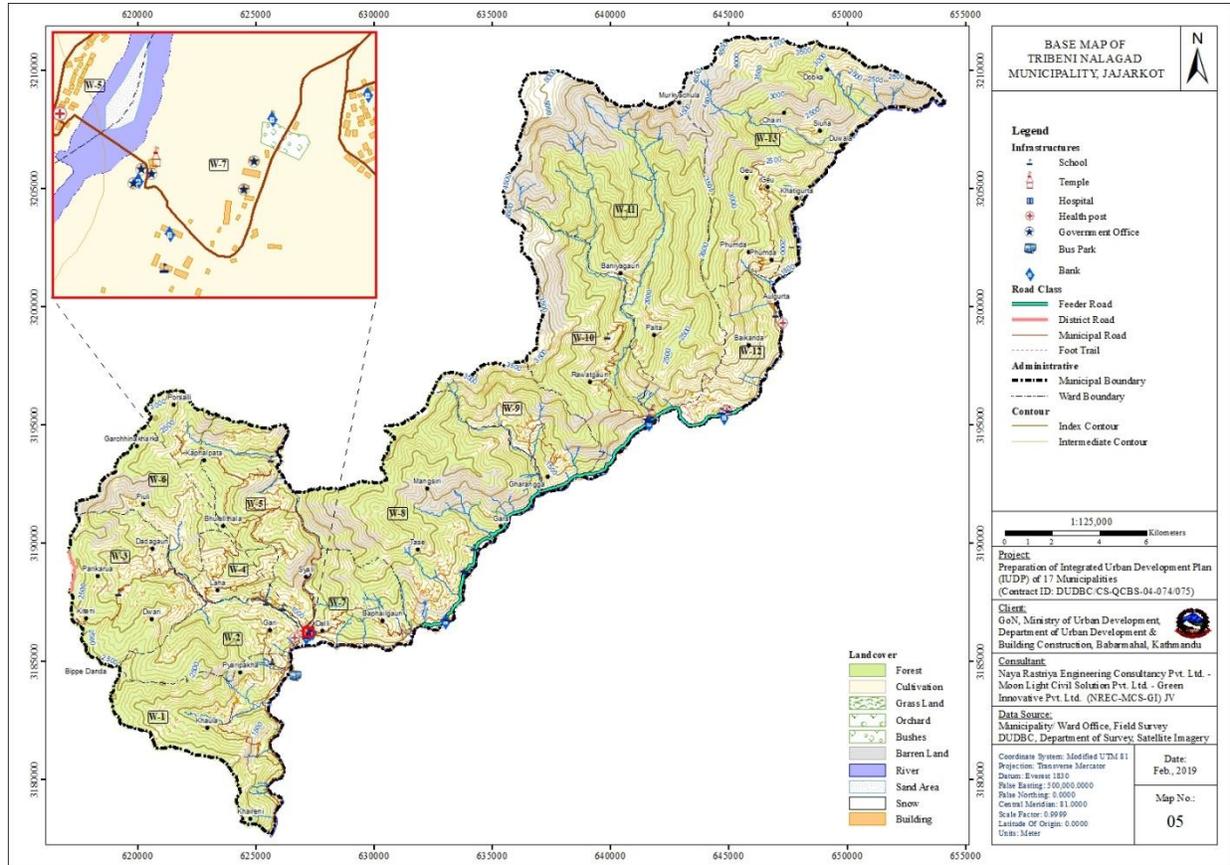
Group of thirteen Chyortens, Shiva Temple, Bharmashto Dhime, Jajarkot Darbar Vestiges, Jagatipur Darwar's Ruins, Shiwalayas of Kalegaun, Kalika Temple and Saru Mastho Paik are the major monuments of the Jajarkot District.

Politically Nalgad municipality have mixed type of political representation. In the elections held for local levels in 2017. The following representatives are elected from different political parties in the municipality. The name of the leaders, their designation and contact number has been presented in the Table below:

Table 5: List of the elected representatives in Nalgad Municipality

SN	Designation	Name of Representatives	Contact Number
1	Mayor	Tek Bahadur Rawal	9758003500
2	Deputy Mayor	Bal Kumari Basnet	9758003502
3	Ward chair-1	Hira lal Pun	9748017879
4	Ward chair-2	Raj Kumar Jaisi	97488609490
5	Ward chair-3	Prachand Oli	9758080022
6	Ward chair-4	Laxmi Bahadur Rawal	9758001391
7	Ward chair-5	Keshab Prashad Sharma	9748021221
8	Ward chair-6	Purna Bahadur Khadka	9748041512
9	Ward chair-7	Arjun Bahadur Singh	9748013625
10	Ward chair-8	Govinda Shahi	9746067788
11	Ward chair-9	Bishnu Bahadur B. Ka.	9747093918
12	Ward chair-10	Bhadra Bahadur Dhyar	9749084785
13	Ward chair-11	Jit Bahadur Malla	9748573535
14	Ward chair-12	Lala Bahadur Khatri	9747299288
15	Ward chair-13	Narendra Shahi	9767057371

(Source: MoFALD, 2017)



Map 7: Base Map of Nalgad Municipality

4.2 Settlement Status

Regarding the ward-level settlements, as illustrated in the Table below, there are 89 settlements in total in Nalgadh. They are of both small and large in terms of the HHs occupancy. The caste/ ethnic composition seems a mixed one comprising Dalits, Brahman, Chhetri, Janajati Magar and Thakuri. However, some of the settlements have been dominated mostly by one caste.

Table 6: Major Tole, household composition and caste/ethnicity at ward levels

Ward	Main Tole/Settlement	Major Caste
1	Chiuri	Janajati, Dalit
	Kalpatu	Janajati, Dalit
	Gyanechwar	Janajati, Dalit
	Pali	Janajati, Dalit
	Pubadhada	Janajati, Dalit
	Jhureli	Janajati, Dalit
	Thulabazar	Janajati, Dalit
	Anapani	Janajati, Dalit
2	Chepka	Bahun, Chhetri
	Mauribhir	Janajati, Dalit
	Dhasora	Janajati, Dalit

Ward	Main Tole/Settlement	Major Caste
	Lyarpe	Janajati, Dalit
	Timilchwar	Janajati, Dalit
	Chiukhara	Janajati, Dalit
	Kwakadha	Janajati, Dalit
	Chuikekafal	Janajati, Dalit
	Gari, Bhune	Janajati, Dalit
3	Ketaa	Bharaman
	Gatta	Janajati
	Chaklechwara	Dalit
	Bhadale	Janajati, Dalit
	Shyatpan	Janajati, Dalit
	Katuwa	Janajati, Dalit
	Chateykachawa	Janajati, Dalit
	Badane, Bolati	Janajati, Dalit
Dadhaalpabhir	Janajati, Dalit	
4	Ghuhara, Pipchaur	Chettri, Bhramin, Dalit
	Shima, Wol	Chettri, Bhramin, Dalit
	Bherikharkha, Jogindhara, Sharkowada	Chettri, Bhramin, Dalit
	Majhashram, Para, Satabhor	Chettri, Bhramin, Dalit
	Machiura, Bihargadha	Chettri, Dalit
	Mamchaur, Kodighau, Chachulina	Chettri, Dalit
	Darpakha	Chettri
	Bhaukhekhola	Janajati, Chhetri, Dalit
	Tatopani	Janajati, Chhetri, Dalit
5	Labisa	Janajati, Dalit
	Serari	Janajati, Dalit
	Aanari Gau, Muli	Janajati, Dalit
	Pokhara Pari Gan	Janajati, Dalit
	Khanda Kura	Janajati, Dalit
	Ragunath	Janajati, Dalit
	Ranikhet	Janajati, Dalit
	Kalimati	Janajati, Dalit
6	Thadana	Chettri, Magar, Dalit
	Bhargun	Janajati, Dalit
	Gachhina	Janajati, Dalit
	Piuli	Janajati, Dalit
7	Dale	Janajati
	Kada Dalli	Chettri, Thakuri
	Bafe Langaun	Dalit
	Khagen Kot	Dalit
8	Lallapaur, Saura, Jikuwa	Brahman, Janajati, Dalit, Xettri
	Tanse, Kapre, Mapakhet	Janajati, Dalit
	Maide, Lapana, Maluwa	Janajati, Dalit
	Mancity, Bhargaun, Manse	Janajati, Dalit
	Bagara, Sima, Karinchi	Janajati, Dalit
	Gamrak, Garamla	Janajati, Dalit
Viji	Janajati, Dalit	

Ward	Main Tole/Settlement	Major Caste
9	Baskot	Janajati, Dalit
	Tantro	Janajati, Dalit
	Ghanranga	Janajati, Dalit
	Baskot	Janajati, Dalit
	Tantro	Janajati, Dalit
10	Rawatgaun	Bahun, Chhettri, Janajati
	Dhyargaun Mathhilo	Janajati, Dalit
	Roli	Janajati, Dalit
	Rangda	Janajati, Dalit
	Kothisalla	Janajati, Dalit
	Kalapani	Janajati, Dalit
	Dhyargaun Tallo	Janajati, Dalit
11	Chakha Eta	Chhettri, Dalit
	Tallo Eta	Janajati, Dalit
	Damka Eta	Janajati, Dalit
	Budu Eta	Janajati, Dalit
	Balipang Gan Eta	Janajati, Dalit
12	Awalgurla	Janajati, Dalit
	Wayakada	Janajati, Dalit
	Danaina	Janajati, Dalit
	Basnetgaun	Janajati, Dalit
	Tallo Nagar	Janajati, Dalit
13	Previous Ward.6 Khalide Majhbara	Thakuri, Chhettri, Dalit
	Previous Ward. 6 Jhol	Janajati, Dalit
	Previous Ward.6 Pani Khalade Thaligaun	Janajati, Dalit
	Previous Ward. 7 Khanigorna Aul	Janajati, Dalit
	Previous Ward.7 Khudi	Janajati, Dalit
	Previous Ward. 8 Bhauchawarde Kalapani	Janajati, Dalit
	Previous Ward. 8 Bhauja De Geode	Janajati, Dalit
	Previous Ward. 9 Rup Bhatiyara	Janajati, Dalit
	Previous Ward. 9 Siuna, Pyari	Janajati, Dalit

(Source: PRA/FGD, 2018)

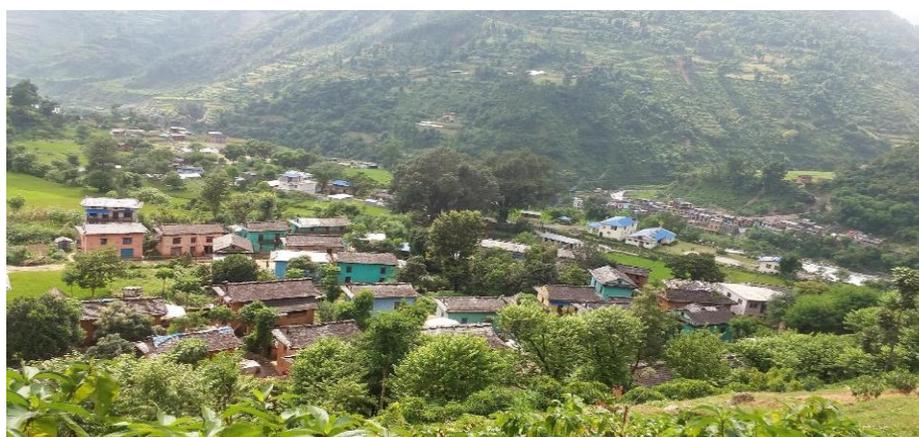
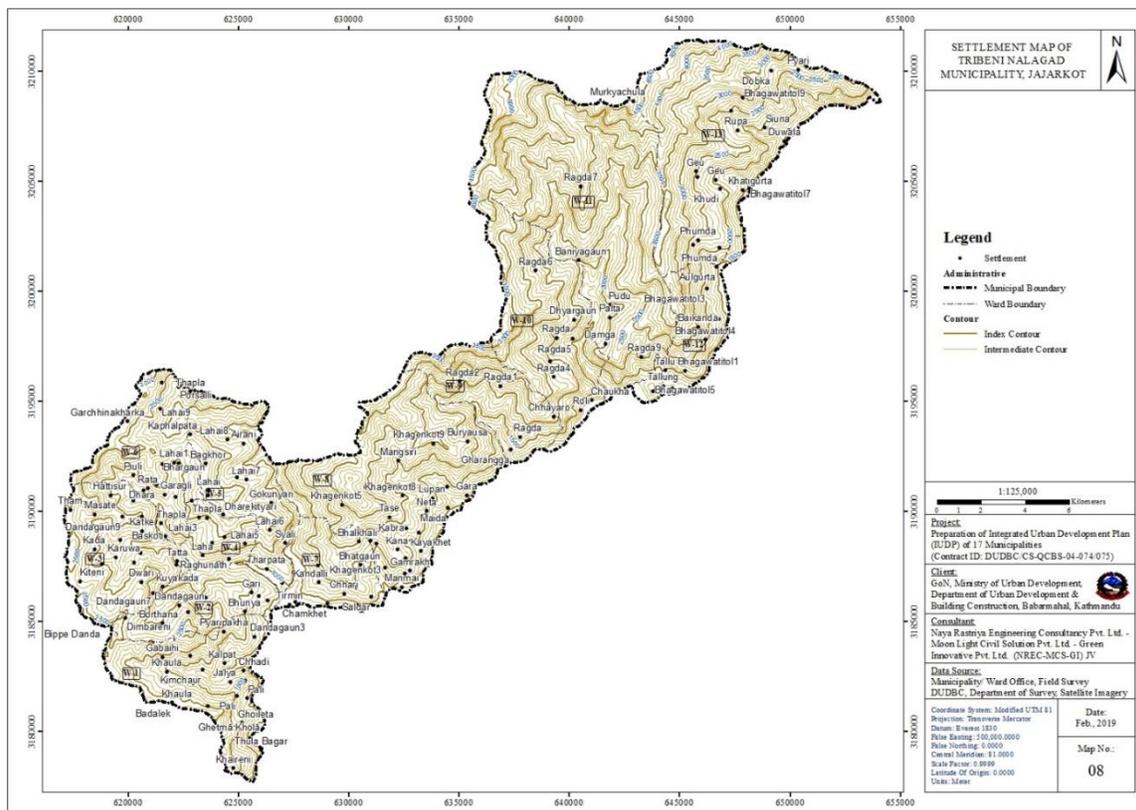


Photo 4: Settlement Pattern at Nalgad Municipality



Map 8: Settlement Map of the Nalgad Municipality

4.3 Demography

Demography is the science and status of population. In 2011, the total population of Nalgad municipality was 25590 having the male population 12741 and female population 12849 respectively. As per the census 2011, the ward-wise population of Nalgadh municipality (Jajarkot) shows that there is comparatively less population of male (49.81%) to the female (50.18%) in all the wards out of the total population (25590) in the municipality.

In overall, this resembles with the national demographic distribution for male and female; i.e. 48.56 percent for male and 51.44 percent for female (CBS, 2012). The demographic status of the Nalgad municipality along with further projections has been presented in the table below:

Table 7: Ward-wise HHs and population structure in 2011 and projection (2018-2033)

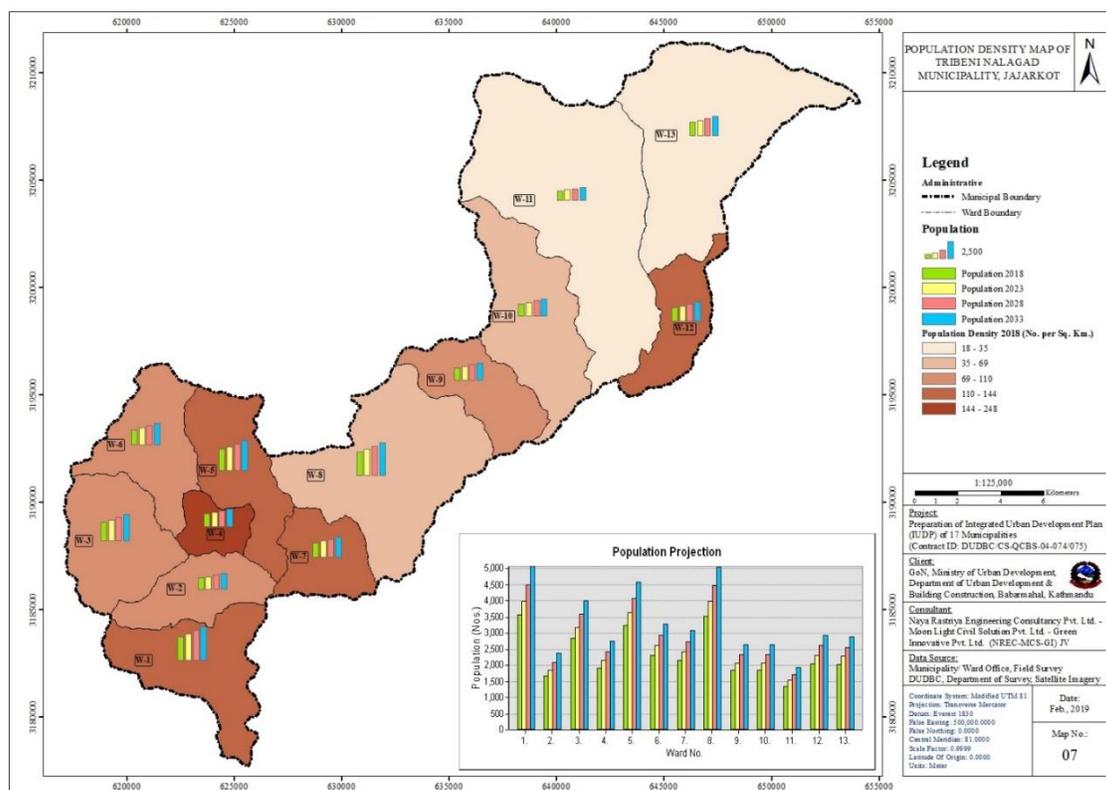
Ward	HHs (2011)	Population (2011)			Existing population and Projected Population (@2.39%)			
		Total	Male	Female	2018	2023	2028	2033
1	561	3023	1487	1536	3566	4014	4517	5083
2	271	1414	704	710	1668	1877	2113	2377
3	421	2402	1190	1212	2834	3189	3589	4039
4	291	1633	837	796	1927	2168	2440	2746

Ward	HHs (2011)	Population (2011)			Existing population and Projected Population (@2.39%)			
		Total	Male	Female	2018	2023	2028	2033
5	483	2741	1388	1353	3234	3639	4095	4609
6	338	1969	965	1004	2323	2614	2942	3311
7	403	1834	879	955	2164	2435	2740	3084
8	560	3010	1511	1499	3551	3996	4497	5061
9	283	1572	809	763	1855	2087	2349	2643
10	267	1572	809	763	1855	2087	2349	2643
11	222	1157	562	595	1365	1536	1729	1945
12	316	1752	879	873	2067	2326	2618	2946
13	305	1727	895	832	2037	2293	2580	2904
Total	4721	25590	12741	12849	30191	33975	38234	43027

(Source: CBS, 2012; MoFALD, 2017)

As per the census 2011, an integrated form of ward-specific population and households is further updated with recent database system on the basis of exponential population growth rate of Jajarkot district for the 2001-2011, i.e. 2.39%. Following the same progression rate, the existing population in the municipality in 2018 is **30191**, while this is projected to be **33975** in 2023, **38234** in 2028 and **43027** in 2033.

The density map of the municipality has been presented below:



Map 9: Population density Map of the municipality

4.4 Social Status

4.4.1 Caste and Ethnicity

Nalgad municipality has a mixed type of caste/ethnic composition, as also discussed in the earlier section of settlement pattern. Virtually, it represents the colorful social structure of caste and ethnicity, including Thakuri and the Mongolians. The presence of Dalit community is common in most of the wards, indicating occupational diversity and heterogeneous community. The dominant caste/ethnic cluster has been presented as per the previous merged VDCs of Nalgad in the Table given below.

Table 8: Caste/ethnic composition of Nalgad (with merged VDCs), 2012

Previous Merged VDC						
Nalgad (Jajarkot)						
	Dandagaun	Lahai	Khagenkot	Ragda	Bhagawati	Total
Total	6839	6343	4844	4085	3479	25590
Chhetri	919	3100	1380	1337	1476	
Kami	1910	1210	1365	1097	578	
Magar	3242	751				
Sanyasi/Dashnami			329			
Damai/Dholi				290	320	
Brahman - Hill	354					
Thakuri		698	990	1040	995	

(Source: Adapted from Census Report 2011 and respective VDC profiles)

In this municipality, the majority of people are: Chhetri and furthermore it is followed by Magar, Kami, Brahmin, Damai and Sanyasi.

4.4.2 Religion

People of Nalgad municipality follow different types of religion. Majority of the population follows the Hindu religion. More than 95 percent people follow Hindu religion.

4.4.3 Mother Tongue/Language Spoken

Language is another important indicator of the municipality. It is seen that the most of the people in Nalgad municipality use Nepali language as their mother tongue. Few of other languages are spoken but Nepali language is taken as the base for the communication between the people of the municipality.

Table 9: Mother tongue/Language spoken

Mother tongue							
	Dandagau n	Laha i	Khagenko t	Ragd a	Bhagawati Tole	Total	Remark s
All Mother Tongue	6839	6343	4844	4085	3479	25590	

Mother tongue							
	Dandagau n	Laha i	Khagenko t	Ragd a	Bhagawati Tole	Total	Remark s
Nepali	6836	6184	4823	4081	3476		
Magar		100	15				
Kham		48					
Others	3	11	6	4	3		

(Source: Adapted from Census Report 2011 and respective VDC profiles)

4.4.4 Social Organizations

Nalgad seems rich in its social and cultural networking where there are many social institutions and organizations deep rooted in the social structure. The organizations are of various types, including social, cultural, economic and civil society. There 14 farmer's groups, 10 agricultural and animal farming clubs, 2 youth clubs, 6 women's group, 3 child service groups and other social groups in this municipality listed during the intuitional survey. Ward-wise social organizations and their description of work have been presented in the table below:

Table 10: Social organizations in Nalgad Municipality

Ward	Major Institutes	Work Description
2	Shree Shrejangshil Bee Keeping Agro	Bee Keeping & Agro
	Shree Buffalo Farming Group	Buffalo Working
	Shree Goat Keeping Group	Working for Goats
	Shree Poultry Farm	Working for Poultry
3	Health-Post	Check-Up, Delivery, Vaccination, Lab
4	Khalchaur Health Post	Check Up
7	Triveni Youth Club	Public Awareness
	Trivun Child Club	Child Improvement Committee
	Balbikash Agro Group	Agro Seeds Production(Paddy & Wheat)
	Saptarangi Goat Keeping Group	Economic Growth
	Himali Goat Keeping Group	Economic Growth
	Sayapatri Women's Agro Group	Kitchen Garden & Fruits
	Fulbari Women's Group	Kitchen Garden & Fruits
	Panipipal Agro Group	Kitchen Garden & Fruits
Harimali Women's Group	Healthy Food Production & Distribution	

Ward	Major Institutes	Work Description
	Xahare District Fruits Group	Different Kinds of Fruits Production & Distribution
	Xahare Khola Fresh Vegetables Group	Different Kinds of Fruits Production & Distribution
8	Women's Group Committee	Saving & Local Awareness
	Mother's Group	Health Related Programme
	Takuri Food Crops Farmer's Group	Distributions of Paddy, Maize, Wheat Seeds & Fertilizers
	Well-Society Development Youth Club	Schools Development
	Deurali Agro Group	Saving & Vegetables Productions
	Bhargaun Burause Farmer's Group	Production of Potato & Simi
	Sundardada Farmer's Group	Vegetables Farming
9	Hariyali Child Development Farmer's Group	Fruits, Vegetables, Lemon, Oranges
	Suryadaya Goat Keeping Farmer's Group	Savings, Goat Keeping
	Laligurns Women's Farmer's Group	Vegetable Production
	Basdhara Buffalo Keeping Farmer's Group	Buffalo Keeping Milk, Curd & Ghee Production
	Hariyali Goat Keeping Farmer's Group	Goat Keeping
	Darimaya Farmer's Group	Potato & Vegetable Farming
	Suryakiran Farmer's Group	Garlic Farming & Vegetables Farming
10	Laliguras Healthy Mother's Group	Health Related Activities
	Tallai Farmer's Group	Agricultural Related Activities
	Bayalghari Farmer's Group	Agricultural Related Activities
	Pragati Mother's Group	Saving and Credits
	Khanipaha Farmer's Group	Agricultural Related Activities
12	Hariyali Mother's Group	Saving and Credits
	Unnat Bali Farmer's Group	Agricultural Related Activities

(Source: PRA/FGD, 2018)



Photo 5: Interaction programme for development of education system in Nalgad.



Photo 6: Training on development of agricultural source.

4.5 Existing land use

Land systems are defined as areas or regions with recurring patterns of component parts, in geographical, geological, and ecological terms. Land systems are generally seen in terms of landform, underlying geology, vegetation and can also have other components that may be recurrent across regional landscapes. They are used extensively in surveys of land use planning and land management.

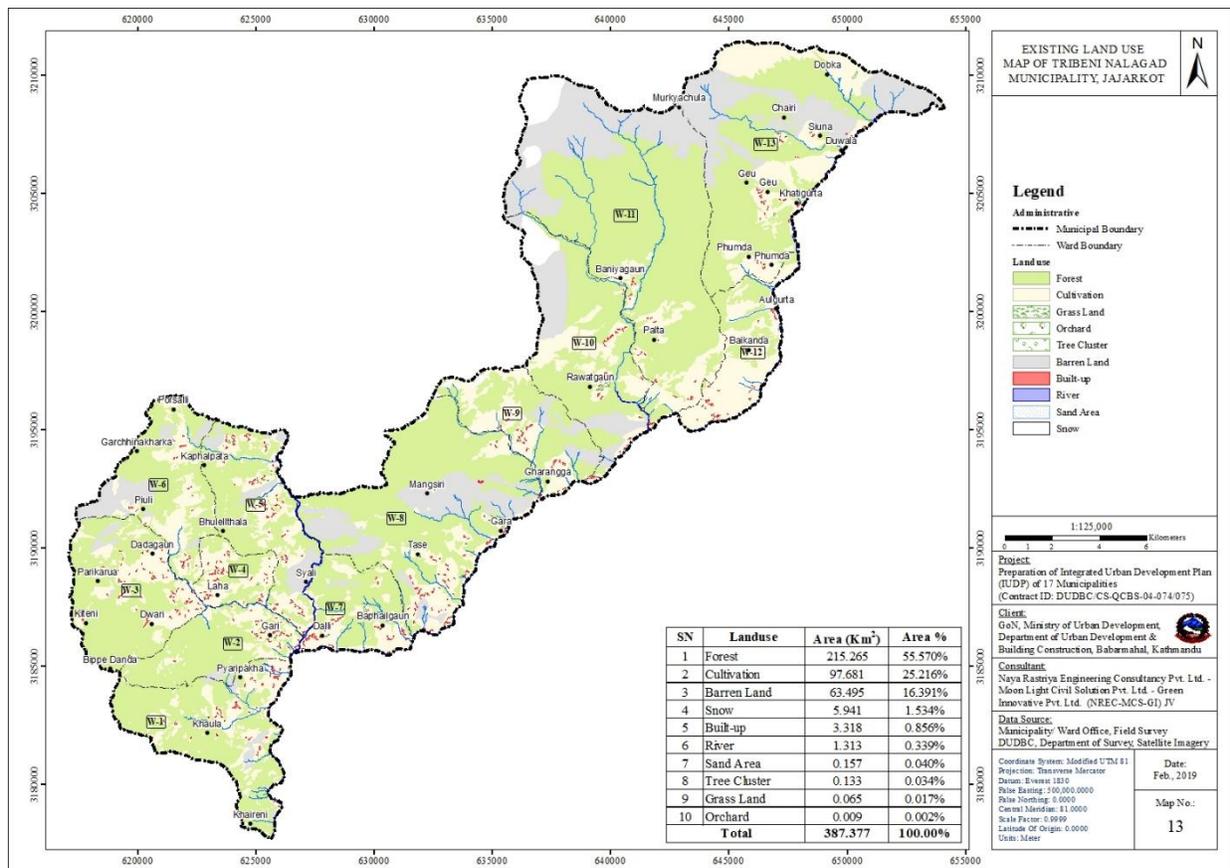
The majority of total land area in Nalgad is covered by Forest (i.e. 55.57%), 25.216% by Cultivation, 16.391% by Barren Land, 1.534% by Snow, 0.856% by Built-up, 0.339% by River, 0.040% by Sand Area, 0.034% by Tree Cluster, 0.017% by Grass Land, 0.002% by Orchard.

Table 11: Land cover of Nalgad Municipality

S.N	Land use	Area (Km ²)	Area %
1	Forest	215.265	55.570
2	Cultivation	97.681	25.216
3	Barren Land	63.495	16.391
4	Snow	5.941	1.534
5	Built-up	3.318	0.856
6	River	1.313	0.339
7	Sand Area	0.157	0.040
8	Tree Cluster	0.133	0.034
9	Grass Land	0.065	0.017
10	Orchard	0.009	0.002
	Total	387.377	100%

(Source: GIS Land Cover, 2018 (prepared for IUDP by NREC J/V))

Further, land use map of the municipality has been presented below:



Map 10: Land use map of Nalgad Municipality

4.6 Climate

Climatic and meteorological condition is one of the unavoidable components of sustainable cities and urban planning. Nalgad Municipality consist of 3% Tropical zone of total area, 40% Sub-Tropical zone, 38% Temperature zone, 15% Subalpine and 4% Alpine zone.

In Nalgad municipality climate is warm and temperate. In winter, there is much less rainfall than in summer. The average maximum temperature in the municipality is 27⁰C and the average minimum temperature is 6⁰C. with regard to Precipitation, the Annual highest rainfall is 1655mm and the lowest rainfall is 865mm. The average annual maximum wind speed is 3.25 m/s and the minimum is 1.30 m/s.

The climate is suitable for plant life like Tejpat, Uttis, Kaulo, Setubar, Lonta, Okhhar, Kurillo, Silpari, Red mushroom, Samaya, Chirailo, Khirailo, Pach aale, Satuwa, Vulte, Kauja, Bek etc in this municipality.

4.7 Vegetation and Forestry

The municipality consists of both communities managed as well as government managed forests. It consists of both natural and plantation forest. Agroforestry is practiced in the municipality. The forest in the municipality can be categorized as tropical, sub-tropical to temperate climatic zone. The major forest types are mixed forest followed by pine forest. Mixed forest is dominant in the north and pine forest is dominant in the south.

As reflected in the table below, there are different forests in different wards of Nalgad, among which 22 are community forests. Some of the major community forests are Pyaargara Community forest, Thulo khola kimu chaur Forest, Raniban majhgaun, Chiuri Forest, Pragatishil Forest, Hasdama khet Community forest, Serakhipani Saukhali Community forest, Sanjola Sajhgari Community forest, Batase Chiura Community forest, Raieli Sisneri Community forest, Pankor Rabula Community forest, Pankor Rabula Community forest etc. The important information about the forest in the municipality is:

- The ward with maximum number of community forest- 8
- Largest community forest (in terms of area)- Hasdama khet Community forest (ward 7 with 254 HHs)

Table 12: Forests in Nalgad Municipality

Ward	S.N.	Name of forest	Types of Forest
4	1	Pyaargara Community Forest	Community Forest
	2	Thulo Khola Kimu Chaur Community Forest	Community Forest
	3	Raniban Majhgaun Community Forest	Community Forest
	4	Chiuri Community Forest	Community Forest
	5	Pragatishil Community Forest	Community Forest
7	1	Hasdama Khet Community Forest	Community Forest

Ward	S.N.	Name of forest	Types of Forest
	2	Serakhipani Saukhali Community Forest	Community Forest
	3	Sanjola Sajhgari Community Forest	Community Forest
8	1	Batase Chiura Community Forest	Community Forest
	2	Raieli Sisneri Community Forest	Community Forest
	3	Pankor Rabula Community Forest	Community Forest
	4	Naumela Community Forest	Community Forest
	5	Menfulakaflidi Community Forest	Community Forest
	6	Raili Sisneri Kafladevi Community Forest	Community Forest
9	1	Golkhala Community Forest	Community Forest
	2	Liurabari Kapleti Forest Community	Community Forest
	3	Dhani Pudhara Salleri Pakha Community Forest	Community Forest
	4	Purna Barunga Pullepara Community Forest	Community Forest
12	1	Kaushila, Community Forest, Bathdada	Community Forest
	2	Bhagawati Community Forest, Basnetgaun	Community Forest
	3	Himali Kabuliyati Forest, Bathdada	Kabuliyati Forest
	4	Himchuli Kabuliyati Forest, Bathdada	Kabuliyati Forest

(Source: PRA/FGD, 2018)

The wildlife and forest products of Nalgad municipality are shown below in the table:

Table 13: Wildlife and Forest Products of Nalgad Municipality

Ward	Main Non-Timber Forest Products (Medical Herbs)	Main Wildlives
1	Sirpa, Katus, Uttis Saal, Kurilo, Padam Chalo, Samayare, Kaulo, Lajpat, Etc	Ghoral, Ratwa, Boar, Monkey, Fox
2	Saal, Chilaune	Tiger, Deer, Wild Chicken
3	Chop, Tejpaat, Aakhar, Ratochyau, Sampo, Sunkhari	Ghoral, Boar, Bear, Red Panda, Monkey, Sampo, Fox
4	Saalli	Kalij, Ratuwa, Rabbit, Monkey, Fox
5	Saal, Sallo, Uttis, Chaap, Taj, Chottra, Malagiri Etc	Ghoral, Bear, Boar, Red Panda, Monkey, Danphe, Sunagiddi, Kalij
6	Bamboo, Salla, Uttis	Ghoral, Deer, Monkey
7	Kurillo, Dhemne, Kauli, Pinchuchyau	Tiger, Kalij, Monkey, Ratuwa, Fox
8	Chop, Tejpaat, Aakhar, Ratochyau, Sampo, Sunkhari	Ghoral, Boar, Bear, Red Panda, Monkey, Sampo, Fox

Ward	Main Non-Timber Forest Products (Medical Herbs)	Main Wildlives
9	Chaup, Tejpat, Okhhar, Uttis, Timmur, Kaulo, Satuwa, Red Punyuumushroom, 5Vauje, Khiyalo, Tite, Kurillo, Bhulle	Red Panda, Bear, Tiger, Ghoral, Ratuwa, Ghaar, Boar, Leopard Etc.
10	Chaup, Tejpat, Okhhar, Uttis, Timmur, Kaulo, Panch Aaule, Sunkhari, Sunghava, Samayo, Chirailo, Mushrooms	Kasturi, Thar, Ratuwa, Ghoral, Boar, Bear, Tiger, Red Panda, Monkey, Langur, Vulture
11	Kaulo, Panch Aaule, Sunkhari, Sunghava, Samayo, Chirailo, Mushrooms	Thar, Ratuwa, Ghoral, Boar, Bear, Tiger, Red Panda, Monkey, Langur, Vulture
12	Tejpat, Uttis, Kaulo, Setubar, Lonta, Okhhar, Kurillo, Silpari, Red Mushroom, Samaya, Chirailo, Khirailo, Pach Aale, Satuwa, Vulte, Kauja	Kasturi, Ratuwa, Ghoral, Boar, Bear, Tiger, Red Panda, Ratuwa, Champangi
13	Chop, Tejpaat, Aakhar, Ratochyau, Sampo, Sunkhari	Ghoral, Boar, Bear, Red Panda, Monkey, Fox

(Source: PRA/FGD, 2018)





Photo 7: Natural forest and Vegetation area of Nalgad

The plant species found in the municipality are Sirpa (*Bergenia Starchei*), katus, Padam Chalo, Samayare, kaulo, Lajpat, Sal (*Shorea robusta*), Chilaune (*Schima wallichaii*), Chop, Aakhar (Chestnut), Ratochyau, sampo, Sunkhari, Sallo, Uttis, Chaap, Taj, Chottra, malagiri, Bamboo, Dhemne, Kauli(Cauliflower), Pinchuchyau, Chaup, Tejpat, Okhhar, Uttis, Timmur, Kaulo, Satuwa, Vauje, Khiyalo, Tite (Mug-wort), Bhulle, Timmur (*Zanthoxylum Alatum*), Kaulo,

Sunkhari, Sunghava (*Dendrobium densifloram*), Samayo, Chiraito (*Swertia*), Mushrooms, Tejpat(Tamala), Uttis, Kaulo, Setubar, Lonta, Okhhar, Kurillo (*Asparagus*), Silpari, Red mushroom, Samayo (*Indian Valerian*), Chirailo, Khirailo, Pach aaule (*Dactylorhiza hatagirea*), Satuwa, Vulte (*Nardostachys grandiflora*), Kauja, Bek etc.

The wild animals found in the municipality are Fox (*Vulpes Montana*), Langur (*Prosbytus entellus*), Bwaso/Wolf (*Canis lupus*), Jackle (*Canis aurens indicus*), Nyauree musso (*Herpestes auropunctus*), Wild boar (*Sus scrofa*), Ratuwa deer (*Mutianus mutijac*), Leopard (*Panthera uncia*), Rabbit (*Lepus ruficaudatus*), Monkey (*Macaca mulutta*), Bear, Goral (*Naemorhedus goral*), Ghoral, Boar, Thar, languor, Red panda etc.

Kasturi, Sunagiddi, Wild chicken, Kalij (*Lophura leucomelana*), Dhukur (*Streptopeli chinensis*), Owl (*Tyto Alba*), Dove (*Chalcophaps indica*), Vulture, are the birds found in the municipality.

4.8 Natural Resource

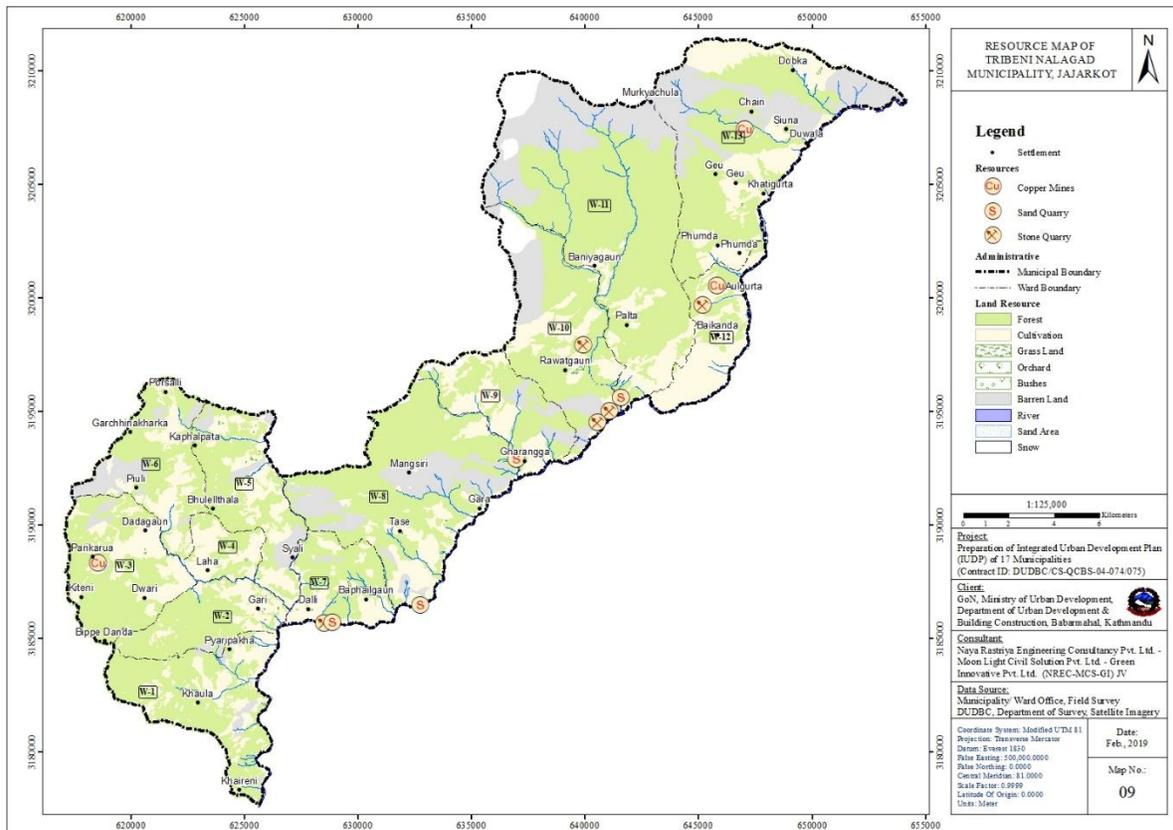
The rangelands which are present along the riverside are suffering from an enormous grazing pressure and wetland biodiversity is threatened by encroachment of wetland habitat, unsustainable harvesting of wetland resources, industrial pollution, agricultural runoff, introduction of exotic and invasive species into wetland ecosystems and siltation. In higher altitude, biodiversity is suffering due to ecological fragility and instability of environment, deforestation and poor management of

natural resources, inappropriate farming practices and climate change. Forest loss has contributed to floods, soil erosion and stagnant agricultural output in many area of the municipality.



Photo 8: Natural Beauty of Nalgad

A major natural resource in Nalgad with their respective use and potentiality is presented in the Map below:



Map 11: Resource Map of the municipality

4.9 Economic Condition

The nature of the distribution of economic resources is the determinant components of the economic status of the people. In Nalgad municipality, economic condition of the people of this area is better in comparison to rest of the local bodies of the Jajarkot district since the headquarter of Jajarkot lies in this municipality. People have been involved in different economic activities beside agriculture. They have more than one source of income. Some members of such families are employed in government offices, corporations and Foreign Employment. The households who have some kind of agricultural production particularly vegetables and horticulture are found benefited from local market. But those households with small landholding size or without land are facing the life of dearth and destitution. They are deprived of opportunities of higher education, jobs in government offices, corporations and foreign employment. They are not in the position to start their own business and enterprises. Some of the economic resources in the municipality are described in the following topics.

4.9.1 Livelihood

Livelihood pattern generally refers the means and ways people are adopting for making their life. It is coupled with economic, socio-cultural and geographical condition of the particular region and time. There are three main livelihood patterns in this Nalgad municipality:

- For most households' agriculture is the primary livelihood activity, based on the ownership of small terraces of irrigated and / or un-irrigated farmland. Middle-class households commonly have land-holdings and cattle, but only modest private tree resources and goat keeping. They tend to be heavily dependent on inputs to their farming systems from common forestland.
- Poorer and landless households depend on non-land based activities such as laboring, artisanal work and NTFP collection. To pursue these livelihoods, they have specific needs from the forest distinct from the other wealth-rank groups.
- Richer households may supplement farming with incomes from local businesses or service employment. They often have land outside the village and may spend only part of the year in the hills. They commonly have irrigated as well as un-irrigated land holdings; extensive on-farm tree resources, grazing; land private forest; and a substantial number of livestock.

The main crops on irrigated land are rice and wheat, and on un-irrigated land are maize and other fruits like oranges. Due to the limited size of land-holdings, hill agriculture systems depend on interdependence between arable land, livestock and forest components. Broadleaf forests, particularly Laligurans, Sal, Katus-Chilaune, supply the most useful range of products for agriculture, such as fuel wood, fodder, leaf litter, foliage, small poles and fence-sticks. In addition

to agricultural needs, virtually all households depend on forests for a variety of domestic needs such as fuel and construction material.

4.9.2 Market center

The people of the Nalgad municipality does different activities for business such as goat keeping and bee keeping. The main market areas of the Nalgad municipality include Dalli, Jajarkot, Rukum, Dolpa, Dadagauu-2, Kalimati and Radi. The major pocket area includes Lupan, Bhaisiti, Pokhara tole, Ragonath tol, Seteti tol, Yerari Tole and Pokhara.

4.9.3 Financial institutions

Nalgad has different kinds of financial organizations, which mainly include saving groups, co-operatives, remittance exchange firms, and banks of different categories. In Nalgad there are 13 cooperatives, 2 finances, 1 bank and there are other small financial institutions listed during the intuitional survey. Their ward-wise allocation has been presented in the table below.

Table 14: Description of Economic Organization

Ward	S.N	Name of Financial Institutes	Address
1	1	Bee Keeping And Agro Co-Operative Ltd	Kalpat, Jajarkot
2	1	Shree Janamukhi Multi Cooperative Ltd	Dadagaun Jajarkot.
	2	Shre Jwala Sana Agro Kishan Cooperative Ltd	Dadagaun Jajarkot.
	3	Shree Namuna Mahila Saving & Credits Cooperative Ltd	Dadagaun Jajarkot.
4	1	Nalgaad Small Farmer Agro Cooperative Ltd	Bheri Kharka, Jogindada
	2	Nagarik Agriculture And Animal Husbandry Cooperative Ltd	Nalgadh-4
5	1	Panchase Multipurpose Cooperative Ltd	Nalgadh-5
7	1	Farmer's & Brother's Finance Ltd	Dalli
	2	Danipapal Cooperative Ltd	Nalgad Kholchaur
	3	NIC Asia Bank Ltd	Dalli
	4	Dovan Cooperative Ltd	Dalli
	5	Nalgad Library	Dalli
8	1	Shree Pipal Chautari Women's Saving & Credits Cooperative Ltd	Manimai
	2	Shree Dovan Small Farmer Cooperative Ltd	Matmai

Ward	S.N	Name of Financial Institutes	Address
	3	Shree Hariyali Cooperative Ltd	Kayakhet
9	1	Shree Buddhapani Multipurpose Cooperative Ltd	Nalgadh-9
12	1	Small/Farmer Cooperative Ltd	Tallubazar

(Source: PRA/FGD, 2018)



Photo 9: Market Centre at Nalgad Municipality

4.9.4 Income sources

Diversification of the sources of income indicates that the people are engaged in different sectors for their livelihood. Agriculture is the major source of income at households. It is followed by remittance and business in the main market centers. Both agriculture and remittance cover about 80 percent of the household income. Following these two sources, wage labor and service are other sources of income. Service and pension is contributing a least proportion because most of the people of this municipality are not highly involved in government and non-government sectors.

There are different types of sources of income in this municipality. Different people have involved in different professional activities for their livelihood. People are engaging themselves in goat keeping, bee keeping and other agricultural activities. The major goat keeping are Luv-Kush goat keeping, Chetanshil agro & goat keeping groups, Balitaal goat keeping farmer group, Sudgera goat keeping group, Gausahar fruits & vegetables farmer group and other groups that are helping in goat keeping business.

The municipality itself is situated in the rural area. There are many prospects of earning from various activities through rural-urban linkages. One of the major sector is agriculture. People have already started growing vegetables and fruits for commercial purpose that can be extended. As the special economic zone is established, there could have job opportunity for various skill people including wage labor. As the municipality is near from the tourist destination and district

headquarter, even the perishable products can be produced and marketed as such for high income generation.

For analytical purpose, the sources of income are categorized into agricultural livestock and off-farm sources. All these seem supplementary on each other. Among the non-agricultural sector, foreign employment seems most common and cross-cutting source of income, while it includes mobility to different regions of India for employment. There are few small-scale industries and micro-enterprises in the municipality.

People in the municipality harvest maize, wheat, mustard, orange lemon, mango etc. for selling purpose which is one of the agricultural base income sources. It is mainly found in ward 1 and ward 2. Also goat keeping and bee keeping are the major animal base income source, people sell goats and honey for earning. Foreign employment and small business has also been a small effort as income source.

4.9.5 Occupation

Major employment of the people residing in this municipality is agriculture/livestock followed by labor work and foreign employment. More than 80% households of this area depend on agricultural & livestock sector. Agriculture and poultry farming are the main source for livelihood.

4.9.6 Small & Medium scale Enterprises

In Nalgad there are number of small, medium scale and cottage industries. Beekeeping, fruits and nursery production, grill, furniture production, are major industries. Therefore, they are generating some employment opportunities for local as well as for rural people. The necessary raw materials for furniture and factories are found from same municipality and from neighboring municipalities. The furniture industry makes tables, chairs, beds, cupboard etc. The market for this product is confined mostly to Nalgad and its surrounding area. Among them furniture factory and nursery production are very important to generating employment opportunities for local people.

According to local known people, there are about seven industries including one beekeeping industry, 2 nursery production industries, few furniture and other industries. There are no any big and large-scale industry is located in the municipal area. Moreover, none of the industries are reported as polluter in the market place. Ward-level detail of industrial and production sectors as indicated during the PRA and institutional survey has been presented in the Table below.

Table 15: Detail of description of industries in the municipality

Ward	Industry/Company Name	Address	Service/Production
1	Maurighar Industry	Kalpat	Maurighar Udpadan
4	Rawal Fruits & Nursery Productions	Jogindada	Fruits And Nursery Plants Distribution

Ward	Industry/Company Name	Address	Service/Production
5	Grill Industry	Kalimati	Works On Grill Products
7	Furniture Production	Dahali	Wood Cutting
	Paddy Grinding Mills	Dahali	Paddy Grinding
	Grill Industry	Dahali	Metal Production
	Nalgad Nursery Productions	Dahali	Herbs

(Source: PRA/FGD, 2018)

The few industries of Nalgad are Nalgad Nursery productions, Grill udhyog, Paddy grinding mills, Furniture Production in ward 7 Dahali, Grill industry in ward 5, Kalimati, Rawal fruits & nursery productions in ward 4- Jogindada and Maurighar industry in ward 1, Kalpat.

4.10 Transportation and Road Network

Road is one of the most important infrastructures. It is also the backbone of development. It helps local people to travel from place to place and importantly facilitate people to market their agricultural products. There are different types of road such as black topped, graveled and earthen in this municipality.

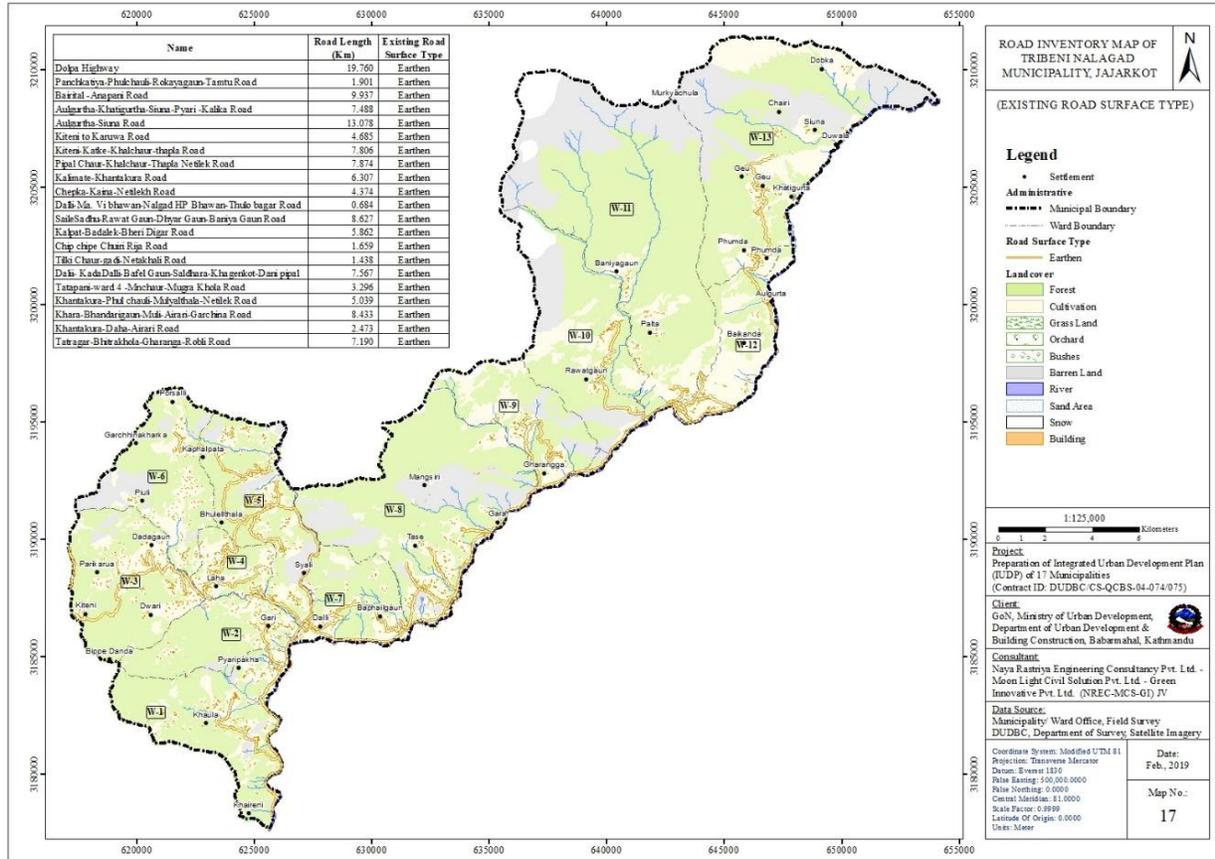
It is connected to other parts of the district by various roads. Most of the roads of Nalgad municipality are earthen are there is high requirement for development of the roads. Dolpa highway is the main road in this municipality connecting 7 wards, ward-2, ward-7, ward-8, ward-9, ward-10and ward-11. Ring road Jajarkot to Dolpa connects Jajarkot district with the Dolpa.

Table 16: Description of Road Networks

Ward	Name of Road	Length (Km)	Type
2	Dolpa (Bheri Corior)	1 km	Earthen
	Xoka rija Gramin farmer	3km	Earthen
	Xoka humka gramini krishi	5km	Earthen
3	Xeppka kaina	6km	Earthen
7	Dolpa highway	5km	Earthen
8	Dolpa Highway	7 km	Earthen
	Manmai, Jikuwa, Kapra	1 km	Earthen
9	Dolpa highway	1km	Earthen
10	Dolpa highway	4km	Earthen
11	Dolpa highway	2km	Earthen
	Ring road jajarkot to dolpa	4km	Earthen
12	Dolpa highway	2 km	Earthen
	Agro road	2 km	Earthen

(Source: PRA/FGD, 2018)

The roads in the municipality is presented below:



Map 12: Road Inventory Map of Nalgad

4.11 Infrastructures and Development Projects

Municipal infrastructure is defined in broad terms as the capital works required to provide municipal services. It includes all the activities necessary to ensure that the works are delivered effectively, such as feasibility studies, project planning and capacity building to establish sound operational arrangements for the works. The term ‘works’ is taken to exclude readily movable assets such as specialized vehicles and equipment and land not directly required for the construction of municipal infrastructure.

For the development of Nalgad, there are number of infrastructures, as presented ward-wise table below. The infrastructures are of various types and inherently related to the development. Their use pattern and issue of further requirements are however different. Since the delivery of municipal infrastructure involves all spheres of government and a whole range of sector departments, there is a strong need for both co-operative governance and cross sector collaboration. The principles are designed to ensure an enabling institutional environment for the delivery of municipal infrastructure, which institutionalizes a collaborative approach.

Table 17: Profile of infrastructures and development projects

Ward	Available Infrastructures	Detail of Utilizations	Essential Improvement
5	Road	Under Use	Need to pitch the road
	Irrigation plan	Only-half available	Need to construct
	Tele communication	Not available	Need to construct
8	Manmai Jikuwa Road construction	Under construction	Dam & canal need mechanical force
	Mulakhola Halchaur Irrigation	Under use	Need maintenance
	Badakhola Canal irrigation	Under use	Need maintenance
	Kaphaldhara lupan Irrigation	Under use	Need maintenance
	Kuselikhola mede Irrigation	Under use	Need maintenance
	Xahare khola Irrigation	Under use	Need maintenance
	Garala NTC tower	Under construction	
	Bagara park (bus park)	Under use	Under maintenance
	Pipalchautari	Under use	Maintenance
9	Vaccination center building	Normal	Need new building
	Public health primary school building	Normal	Needs re maintenance
	Tribhuvan lower secondary Building	Normal	2 buildings must built
	Mahadev Primary school building	Normal	2 buildings must built
12	Health post building	Weak house	Building
	School building	Weak house	Building
	Network	Poor	Increase of quality
	Road	Earthen	Pitch
	Bridge	Incomplete construction	Complete construction
	Drinking water	Poor	Management
13	Irrigation ranigurta	Normal	Need maintenance
	Drinking water, ranigurta	Normal	Need New construction
	Drinking water	Every tole	Need maintenance
	Communication	Tower must be built	
	Health committee	Running	Need maintenance
	Masi khanna maurikharka	Open field grassland	Need management

(Source: PRA/FGD, 2018)

4.12 Education

In every community, education plays vital role as fundamental forces of the social restructuring. The degree of education in a community indicates the standard of living. It is also an instrument of change.

There are altogether 23 educational institutions in this municipality in different wards of the municipality. There are 11 primary level schools, 4 secondary level schools and one college and other small schools. It seems that there is limited number of higher educational institutions. The detail list of name of schools/ college, level wards, teacher number and student number has been presented in the following table.

Table 18: Existing schools and colleges in Nalgad municipality

Ward	Name of School/College	Number of student		
		Male	Female	Total
1	Shree Nepal National Primary School	24	23	47
	Shree Shivashankar Secondary School	135	126	261
	Shree Jana Adarsha Primary School	24	23	47
	Shree Mahadevi Primary School	29	16	45
	Shree Likhan Kumari Primary School	51	71	121
	Shree Janapriya Primary School	25	22	47
	Shree Lakshmipakha Primary School	15	17	32
2	Janak Secondary School	147	143	290
4	Shree Bhanubhakta Secondary School	294	243	
	Shree Bhanu Primary School	51	71	121
	Ganyodaya	25	22	47
	Himalayan	15	17	32
	Janajagaran	51	71	121
	Janata	25	22	47
	Rambhakta	15	17	32
5	Shree Junitaal Saving Secondary School	212	139	347
7	Nalgad Multiple Campus	51	71	121
	Tribhuvan Secondary School	25	22	47
	Tribhuvan Primary School	15	17	32
	Saraswati Primary School	51	71	121
	Saraswati Primary Schools	51	71	121
	Janabikash Basic Schools	25	22	47
	Greendream English Boarding Schools	15	17	32

(Source: PRA/FGD, 2018)

Along with the number of schools and other educational institutions, status of building, available rooms and required number of rooms are also important for promoting quality education. There is limited number of modern building for schools. Old buildings are used as schools and colleges. There is quite well situation of schools such as Suryodaya Secondary school, Kailash Alfa primary school, Tribhuvan Secondary school, dalli etc. Whereas schools such as Shree Bhanu Bhakta secondary school, Lahu, Shree Siddhashai Kumari Primary School parli, Janaki secondary school,

Kaprewal and other schools have very bad condition. It is also a part of basic infrastructural design which is presented in the Table below:

Table 19: Description of Educational Structure

Ward	S.N	Name of School/College	Building Condition	No. of Rooms	No. of Rooms Required
1	1	Shree Janapriya Primary School	Old Building	5	5
	2	Shree Shivashankar Secondary School	Normal	7	7
	3	Shree Jana Adarsha Primary School	Old Building	6	6
	4	Shree Mahadevi Primary School	Normal	5	3
	5	Shree Siddhashaikumari Primary School	Bad	4	1
	6	Shree Lakshmipakha Primary School	Old Building	4	1
2	1	Janak Secondary School	Incomplete	6	4
3	1	Suryodaya Secondary School	Normal	10	5
	2	Kailash Alfa Primary School	Normal	9	4
	3	Nera Primary School	Normal	6	3
	4	Karunodaya Primary School	Normal	6	2
	5	Laligurans Shyaubari	Normal	3	2
4	1	Shree Bhanu Bhakta Secondary School	Decrepit	14	10
	2	Shree Ganyodaya, Primary School	Need Maintenance Shree	8	9
	3	Shree Bhanu Bhakta Primary School	Need Maintenance	9	4
	4	Shree Rambhakta Primary School	Need Maintenance	5	3
	5	Shree Himalayan	Need Maintenance	3	5
	6	Shree Janata Primary School	Need Maintenance	4	4
	7	Shree Janajagaran, Primary School	Need Maintenance	3	5
6	1	Nera Primary School	Normal	5	3
	2	Terapur Primary School	Normal	5	2
	3	Laliguras Gahida	Normal	6	2

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Ward	S.N	Name of School/College	Building Condition	No. of Rooms	No. of Rooms Required
7	1	Nalgad Multiple Campus	Under Construction		
	2	Tribhuvan Secondary School	Normal	14	
	3	Tribhuvan Primary School	Normal	6	
	4	Saraswati Primary School	Normal	6	
	5	Saraswati Primary Schools	Normal	5	
	6	Janabikash Basic Schools	Normal	10	
8	1	Shree Panchabhar Secondary School	At In Old Condition	10	8
	2	Shree Lekh Besi Primary Schools	Normal	6	4
	3	Surya Kiran Primary School	Normal	8	4
	4	Janakalyan Primary School	Normal	6	4
	5	Madan Primary Schools	Bad	6	4
	6	Janaki Secondary School	Decrepit	10	8
	7	Nepal National Primary Schools	Decrepit	6	4
	8	Ganesh Primary School, Malware	Normal	6	2
	9	Himalayan Primary School	Decrepit	5	4
	10	Masta Primary School	Normal	4	5
9	1	Shree Tribhuvan Basic School (1-8)	3 Rooms Are Weak	12	4
	2	Shree Mahadev Primary School (1-5)	2 Rooms Are Weak	9	7
	3	Shree Janaswasthya Primary School (1-5)	2 Rooms Are Weak	7	6
	4	Shree Shrijana Primary School (1-3)	4 Rooms Are Weak	4	4
10	1	Tapo Bhumi, Secondary School	4 Building (Medium)	17	Girls Hostel 20 Rooms/Field
	2	Jana Bikash Secondary School	3 Building (Medium)	11	8 Room Building/Field
	3	Jana Ekata Primary School	1 Building (Medium)	2	5 Room Building/Field
	4	Samaj Paribartan Primary School	1 Building (Medium)	4	2 Room Building/Field
	5	Dalit Primary School	1 Building (Medium)	2	3 Room Building/Field
12	1	B.HI Secondary School	Normal	16	10
	2	Nepal Rastriya Secondary School	Normal	10	4

Ward	S.N	Name of School/College	Building Condition	No. of Rooms	No. of Rooms Required
	3	Dalit Primary School	Normal	5	5
	4	Bal Gyanjyoti Primary School	Normal	4	5
	5	B.HI Secondary School	Normal	7	3

(Source: PRA/FGD, 2018)



Photo 10: Students in participating in program for betterment of educational institutes.



Photo 11: Educational Institution at Nalgad Municipality

4.13 Health

Health is social, physical, mental, physiological and psychological well-being of people. It is known as fundamental thing for human life. However, education and awareness are prerequisite for this purpose. It requires more government investment for health infrastructure. There are six health posts and a number of private hospitals. People from all wards can visit health post with half an hour but they need more time to reach to the hospital for the treatment. People first visit

health post for health problem. People also visit traditional healer and health volunteers. Health facility is limited in Nalgad municipality.

Table 20: Description of Health

Ward	Name of Institutes	Type	Major
3	Health Post	Government	Check-Up, Delivery
4	Health Post	Government	Check-Up, Delivery, Vaccination
6	Ghaughar Clinic	Government	Vaccination Only
	Ghaughar Clinic	Government	Vaccination Only
7	Primary Health Post	Government	OPD, Delivery, Vaccination, Lab, Pharmacy, Emergency Service, Patient Admission, Etc. Services Are Provided As Well X-Ray, Video X-Ray, Service Etc.
8	Community Health Center	Government	Vaccination & Other Primary
	Gaughar Clinics	Government	Vaccination
9	Vaccination Centre	Government	Vaccination
11	Health Post	Government	Delivery, Vaccination, Check Up
	Animal Service	Government	Check Up
	Ilaka Police Station (Choka)	Government	Security Service
	Health Dipa Nepal	Government	
12	Health Post	Government	Check-up, Delivery, Vaccination
13	Health Committee(Thanchaur)	Government	Check Up Only

(Source: PRA/FGD, 2018)



Photo 12: General checkup programme in Nalgad municipality.

4.14 Water Supply and Sanitation

Drinking water

There are different sources of drinking water in Nalgad municipality. However, most of the people use tap water for drinking purpose. Drinking water supply and poor sanitation is the main environmental issue in the municipality. Many wards in the municipality have limited water supply system. Tap or pipe water is the main source of drinking water. Other source of drinking water is rain water harvesting, wells, tube well, and underground water.



Photo 13: Water Supply at Nalgad Municipality

Table 21: Condition of Sources of Water Management

Ward	Major Use	Service Detail (Yes/No)	Present Needs
1	Drinking Water Purification	Yes	Purification
	Tap Or Pipe	Yes	Tap On Every House
	Irrigation	Yes	Should Be Maintained & Developed
	Rain Water Harvesting	No	Should Be Maintained & Developed

Ward	Major Use	Service Detail (Yes/No)	Present Needs
	Under Ground Water	No	Something Should Be Managed
	Well	Yes	Something Should Be Managed
	Tube Well	No	NO NEEDED
2	Drinking Water Purification	Yes	Purification
	Tap Or Pipe	Yes	Tap On Every House
	Irrigation	Yes	Should Be Maintained & Developed
	Rain Water Harvesting	No	Should Be Maintained & Developed
	Under Ground Water	No	No Needed
	Well	Yes	Something Should Be Managed
	Tube Well	Yes	NO
3	Drinking Water Purification	Yes	Purification
	Tap Or Pipe	Yes	Tap On Every House
	Irrigation	Yes	Should Be Maintained & Developed
	Rain Water Harvesting	No	Should Be Maintained & Developed
	Under Ground Water	No	Should Be Maintained & Developed
	Well	Normal	Need Maintenance
	Tube Well	No	No Needed
4	Drinking Water Purification	No	Something Should Be Managed
	Tap Or Pipe	No	Tap On Every House
	Irrigation	No	Canal Management
	Rain Water Harvesting	No	Something Should Be Managed
	Under Ground Water	No	No
	Well	No	Something Should Be Managed
	Tube Well	No	No
5	Drinking Water Purification	No	Something Should Be Managed
	Tap Or Pipe	Yes	Tap On Every House
	Irrigation	Yes	Should Be Maintained & Developed
	Rain Water Harvesting	No	Something Should Be Managed
	Under Ground Water	No	No
	Well	No	Something Should Be Managed
	Tube Well	No	NO

Ward	Major Use	Service Detail (Yes/No)	Present Needs
6	Drinking Water Purification	No	Water Source Management
	Tap Or Pipe	No	Connectivity Of Tap In Every House
	Irrigation	No	Canal Management
	Rain Water Harvesting	No	Collecting Technology Must Be Used
	Under Ground Water	No	New Construction
	Well	No	Need Maintenance
	Tube Well	No	Something Should Be Managed
7	Drinking Water Purification	No	Needed (To Stop Different Kinds Of Transmitting Diseases)
	Tap Or Pipe	Normal	Needed
	Irrigation	Normal	Maintenance & Complete Development
	Rain Water Harvesting	No	Using Technology & Collecting
	Under Ground Water	No	No
	Well	No	NO
	Tube Well	No	NO
8	Drinking Water Purification	Not Done	Need Filter On The Source And Deposte Tank Needed
	Tap Or Pipe	IS In Normal	In Every Residential Area, One House One Tap Programme Must Be Implemented
	Irrigation	Is In Normal	Should Be Maintained & Developed
	Rain Water Harvesting	No	Should Be Maintained & Developed
	Under Ground Water	No	No
	Well	No	Should Be Maintained & Developed
	Tube Well	No	Should Be Maintained & Developed
9	Drinking Water Purification	No	Drinking Water Must Be Purified
	Tap Or Pipe	Normal In Use	Tap On Every House
	Irrigation	Normal In Use	Irrigation Must Be Well Managed
	Rain Water Harvesting	Yes	Collecting Technology Must Be Used
	Under Ground Water	No	NO
	Well	Yes	Need Maintenance

Ward	Major Use	Service Detail (Yes/No)	Present Needs
	Tube Well	No	Something Should Be Managed
10	Drinking Water Purification	No	Conservation Of Water Source
	Tap Or Pipe	Yes	Need Maintenance
	Irrigation	Yes	Need Maintenance
	Rain Water Harvesting	No	Collecting Technology Must Be Used
	Under Ground Water	No	
	Well	No	Something Should Be Managed
	Tube Well	No	
11	Drinking Water Purification	Yes	Purification
	Tap Or Pipe	Yes	Tap On Every House
	Irrigation		Canal Management
	Rain Water Harvesting	No	Collecting Technology Must Be Used
	Under Ground Water	No	New Construction
	Well	Yes	Need Maintenance
	Tube Well	Yes	New Construction
12	Drinking Water Purification	No	Need Of Public Awareness
	Tap Or Pipe	Yes	Re Maintenance & Public Awareness
	Irrigation	No	New Construction
	Rain Water Harvesting	No	No Needed
	Under Ground Water	No	Collecting Technology Must Be Used
	Well	No	Need Maintenance
	Tube Well	No	No Needed
13	Drinking Water Purification	Not Done	Should Be Done
	Tap Or Pipe	Done	Need Maintenance
	Irrigation	Normal	Need Maintenance
	Rain Water Harvesting	No	New Construction
	Under Ground Water	No	No Needed
	Well	Normal	New Construction
	Tube Well	No	NO NEEDED

(Source: PRA/FGD, 2018)

Sanitation and Solid waste

Both ordinary and flush toilets are available in Nalgad municipality. However, many households are lacking toilet facility.

Table 22: Types of toilet used by Households of Nalgad Municipality

Flush toilet (public sewerage)	Ordinary toilet	No Toilet	Not stated	Total HHs
3108	3375	3038	51	9572

(Source: Adjusted with merging VDCs, CBS, 2012)

Management of waste by pit system is applied for household, industrial and hospital waste. Similarly, waste is also disposed by burring and burning. But in ward 1, there is a small effort where people separate degradable waste with non-biodegradable wastes. About 35% is done but more than 65% are not managed.

Solid waste management and open drainage system are the main sanitation problem of this area which might be causative agent for the water borne diseases and land pollution. In ward 12, hospitals contain the dustbin for collecting the wastes but they are further dumped into landfill or burnt.



Photo 14: Sanitation campaign at Nalgad Municipality

Sewerage

There are limited major efforts and future plans for waste water management in the municipality. The facility of sewerage system is limited in the municipality.

4.15 Relief and Drainage

Nalgad municipality is endowed with many streams and running water bodies. Thulo Bheri, Jhumre Khola, Sangata Khola, Piuli Khola, Nalgad River, Mular Khola, Kor Khola, Kare Khola, Khetgati Khola, Bada Khola, Dokhukhola, Thulo Khola, Sirpa Khola, Naughari Khola, Dovan

Khola, Tapragaar, Bar Khola, Xepa Khola, Majh Khola, Bhuja Khola, Khara Khola, Tasu Khola, Lashu Khola, Rapo Khola, Dahar Khola, Aara Khola, Jor Khola, Dote Khola are the major streams flowing in the municipality. Besides these, there are many rivulets flowing in the area.

4.16 Agriculture

Agriculture is the main occupation and major source of livelihood in the municipality. The agriculture system is subsistence and traditional. Commercialization in agriculture is essential. Attraction towards agriculture has been decreasing day by day. Nevertheless, vegetable farming and bee keeping has been gradually increasing in the municipality.

4.16.1 Agriculture Center

Dadagaun, Kaina, Kaul, Chakailcheur, Karua etc are name of some agriculture centre of Nalgad Municipality. Following are the agricultural products and agriculture centers of Nalgad Municipality:

Table 23: Agriculture Center of Nalgad municipality

Ward	Major Agriculture Products	Condition Of Products Livelihood/Sales)	Agriculture Pocket Area
1	Paddy, Maize, Wheat	Livelihood	
	Oranges	Livelihood & Selling	
	Vegetable Farming	Livelihood	
2	Paddy, Maize, Maize, Millet, Potato, Buckwheat, Millet	Livelihood	Dadagaun
3	Paddy, Maize, Millet	Livelihood	Kaina, Kaul, Chakailcheur
	Mustard	Livelihood	Karua
4	Paddy, Maize, Wheat, Barley, Oranges, Lemon, Amilo,	Livelihood	Production Of Maze Guhara Pipalchaur
	Banana, Peanuts, Guva, Potato, Beans, Simi, Red Lintels, ,Sakhar Khanda	Livelihood	
	Soybean, Pea	Livelihood	
5	Maize	Livelihood	Raghunath
	Paddy	Livelihood	Ranikhet
	Wheat	Livelihood	Roradi
	Mustard	Livelihood	Labisa
	Soybean	Livelihood	Khabatakhura

Ward	Major Agriculture Products	Condition Of Products Livelihood/Sales)	Agriculture Pocket Area
	Potato	Livelihood	Khabatakura
	Oranges	Livelihood	Rorari
6	Maize, Wheat	Livelihood	Bhala Tole
	Potato	Livelihood	Bhargaun Tole
	Barley	Livelihood	Gauxinda
	Paddy, Mustard, Millet,	Livelihood	Bhanta Tole
	Fafar Potato	Livelihood	Bhargaun
7	Paddy, Wheat	Livelihood	Dalli Dali Pipal
	Maize	Livelihood	Kadadalli, Pelgaun, Saldhara
	Chana, Red lintels	Livelihood	
8	Maize	Livelihood	Halchaur, Tse, Bhadgaun, Lpana, Dokhu
	Paddy	Livelihood	Kapakhet, Vaixe, Bhaniyea, Maluwabagar
	Wheat	Livelihood	Bhadgaun, Halchaur, Lupana, Kapkhet
	Mustard	Livelihood	Manjiri
	Potato, Piper	Livelihood	Kafed
	Vegetable Farming	Livelihood	-
9	Maize, Paddy, Wheat, Millet	Livelihood	-
10	Maize, Wheat	Livelihood	Rawatgaun, Chyargaun,
	Paddy	Livelihood	Rawatgaun, Roli
11	Paddy	Livelihood	-
12	Maize, Wheat	Livelihood	-
13	Maize, Maize , Paddy, Potato	Livelihood	On Every Tole

(Source: PRA/FGD, 2018)



Photo 15: Plantation Program conducted at Nalgad Municipality

Agriculture pocket area

The major crops in Nalgad municipality comprises of paddy, wheat, maize, oranges vegetables, millet, potato, Barley, lemon, Amilo, Musami, Banana, Peanuts, Guava, Beans, Simi, Red lintels, Sakhar khanda, Bhatmas, Pea for livelihood as well as commercial use. Dadagaun, Kaina, kaul, chakailcheur, Karua, Kadadalli, Pelgaun, Saldhara, Bhadgaun, Halchaur, lupana, Kapkhet etc are major pocket area of the Nalgad municipality.

The table below portrays details of cropping calendar as per the Nepali months which include 10 different kinds of agricultural products. This cropping calendar is applicable to all the wards of the municipality. The major crops in Nalgad municipality comprises of paddy, wheat, maize, oranges vegetables, millet, potato, Barley, lemon, Amilo, Musami, Banana, Peanuts, Guava, Beans, Simi, Masuro, Sakhar khanda, Bhatmas etc. The cropping pattern in the villages of municipality seems involving both seasonal and non-seasonal, but mostly the seasonal pattern of farming and cultivation. It further differs as per the topography of the land; different for pain land a fallow land.

Table 24: Cropping Calendar

SN	Name of Agriculture Products	Cultivating	Harvesting Time	Income source	Economic source
1	Paddy	Jestha- Ashad	Ashoj- Kartik	Maize	Business and Foreign Employment
2	Wheat	Kartik- Mangsir	Chaitra-Baisakh	Wheat	
3	Maize	Baisakh- Jestha	Ashoj	Mustard	
4	Potato(Rainy)	Falgun- Chitra	Shrawan-Bhadra	Honey	
5	Potato(Winter)	Ashoj-Kartik- Mangsir	Falgun-Chaitra- Baisakh	Orange	
6	Mustard	Ashoj-Karthik	Magh-Falgun	Lemon	
7	Winter vegetables	Ashoj-Karthik	Poush-Magh- Falgun-Chaitra	Mango	

SN	Name of Agriculture Products	Cultivating	Harvesting Time	Income source	Economic source
8	Rainy vegetables	Baisakh-Jestha-Ashar	Bahdra-Ashoj	Agriculture	
9	Unseasonal vegetables	As required		Agriculture	
10	Agro seeds				
11	OTHERS			Agriculture	

(Source: PRA/ FGD, 2018)

The cropping pattern in the villages of municipality seems involving both seasonal and non-seasonal, but mostly the seasonal pattern of farming and cultivation. It further differs as per the topography of the land.

4.16.2 Livestock and animal pocket area

Along with the agricultural activities, recent trend in the municipality is seen as the commercialization of livestock farming for the income generation and promotion of the livelihood. Buffalo, cow, chicken, goat, pig and fish are the major animal pocket areas of Nalgad municipality. The farms have been also developed as the animal pocket center that Buffalo, goat, pig, chicken and bee are the major animal pocket areas of Nalgad municipality.

Table 25: Animal pocket center and livestock farm in Nalgad

Ward	Pocket Area	Production & Market Condition(Major Market)	Pocket Area
1	Goat Keeping		
2	Complete Bee Keeping	Dalli, Jajarkot, Rulum Dolpa	Dadagaun
	Luv-Kush Goat Keeping	Dandagaun	
5	Chetanshil Agro & Goat Keeping Groups	Kalimati	Pokhara
	Balitaal Goat Keeping Farmer Group	Kalimati	Yerari tole
	Sudgera Goat Keeping Group	Kalimati	Yerari tole
	Gausahar Fruits & Vegetables Farmer Group	Kalimati	Seteti tole
	Pragatishil Fruits & Vegetables Farmer Group	Kalimati	Ragunath tole
8	Laligurans Fruits & Vegetables Farmer Group	Kalimati	Pokhara tole
	Upper Mountain Goat Keeping	Rukum, Radi & in Dolpa	Bhaisiti
	Paribartan Goat Keeping	Rukum, Radi & in Dolpa	Lupan

(Source: PRA/FGD, 2018)

4.17 Irrigation

Irrigation is a primary source for the agriculture to promote its productivity and commercialization. It is however partly developed in Nalgad municipality. The water resources for irrigation in the municipality are Karnali River, Bheri River, Surya Khola, Alainchi Khola, Kota Khola, Dobra Khola, Chhatte Kulo, Chor Khola, Tokma Khola, Syalighat Khola, Doplal Khola, Baraiche Kholam, Ghatte Khola, Mul Khola, Maghighat Khola, Biju Khola, Gutu Khola, Sanne Khola, Rudra Khola, Aap Khola, Bangare Khola, Galpha Khola, Branch of Babai canal.

There are 9 major irrigation projects in the municipality. The list of major irrigation projects and its benefitted areas has been presented below in the table:

Table 26: Areas Benefitted from Irrigation Project

S.N.	Irrigation Project Name	Irrigated Area(Ha)	Irrigated Location
1	Babai Irrigation Project	-	Diudhakala, Motipur
2	Kuthura Laganiya Irrigation Project	400	Biluwa
3	Aamaeyataal Irrigation Project	440	Biluwa
4	Baatuli kurule Irrigation Project	120	Ward.no.1
5	Chepang Irrigation Project	42	Ward.no.1
6	Rehukhola Irrigation Project	450	Diudhakala
7	Rehukhola Aaniri Irrigation Project	300	Motipur
8	Kuruli Irrigation Project	8	Ward.no 1
9	Gitthi Khola Irrigation Project	22	Biluwa

(Source: Household Survey, 2017)



Photo 16: Canals in the municipality

4.18 Natural hazards and Disasters

Disaster Risk

This municipality environment has suffered the effects of agricultural encroachment, deforestation and consequent soil erosion and contamination of the water supply. The factors for the loss of agro biodiversity include landslide and soil erosion, pollution, fire, overgrazing. There is no proper management after disaster and plan for disaster management.

Landslide Risk

Landslide and erosion which are the common problems associated with these rivers and are natural drivers of changing landscape in some part of the municipality. Gerete, Ranikhet, Kalimati, Khara, Bikre bagar, Ghatte khola and Bheri River is major causes for the Landslide in this municipality. People of this municipality have made efforts like afforestation in order to decrease risk of landslide.

Flood Risk

Gerete, Ranikhet, Kalimati, Khara, Bikre bagar, Bheri River Flood, Mulkhola flood, Sauraya khola, Khara khola fasda, Gehu khola, Jare khola, Rasta khola etc are main disaster of flood causing destruction of huge land areas, houses and loss of lives of people. In order to protect themselves from flood people have started afforestation, making dams and embankment in the riverside.

Table 27: Status of disaster in Nalgad municipality

Ward	Major risk and Disaster	Settlement Displacement From Disaster/Risk	Available Plan or Present Needs
5	Landslide in Gereti	Yes	Afforestation
	Flood landslide in Kalimati	Yes	Afforestation
	Flood and landslide in Rani khet	Yes	Afforestation
	Flood and landslide in Khara	Yes	Afforestation
	Flood and landslide in Birke bagar	Yes	Afforestation
7	Bheri River Flood	Yes	River Dam
	Mulkhola flood	Yes	River dam
	Sauraya khola	Yes	River dam
	Flood in Mula khola	Yes	River dam
	Landslide		Afforestation
8	Flood in residential area, Karyakhet kahare khola	Yes	River dam
	Flood in residential area, Bagara khola	Yes	River dam

Ward	Major risk and Disaster	Settlement Displacement From Disaster/Risk	Available Plan or Present Needs
	Flood in residential area, Tatragad to Bagarkhet	Yes	River dam
	Flood in residential area, Bheri Khola	Yes	River dam
9	Flood in residential area	Yes	Residential area should be migrated
	Flood in residential area, Bheri river	Yes	River dam need
10	Flood & landslide Drought, Mahamari	Somewhere	Need river dam on Bheri river
11	Landslide & flood, Bheri River	Yes	Immediate River dam
12	Landslide , Kahare khola vir	Yes	Village management
	Flood of Bheri River	Yes	River damn
	Mahamari	Yes	Afforestation/tree plantation
	Bhutta ,Tree plantation	Yes	Lack of cleanliness of drinking water
13	Residential area swept away by Bheri river	Yes	Need dam on side
	Residential area swept away, Khara khola	Yes	Need dam on side
	Residential area swept away, Gehu khola	Yes	Need dam on side
	Residential area swept away, Jare khola	Yes	Need dam on side
	Residential area swept away, Bheri khola	Yes	Need dam on side
	Residential area swept away, Duwala khola	Yes	Need dam on side
	Residential area swept away, Rasta khola	Yes	Need dam on side
	Residential area swept away, Gara Pani khola	Yes	Need dam on side

(Source: PRA/FGD, 2018)

Although, flood and landslide are the major disasters in the municipality, the control measures are still lacking.



Photo 17: Flood at Jhupra River in Nalgad Municipality of Jajarkot district

Pollution Risk

Air and water pollution are significant environmental pollution in the municipality. Local farmers use chemical fertilizers such as urea, pesticides and insecticides in an unregulated manner to increase the amount of production in the municipality which has several potential negative consequences, including agricultural practice as well as soil productivity, contamination of local food and water sources. The runoff from agricultural lands carries the chemicals into the local water sources causing water pollution. Vehicular and industrial emissions increasingly have contributed to air pollution in urban areas where as in rural areas the graveled agriculture roads are the prominent source of air pollution.

The main source of water pollution is lack of management of solid waste, dumping of wastes into water source, and water source being open to all animals, birds and human. Besides, flood and landslide are also the sources of water pollution.

Other risk

Loss of cultivated land, grass/grazing and forest land due to river encroachment is a common problem, while in some parts abandoned by channels or old riverbeds have been brought into cultivation or reused as grazing areas or used for tree plantations in hazard areas. The river morphology is unpredictable i.e. increase bank cutting, bifurcation and flooding which one is common problem and reoccur every year.

Regarding this, sand extraction is also common in some rivers for household purpose causing huge impact on riverine environment such as destruction of aquatic habitat, flooding, change in river morphology etc. There is deforestation and habitat degradation in all wards due to construction of rural roads. The big settlement areas are located near to forest area causing further degradation of forest.

4.19 Telecommunication and postal services

The major means of telecommunications of the Nalgad municipalities are mobile phones, local telephones, radio, television etc. According to CBS,2012, 37% of the population has access to the radio services whereas only 18% of population has access to the television. Nell, Nepal telecom, UTL, CDMA are used in communication networks.

Post office

In Nalgad municipality there are post offices in Ragda and Dalli. However, the use of postal service declining every year due to the easy and accessible to telecommunication.

4.20 Electricity

According to CBS 2011, Eighty percent households of the municipality are using electricity facility. People are using electricity for various purposes like lighting, cooking, heating and also for their small industries. There is no electricity facility in ward 1, ward 3, ward 6, ward 10 and ward 13. Similarly, as the discussion with municipal representatives, 3777 households use electricity, 11 HHs use kerosene, and bio gas 12, solar 921 out of total households of the municipality.

Hydropower

There are few hydropower projects in Nalgad municipality. One of the major hydropower projects is Nalgad hydropower project in ward 10. And other major hydro powers are Saita bheri khola hydropower (16 kW), Bagmare hydropower (45 kW), Rani Khola hydropower (11 kW), Lahare khola hydropower (32 kW), Rular Hydropower (25 kW), Sirpa khola Hydropower (32 kW), Chadakhola Hydropower (7 kW), Dokhukhola hydropower (9 kW), Dabiya khola Hydropower (12 kW), Chokha Hydropower (2 kW) etc. Most of the hydropower are in normal condition but few are in the state of under construction. Rani Khola hydropower has been swept away. Lahare khola hydropower has been providing it services for 500 households which is located in Gauxiltar (ward 6).

Table 28: Hydropower Projects at Nalgad Municipality

Ward	Name	Capacity (kw)	Location	Benefited Household	Existing Condition
3	Saita bheri khola hydropower	16KW	Kewa	250	Normal
4	Bagmare hydropower	45KW	Guhara	495	
5	Rani khola	11KW	Ranikhola	67	Swept away
6	Lahare khola hydropower	32KW	Gauxiltar	500	Under construction
7	Rular Hydropower	25KW	Dalli	130	Normal
8	Sirpa khola Hydropower	32KW	Maide lupan, kareni, madawa	200	Normal
	Chadakhola Hydropower	7Kw	Kaprekhet, radi, Nilagard, mannmai barash	110	Normal
	Dokhukhola hydropower	9KW	Kapra,tisse, chaurima	150	Normal
9	Dabiya khola Hydropower	12KW	Baskot	250	Bad
11	Chokha Hydropower	2KW	Chokha	200	OLD

(Source: PRA/FGD, 2018)

4.21 Energy use

The majority of residents in this municipality use fuelwood from public and private sources as their primary energy source. Availability in accessed forests, amount of fuelwood collected, preferred tree species for fuelwood, contribution of public and private sources to total fuelwood consumption, and investment in tree planting on agricultural land are major concern to the local people. Most households collected fuelwood from a private source, mainly trees planted on sloping, rain-fed agricultural land (Bari), but this accounted for only a small portion of most households' requirement.

People have limited access to many modern sources of fuel. They are using firewood for cooking purpose and very few have access to the gas, bio gas, kerosene oil and others. Ward 1, ward 2, ward 3, ward 4, ward 9 and ward 13 are completely dependent on fire wood for cooking purpose while other wards have access to LPG gas but in very few households.

4.22 Culture and tourism

There are different castes and ethnic groups living in the municipality. These different castes and ethnic groups have their own customs and traditions. Generally, people following different religions have different cultures. Hindus are the dominant religious group living here. They have their own rites and rituals. They observe different festivals like Dashain, Tihar, Teej, Krishnastami,

Raksha Bandhan, and Maghe Sankranti and so on. The people of this municipality follow different religions with their own customs and traditions. The people of different caste follow the tradition according to their culture. These are observed in different month, tithi etc.

There is prospect of development of tourism industry in this municipality. Nepal has different climates depending on topography and altitude. Therefore, external tourists from different countries as well as internal tourist from different parts of our country can choose the climate they like most. Likewise, this municipality has different caste and ethnic groups residing various settlements of the municipality. Each caste and ethnic group has its own culture. Tourists can enjoy cultural varieties. People of this municipality regard guests as gods. They are courteous and hospitable to the tourists.

Nalgad municipality has numbers of potentiality of development of tourism and it is the important aspect of economy too but there is fluctuation of tourist in the municipalities. It has number of places for religious, adventurous, natural site seeing too. The major tourism spots in Nalgad municipality are Bheukhola (Faanchaur) Roopchaur Pangeychaur(Raap) Famda Bhigichaur(Famda) Khudi Raniban (Khudi) Mashikhanna(Shiun) Must Bhagwati (Khudi) Shaijumari (Famda) Mutkechula, Oglachuleni Puratwato Bastu, Tallo Chara Jharana (Chokha), Banepa Ghau, Bhagwati Mandhir, Bhyauli Tasey(Kalapani), Karthik Purnima Deuti Pooja (Rawat Gau), Bhadrapurima Mela (Rawat Ghau), Shrawan Purnima Mela (Dhyarghau), Gumthaley Tamakhani (Dhyarghau), Ghutupani Tantra Tol, Gauthali Cave, Dware Lekh etc. Many of these are in poor condition these can be maintained in order to increase the tourism in this municipality. But there are no facilities of homestay, tourist hotel except small local hotels and lodges but these are not established for the tourist except local people.



Photo 18: Temple at Nalgad Municipality

There are a number of temples with different religious importance in this municipality. Hindu people worship in these temples regularly. Mant Mandhir, Baapkada, Panch Bhayar, Awalgurna, Dadha Mathi, Bhagawati Mandhir, Adsarsha Tirtha (Nalipa Ghau), Tatopani Jwalamukhi Mandhir, Halchwar Ram Mandhir, Maibhagawati Math Mandhir, Dhani Podhara etc. are the major religious places and temples of Nalgad municipality. During religious ceremonies and festivals people gather in the temples to worship. There is one temple in the municipality. The municipality is covered with beautiful natural landscape and have mesmerizing view but there is no any artificial park, if the municipality establish such park and manage homestay with trekking route it will create more opportunity for domestic and foreign tourist.



Photo 19: Cultural Programme at Nalgad Municipality

Table 29: Tourism Places and Destination

Ward	S.N	Tourist Place	Existing Condition	Opportunity	Major Threats
1	1	Badalekh	Normal	Airport construction	Lack of resources
	2	Nahukuli	Normal	Agricultural production	Lack of Modern technical & roads
	3	Bheri River Rafting(Chisapani) To Rimna	Normal	Need to develop Tourism spot	Lack of Expert
	4	Rabsa Cave, Thulabazar	Normal	Can be tourism spot	Needs research & investigation
	5	Rabsa To Jureli – Anapani Cable Car	Normal (Almost 10km)	Could be developed	Geographical challenging
	6	Darbare Cave	Normal	Can be developed tourism spot	Disconnected from road
2	1	Nahabhumi View Tower Devkane Nahamurla Cable Car	Normal		
	2	Dham	Normal	Can be tourism spot	Geographical challenging
	3	Fukne Cave Bherlotey	Normal	Can be tourism spot	Geographical challenging
	4	Bheri River (Bhir Mauri Living Place)	Normal	Can be tourism spot	Geographical challenging
	5	Rimna To Jhureli Hurdey Radhalon Anapani Cablecar	Normal	Can be tourism spot	Geographical challenging
	6	Durabar Cave (Garbey)	Normal	Can be tourism spot	Geographical challenging
3		Dware Lekh	Old	Tourism spot	Geographical challenging
		Old Caves In Kadke Dham Lekh	Old	Researchable	Geographical challenging
		Old Residential Of Kiteni Mauri	Old	Researchable	Geographical challenging
4	1	Bhotegauri Cave	Old	Can be used as tourism spot	Road, communication, electricity, water
	2	Nayarkot	Beautiful spot	Can develop view tower	Transportation, technology, water
	3	Dahakhana Cave	Not used yet	Can be used as tourism spot	Transportation, water

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Ward	S.N	Tourist Place	Existing Condition	Opportunity	Major Threats
5	1	Khantakura River	Normal	Can be made	Economic, transportation, communication
	2	Chamere Cave	Normal	Can be made	Economic, transportation, communication
	3	Bramhadevta Mandir	Normal	Can be made	Economic, transportation, communication
	4	Other's Devta Mandir	Normal	Can be made	Economic, transportation, communication
6	1	Mulya Thalta Airport	Normal	Can be made	Economics
	2	Fultawarit	Normal	Can be made	Management
	3	Ashare Ko Thant	Normal	Can be made	Management
	4	Thalt Silingt	Normal	Can be made	Management
	5	Kakra Oralt Cave	Normal	Can be made	Management
	6	Piultit Ashare Cave	Normal	Can be made	Management
7	1	Mai Bhagawati Mandir	Normal	Tourism attraction	Boundary
	2	Gauthali Cave	Very bad	Tourism attraction	Need to check
8	1	Chaudary Tourism Spot	Old	Tourism and Religious spot	Geographical challenging
	2	Maibhagawati Math Mandhir	Old	Religious spot	Economic crisis
	3	Halchwar Ram Mandhir	Normal	Religious spot	Transportation
	4	Tatopani Jwalamukhi Mandhir	Normal	Religious spot	Economic crisis
9	1	Ghutupani Tantra Tole	Old	Tourism attraction, spot	Economical
	2	Dhani Podhara	Old	Religious spot	Geographical challenging
	3	Purna Ghaaranga Kotila	Old	Research spot	Economical

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Ward	S.N	Tourist Place	Existing Condition	Opportunity	Major Threats
	4	Thamka Cave(Baskote)	Old	Research spot	Economical
10	1	Garuledi Tirtha Stall(Dhyarghau)	Old	Tourism spot	Geographical challenging, Transportation lack
	2	Gumthaley Tamakhani (Dhyarghau)	Old	Tourism spot	Geographical challenging, Transportation lack
	3	Shrawan Purnima Mela (Dhyarghau)	Old	Tourism spot	Geographical challenging, Transportation lack
	4	Bhadrapurima Mela (Rawat Ghau)	Old	Tourism spot	Geographical challenging, Transportation lack
	5	Karthik Purnima Deuti Pooja (Rawat Gau)	Old	Tourism spot	Geographical challenging, Transportation lack
	6	Bhyauli Tasey(Kalapani)	Old	Tourism spot	Geographical challenging, Transportation lack
11	1	Bhagwati Mandhir	Critical condition	Tourism spot	Economic Crisis
	2	Paragliding	Still under research	Geographical spot	Economic Crisis
	3	View Tower(Bhesighau)	Still under research	Tourism spot	Economic Crisis
	4	Cable Car	Still under research	Tourism spot	Geographical challenge
	5	Banepa Ghau	Old condition	Tourism spot	Transportation crisis
	6	Adsarsha Tirtha(Nalipa Ghau)	Old condition	Religious spot	Transportation crisis

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Ward	S.N	Tourist Place	Existing Condition	Opportunity	Major Threats
	7	Tallo Chara Jharana (Chokha)	Old condition	Tourism spot	Transportation crisis
	8	Oglachuleni Puratwato Bastu	Old condition	Tourism spot	Road
12	1	Dadha Mathi Bhagawati Mandhir	Old	Temple association	Economic crisis/ Transportation
	2	Panch Bhayar Awalgurna	Old	Temple association	Economic crisis/ Transportation
	3	Mant Mandhir Baapkada	Old	Temple association	Economic crisis/ Transportation
	4	Tama Khana Baapkada	Old	Can be visited	Economic crisis/ Transportation
13	1	Mutkechula	Old	Tourism spot	Transportation and managing crisis
	2	Shaijumari (Famda)	Old	Tourism spot	Transportation and managing crisis
	3	Must Bhagwati (Khudi)	Old	Tourism spot	Transportation and managing crisis
	4	Mashikhanna(Shiun)	Old	Tourism spot	Transportation and managing crisis
	5	Khudi Raniban (Khudi)	Forest area	Tourism spot	Transportation and managing crisis
	6	Famda Bhigichaur(Famda)	Forest area	Tourism spot	Transportation and managing crisis
	7	Roopchaur Pangeychaur(Raap)	Forest area	Tourism spot	Transportation and managing crisis
	8	Bheukhola (Faanchaur)	Jharana	Tourism spot	Transportation and managing crisis

(Source: PRA/FGD, 2018)

As different kinds of caste/ ethnic and religious groups are living in different villages of the municipality, people do celebrate various festivals and ceremonies. They follow their religious and cultural values in the form of these celebrations, as presented in the table below.

Table 30: Religious- Cultural Description

SN	Major Festivals	Time	Caste/Ethnicity
1	Dashain	Ashoj- Kartik	All Hindu excluding Christians and Muslim
2	Tihar	Kartik	All Hindu excluding Christians and Muslim
3	Chhath	Kartik-Manshir	All Hindus particularly In Tarai Region
4	Tammu Lohsar	Poush 15	All Gurungs
5	Teej	Bhadra	All Hindu excluding Christians and Muslim
6	Eid	shrawan	All Muslims
7	Janaipurnima	shrawan-Bhadra	All Hindu excluding Christians and Muslim
8	Buddhajayanti	Baisakh	All Buddhist
9	Holi Purnima	Falgun-Chaitra	All Hindu excluding Christians and Muslim
10	Chaite Dashain	Chait- Baisakh	All Hindu excluding Christians and Muslim
11	shrawani Sakranti	shrawan 1	All Hindu excluding Christians and Muslim
12	New Year	Baisakh 1	All Nepali
13	Shiv Ratri	Falgun-Chaitra	All Hindu excluding Christians and Muslim
14	Christmas	Poush/December 25	All Christian
15	Badkiaaitabari/Attwari	Bhadra	Tharu
16	Maghi	Magh First Week	Tharu
17	Ramadan	May-June	Muslim

(Source: PRA/FGD, 2018)

The table above shows that in Nalgad municipality, all wards celebrate the festivals like Dashain, Tihar, Teej, Chaitra Dashain, Holi and Shivaratri.

5 CHAPTER V: ANALYSIS

5.1 Trend Analysis

The land use of Nalgad is in changing pattern due to the change of the settlement area. Following graph shows the changing land use pattern (settlement, cultivation, forest and water body) of Nalgad municipality of year 2004, 2011 and 2018.

In the graph below, it shows the changing land use pattern of Nalgad in years in terms of percentage. The area of the municipality is 386.44 sq.km. The settlement area is also increased by 0.03% in 9 years' period. There is minimum increase in the settlement area. Similarly, cultivation land is decreased by 0.008% from 2004 to 2011 and again increased by 0.063% from 2011 to 2018.

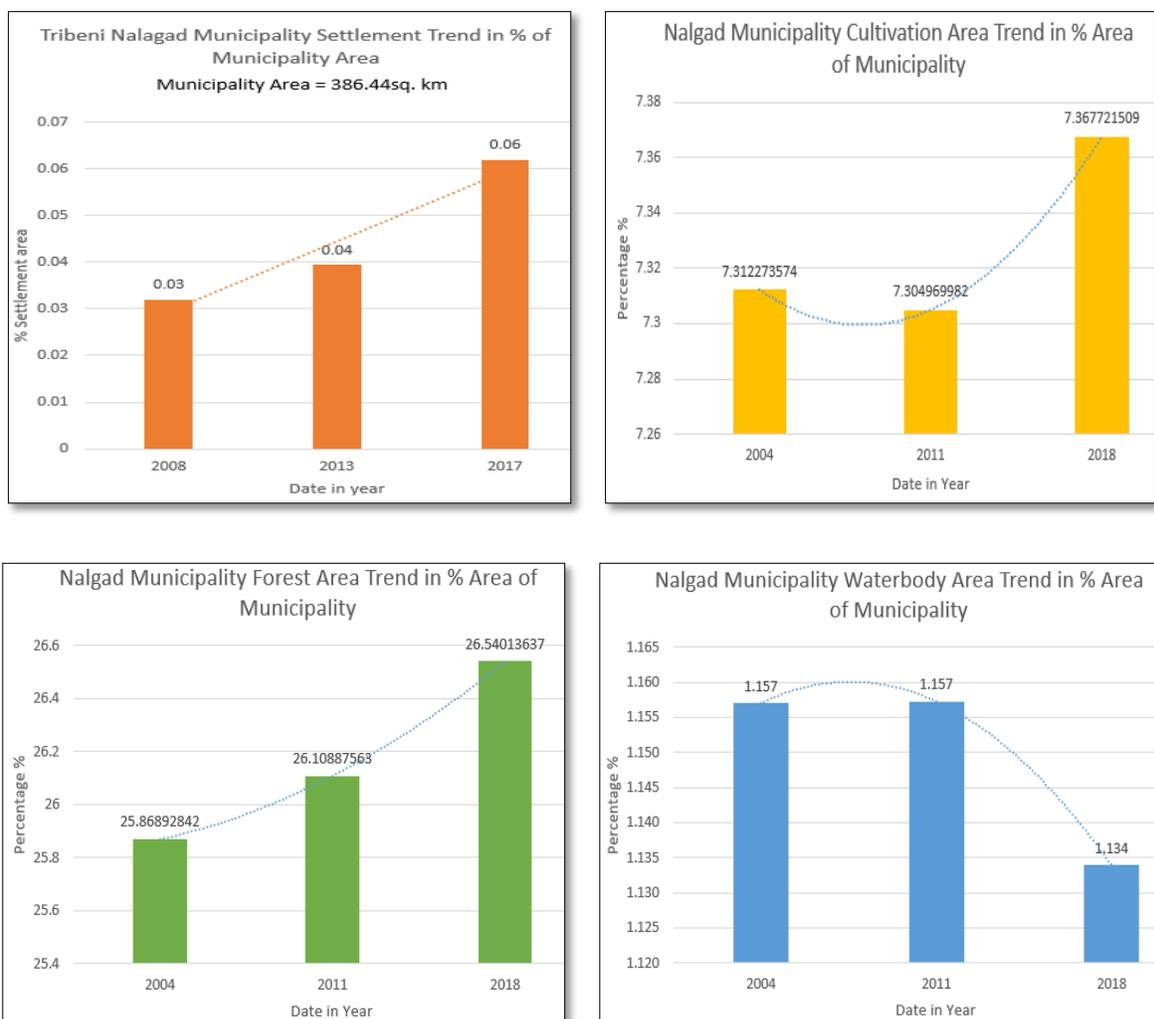


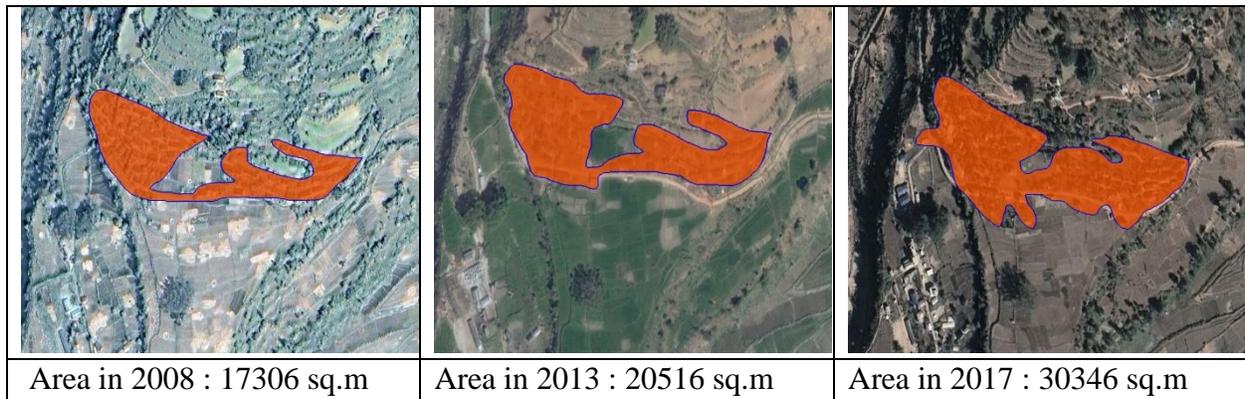
Figure 10: Changing land use in three different years

Another graph shows the change in the forest area of the municipality which indicates increasing in the forest area. The percentage of land covered by forest in 2004, 2011 and 2018 are 25.868%, 26.108% and 26.540% respectively. There is 0.672% increase in the forest area from 2004 to 2018.

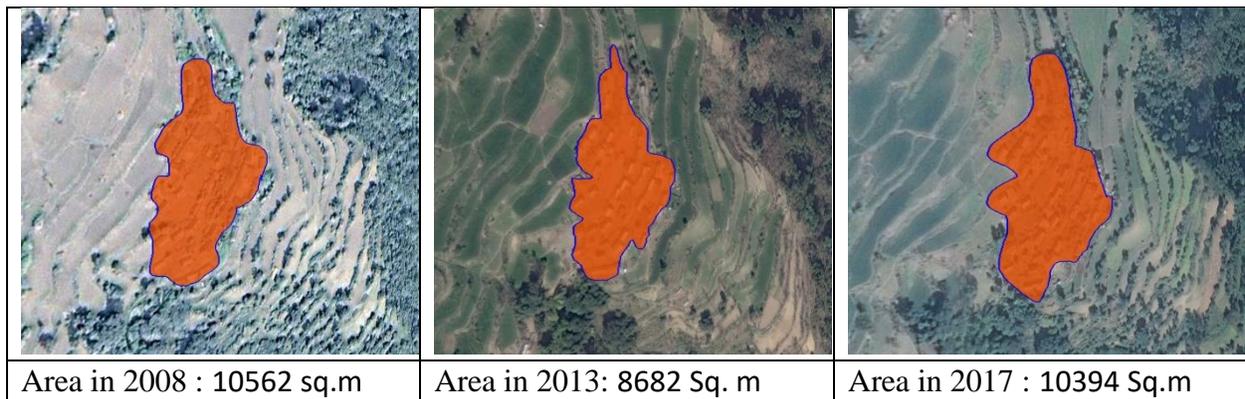
Water body in the municipality is decreased by 0.023% from 2004 to 2017. So, we can see that, there is encroachment in the cultivation land by the settlement area.

We can see that, there is encroachment around the water body area by settlements and barren land are also converted into settlement area and cultivation area.

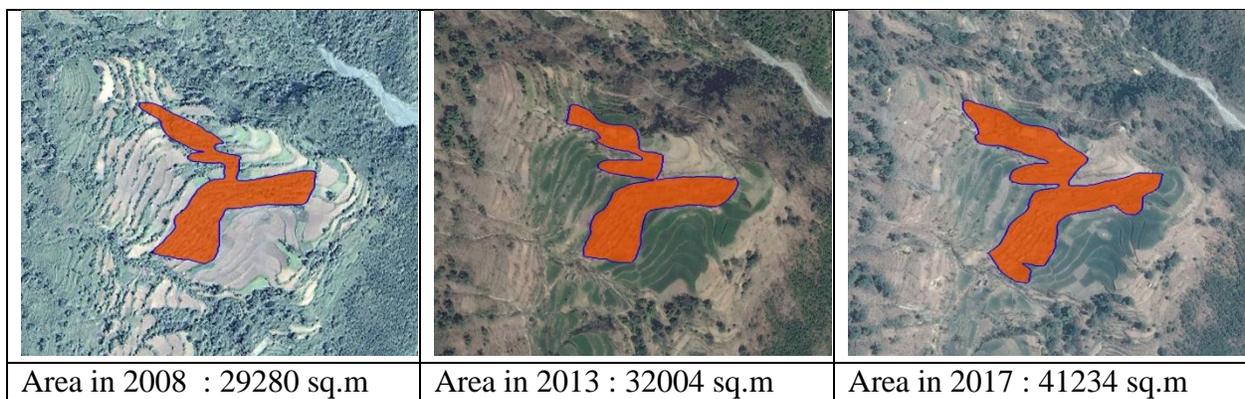
The map below illustrates the change in the settlement, cultivation, forest and water body of Nalgad municipality.



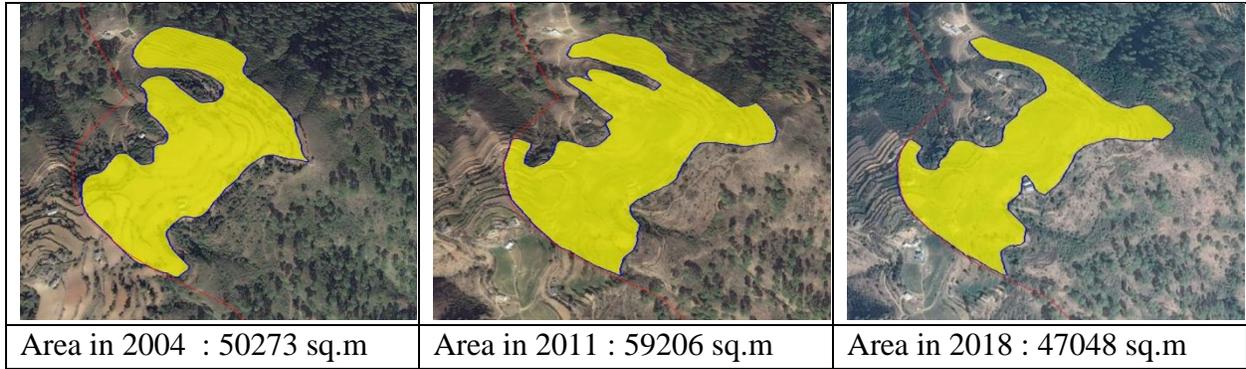
Map 13: Settlement pattern of Pyaripakha



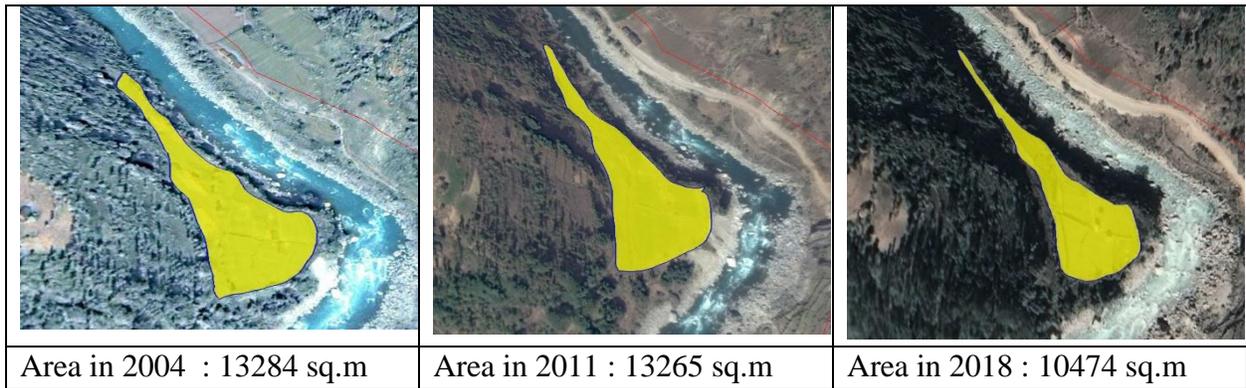
Map 14: Settlement pattern of Jalya



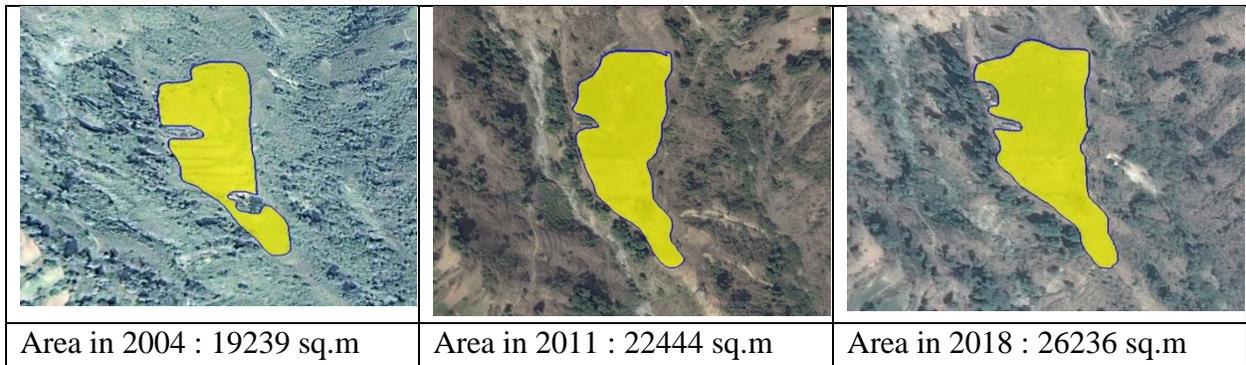
Map 15: Settlement pattern of Kandalli



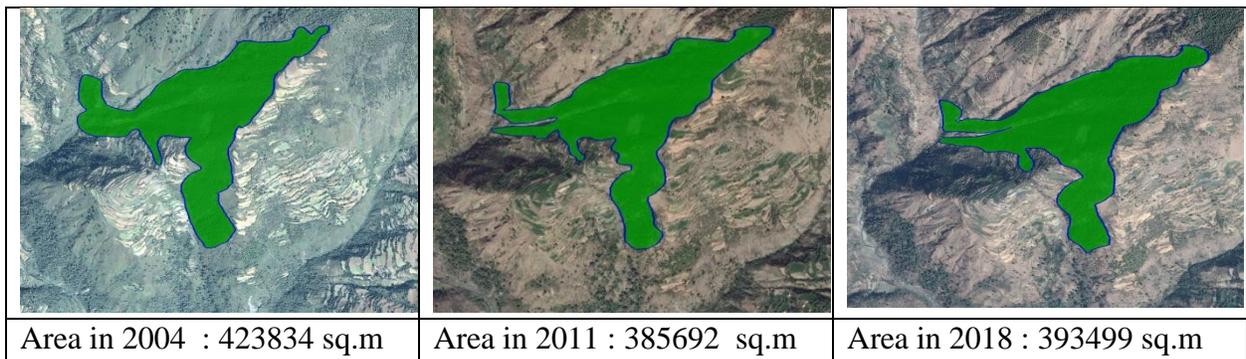
Map 16: Cultivation Land pattern of Kimchaur



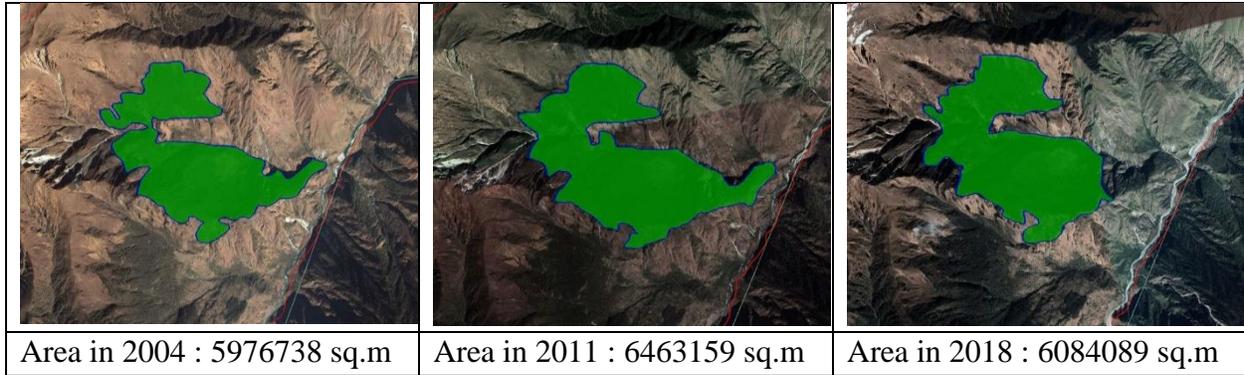
Map 17: Cultivation Land pattern of Jalya



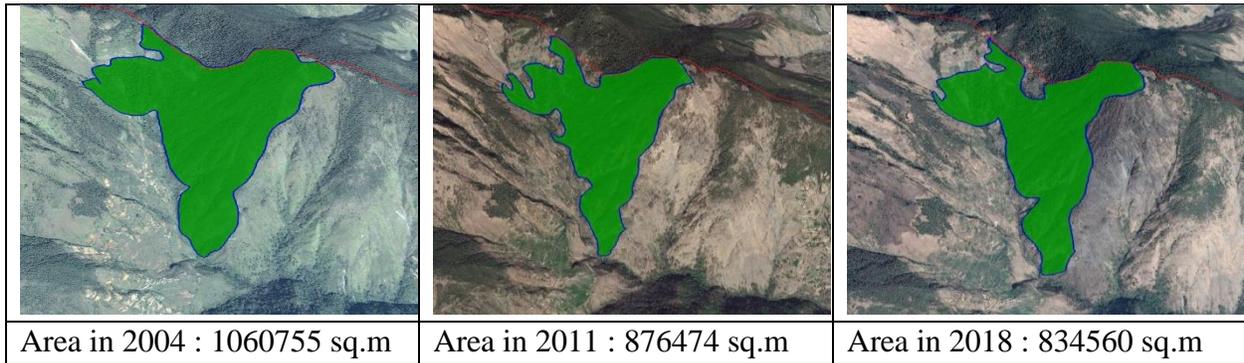
Map 18: Cultivation Land pattern of Dandagaun



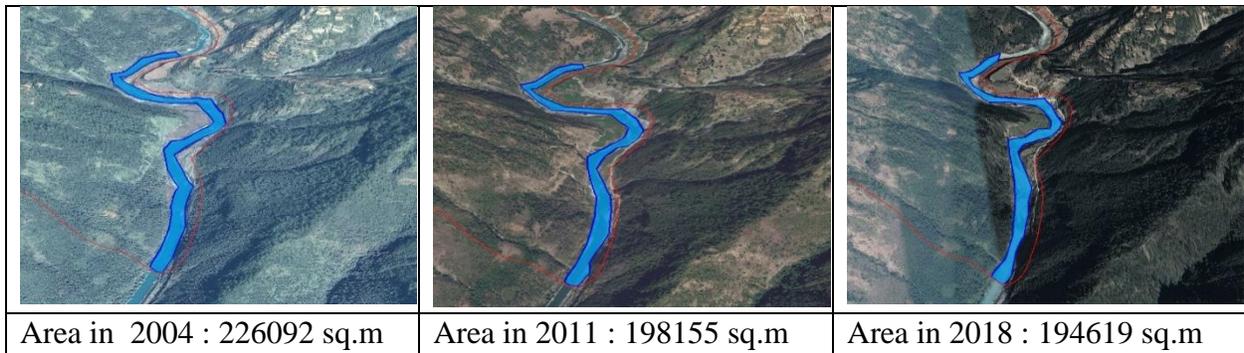
Map 19: Forest pattern of Garagli



Map 20: Forest pattern of Ragda 7



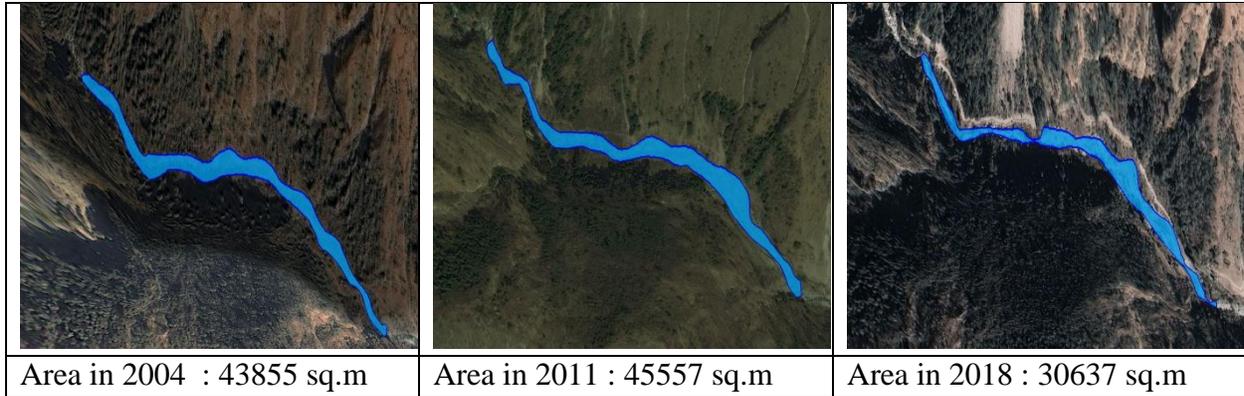
Map 21: Forest pattern of Pipe thapla



Map 22: Water body pattern of Thula bagar



Map 23: Water body pattern of Khatigurta



Map 24: Water body pattern of Damga

In the above map, we can see the changing settlement pattern of Rawatgaun in different years. The settlement area in 2008, 2013 and 2017 are 2236 sq. m, 10365 sq. m and 40561 sq. m respectively. Settlement is increased around river side area.

5.2 SWOT Analysis

SWOT (Strength, Weakness, Opportunity and Threat) Analysis is useful technique to understand the existing internal strength and weakness of the municipality based on present scenario while also identifying its future potential external opportunity and threats for its development prospects in holistic approach.

The exercise of analyzing SWOT of the municipality was carried out during the induction workshop (2075/4/20) at municipal level as well as during ward level Focused Group Discussion. Similarly, continuous discussions were adopted with key informants and the community to identify different aspects of strength, weakness, threats and opportunity of the municipality. While some minor refraining of SWOT Matrix with different aspect, we've presented analysis as follows:

Table 31: SWOT Analysis of Nalgad Municipality

Indicators	Strength	Weakness	Opportunity	Threats
Physical Infrastructures	<ul style="list-style-type: none"> • Started construction of road to agricultural fields • Establishment of own Municipal office building • Availability of nos. of hydropower 	<ul style="list-style-type: none"> • Lack of various infrastructures, like vehicles and well transportation, irrigation technical equipment, drinking water • Fragile canal • No ward office • Lack of access to health • Lack of flat land due to natural terrains • Dispersed settlement 	<ul style="list-style-type: none"> • All settlement can have access to road • Huge possibility of hydropower upgradation development with modern technology • Modernization system and facilities about various infrastructures i.e. drinking water, education, health etc. • Irrigation canal improvement • Construction of Mai Bhagwati temple • Construction of all offices of municipality • Chiuri refinery centre • Establishment of domestic industries 	<ul style="list-style-type: none"> • Lack of Well management and information • No well plantation • Lack of maintenance • Unmanaged office building • Problem of refinery • No proper utilisation

Indicators	Strength	Weakness	Opportunity	Threats
Social	<ul style="list-style-type: none"> • School operation • Health service operation 	<ul style="list-style-type: none"> • Poverty • Illiterate • Lack of health service 	<ul style="list-style-type: none"> • Improvement in quality of health service • Quality education for skill manpower production • Community Development Activity. • Library Building 	<ul style="list-style-type: none"> • Lack of Communication • Illiterate Society • Lack of public awareness. • Lack of research and investigation • Lack of technology

Indicators	Strength	Weakness	Opportunity	Threats
Economic	<ul style="list-style-type: none"> • Having market focused houses • Progressing phase of urbanization is good as the 	<ul style="list-style-type: none"> • Lack of special market • Lack of possible commercial activities 	<ul style="list-style-type: none"> • Multiple economic activities create new opportunity for growth. 	<ul style="list-style-type: none"> • Financial problem • Weak Market Management • Lack of budgets • Lack of income resources

	creation of market urban areas by the formation various grocery shops, retail shops, cottage industries etc.	and probable market trend opportunity • Budget needed for physical infrastructure.	• Possibility of integrating new commercial activities and business activities with municipal new vision for planning.	• Lack of business • Lack of defined land use policy and economic development plan hinders the future investment policies on different sectors.
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Indicators	Strength	Weakness	Opportunity	Threats
Environment and Natural Resources	<ul style="list-style-type: none"> • Lots of water resources i.e. local streams and rivers • enough forest resources, herbs and wild animals • Existing natural landscaping and greeneries • Beautiful forest at Lekhali slope • Potential pocket area for natural herbs 	<ul style="list-style-type: none"> • Lack of effective conservation and awareness of existing natural resources, open spaces, lack of landfill site, public toilets • Problem in collection of herbs, lack of management • Geographical barrier • Lack of policy related to use and conservation of natural resources like natural elements and natural herbs 	<ul style="list-style-type: none"> • Effective investment on existing natural resources like rivers, forests etc. for sustainable development; • Herbs Collection Centre • Regularized markets of natural resources • Opportunity to work on 3Rs principle of solid waste management. 	<ul style="list-style-type: none"> • Landslide • Pollution from urbanization, solid waste refusals and climate change etc • Geographical challenges • Difficulty in protection • No proper utilization • Exploitation of resources from illegal markets and trafficking

Indicators	Strength	Weakness	Opportunity	Threats
Agriculture and Livestock	<ul style="list-style-type: none"> • Availability of organic rice • Lots of land for animal husbandry • Fertile land • Irrigation facility available 	<ul style="list-style-type: none"> • No well facility of agriculture equipment (i.e. advanced technology) • Lack of commercialization of agricultural products 	<ul style="list-style-type: none"> • Modernization in agricultural sector • Possibility in bee keeping • Good production lands • Good production of herbs • Possibility of professional animal husbandry, fruits farming, herbs farming, livestock hybrid • Opportunity of infrastructures development i.e. electricity, drinking water, education, health 	<ul style="list-style-type: none"> • Lack of scientific farming • Lack of hybrid animals • Shortage of trainings for farmers

	<ul style="list-style-type: none"> • Focus on Vegetable Production and Poultry Farming. 	<ul style="list-style-type: none"> • Lack of irrigation system to all farming lands. 	<ul style="list-style-type: none"> • Commercialization of Agricultural products; • Identification of major agricultural products, pocket areas and • Research on opportunity of organic farming and alternate farming technologies. 	
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Indicators	Strength	Weakness	Opportunity	Threats
Human Resource	<ul style="list-style-type: none"> • Empowering Human Resource 	<ul style="list-style-type: none"> • Lack of enough government staffs • Lack of skilled and knowledge-based manpower. • Lack of people's participation in development. 	<ul style="list-style-type: none"> • Skill manpower production (quality education) 	<ul style="list-style-type: none"> • No Skilled manpower (Lack of technicians)

Indicators	Strength	Weakness	Opportunity	Threats
Tourism	<ul style="list-style-type: none"> • Availability of high potentiality of tourism sites and plenty in nos. like historical temples, caves, pilgrim sites dhams, natural sites, view tower etc. • Rafting potential at Bheri river 	<ul style="list-style-type: none"> • Not aware about Identification of tourist places • No defined objective and functional zoning of existing natural landscape 	<ul style="list-style-type: none"> • Tourism development • Tourism possibility near Chiuri forest • Naudhari Tatopani tourism spot • Possibility of homestay • To gain popularity for tourists attraction 	<ul style="list-style-type: none"> • No Master Plan of tourism sites

Indicators	Strength	Weakness	Opportunity	Threats
Governance System	<ul style="list-style-type: none"> • New federal systems and new municipality boundary provides development potential by linking central and local government. 	<ul style="list-style-type: none"> • Capacity deficit in terms of new governance structure; • Lack of transparency and information sharing; lack of incorporating technology in administrative work 	<ul style="list-style-type: none"> • Power and authority of local governance to take decisions at local level • Allocation of financial budgets as per the vision of municipality. 	<ul style="list-style-type: none"> • Complex structuring of new system may create chaos and confusions among general people and administrative authority • Lack of will and commitment may undermine development potential of the municipality

(Source: Induction Workshop, PRA/FGD, 2018)

5.3 Ward Analysis

As from the first day of field visit and informal interviews that we've conducted in every wards, the categories of ward are done according to the ten criteria of selection. These ten selection criteria are followed as: -1. Accessibility of motorable roads 2. Natural disaster prone wards 3. Wards with lesser availability of drinking water facilities 4. Ward with weak educational infrastructural services 5. Wards with lesser availability of health facilities in terms of infrastructure 6. Environmentally sensitive ward in terms of urban environment 7. Availability of government facilities 8. Prevalence of NGOS/INGOS activities 9. Wards with predominance of Dalit, Janjatis and Minority 10. Wards with poorest community or lowest livelihood opportunities.

Ward analysis shows the developed and under developed wards in the Nalgad Municipality. Following table shows the ward analysis of the Municipality:

Table 32: Ward analysis of Nalgad Municipality

S N	Criteria	Description	65	60	55	50	45	40	35	30	25	20	15	10	5
1	Accessibility of Motorable Road	Wards that are most underdeveloped in terms of Road Transport.	6	13	9	4	10	1	11	5	3	12	8	7	2
2	Most affected by natural disaster	Wards that are severely affected by Natural disasters such as flood, landslides, drought, high wind etc.	4	5	6	8	12	13	11	10	9	1	3	2	7
3	Access to Water Supply	Wards that have limited access to safe drinking water.	1	6	13	9	2	3	5	10	11	12	7	4	8
4	Education Infrastructure	Wards that have least or minimum education infrastructures.	1	6	11	13	9	10	3	5	8	12	4	2	7
5	Health Infrastructure	Wards that have least or minimum health facilities.	6	5	1	9	8	10	13	4	2	12	11	3	7
6	Environmentally Sensitive	Wards that are environmentally most sensitive or precarious.	4	5	6	7	8	9	10	11	13	12	3	2	1
7	Access to Government Services	Wards that have limited access to Government facilities and services.	1	6	9	13	5	10	4	8	2	3	12	11	7
8	Presence of I/NGO	Wards that have lack of presence of Non Governmental Organizations.	6	1	2	3	5	4	8	7	13	12	11	10	9

S N	Criteria	Description	65	60	55	50	45	40	35	30	25	20	15	10	5
9	Predominance of Dalit, Janajati and Minority	Wards that have higher number of Dalit, Janajati and Minority Groups.	1	3	6	9	12	2	5	8	4	13	10	11	7
10	Poorest Community or Lowest Livelihood opportunity	Wards that have higher number of Deprived Community or least livelihood opprotunities.	1	6	9	12	13	11	10	8	3	5	4	7	2

Table 33: Ward analysis result of Nalgad Municipality

Ward	65	60	55	50	45	40	35	30	25	20	15	10	5	Total	Group
1	5	1	1	0	0	1	0	0	0	1	0	0	1	505	A
2	0	0	1	0	1	1	0	0	2	0	0	3	2	230	C
3	0	1	0	1	0	1	1	0	2	1	2	1	0	295	B
4	2	0	0	1	0	1	1	1	1	0	2	1	0	350	B
5	0	3	0	0	2	0	2	2	0	1	0	0	0	420	B
6	3	4	3	0	0	0	0	0	0	0	0	0	0	600	A
7	0	0	0	1	0	0	0	1	0	0	1	2	5	140	C
8	0	0	0	1	2	0	1	3	1	0	1	0	1	310	B
9	0	0	3	3	1	1	0	0	1	0	0	0	1	430	B
10	0	0	0	0	1	3	2	2	0	0	1	1	0	320	B
11	0	0	1	0	0	1	2	1	1	0	2	2	0	270	C
12	0	0	0	1	2	0	0	0	0	6	1	0	0	275	C
13	0	1	1	2	1	1	1	0	2	1	0	0	0	405	B

(Source: Induction Workshop, 2018)

The highest rank is shown by the lowest number and it is graded by letter “C”. So, those ward having grade “C” is the high developed ward as compared to other wards. According to the above chart, it is shown that ward 2,7,11 and 12 are the high developed wards of Nalgad Municipality comparative to other wards. As the ward 1 and 6 having grade “A” which shows that it lacks lots of facilities for example accessible road, health, education. etc. Then after, ward 3,4,5,8,9,10 and 13 have low facilities as having grade “B”. So, during planning phase, the less developed wards should be given much priority. This analysis shows the level of presence of infrastructure and facilities in every wards of Nalgad Municipality.

5.4 Spatial Analysis

Any topographic feature or event on the earth surface is related with location information and, hence, can be placed on the map. The Geographic information System answers the question, what is present and where it is. The real world can be represented as discrete data, stored by its exact geographic location (called “vector data”), or continuous data represented by regular grids (called “raster data”).

Spatial analysis allows to solve complex location-oriented problems and better understand where and what is occurring in our world. Spatial analysis lends new perspectives to our decision making. Using spatial analysis, we can combine information from many sources and derive new sets of information by applying a sophisticated set of spatial operators. So, the spatial analysis has proven to be highly effective for evaluating the geographic suitability of certain locations for specific purposes, estimating and predicting service provided area, interpreting and understanding change pattern, observing accessibility of infrastructures and identifying new location, and much more.

5.4.1 Easy Accessibility Analysis

Accessibility analysis is a very useful tool for bringing together all aspects of transport system along with spatial distribution of various infrastructures such as education facilities, health facilities, market places etc. in different land zoning. It provides an integrated measure of land use system, the distribution of services and the distribution of population. The objective of accessibility analysis is to identify the existing coverage/ service area by various public services and allocation of potential new location of infrastructures (School, hospital, bank etc.) as per distribution of population and road network.

For a particular facility within the town, there is certain area of influence of this facility, from where the people can receive the service easily. For the people outside of the area of influence, the access to that particular facility is difficult. Spatial analysis identifies the area, people from where, have less or no facility of at all. The decision maker can use this information in order to plan the location and size of new facility.

In order to complete the easy accessibility analysis in GIS, some criteria are to be fed to the system. These criteria depend upon the research results in that particular area, physical experience and results similar study. For easy accessibility buffer analysis in “Integrated Urban Development

Plan” project, the criteria are set on the basis of norms and standards of Government of Nepal, topographic location, the morphology of the municipality, the road network, the surface condition of the road network etc.

5.4.1.1 Health

For the health facility, maximum walking time and speed of the citizen are fed as criteria for analysis in GIS system.

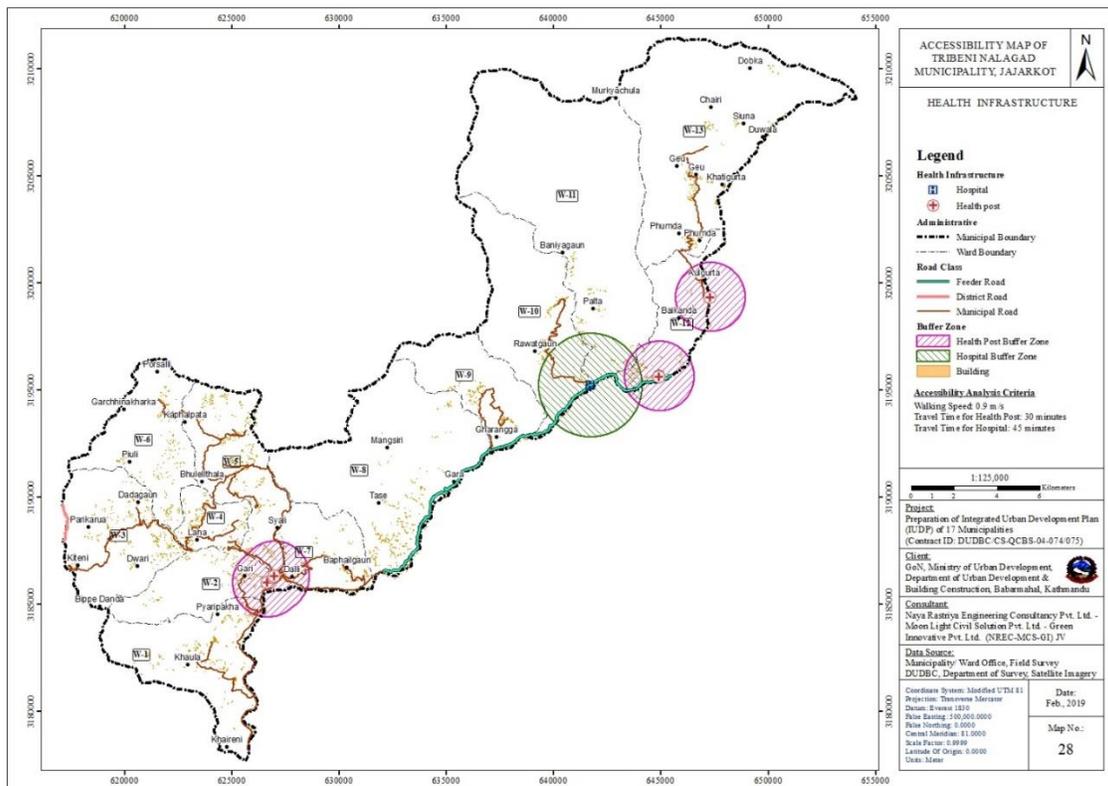
Analysis Criteria

- Each citizen must not walk more than 30 minutes to reach the nearest health post.
- Each citizen must not walk more than 45 minutes to reach the nearest Hospital.

The above mentioned criteria are set for walking distance. For citizen using a vehicle to reach the facility, the travel time would be much lesser than mentioned above. Furthermore, the walking speed of a normal citizen depends also upon the topography, road network and surface type, rivers, streams and the cross drainage structures etc. of the municipality. For the “Integrated Urban Development Plan” project, the following walking speed has taken for spatial analysis.

- In Hilly region, the Walking Speed for a healthy citizen: 0.9 m/s

By feeding the above mentioned criteria in GIS system, and performing the buffer analysis, the coverage area of the health facility is obtained and shown below:



Map 25: Easy Accessibility Analysis result for Health Service

From the analysis it seems that this municipality is not good in health facility. Ward nos. 3, 4, 5, 6, 8, 9 and 13 needs to provide with new health facility.

5.4.1.2 Educational facility

For the education facility, maximum walking time and speed of the citizen are fed as criteria for analysis in GIS system.

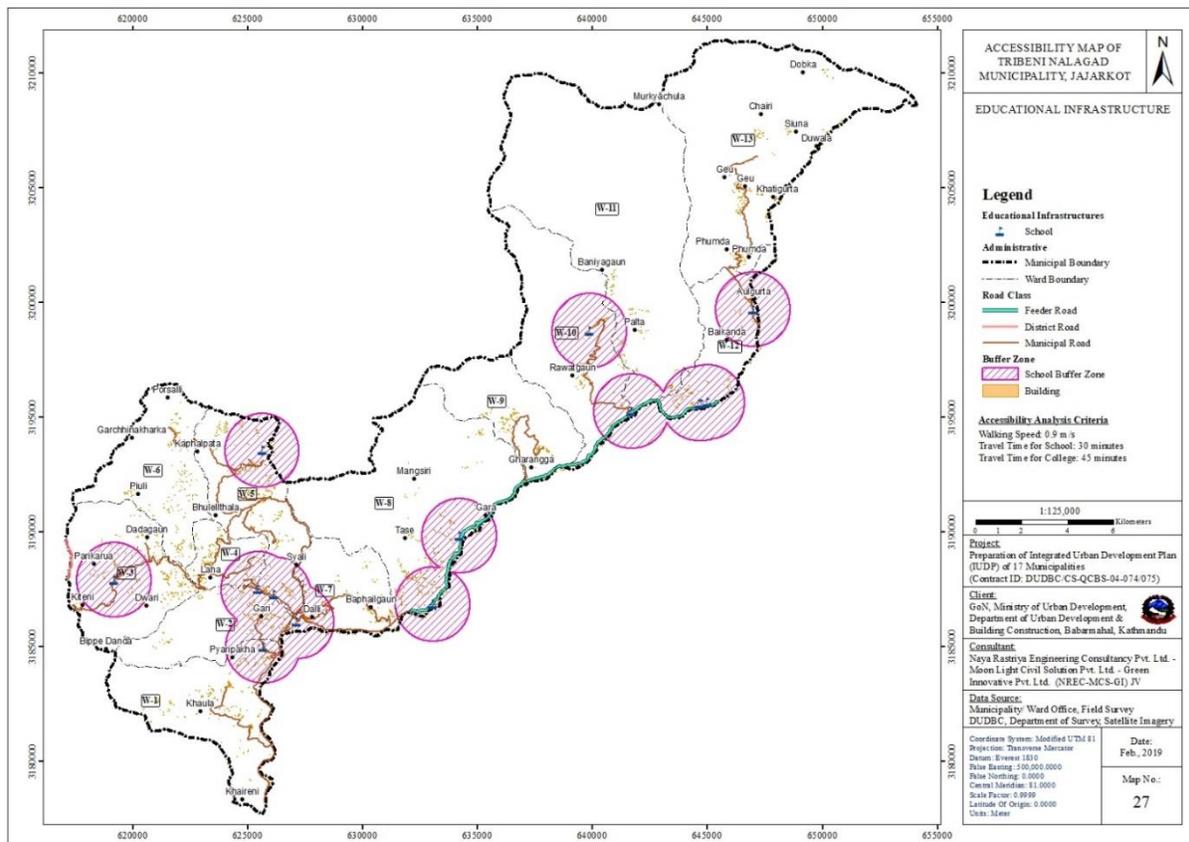
Analysis Criteria

- Each citizen must not walk more than 30 minutes to reach the nearest school.
- Each citizen must not walk more than 45 minutes to reach the nearest college.

The above mentioned criteria are set for walking distance. For citizen using a vehicle to reach the facility, the travel time would be much lesser than mentioned above. Furthermore, the walking speed of a normal citizen depends also upon the topography, road network and surface type, rivers, streams and the cross drainage structures etc. of the municipality. For the “Integrated Urban Development Plan” project, the following walking speed has taken for spatial analysis.

- In Hilly region, the Walking Speed for a healthy citizen: 0.9 m/s

By feeding the above-mentioned criteria in GIS system and performing the buffer analysis, the coverage area of the education facility obtains and show below:

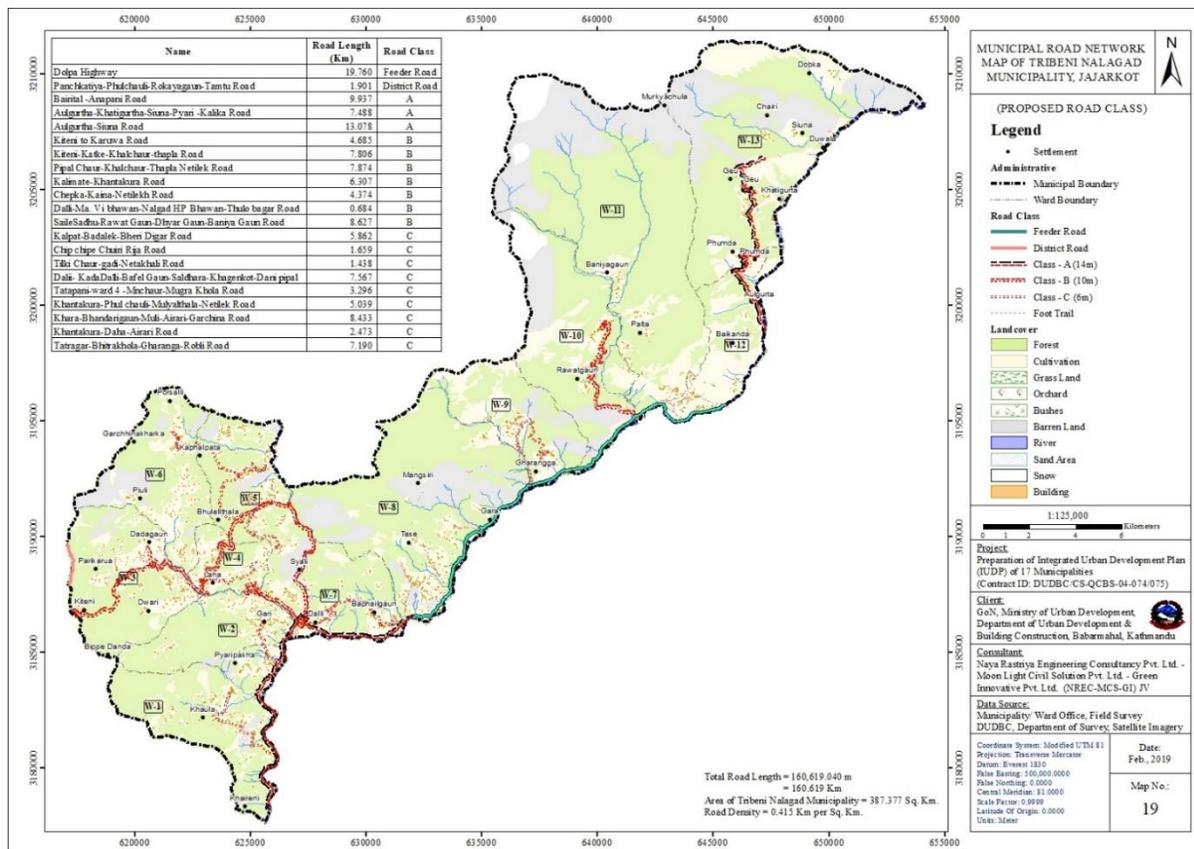


Map 26: Easy Accessibility Analysis result for Education

From the analysis, it seems that this municipality is good in terms of education in core market area. Ward nos. 6, 9 and 13 needs to provide with new education facility.

5.4.2 Linkage Analysis

One of the important aspects of this IUDP is to grow the municipality with ambitious target of making it physically, socially, culturally and economically benefited and also making the municipality sustainable for long run. It also ensures equal opportunity for different sub-areas and different social and age groups. It is well known fact that it is only possible with induced development plans. It is also necessary to understand that most of the people flowing to the region are from the nearby wards or from nearby districts. Hence, study of the linkage has been done with aspect of flow of good and flow of people. Places like Dalli, Baphailgaun are the main market center of the municipality.

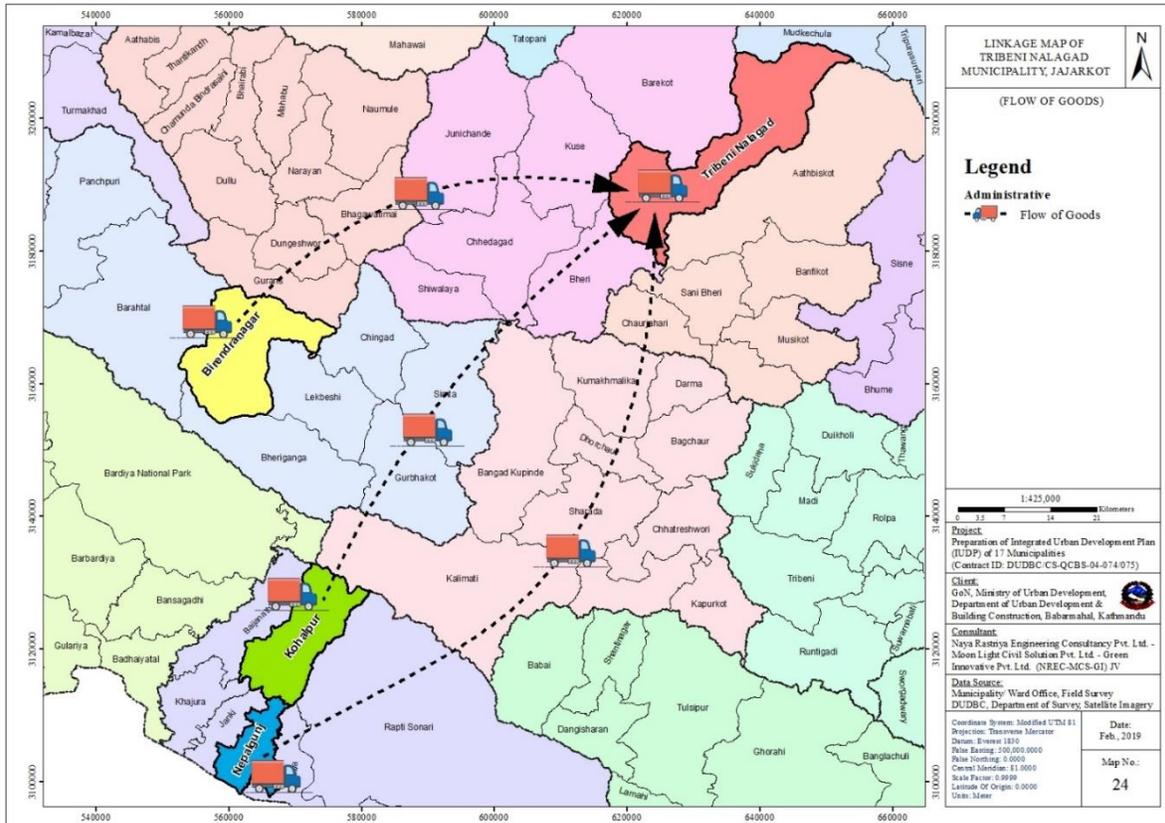


Map 27: Map showing road network of Nalgad

Exchange of goods and services are common among the nearby districts or within districts. Exchange of any of such has direct impact in economic development of the region. Some of the linkages are explored in two different perspectives as mentioned below:

Inter-regional

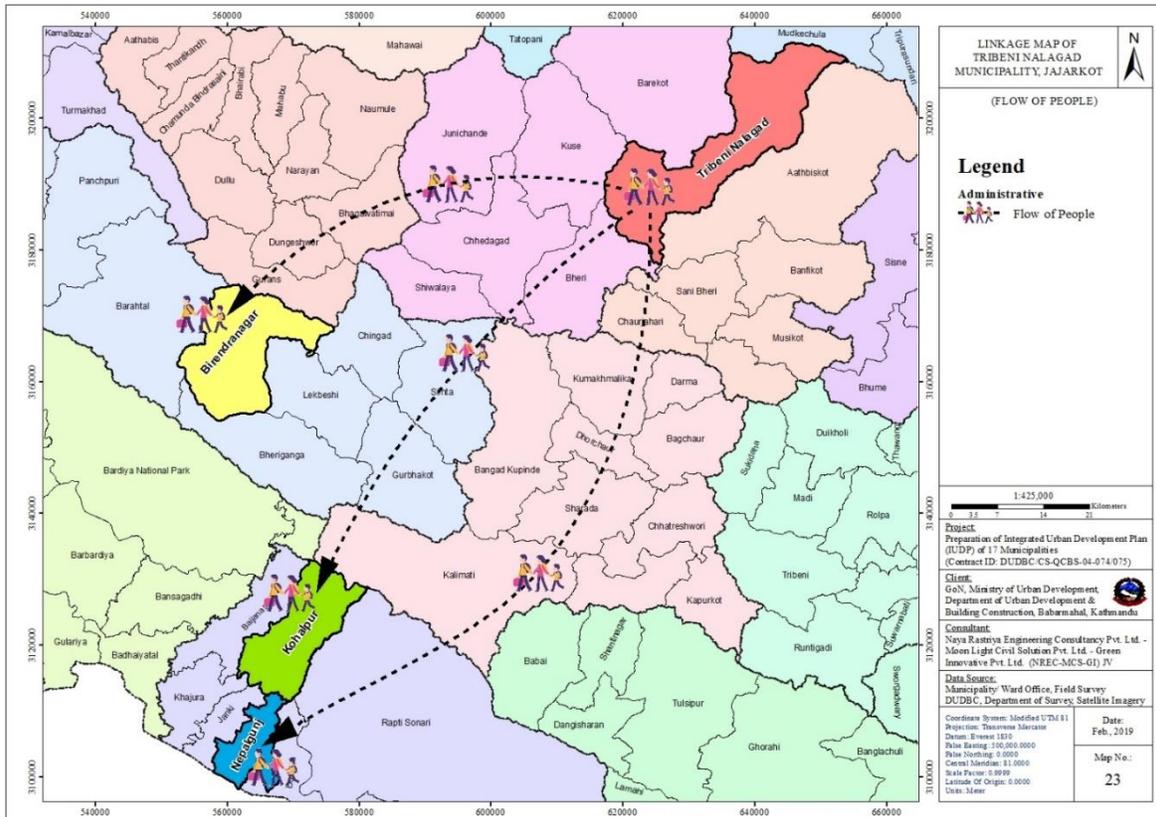
Nalagad Municipality lies on the closer proximity of west Rukum and Salyan district. The numerous no. of historical/ cultural sites like Mai Bhagawati Mandir, Halchwar Ram Mandir, Tatopani Jwalamukhi Mandir, Tribeni Dham, Shrawan Purnima Mela, Darbare cave, Nahabhumi View Tower etc. and the natural beauty of the municipality serves as tourist destination and may help in the development of the area by entering foreign currency too.



Map 28: Showing linkage of goods

Bulk amount of goods come from Kathmandu, Birendranagar, Kohalpur and Nepaljung and are redistributed to the other municipalities. Mostly, Nalagadh depends on these districts for the goods and services.

As we all know, Nalagad is not complete and sustainable on its own. There are still many things that the town depends upon starting from basic higher education facilities and health services. People from Nalagad have to come to Kathmandu for good higher education and complicated health issues. Mostly, the migration trend is seen in Birendranagar, Nepalgunj and Kohalpur as these places lies in the closer proximity in comparison to other cities. Trend of moving students for higher education is common in the place where as people also move to Kathmandu for seeking better job opportunities. Growing number of out migration is also one of the major problem either that be within the nation or out of nation.



Map 29: Map showing flow of people

Intra- Regional

Majority of settlement is seen in Radi Jyula and it is also the main market center of the municipality. This market serves for other wards and places of the municipality like Ghartigaun, Khape, Bankegaun, Dhoteni. The feeder road passes along the market center so the market is in growing trend.

5.4.3 Site Suitability Analysis

The demand for new residential areas rapidly increasing because of increasing population, migration and urbanization, mostly in urban areas. So, the suitable site selection has become more important due to the development of urban areas. For the “Integrated Urban Development Plan”, the spatial analysis is conducted to identify the site suitable for settlement purpose using Geographic Information System. Once again, the system has to be fit with the suitability criteria for settlement. The criteria depend upon planning norms for urban development, identified risks for urban settlements, climatic condition etc. More the criteria we fed to the system more suitable site will be identified. But at the same time the available area becomes lesser and lesser. The identified suitable settlement sites can be delineated on map, which shows the spatial distribution of topographically suitable and safe, climatically pleasant and environment friendly area for settlement, based on topographical, hydrological and environmental data.

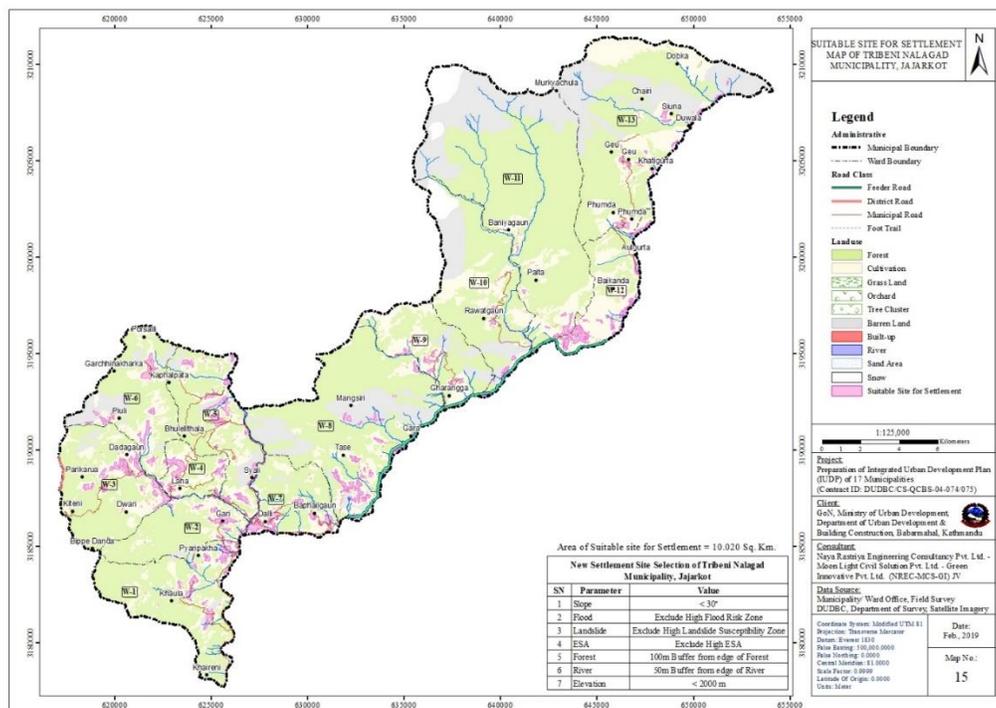
5.4.3.1 Suitable Site for Settlements

The adopted criteria for suitable site selection for settlement are tabulated below:

Table 34: New settlement site selection Criteria

New Settlement site Selection Criteria in GIS Spatial Analysis		
S.N	Parameter	Value
1	Slope	<30 degree
2	Flood	Exclude High Flood Risk Zone
3	Landslide	Exclude High Landslide Susceptibility Zone
4	ESA	Exclude High ESA
5	Forest	100m Buffer from edge of Forest
6	River	50m Buffer from edge of River
7	Elevation	<2000m

In order to make the new settlement area free from the risk of land slide the slope of the suitable settlement cannot be more than 30°. From the flood risk analysis, we identified high flood prone zone. The high flood risk zone must be excluded to identify the suitable settlement area. Furthermore, the area must be out of Environment Sensitive Area and at least 100m far from the existing forest and 50m far from the edge of the river in order to protect the environment, wild life, aquatic life and biodiversity of the municipality. Elevations above 2000m lies in the temperate, subalpine and alpine climatic zone and considered to be not suitable for new town development. Hence the area above 2000m is excluded from suitability analysis for settlement. After running all above mentioned criteria, GIS system identified the site suitable for settlement as shown in the map.



Map 30: Suitable site for settlement

For Nalgad Municipality, the result is showing Above: From the analysis, about 10.020 sq. km area has been found to be suitable for settlement within the municipality.

5.4.3.2 Suitable Location for Land Fill Site

Evaluation of a suitable landfill site is a complex process, which involves evaluating multiple aspects, including regulations, environmental, socio-cultural and engineering factors. For the “Integrated Urban Development Plan”, the spatial analysis of landfill suitability map is conducted to determine the spatial location of suitable landfill site using the techniques of Geographical Information Systems (GIS) based on topographical, hydrological and environmental data.

The adopted criteria for suitable landfill site identification are tabulated below:

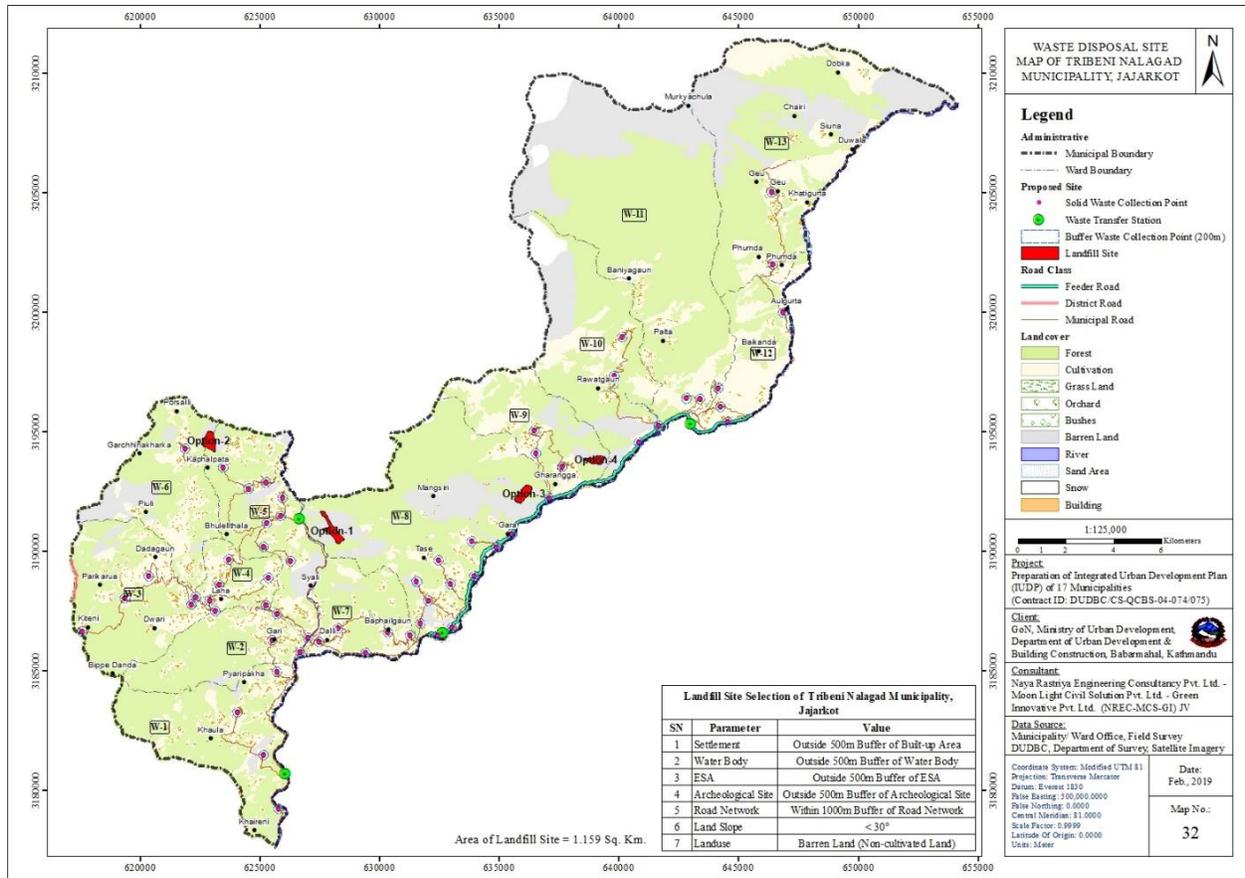
Table 35: Landfill Site Selection Criteria In GIS

Landfill Site Selection Criteria in GIS Spatial Analysis		
S.N	Parameter	Value
1	Settlement	Outside 500m Buffer of Built-Up Area
2	Water Body	Outside 500m Buffer of Water Body
3	ESA	Outside 500m Buffer of ESA
4	Archeological Site	Outside 500m Buffer of Archeological Site
5	Road Network	Within 1000m Buffer of Road Network
6	Land Slope	<30 degree
7	Land use	Barren Land (Non-cultivated Land)

As per above criteria, the suitable location should be at ground slope less than 30°, within the accessibility buffer of 1000m of road network and non-cultivated land use type. It shouldn't lie at the zone of settlement (500m buffer zone) and within the 500m buffer zone of Water body, ESA and Archeological sites of the municipality.

Thus, the above multi criteria spatial analysis identifies the available area of municipality for best location for construction of landfill site, where all the waste disposal of municipality should be dumped, recycle and further processed. Solid waste collection points are given at necessary locations near to settlement and road access with service radius of 200m as per “Planning Norms and Standards 2013, DUDBC”.

For Nalgad Municipality, the result is show below:



Map 31: Suitability Analysis for Landfill Site

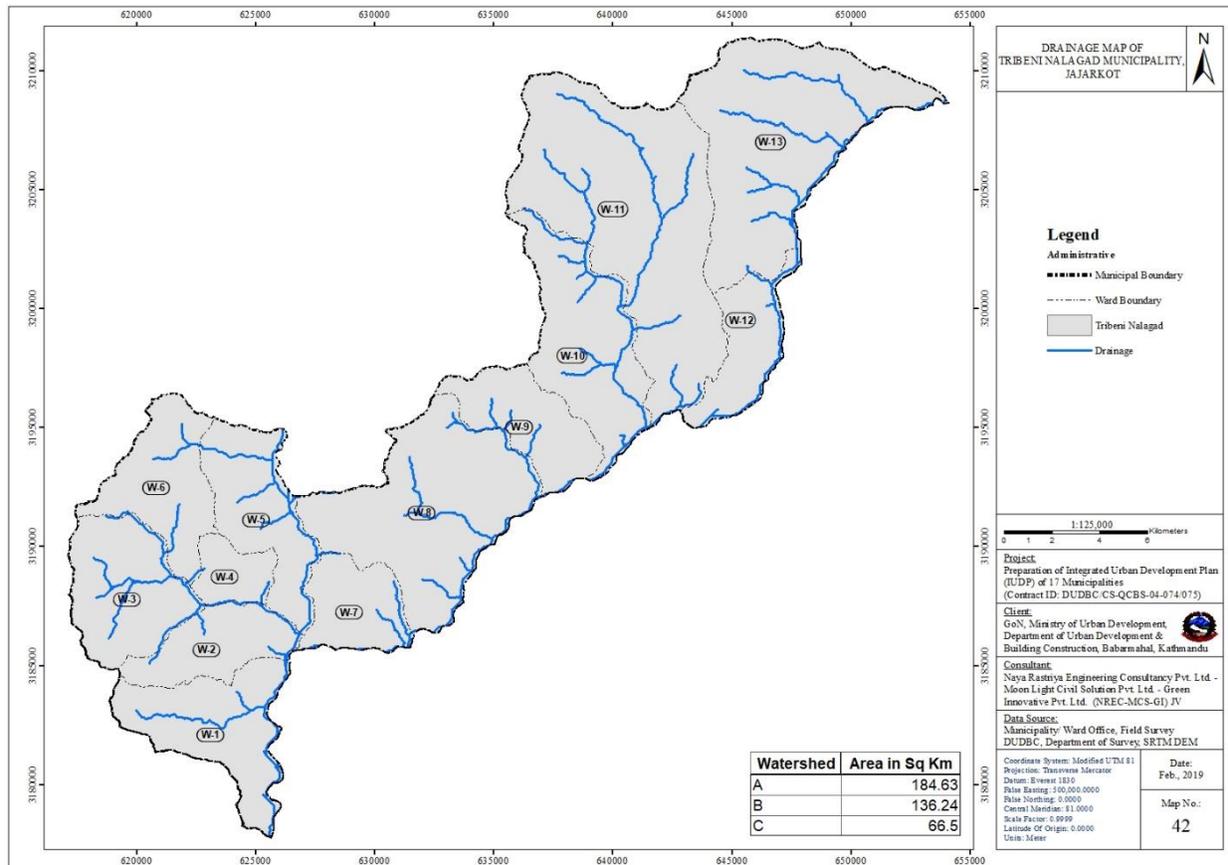
From the analysis, about 1.159 sq. km area has been find suitable for landfill site.

5.4.3.3 Drainage Network Analysis

The area, upon which precipitation occurs and the network through which it travels to an outlet is referred to as a drainage system. The flow of water through a drainage system is only a subset of what is commonly referred to as the hydrologic cycle, which also includes precipitation, evapotranspiration, and groundwater flow. The hydrology tools focus on the movement of water across a surface.

A drainage basin is an area that drains water and other substances to a common outlet. Other common terms for a drainage basin are watershed, basin, catchment, or contributing area. This area is normally defined as the total area flowing to a given outlet, or pour point. In GIS, drainage used to be extracted from DEM (Digital Elevation Model) by using Arc Hydro tools.

The total length of drainage in Nalgad municipality is about 228.28 km. The drainage map of the municipality is shown below:



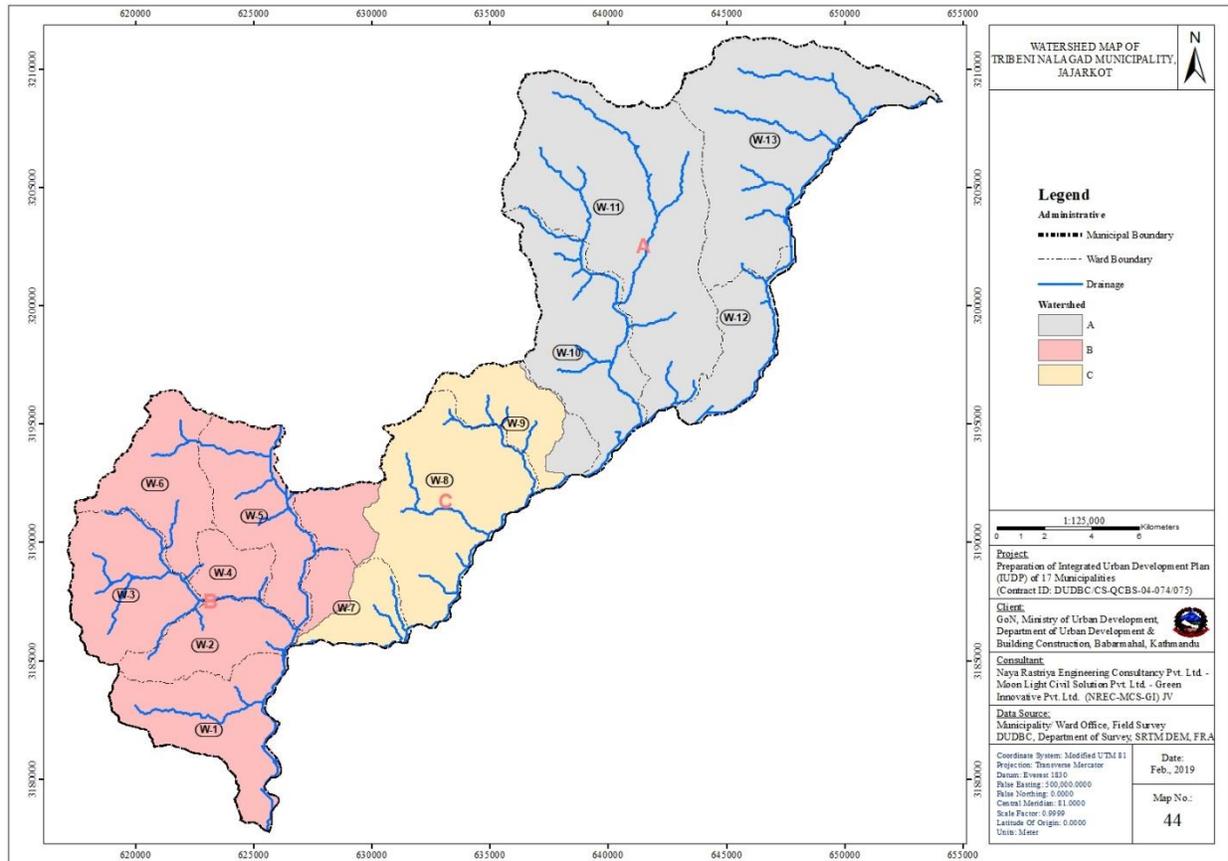
Map 32: Drainage Map of Nalgad Municipality

5.4.3.4 Watershed Analysis

A watershed is the upslope area that contributes to flow of water to a common outlet as concentrated drainage in order to make a big river, streams, and Lakes. It can be part of a larger watershed and can also contain smaller watersheds, called sub-basins. The boundaries between watersheds are termed drainage divides. The outlet, or pour point, is the point on the surface at which water flows out of an area. It is the lowest point along the boundary of a watershed. Important things to be noted is “Wherever we are, we are in watershed”

Watersheds can be delineated from a DEM (Digital Elevation Model) by computing the flow direction and using it in the Watershed tool. In this Project, we acquired the watershed data from the Department of Forest and Soil Conservation (DoFSC).

The Watershed Map of the Nalgad municipality is given on map shown below.



Map 33: Watershed Map of Nalgad Municipality

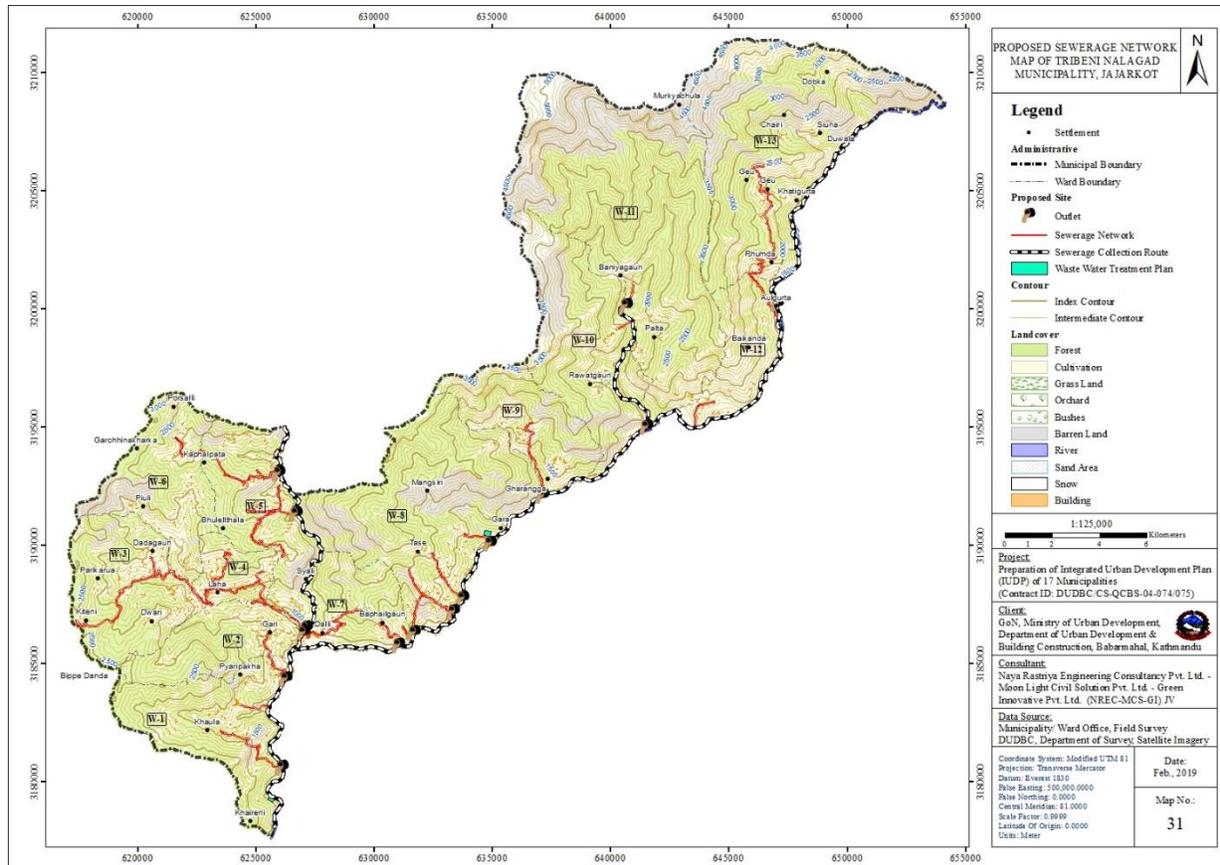
5.4.3.5 Suitable Layout for Sewerage Network

A system of sewer pipes collects sewerage and takes it for treatment or disposal. The system of sewers is called sewerage network system. One of the principal goals of sewer system is to provide hygienic conditions to inhabitants so that health and wellbeing of population is protected. Wastewater effluent includes sewerage from houses and industries as well as rainfall runoff, snowmelt that enter from urban surfaces through gulleys and catch-pits also. Therefore, proper sewerage system is necessary to prevent urban flooding that arises from inadequate drainage of rainfall from the surface.

Network analysis becomes easier when there is interaction between databases and maps. For the “Integrated Urban Development Plan”, wastewater from private households and industries is connected to sewerage network lines which is collected in Sewerage Collection Route (Trunk lines) and is finally transported to wastewater treatment plant. Horizontal alignment is designed in consideration of most economic alignment along-with suitable contour differences whereas in vertical alignment, it is given first priority to gravity flow considering of terrain gradient. Outlets are given at necessary locations/ junctions of “Sewerage Network Lines” and “Sewerage Collection Route” for proper periodic maintenance. The suitable location of wastewater treatment

plant is identified using gis analysis over the topographic and DEM of the municipality, so that the final treated wastewater could be disposed to stream flow or irrigation purpose.

For Nalgad Municipality, the result is shown below:



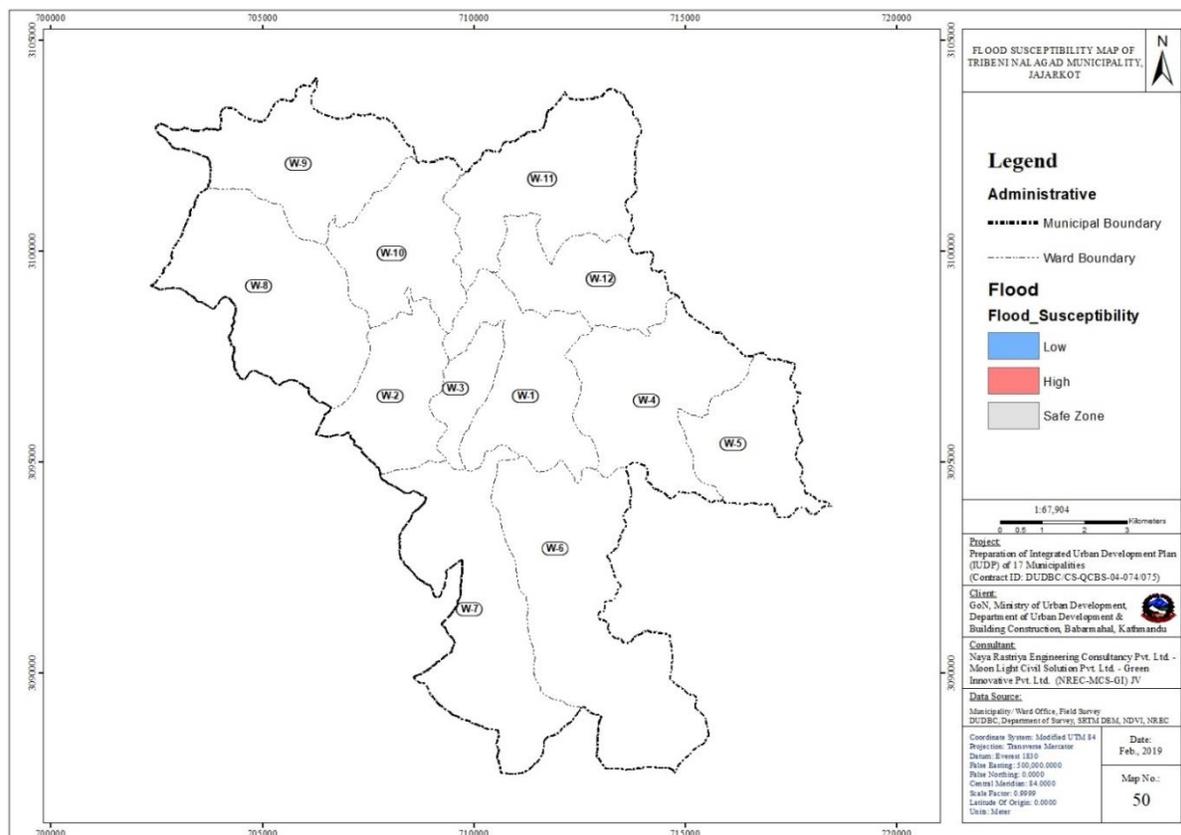
Map 34: Suitable Layout for Sewerage Network

5.4.4 Flood Susceptibility Analysis

Flood is called the inundation of dry land. Floods are natural process, but human activities affect flooding. Floods occur at irregular intervals and vary in size, area of extent, and duration. Floods can happen in the blink of an eye, so it is important to prepare the flood hazard map which helps to take preventive measures to save from the disasters. Floods can be caused in a number of different ways. The criteria that was used to determine the flood susceptibility is tabulated below. The flood susceptibility map of the municipality is given below:

Table 36: Parameters Used for Determining the Flood Risk zones

High	Parameters	Low
0-20 Degree	Slope	Above 20 Degree
0-2000 Meters	Elevation	Above 2000 Meters
200 Meters	Buffering of Rivers	200-500 Meters
Less than 0.2	NDVI	0.2-0.4



Map 35: Flood Susceptibility zone of Nalgad Municipality

Table 37: Flood Susceptibility zone of Nalgad Municipality

Ward no	Low flood risk zone (Ha)	High flood risk zone (Ha)	Total flood risk zone (Ha)
1	96.48	10.98	107.46
2	24.66	2.43	27.09
3	135.99	0	135.99
4	131.76	0	131.76
5	215.37	10.08	225.45
6	32.94	0	32.94
7	125.1	5.31	130.41
8	55.08	13.5	68.58
9	271.89	2.07	273.96
10	370.8	6.39	377.19
11	96.48	1.08	97.56
12	24.66	15.75	40.41

5.4.5 Drought Susceptibility Analysis

A drought is a natural disaster of below-average precipitation in a given region, resulting in prolonged shortages in the water supply, whether atmospheric, surface water or ground water. A drought can last for months or years or can be permanent if the necessary actions are not taken. It

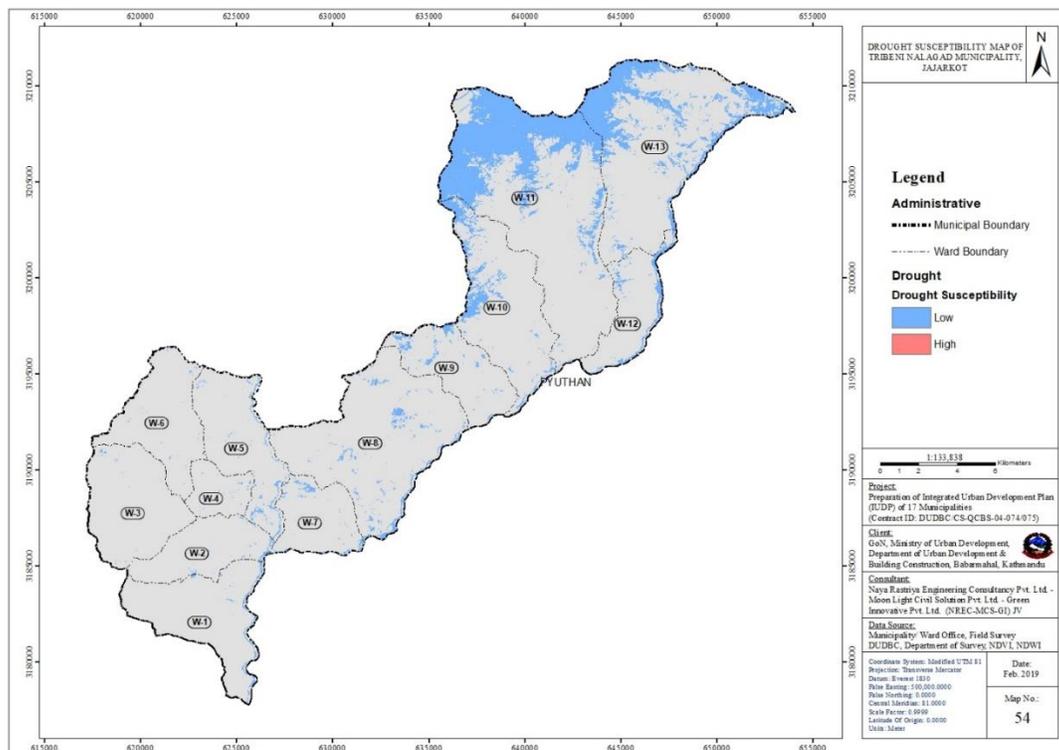
can have a substantial impact on the ecosystem and agriculture of the affected region. There are various factors that cause the drought. The criteria that was used to determine the drought susceptibility are mentioned below.

Table 38: Parameters that are Used to Determine the Drought Susceptibility zone

High	Parameters	Low
Less than zero	NDVI (Normalized Difference Vegetation Index)	0-0.4
Less than zero	NDWI (Normalized Difference Water Index)	0-0.4

Table 39: Ward-wise extent of drought zone of Nalgad Municipality

Ward no	Low Drought (Ha)	Total Drought (Ha)
1	72.703	72.703
2	24.96	24.96
3	7.50	7.50
4	10.20	10.20
5	78.52	78.52
6	8.68	8.68
7	66.63	66.63
8	203.34	203.34
9	115.63	115.63
10	409.06	409.06

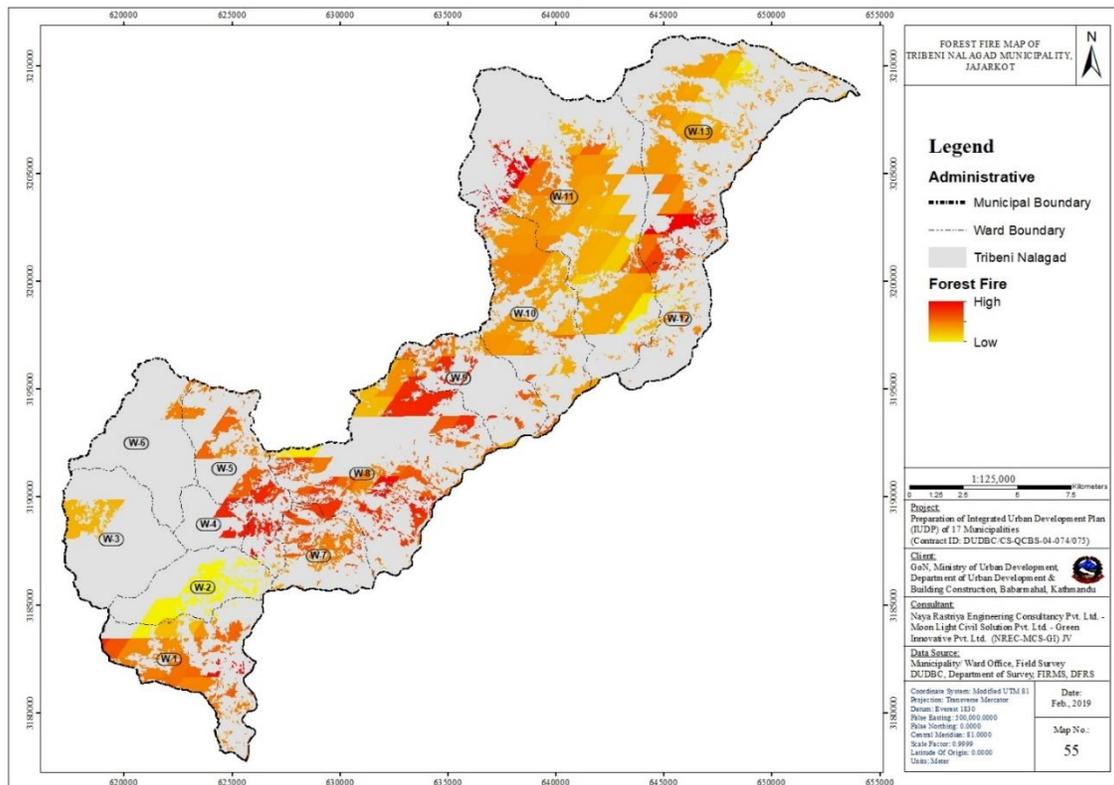


Map 36: Drought Susceptibility Map of Nalgad Municipality

5.4.6 Forest Fire Analysis

Forest fires always start by one of two ways - naturally caused or human caused. Natural fires are generally started by lightning, with a very small percentage started by spontaneous combustion of dry fuel such as sawdust and leaves. On the other hand, human-caused fires can be due to any number of reasons. Forest fires increase carbon dioxide levels in the atmosphere, contributing to the greenhouse effect and climate change. In addition, ashes destroy much of the nutrients and erode the soil, causing flood and landslides.

In this project, the fire data was obtained from the FIRMS (Fire Information for Resource Management system) that allows us to interactively browse the full archive of global active fire detections from MODIS and VIIRS. Near real-time fire data are available within approximately 3 hours of satellite overpass and imagery within 4-5 hours. Fire data of Nepal was extracted by using Google Earth Engine. Then, those fire was clipped by Forest Types of Nepal in order to depict the forest fire only.



Map 37: Forest Fire Analysis

In Nalgad municipality, there is high risk in the area of ward no. 5, 7, 8 eastern part of ward no.4, southern part of ward no. 13.

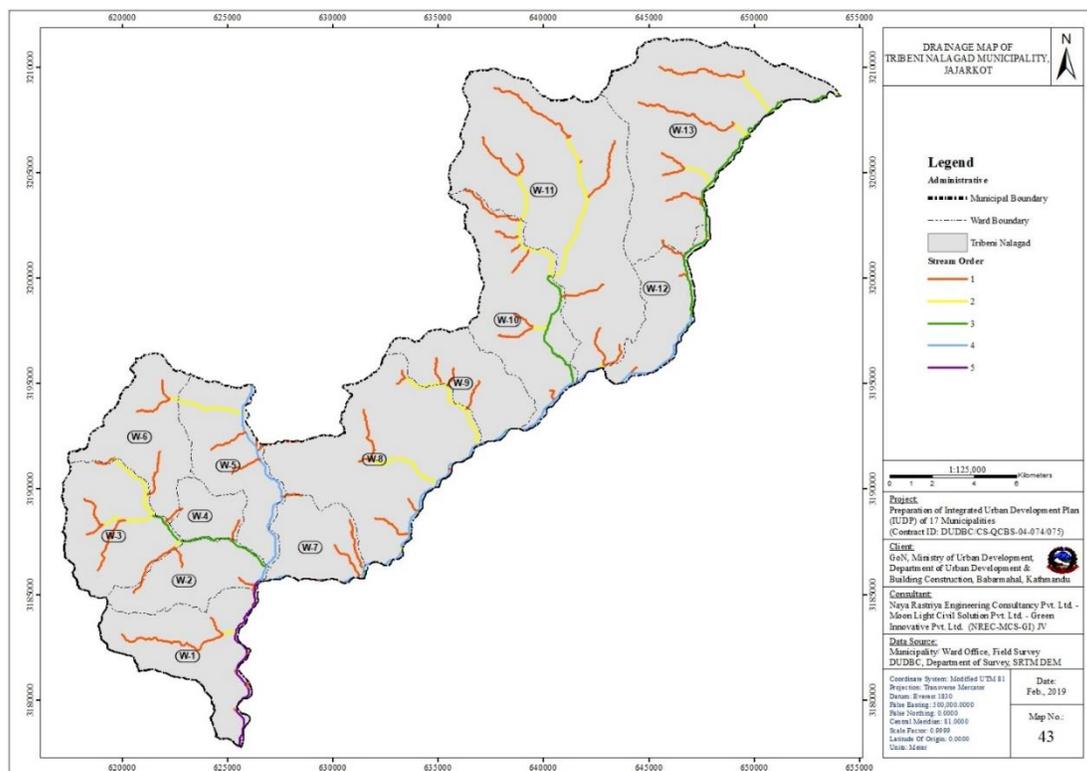
5.4.7 Stream Order Analysis

A stream is classified as a body of water that flows across the Earth's surface via a current and is contained within a narrow channel and banks. When using stream order to classify a stream, the

sizes range from a first-order stream all the way to the largest, a 12th order stream. A first-order stream is the smallest of the world's streams and consists of small tributaries. These are the streams that flow into and "feed" larger streams but do not normally have any water flowing into them. In addition, first and second order streams generally form on steep slopes and flow quickly until they slow down and meet the next order waterway. First throughs third order streams are also called headwater streams and constitute any waterways in the upper reaches of the watershed.

Streams Order gives the idea behind the River Continuum Concept, a model used to determine the number and types of organisms present in a stream of a given order. In GIS Stream order is derived from Digital Elevation Model with the Flow Accumulation and Flow Direction raster that are used to create a stream network by applying a threshold values with a high accumulated flow.

The Stream order map of Nalgad municipality is as follows:



Map 38: Stream Order Map of Nalgad Municipality

Table 40: Total Number and Length of Different Stream Order

Stream Order	Total No. of Stream	Distance (Km)
First Order	70	105.75
Second Order	30	45.18
Third Order	21	29.84
Fourth Order	28	37.75
Fifth Order	9	9.73

5.4.8 Buffer Analysis

Buffer analysis is the process of identifying the area of influence of a Geographical phenomenon in it longitudinal, lateral or both directions. The buffer tool of GIS can be used to identify the coverage area of influence of point or line or polygon feature.

5.4.8.1 Forest Area

In Nepal, there are 37 forest types according to the Dobremez (1972). Distribution of each of the forest types are governed by the Bioclimatic zonation, Geographic locations, Physiognomy and structural parameters, and Floristic parameters. The GIS data of the Forest types was obtained from the Forest Research and Training Centre, Babarmahal. The data is acquired from the Lidar image processing, having high accuracy.

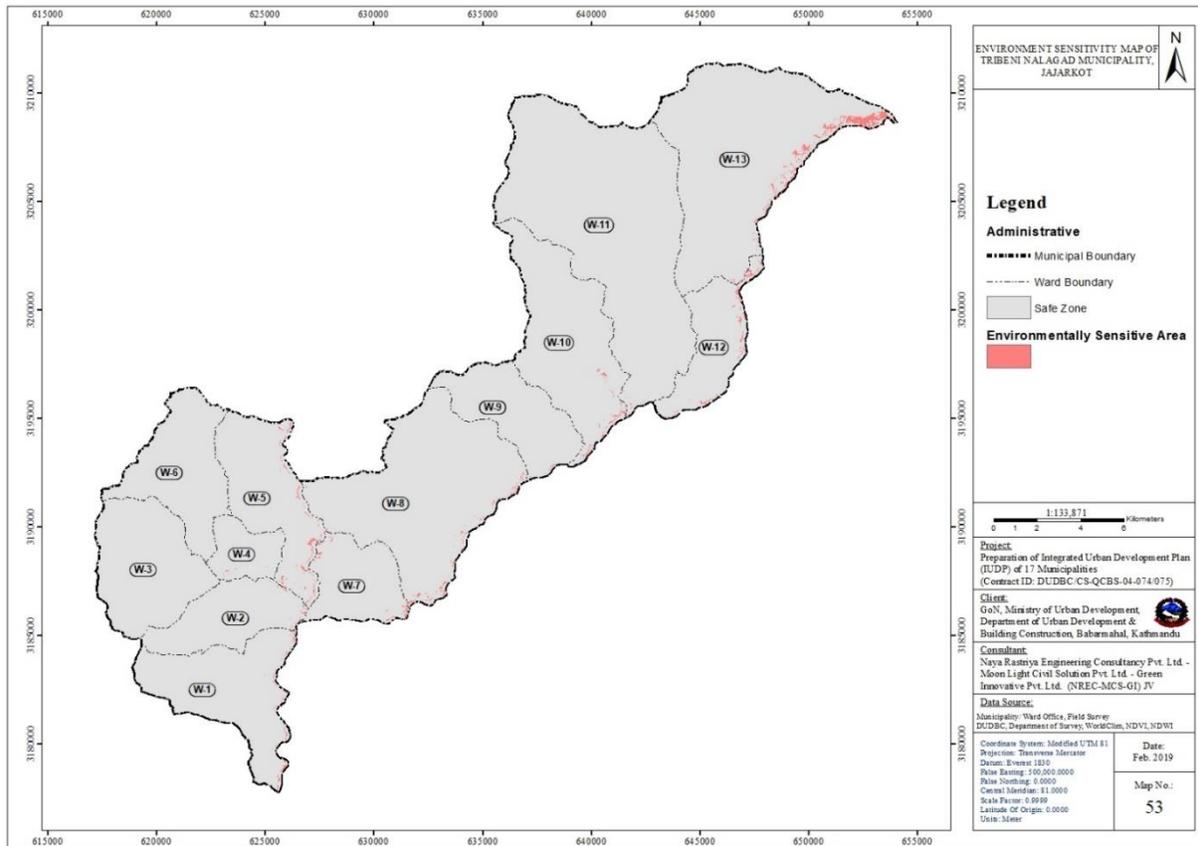
5.4.8.2 Environment Sensitive Area (ESA)

Environmentally sensitive areas (ESAs) are landscape elements or places which are vital to the long-term maintenance of biological diversity, soil, water or other natural resources both on the site and in a regional context. They include wildlife habitat areas, steep slopes, wetlands and prime agricultural lands. When ESAs are interconnected, they could form greenway corridors consisting of networks of linked landscape elements that provide ecological, recreational and cultural benefits to a community. The identification and protection of ESAs focus on individual landscape elements that varies according to the geographic location of the area. The ESA was determined by using the Criteria as: Flood Risk Zone + High Landslides + Drought Areas + Any Protected Areas and/or Important birds and biodiversity areas.

In Nalgad municipality, ESA zone is given below.

Table 41: Environment Sensitive Area

Ward No.	Environment Sensitive Areas (Ha)
1	25.29
2	7.29
3	0.09
4	1.26
5	36.63
7	14.67
8	35.37
9	2.79
10	25.56
11	2.52
12	43.47
13	148.14
14	2.79
15	25.56

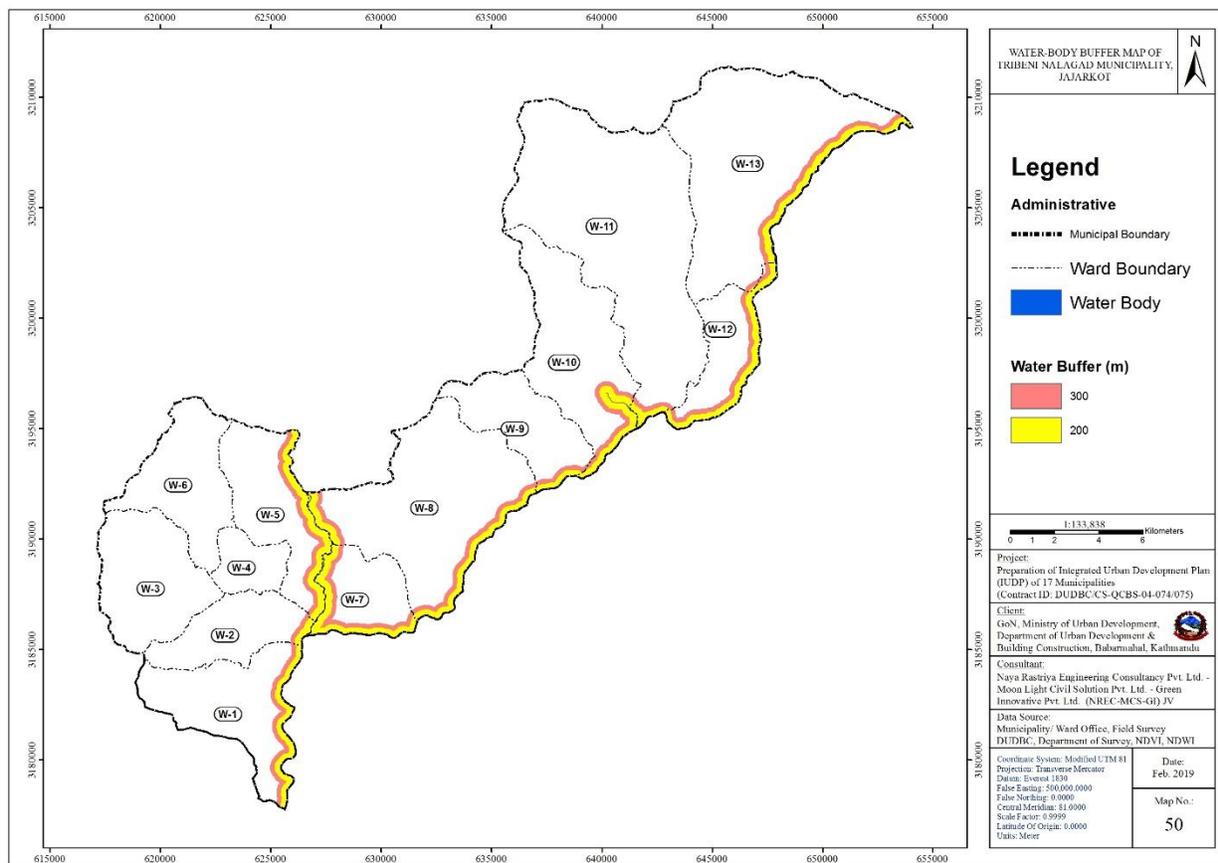


Map 39: Environment Sensitive Area

5.4.8.3 Water Body

Buffer of water body, especially river that was digitized from the high-resolution satellite imagery was conducted for proximity or buffer analysis. This Buffer was done in order to know the distance from the center of the river to its surrounding areas for knowing the potential flood prone areas. Generally, distance from the center line of the river to another 200m of its surrounding side are regarded to be as most vulnerable zone that are highly susceptible to flood while it was also noted that next 100m to 300m after 200m could also be damaged by the flood that depends upon the intensity and nature of the flood which differs in physiography of the areas.

The buffering area of rivers in Nalgad municipality is given on map:



Map 40: River Buffer Map of Nalgad Municipality

5.4.9 Population Served Analysis

Different urban feature served different number of population depending upon its physical status, relevancy in people’s life, adjacent service, population density etc. It is difficult to count the number of people served by each facility of the municipality every day. But for prominent features like road, the number of permanent service recipient can be estimated using geographical information system.

5.4.9.1 Road Network

The transportation system of any municipality of Nepal is largely dependent upon the road network. In order to set the priority for maintenance and upgrading of the transportation network, the municipality must classify the road sections depending upon different criteria. One major criteria for the classification of the road would be the number people, who are being served by the road daily and directly. The people living adjacent to the road use the road most, in their daily life. Geographic information system can be used to compute the number of persons directly and daily using that particular road.

Road networks within a municipality are designed and constructed to connect the settlements, the market places and infrastructures within the municipality to serve the overall population. The

analysis is based on that population served by minor roads finally incorporate by its connected major road for the daily movement of peoples and goods. The number of population is delineated as thickness of the road on the map. Increase in thickness of the road width indicates higher number of people being served by that road. From the analysis, it is found that highway, feeder road, district road and Class-A roads are highly population served roads. Similarly, Class-B and Class-C roads are less no. of population serving roads.

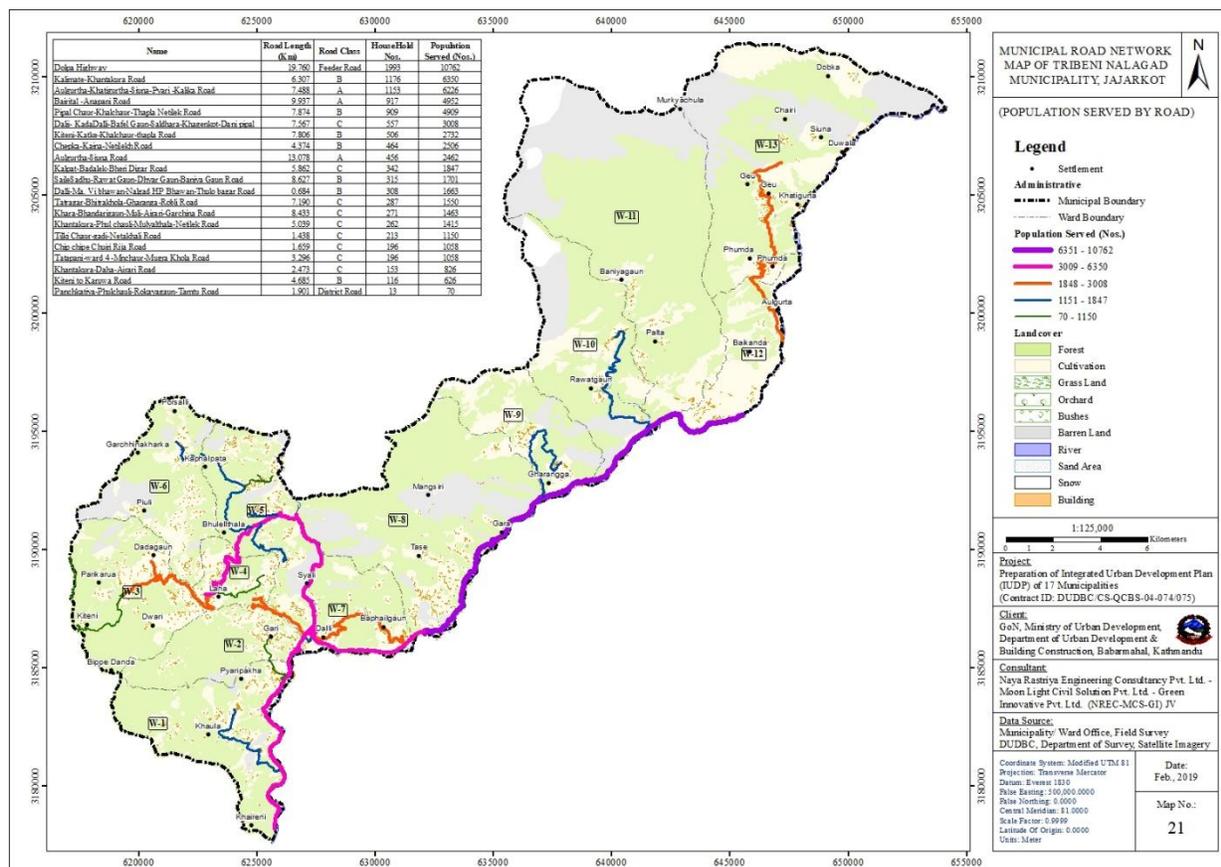
By buffering the centerline of the road, counting the number of households lying within the buffer area and multiplying the number of house hold by population rate per house hold, the number of people being directly served by the road can be computed. After computing the number of population served by each road, the roads can be classified and delineated in the map.

For Nalgad Municipality, the result is shown below:

Table 42: Road classification on the basis of population service

S.N	Road Name	Road Length (Km)	Road Class	House Hold Nos.	Population Served (Nos.)
1	Dolpa Highway	19.760	Feeder Road	1993	10762
2	Panchkatiya-Phulchauli-Rokayagaun-Tamtu Road	1.901	District Road	13	70
3	Bairital -Anapani Road	9.937	A	917	4952
4	Aulgurtha-Khatigurtha-Siuna-Pyari -Kalika Road	7.488	A	1153	6226
5	Aulgurtha-Siuna Road	13.078	A	456	2462
6	Kiteni to Karuwa Road	4.685	B	116	626
7	Kiteni-Katke-Khalchaur-thapla Road	7.806	B	506	2732
8	Pipal Chaur-Khalchaur-Thapla Netilek Road	7.874	B	909	4909
9	Kalimate-Khantakura Road	6.307	B	1176	6350
10	Chepka-Kaina-Netilekh Road	4.374	B	464	2506
11	Dalli-Ma. Vi bhawan-Nalgad HP Bhawan-Thulo bagar Road	0.684	B	308	1663
12	SaileSadhu-Rawat Gaun-Dhyar Gaun-Baniya Gaun Road	8.627	B	315	1701
13	Kalpat-Badalek-Nalgad Digar Road	5.862	C	342	1847
14	Chip chipe Churi Rija Road	1.659	C	196	1058
15	Tilki Chaur-gadi-Netakhali Road	1.438	C	213	1150
16	Dalii- KadaDalli-Bafel Gaun-Saldhara-Khagenkot-Dani pipal	7.567	C	557	3008
17	Tatapani-ward 4 -Mnchaur-Mugra Khola Road	3.296	C	196	1058

S.N	Road Name	Road Length (Km)	Road Class	House Hold Nos.	Population Served (Nos.)
18	Khantakura-Phul chauli-Mulyalthala-Netilek Road	5.039	C	262	1415
19	Khara-Bhandarigaun-Muli-Airari-Garchina Road	8.433	C	271	1463
20	Khantakura-Daha-Airari Road	2.473	C	153	826
21	Tatragar-Bhitrakhola-Gharanga-Robli Road	7.190	C	287	1550

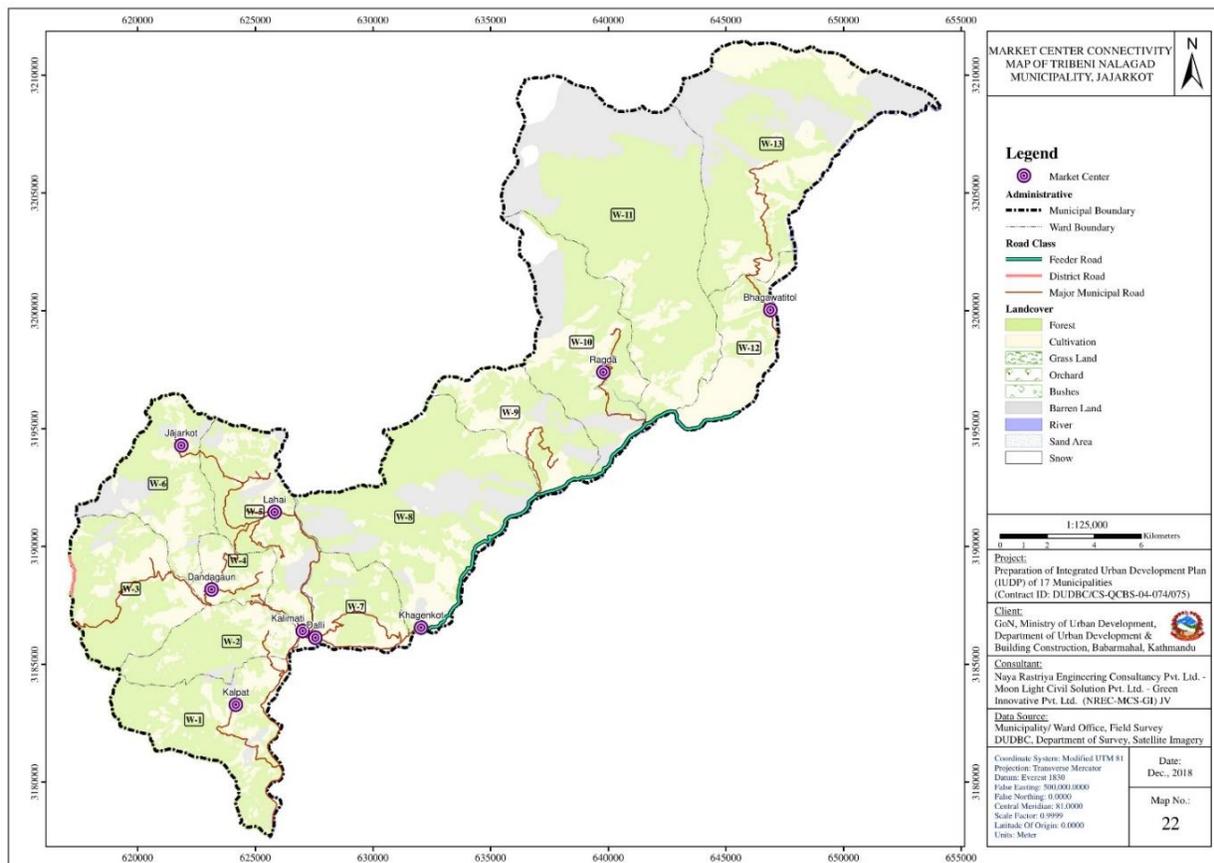


Map 41: Population served by Road Network

5.4.9.2 Market Center Connectivity

Connectivity refers to the directness of links and the density of connections in road network. As connectivity increases, travel distances decrease and route options increase, allowing more direct travel between destinations, creating a more accessible and resilient system. They reduce daily miles of vehicular travel per household and improve emergency response times. Connectivity can apply both internally (streets within a particular area) and externally (connections with arterials and other neighborhoods) (Connectivity Standards).

For the “Integrated Urban Development Plan”, the spatial locations of existing market centers are identified within the municipality and overlaid with municipal road network. So the market center connectivity analysis indicates the current linkage of market center through existing road network within the municipality for daily travel and/ or trading. The analysis also concludes for allocation of potential new location of market center as per clustering of settlement and road network.



Map 42: Market center of Nalgad municipality

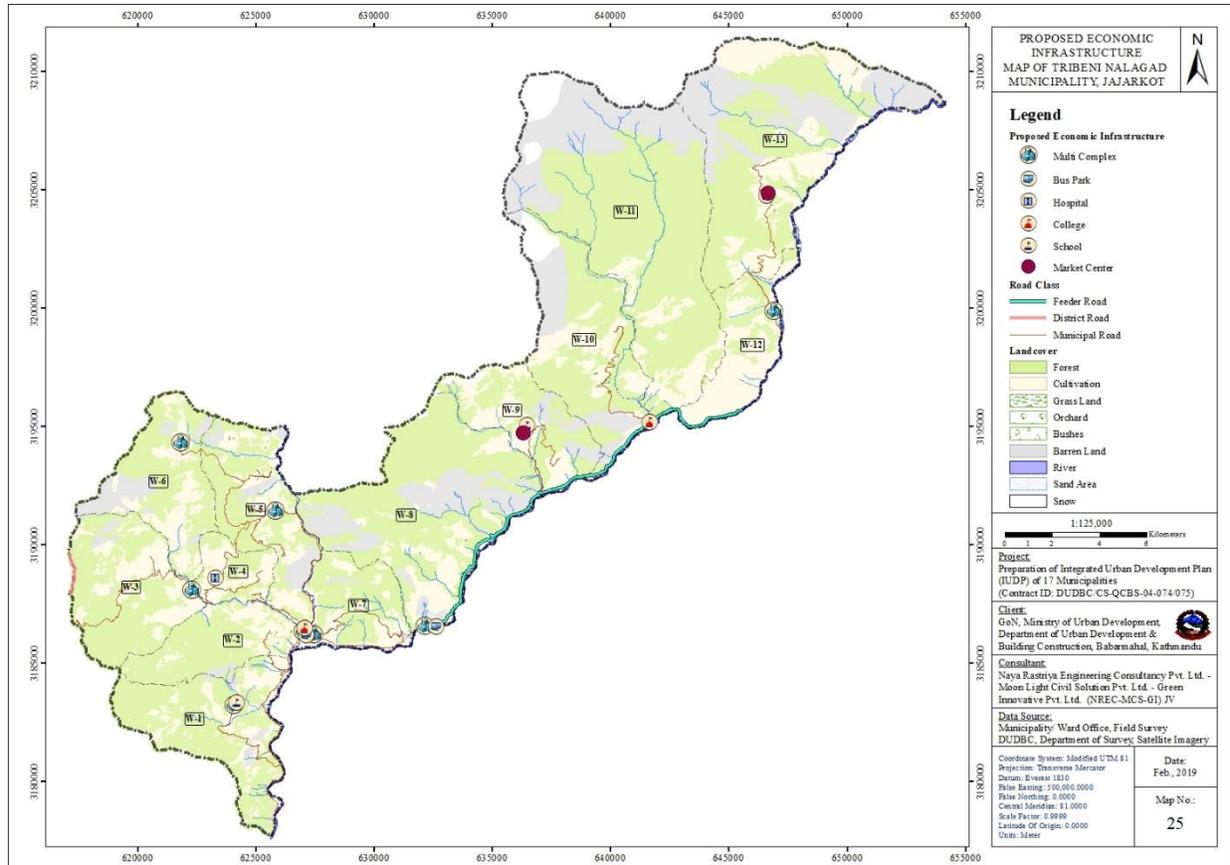
5.5 Infrastructure and Necessity

According to the planning norms and standards, table below shows the numbers of infrastructures needed in Nalgad municipality as per the population. Numbers of schools, hospital, Open Space, library, etc. needed for the proper development of the municipality is calculated in the table and it is useful for the planning of the infrastructure where necessary. This table helped to identify the lacking infrastructures to be installed within this municipality within the specified years in the future. On the basis of planning norms, the necessary infrastructures and their numbers were listed in table below.

Table 43: Required number of facilities in Nalgad Municipality

Types, Norms & Standards	2011	2018	2023	2028	2033
	Pop ⁿ . (25590)	Pop ⁿ . (30191)	Pop ⁿ . (33975)	Pop ⁿ . (38234)	Pop ⁿ . (43027)
EDUCATION					
Number					
Primary (1 in 3000 Pop ⁿ .)	8.53 ~ 9	10	11.3 ~ 11	12.7 ~ 13	14.34 ~ 14
Higher secondary (1 in 7500 Pop ⁿ .)	3.4 ~ 3	4	4.53 ~ 5	5	5.73 ~ 6
Graduate/ Post graduate (1 in 25,000 Pop ⁿ .)	1	1	1.3 ~ 1	1.52 ~ 2	1.72 ~ 2
HEALTH					
Sub health post (1 in 1,000 Pop ⁿ .)	25.59 ~ 26	30	33.9 ~ 34	38	43
Health post (1 in 5,000 Pop ⁿ .)	5	6	6.79 ~ 7	7.6 ~ 8	8.6 ~ 9
OPEN SPACE					
Neighbourhood park (1 in 800 Pop ⁿ .)	31.98 ~ 32	37.73 ~ 38	42.46 ~ 42	47.79 ~ 48	53.78 ~ 54
Local park (1 in 10,000 Pop ⁿ .)	2.56 ~ 3	3	3.3 ~ 3	3.8 ~ 4	4.3 ~ 4
LIBRARY					
City Level (1 in 7,500 Pop ⁿ .)	3.4 ~ 3	4	4.53 ~ 5	5	5.73 ~ 6
SECURITY					
Police Post (1 in 10,000 Pop ⁿ .)	2.56 ~ 3	3	3.3 ~ 3	3.8 ~ 4	4.3 ~ 4
FIRE STATION					
Fire Engine (1 fire engine in 25,000 – 75,000 Pop ⁿ .)	1	1	1	1	1

(Source: Planning Norms & Standards, 2013)



Map 43: Proposed Economic Infrastructure

5.6 GAP Analysis

Gap analysis is one of the important tools for urban planning and analysis. It consists of all the appropriate concepts and standards by making objectives, identifying lead sectors and setting vision to achieve the goal for integral development. As there has been re-structuring of the local levels in 2017 as per the Constitution of Nepal, there occurs vast gap between existing conditions and desired outcomes in the municipalities. Desired outcomes are the required infrastructures and services which are also defined by **Planning Norms and Standard 2013** on the basis of population size, space requirement, road types, etc. To fulfill the desired outcomes, there needs analysis of gap between existing condition and proposed items, which is known by “**Gap Analysis**” in short. The Gap analysis of the Nalgad municipality is presented below:

Table 44: GAP analysis of Nalgad Municipality

S. N.	Infrastructure	Norms	Standards				Existing Scenario				GAP		
1	Road	<ul style="list-style-type: none"> Sub arterial, Collector and Local Street (All or 90% of houses are within 2 km from motorable road) 		ROW (m)	Setback (m)	Foot path (m)	Cycle track (m)		ROW (m)	Setback (m)	Foot path (m)	Cycle track (m)	Sub Arterial – 15m
			Sub Arterial	22	1	2	1.5	Sub Arterial	7 (Carriage Way)				Collector – 9m
			Collector	14	1	2	1.5	Collector	5 (Carriage Way)				
			Local	10	1	2	-	Local	3 (Carriage Way)				Local – 7m

S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
2	Water Supply	<ul style="list-style-type: none"> Courtyard Connection/ Provision of Rainwater Harvesting Treatment plant (lab, dosing and guardhouse) with Storage: Reservoir (24hrs requirement) 	<ul style="list-style-type: none"> Quantity: 60 - 80 lpcd Accessibility: 90% of household have tap within 50m 1 ha per site (treatment plant and storage) Store capacity: 25% of the total treatment capacity 	<ul style="list-style-type: none"> Tap or pipe water is the main source of drinking water No tap water facility for each households Rain water harvesting system in the municipality Other water supply sources are wells, tube well, and underground water. 	<ul style="list-style-type: none"> Tap water facility in each household Treatment Plant

S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
3	Sanitation/ Sewerage system Storm Water	<ul style="list-style-type: none"> 30% of the household is covered by public sewer system (pit latrine, septic tank etc.) Sewage Pumping Station Treatment plant 	Min diameter of trunk line: 200mm 0.01 ha – 0.02 ha per site 2.5 ha – 3.5 ha per site	<ul style="list-style-type: none"> Poor Sanitation Open drainage system No any major efforts and future plan for waste water management 	<ul style="list-style-type: none"> outlets Proper Drain system Covered drain plan for waste water management

	Drainage system	<ul style="list-style-type: none"> Provision of public latrines 	1/3000 passerby at distance of 500m	<ul style="list-style-type: none"> No sewerage system in the municipality except ward 12 Poor sewerage system in ward 12 	<ul style="list-style-type: none"> Waste water treatment plant Provision of public toilets
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S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
4	Integrated Solid Waste Management System	<ul style="list-style-type: none"> 25% of solid waste is collected and properly disposed Collection Point Sanitary Landfill Site 	<ul style="list-style-type: none"> Communal Collection (1 collection point/container/ roadside pickup point serves a radius of 200m) Sanitary Landfill Site: Small (Greater than 1 and less than 25 tons per day) 	<ul style="list-style-type: none"> Waste management by pit system Wastes are burnt and dumped No Compost System in the municipality Landfill site 	<ul style="list-style-type: none"> Proper Management of Landfill site Community collection

S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
5	Electricity Supply System	<ul style="list-style-type: none"> National Grid supply line Alternative energy (panels, battery capacity 100AH) 	<ul style="list-style-type: none"> 100% of the household is covered by electricity city supply line Electric substation 33/11 KV: 0.07 ha per site Transmission Tower: 80 – 100 sq. m Distribution Tower: 20 – 25 sq. m 40 – 100 Watt Solar Home System 	<ul style="list-style-type: none"> 80 % Household with electricity (3777/4721*100) Use of solar energy 	<ul style="list-style-type: none"> Sufficient access of electricity 20% household having no electricity

S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
6	Tele-communication	<ul style="list-style-type: none"> House connection Community telephone booth 	<ul style="list-style-type: none"> 100 % coverage 1 telephone booth for 2 neighbourhood (Standard booth) 	<ul style="list-style-type: none"> Access to communication facility Services provided by Ncell, Nepal telecom, UTL, CDMA etc. 	<ul style="list-style-type: none"> Sufficient access of internet (Mobile data and fibre net/Wi-Fi)

S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
7	Educationa l Institution	<ul style="list-style-type: none"> • Primary/basic level • Higher Secondary • Graduate/ Post Graduate • Vocational and Technical Schools 	<ul style="list-style-type: none"> • 1 per 3000 population at a distance of 0.4 – 0.8 km - 0.2 ha per site • 1 per 7500 population at a distance of 30 min in public transportation – 0.65 ha per site • 1 per 25,000 population at a distance of 45min in public transportation 	<ul style="list-style-type: none"> • Max. no. of schools 8, 7, 7 at ward 1, 4 & 7 • More than 20 primary schools • 1 Graduate School: Nalgad Multiple Campus -7 	<ul style="list-style-type: none"> • Existing gap: 4 higher secondary • Projected gap: 6 higher secondary, 1 graduate school • Vocational & Technical School

S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
8	Health Institution	<ul style="list-style-type: none"> • Sub Health Post • Health Post 	<ul style="list-style-type: none"> • 1 per 1000 population (0.04 ha per site) • 1 per 5000 population (0.15 per site) 	<ul style="list-style-type: none"> • 5 Governmental Health post at ward 3, 4, 7, 11, 12 • 1 Animal Service (Veterinary): at ward-11 • 7 no. Sub Health Post (Clinic/ Vaccination Centre/ health Committee) 	<ul style="list-style-type: none"> • Existing Gap: 23 sub health post, 8 health post at ward 1, 2, 5, 6, 8, 9, 10 & 13 (government) • Projected Gap: 36 sub health post, 8 health post at ward 1, 2, 5, 6, 8, 9, 10 & 13 (government)

S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
9	Open Space/ Disaster Mgmt Recreational areas - Parks	<ul style="list-style-type: none"> • 5% of total sub city area Neighbourhood Park (with play equipment) • Local Park 	<ul style="list-style-type: none"> • 1 @ 800 population (0.4 ha per site) • 1 @ 10000 population (1 ha per site) 	<ul style="list-style-type: none"> • 1 Neighbourhood Park: Pipalchautari –ward 8 • Open Field: Masi Khanna Maurikharka -13 	<ul style="list-style-type: none"> • Existing Gap: (37 Neighbourhood Park, 3 local park • Projected Gap: (53 Neighbourhood Park, 4 local park

S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
10	Library	• City level	• 1 per 7500 population (0.5 ha per site)	• Lack of public library	• Existing Gap: 4 & Projected Gap: 6

S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
11	Security	• Police Post	• 1 per 10,000 population (0.1 ha per site)	• Ilaka Police Station at ward 11	• Existing Gap: 2 police post & Projected Gap: 3 police post

S. N.	Infrastructure	Norms	Standards	Existing Scenario	GAP
12	Fire Stations	• 1 (3 to 4 km radius)	• 1 fire engine @ 25,000 – 75,000 population • 0.5 ha per sub city	• Lack of fire station	• Existing Gap: 1 fire engine & Projected Gap: 1 fire engine

(Source: Planning Norms & Standards, 2013)

5.7 Vision Setting

Planning of any city is based on the analysis of present situational trend, past historic event and future prospective goal to reach. As part of planning process, vision setting executes the participatory approach of setting out aspirational destination of city. This becomes true for any cities, towns or country. But to the newly formed municipalities like Nalgad Municipality, setting out the vision of the municipality at its initial phase of formation of municipality is itself an important opportunity to direct municipal goals, plans, and programmes which will direct whole municipal activities towards the focused direction of set vision. All development activities that would be carried out in the future would be and should be in line with the set municipal vision set. As an aspiring city, the newly formed municipality like Nalgad Municipality has diverse prospects and sectors of development that would drive its future growth but identifying some lead sectors and potential development opportunity of the municipality based on its own strength and individuality would what make municipality grow better and prosper. As the Planner, we've taken this task as the preparation of long term strategic vision planning, which will basically form the structural guide for the development of the town. It is expected that long term vision set during the project will be considered as the basic development strategy for next 20-30 years' development plan. Major strategic roads, width of road, size of development blocks and land use plan for major lots are some of the basics that will define the projects future. Some of the leads sectors are identified with the local participation and with the planning workshop carried out in different stages of time.

5.7.1 Lead Sector Identification

From the analysis of different opportunities and possible threats of municipality including its site resource potentiality, we have concluded the lead sectors for Nalgada Municipality as:

1. **Agriculture as food green city.**
2. **Tourism**
3. **Industry**
4. **Infrastructure**
5. **Health and Education**

Agriculture as food green city, tourism, industry, infrastructure, health and education are the major sector to be considered for the overall development of the municipality. All these sectors should be given priority while formulating and implementing different kinds of development plans. On the basis of above-mentioned lead sectors, vision setting of the municipality has been done with the consultation of municipal authorities, people representatives and concerned stakeholders.

5.7.2 Vision Setting Workshop

One of the major objective of the induction workshop held on Nalgad Municipality, was also to carry out vision setting exercise along with objective to brief the civil representatives and the key

persons of the Nalgad Municipality about the initiation of the integrated urban development plan in their respective municipalities.

The major participants were:

1. Mayor of municipality
2. Deputy mayor
3. Chief administrative officer of the municipality
4. Section chiefs of the municipality office
5. Political representatives
6. Ward chief of the municipal ward
7. Representatives from various social, community and economic organizations

The participants were shortly briefed about the importance of vision setting and why it is needed for any municipality in terms of its holistic development exercise of vision setting was done after completion of SWOT analysis section, hence participants were well informed about the potential strength, weakness of their municipality and has analyzed the opportunity and threat of their municipality. So with those identified sectors in their backdrops participants were asked to write the aspiring vision of their municipality as part of where and how they wish to see their municipality in next 10/15 or 20 years' time.

Furthermore, the ward level FGDs and discussion with key informants additionally clarifies the potential development prospects of the municipality along with the different GIS mapping studies and trend developments of the municipalities for last 10/20 years and with further discussions and analysis on different perspectives at ward levels, the final statement for long term visions is selected.

5.7.3 Long Term Vision

Slogan of Vision:

समृद्ध र सफा नगर

दिगो बिकास र सुसासनको लहर

With the above stated slogan, the vision of the Nalgadh municipality is to make the municipality productive and clean. Nalgadh Municipality for-sees for their sustainable development. People of Nalgadh Municipality wish to visualize their city as beautiful and picturesque, which clearly suggest their intentions of clean and healthy city environment. A city can never prosper with proper and strategic investment on education and health of its citizens. In fact, education and well-being of its citizens are key indicators of development index (HDI) of the city to mark its prosperity.

5.8 DPR Selection Analysis

Detail project report (DPR) is the major element for the development of the municipality, which symbolizes the vision and perspectives of the municipal bodies. Several major projects of the municipality were selected from the FGD and sectoral meeting and discussions with other municipal authorities. Along with that, the criteria provided by DUDBC is mainly considered during the selection of two DPR. The evaluation method incorporates major two steps as described below,

a. First step involves categorization of proposed projects suggested and demanded from the corridor municipalities into three levels viz. (a) regional (b) municipal (c) wards. The **regional level projects** are the one which crosses the boundary of a municipality to include or link two or more than two municipalities. It also includes such project though confined to a single municipality but the impact of which is experienced in wider perspective which enables municipality to participate, and integrate in a regional development process, such as the urban corridor region of the municipalities.

The **municipal level projects** are the one which extends beyond the urban core of the municipality which help in linking other activity centers and peripheral areas of the municipality. The impact of municipal projects are experienced in wider area and population of the municipality. The examples of which, may include projects such as rural to urban roads that enhance rural/urban interface and interactions. The **ward level projects** are comparatively very smaller in scope & cost and also its impact is expected to be confined to a limited local area comprising of a few wards e.g. of ward level projects.

b. Second step involves evaluating the categorized projects (in sequential order from regional to municipal ward level) and prioritizing them by evaluating them based on following four criteria proposed by DUDBC namely

- Congruence with prevalent policies
- Overall viability of the proposed project
- Capacity of the proponent to implement the project, and
- Benefits and positive impact of the project

Each of these four criteria is weighted equally with a maximum score of 25. Each criteria is evaluated using different indicators and weightages. Each indicators or sub-criteria is evaluated using rating scale from 0 to 1—where 1 denotes desired condition, while 0 denotes undesired condition. Any other condition in between is rated using interpolation and best judgement. Value of each indicator is then calculated by multiplying the given rating and maximum score attached to an indicator.

Hence, the construction of road and multi – purpose municipal building has gain the highest number due to which they are selected as major projects. Following table shows the criteria and weightage gained by every selected projects,

Congruence (Weightage = 25)

S.N.	Projects	Fit with corridor strategy (15)		Consistent with activities outlined in NUDS (2.5)		Fit with the Government's catalytic investment areas outlined in policy and program for 2018-2019 (2.5)		Consistent with prioritized economic sectors (service, industry, and agriculture) of Graduation Plan (2.5)		Consistent with Sustainable Development Goals (SDGs) (2.5)		Total Value
		Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value	
		0-1		0-1		0-1		0-1		0-1		
1	Construction of juice and soap industries	1	15	0	2.5	1	2.5	0	2.5	0	2.5	17.5
2	Construction of multi-purpose municipal building	1	15	0	2.5	1	2.5	1	2.5	0	2.5	20
3	Construction of health post in all ward	0	15	1	2.5	1	2.5	1	2.5	1	2.5	10
4	Construction of road connecting Chepka, Kaina, Anapani and Dadagaun	1	15	1	2.5	1	2.5	1	2.5	1	2.5	25
5	Construction of 25 bedded hospital	1	15	1	2.5	1	2.5	1	2.5	1	2.5	25
6	Construction of hydropower	0	15	0	2.5	0	2.5	1	2.5	0	2.5	2.5
7	Construction of school building	0	15	1	2.5	1	2.5	1	2.5	1	2.5	10
8	Construction of bridge	1	15	0	2.5	1	2.5	1	2.5	0	2.5	20

9	Construction of stadium	1	15	0	2.5	0	2.5	0	2.5	0	2.5	15
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Overall Viability (Weightage = 25)

S.N.	Projects	Technical (7)		Financial (5)		Social (4)		Environmental (4)		Economic (5)		Total Value
		Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value	
		0-1		0-1		0-1		0-1		0-1		
1	Construction of juice and soap industries	0.4	7	1	5	1	4	0.5	4	1	5	18.8
2	Construction of multi-purpose municipal building	0.6	7	0.5	5	1	4	1	4	0	5	14.7
3	Construction of health post in all ward	0.8	7	1	5	1	4	1	4	0	5	18.6
4	Construction of road connecting Chepka, Kaina, Anapani and Dadagaun	0.6	7	0	5	0.5	4	1	4	1	5	15.2
5	Construction of 25 bedded hospital	0.6	7	1	5	1	4	1	4	0.5	5	19.7
6	Construction of hydropower	0.4	7	1	5	0.5	4	1	4	0	5	13.8
7	Construction of school building	0.6	7	1	5	1	4	1	4	0	5	17.2

8	Construction of bridge	0.6	7	0.5	5	1	4	1	4	0	5	14.7
9	Construction of stadium	0.4	7	0.5	5	0.5	4	1	4	1	5	16.3

Capacity (Weightage = 25)

S.N.	Projects	Overall Competitiveness (12)		Experience of IFI (8)		Experience of collaborative project (with national agencies) (5)		Total Value
		Rating	Value	Rating	Value	Rating	Value	
		0-1		0-1		0-1		
1	Construction of juice and soap industries	0.5	12	0	8	0	5	6
2	Construction of multi-purpose municipal building	0.75	12	0	8	1	5	14
3	Construction of health post in all ward	0.75	12	1	8	1	5	22
4	Construction of road connecting Chepka, Kaina, Anapani and Dadagaun	1	12	1	8	1	5	25
5	Construction of 25 bedded hospital	0.75	12	0	8	0	5	9
6	Construction of hydropower	0.5	12	0	8	0	5	6

7	Construction of school building	1	12	1	8	1	5	25
8	Construction of bridge	1	12	0	8	0	5	12
9	Construction of stadium	1	12	0	8	0	5	12

Benefits and Positive Impacts (Weightage = 25)

S.N.	Projects	Geographic Extent (4)		Population Extent (4)		Accumulation of Productive Assets (4)		Positive Economic and Social Impacts and Benefits Including Agglomeration Benefits (13)		Total Value
		Rating	Value	Rating	Value	Rating	Value	Rating	Value	
		0-1		0-1		0-1		0-1		
1	Construction of juice and soap industries	1	4	0.5	4	1	4	1	13	23
2	Construction of multi-purpose municipal building	1	4	0.5	4	1	4	1	13	23
3	Construction of health post in all ward	0	4	0.4	4	0	4	0.75	13	11.35
4	Construction of road connecting Chepka, Kaina, Anapani and Dadagaun	1	4	0.8	4	0	4	0.75	13	16.95
5	Construction of 25 bedded hospital	1	4	0.6	4	0	4	0.75	13	16.15

6	Construction of hydropower	0	4	0.4	4	0	4	0.75	13	11.35
7	Construction of school building	0	4	0.4	4	0	4	0.5	13	8.1
8	Construction of bridge	0	4	0.4	4	0	4	0.5	13	8.1
9	Construction of stadium	1	4	1	4	1	4	1	13	25

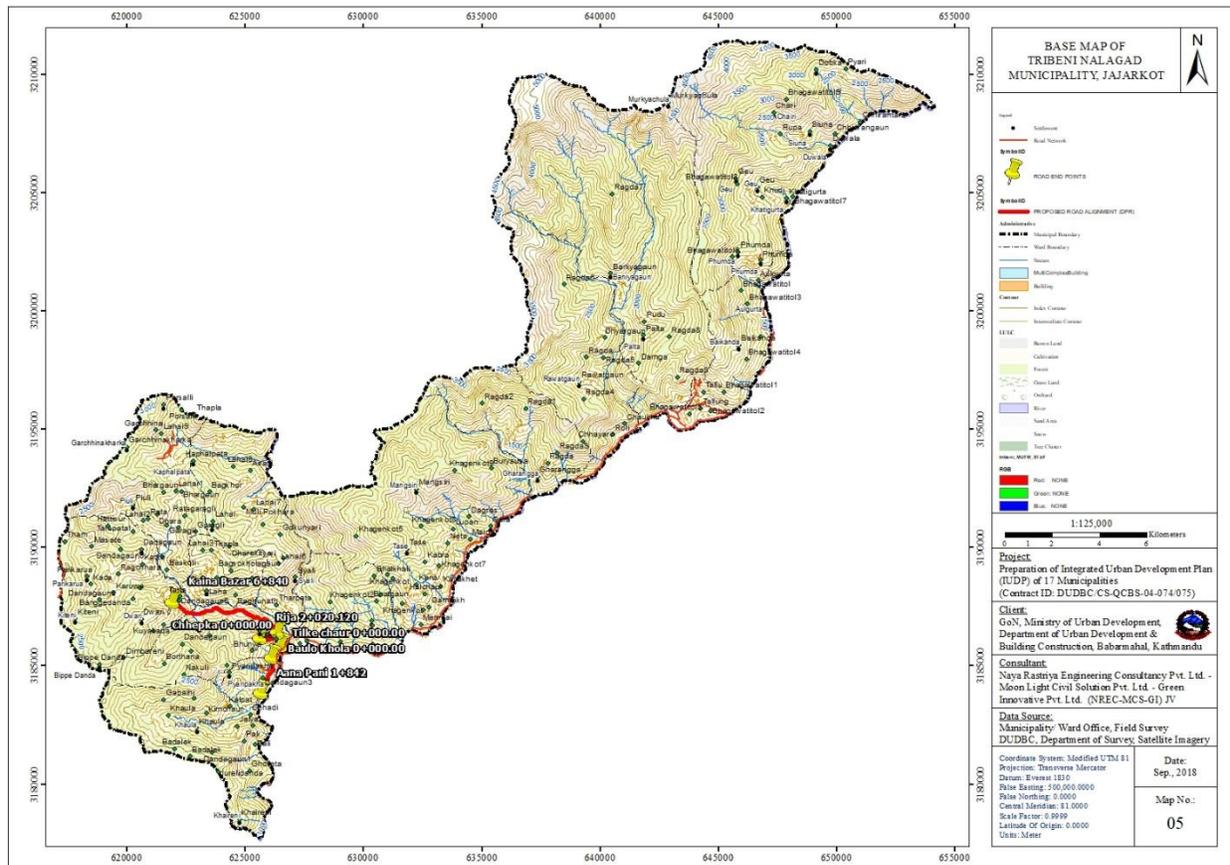
Total Weightage Gained

Project	Congruence	Overall Viability	Capacity	Benefits and Positive Impacts	Total
Construction of juice and soap industries	17.5	18.8	6	23	65.3
Construction of multi-purpose municipal building	20	14.7	14	23	71.7
Construction of health post in all ward	10	18.6	22	11.35	61.95
Construction of road connecting Chepka, Kaina, Anapani and Dadagaun	25	15.2	25	16.95	82.15
Construction of 25 bedded hospital	25	19.7	9	16.15	69.85
Construction of hydropower	2.5	13.8	6	11.35	33.65
Construction of school building	10	17.2	25	8.1	60.3
Construction of bridge	20	14.7	12	8.1	54.8
Construction of stadium	15	16.3	12	25	68.3

In case of Nalgad, from considering and calculating numbers of indicators mentioned above the project of construction of road and multi-purpose building has obtained the highest number in comparison to other projects. Since, the vision focuses on infrastructural development, the project which is feasible for the local people and which help in development are selected as DPR1 and DPR2.

5.8.1 DPR 1: Road

The construction of road connecting Chepka, Kaina, Anapani and Dadagaun is selected as DPR1 as it connects the market center and serves the majority of settlements.



Map 44: DPR1 – Road

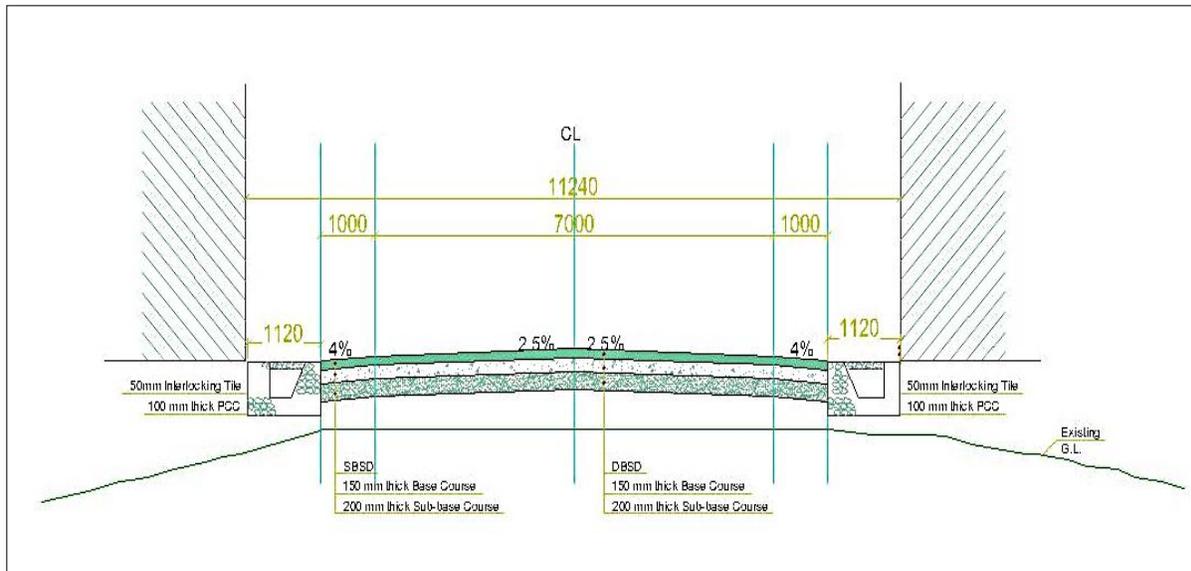


Figure 11: Road Cross section for Hilly Settlement Area

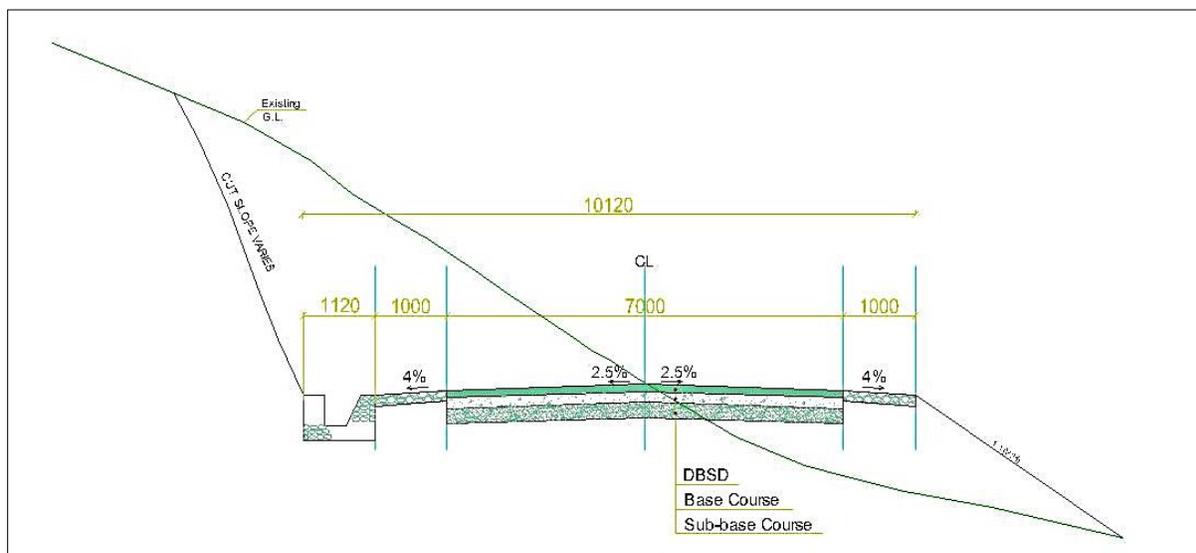


Figure 12: Road Cross Section for Non Settlement Hilly Area

Table 45: Features of DPR1 - Road

Features	Description
Name of the Road	Urban Road (Chhepka, Kaina, Aanapani and Dandagaun, Jodne Sadak Khand) Road, Nalagad Municipality Chainage: [0+000.00 – 10+702.89] KM
Length	10.702 km

Features	Description
Starting Point	Chhepka
End Point:	Aana Pani
Design Standard	
Standard	NRS 2070
Existing Surface:	Mostly Earthen, Partly metallic and gravel surface
Proposed Pavement:	Blacktopped (DBSD) type pavement
Geometrics	
Right of Way:	15 m on either sides (Center line)
Formation Width:	9 m (excluding drain)
Carriage Way Width:	7 m
Shoulder Width:	1 m on either side
Maximum Gradient	12%
Minimum Gradient	0.5%
Lane	Double
Structures (Qty/No.)	
a) Side Drain	Side Drain 1, SIDE DRAIN 1
b) Pipe Culvert	6nos. (900mm dia)
c) Slab Culvert	4 nos. (6m)
Cost Estimate (NRs)	
Base Cost (A+B+C+D+E+F+G)	1,03,31,62,082.33
VAT @13% of Base Cost	13,43,11,070.70
Total Cost including VAT	1,16,74,73,153.03
Work Charge Staff & Miscellaneous Expences@3%	3,09,94,862.47
Grand Total Cost	1,19,84,68,015.50
Cost Per Km of the road inclusive of VAT	11,19,74,961.74

5.8.2 DPR 2: Multipurpose Municipal Building

After the federalism and formation of the municipality, the spaces for municipal bodies and the municipal building is lacking, so, Multi – purpose municipal building is selected as DPR2 which includes market center at the ground floor, office spaces at the first floor, meeting and conference hall at second floor and upper floor contain the quarter and this building also helps for the financial benefit of the municipality and local people.



Figure 13: DPR2 – Multipurpose Municipal Building

Summary of Cost

Project : Detail A/E Design of Multipurpose Municipal Building, Nalagad Municipality, Jajarkot			
Consultant: NREC - MCS - GI JV, Lalitpur			
S.N.	Description of Work	Amount Rs	Remark
1	Civil Work	390,786,057.95	
2	Electrical Work	26,637,086.94	
3	Sanitary work	15,488,826.04	
4	Miscellaneous item	1,113,645.11	
	Total	434,025,616.04	
	Vat 13 %	56,423,330.09	
	Contengencies 5%	21,701,280.80	
	Grand Total	512,150,226.93	

5.9 Building Bye-Laws

5.9.1 Introduction

The outcome of discussion held with Planning and Building Byelaws Preparation Task force and the information from the workshop was juxtaposed with conceptual framework for bylaws preparation envisaged in inception report and the necessary revision was made to arrive at preliminary guidelines for the field investigation and verification. One of the important revisions made to the conceptual framework included the mapping of existing built up and the urban expansion areas as field verification identified the shortcoming of the maps of built up and expansion areas given in Integrated Development plans. So mapping activity was carried out using GPS tracking and taking reference from Integrated Action Plans. This essentially included;

- Mapping of the existing built up areas was carried out according to the type, use of existing buildings in relation to the access and topographical features of the land.
- Mapping was carried out for the possible residential expansion areas based upon on the current trend of the building activities (substantiated by building permit data of past three years, land subdivision and sales and on site observation)
- Mapping and verification of new land use zones as suggested by the group discussions and their on-site investigation in terms of topography, topographical limitation to expansion, access and applicability of existing road and its Right of Way (RoW) based upon standard density calculations
- Mapping of existing institutional areas and expansion areas was carried out
- Field observation of the environmentally sensitive areas as indicated in the periodic plan, IAP plan and according to the workshop outcomes.
- Tracking tentative area of proposed land use by using GPS and new alignments of the road network was carried out.

5.9.2 Observations

- Field observation of existing residential plot size, setbacks, ground coverage, storey/FAR was carried out
- Field observation of existing urban design elements of building façade, streetscape and volumetric disposition of building in relation to the open space in case of Nalgad Municipality was carried out for urban design control
- Field observation of existing urban design elements of building façade, streetscape and volumetric disposition of building in relation to the terraced terrain in case of Nalgad Municipality was carried out for urban design control
- Field data collection was carried out regarding the possible boundaries by names, landmarks, land value, land transaction and its locational attributes
- For the preservation of existing heritage area, design of building façade is going to decorate day by day in Nalgad municipality.

Some specific and important comments made during the presentation were as follows.

- The architectural control proposed needs to be compatible with the architectural code section of NBC
- The minimum plots size requirements for the public building needs to be worked on the basis of the per person use standards of the spaces taking reference for architectural code section of NBC
- The definition sections of the report need to be simplified and the English terminology to be used alongside the Nepali headings far as possible
- A proper coding the hierarchy of roads in each municipality and need for assessing the potential expansion of proposed commercial streets
- A judicious assessment of FAR with the alternatives of designating the no of floors

During the visit, minor comments were made which were mainly related to ROW and minimum size of the plot. During the third visit respective municipalities decided in writing to present the proposed planning and building bylaws to municipal board/council for the approval and then enactments.

The suggestions made were:

- Clarity on agricultural areas indication in land use plan
- Concerned were raged about some of the ROW delineation and the naming of the road
- Local leaders were of the opinion that the proposal made in bylaws should be discussed at ward level or rather Tole level and they agreed that on the submission of the draft final they will discuss the bylaws prepared by consultant at ward level before recommending it to municipal council for final approval
- Few ambiguities related to definitions and some of the bylaws provisions were pointed out and discussed for its practical implementation

Further more detail see Volume –V (Building Byelaws of Nalgad Municipality)

6 CHAPTER VI: DEVELOPMENT PLANS

6.1 Physical Development Plan

Physical planning is the overall systematic arrangement of actions about multi sectors, has aim to improve physical environment of the municipality through the construction and rehabilitation of infrastructures that serves its dwellers. It enhances the planned spatial framework of development. The urban forms and shape of city depend upon the planning process of physical development about various components such as road network, water supply, drainage and sewerage networks, solid waste management and electricity & communication. The improvement of road network through the management of transportation, traffic, parking & road safety is enhanced by Physical Development Plan.

With the help of national/municipal goals, various planning guidelines including National Urban Development Strategy, planning norms & standards etc. physical strategic plans are prepared. The long-term physical development plan of Nalgad aims to improve the urban physical amenities of the Nalgad.

Goal: The enhancement of living standard of citizens through the systematic provision of physical infrastructures with proper allocation of resources with the optimum utilization.

Objectives

- To provide road network improvement and development
- To improve Water Supply System
- To plan for drainage and sewerage networks
- To prepare solid waste management plan
- To provide of sufficient electricity
- To promote alternative energy and resources
- To enhance of telecommunication network
- To construct public toilets in required places.
- To facilitate sufficient drainage and sewerage.
- To promote rainwater harvesting system, drinking and waste water treatment plants
- To allocate proper landfill site
- To provide Bio-gas system in different wards
- To provide proper educational, health and religious institutions,
- To facilitate various public amenities such as city hall, sport complex, exhibition centers, police stations, museum/art-gallery, public & central library, fire stations, old age home etc.
- To develop open spaces through the construction of different types of parks
- To manage of parking space and transportation system

6.1.1 Urban Transportation Management Plan

Urban transportation provision is mainly to improve accessibility of the people to markets and services and promote economic activities through employment generation and marketing of local products. In context of Nepal, a fixed point system model is adopted for networking where junctions are confined to a finite set of locations such as markets, historical/archeological locations, etc.

Road Network and Connectivity

Mountain roads are typically associated with difficult ground access, numerous slope instability problems and shortages of good construction material. These conditions require carefully designed off-site drainage, erosion protection measures and identification of the best locally available materials.

As a result, design and construction of roads in this terrain requires special expertise in relation to:

- geological, geotechnical and route alignment factors
- geometric design
- slope protection and stabilization measures

One of the important aspect to be considered in the strategic level is that it's difficult geographic terrain which hinders the transportation system as well as equally provides opportunity to explore the traditional clustering of high terrain. Right of way of roads usually ranges from 10-30 meters with local to arterial, but in case of such terrain in Nalagad, it doesn't seem feasible. Collector roads of 14m will basically act as the arterial road of the area; whereas 7-meter road will serve as sub-arterial road instead of 22 meter. Hence, it is important to promote the walking friendly terrain with at least 3 meter (10feet) width, which could be used for emergency vehicular entrance as well. Apart from the, some other strategies which are mentioned as below:

Objective:

- Maintain and promote connectivity with each settlement of Nalagad with major road of 14m (ROW).
- Promote regional linkage for trade and commerce,
- Encouraging public transportation within the city.

Strategy:

- Connecting city area with settlement area of each ward with feeder or district road.
- Linkage with nearby districts like Surkhet and Banke.
- Construction of cycle friendly road networks with minimum width of 2 meter
- Construction of pedestrian pathways on each local, collector and sub-arterial road, width varying as per requirement but not less than 2 meter on each side.
- Plantation of trees along the road side to provide shading for foot-travelers.

- Regular monitoring and evaluation by government bodies on privately owned/managed public transportation.

With above mentioned objective and activities, sustainable transportation system has been proposed which will serve as the planned city network for inter-city and intra city network. It is important to invest on the road infrastructure but it should be long term and inclusive in manner. With the basic principle of each settlement to be connected with market center, the roads have been proposed. It is important to consider that these roads are proposed for the longer run and as a strategic plan for 15 years accommodating more than one hundred thousand populations. Hence, phase wise development could be done as per the available budget and priority.

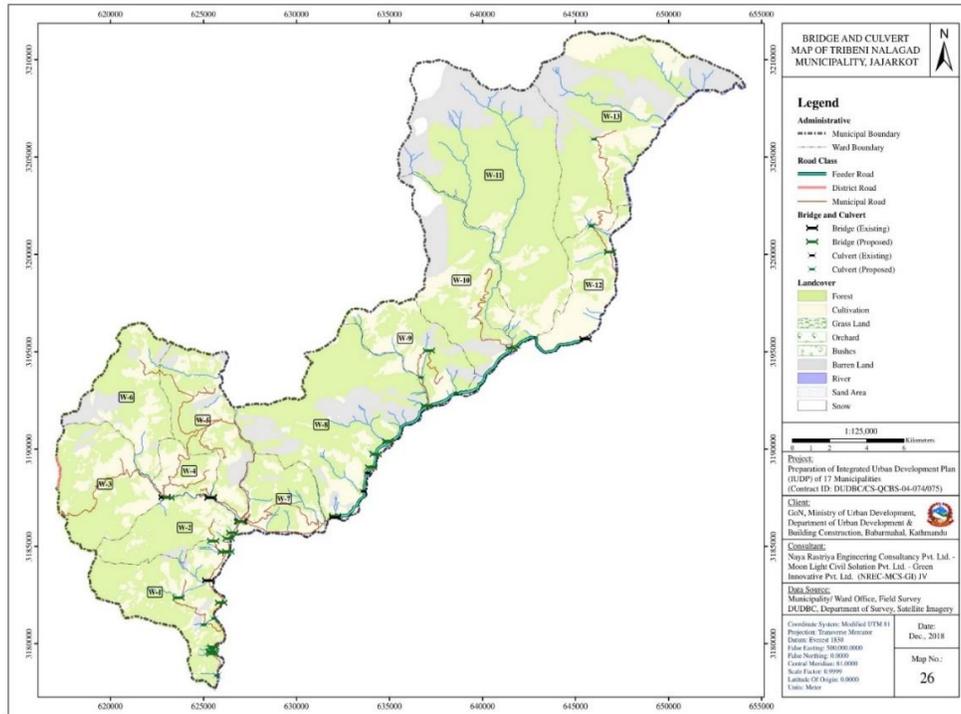
Guidelines:

- Minimum basic guidelines for roadside infrastructures, bicycle tracks, pedestrian facilities, curbs. Bus lay bays, lighting and drainage should be followed as per the guidelines set by Nepal Road Standard 2070.
- Furthermore, regarding the general design of urban roads, especially with pedestrian footpaths, cycle lane, bus stop, taxi stands and parking lanes, guidelines defined in “Urban Road Standards 2071” should be followed.
- If different guidelines are provisioned for same infrastructure, then the standard, which explains the pedestrian friendly transportation most, should be adopted.

Strategic Projects:

Roads are important structures to set the urban forms and shape. Considering the settlement and market area, new roads are proposed and pedestrian movement is encouraged, discouraging vehicular movement. With related to the existing market area some of the projects are proposed as:

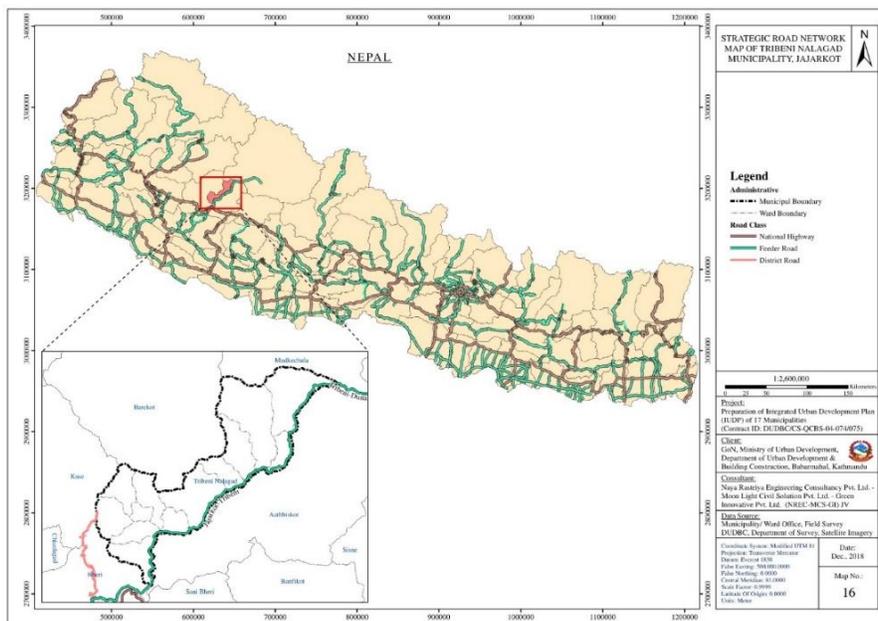
- Strategic Roads (as shown in Map) connecting different market center and settlements.
- New bridges are proposed at different settlements i.e. Khaireni, Khaula, Dalli, Gara, Gharangga and Aulgurta for easy transportation
- Culverts are also proposed at Geu, Phumda and Khaireni
- Pedestrian footpaths and cycle tracks on the flat terrain along the roads of market, residential areas
- Pedestrian friendly route connecting houses at the terrain slope after primarily connecting with the strategic roads.



Map 45: Proposed and existing bridge and culverts

6.1.1.1 Strategic Road Network

Nalgad municipality lying in hilly area has connection with feeder road along with the overall road network of Nepal. Feeder road passes through border of the municipality in North – South direction. The map below shows the strategic road network of Nalgad municipality connecting feeder road and other roads.



Map 46: Strategic road network map

6.1.1.2 Accessibility Situation

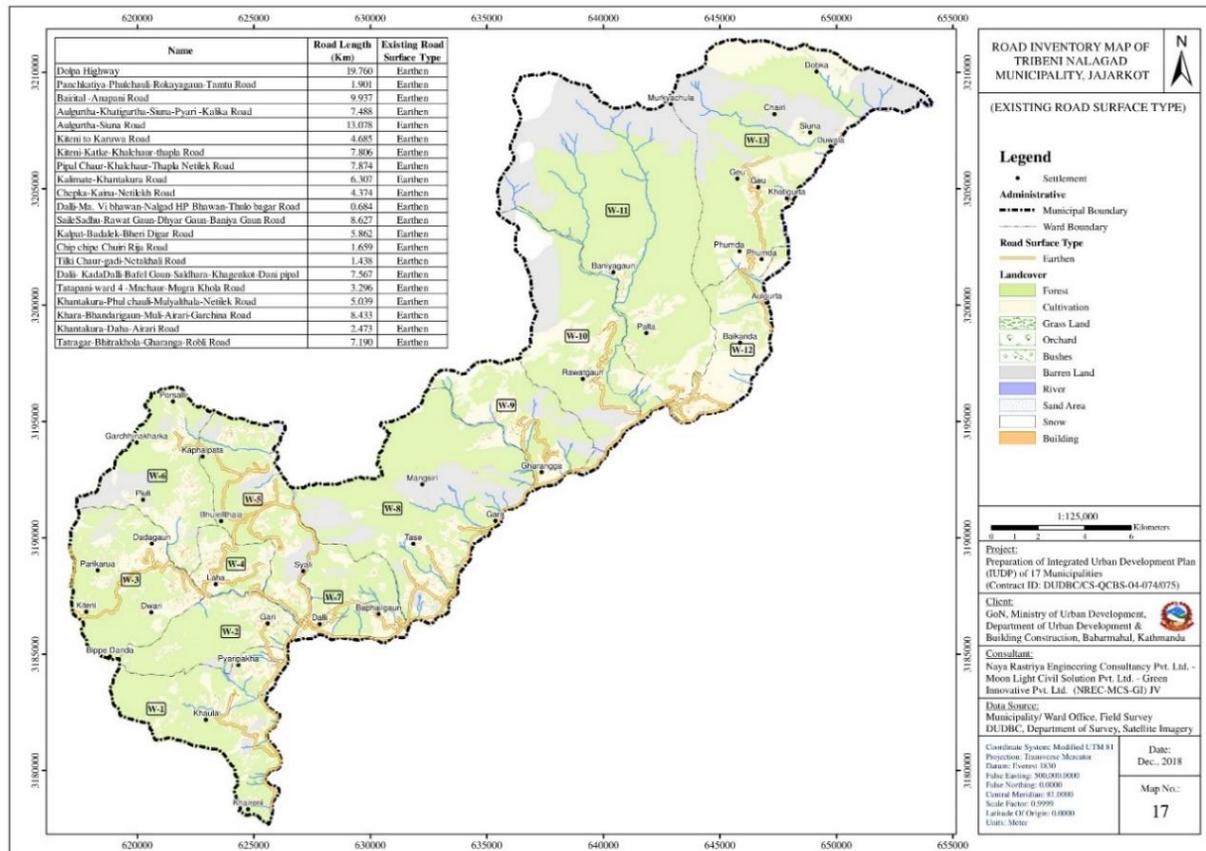
Nalagad municipality lies in hilly area where there is presence of contour and sloppy land. The accessibility does not seem to be easy in Nalagad due to the only presence of feeder road. Every road in the municipality are earthen roads. Width of the road in the municipality ranges from 3m to 7m. These road serves for transporting within wards and other wards and settlement through vehicles. Other 2m roads are used as foot trail for travelling between two villages. The name of roads, its width and types are shown in the table below:

Table 46: Road surface type and its width of Nalagad municipality

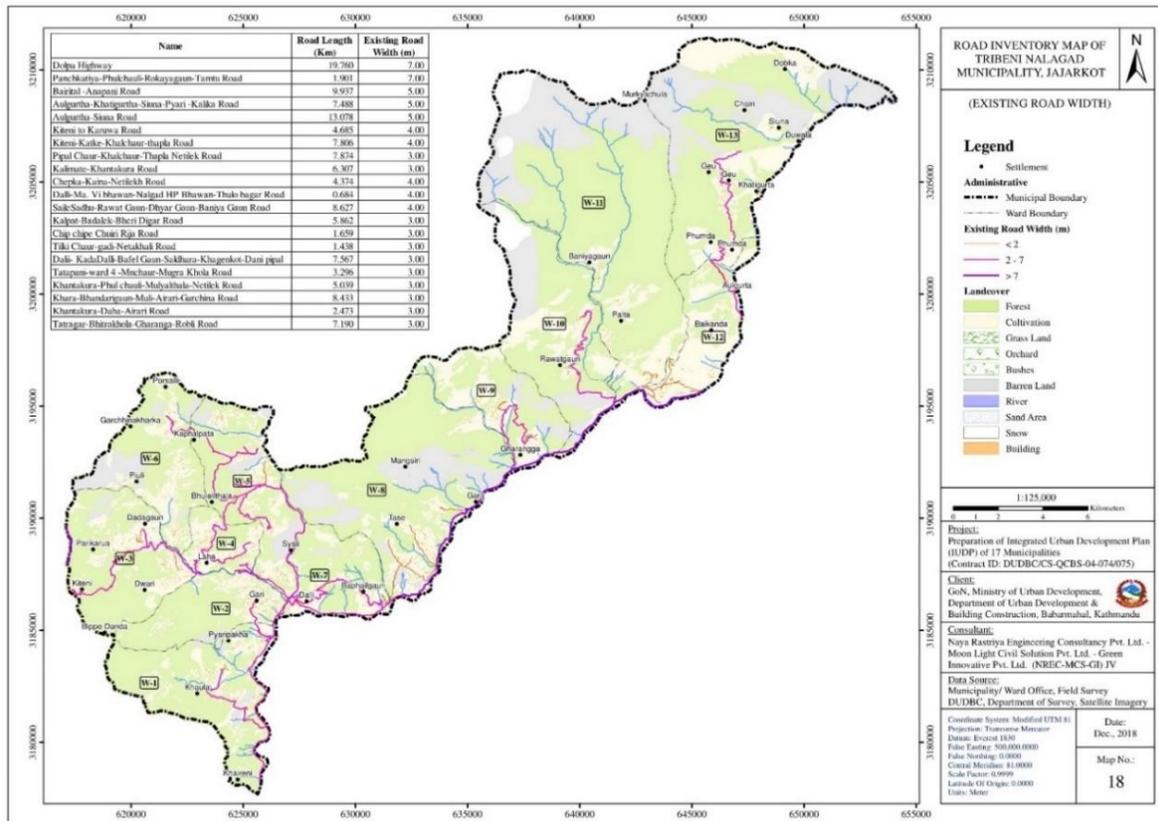
S.N.	Road Joining Settlements	Road Length (Km)	Existing Width (m)	Existing Road Surface
1	Dolpa Highway	19.760	7	Earthen
2	Panchkatiya – Phulchauli – Rokayagaun – Tantu Road	1.901	7	Earthen
3	Bairital – Anapani Road	9.937	5	Earthen
4	Aulgurtha – Khatigurtha – Siuna –Pyari – Kalika Road	7.488	5	Earthen
5	Aulgurtha – Siuna Road	13.078	5	Earthen
6	Kiteni to Karuwa Road	4.685	4	Earthen
7	Kiteni – Katke – Khalchaur – Thapla Road	7.806	4	Earthen
8	Pipal Chaur – Khalchaur – Thapla Netilek Road	7.874	3	Earthen
9	Kalimate – Khantakura Road	6.307	3	Earthen
10	Chepka – Kiana – Netilekh Road	4.374	4	Earthen
11	Dalli – Ma. Vi. Bhawan – Nalagad HP Bhawan – Thulo Bagar Road	0.684	4	Earthen
12	Saile Sadhu – Rawat Gaun – Dhyar Gaun – Baniya Gaun Road	8.627	4	Earthen
13	Kalpat – Badalek – Bheri Digar Road	5.862	3	Earthen
14	Chip Chipe Chiuri Rija Road	1.659	3	Earthen
15	Tilki Chaur – Gadi – Netakhali Road	1.438	3	Earthen
16	Dalli – Kada Dalli – Bafel Gaun – Saldhara – Khagenkot – Dani Pipal	7.567	3	Earthen
17	Tatapani – ward 4 – Manchaur – Mugra Khola Road	3.296	3	Earthen
18	Khantakura – Phul Chauli – Mulyalthala – Netilek Road	5.039	3	Earthen

S.N.	Road Joining Settlements	Road Length (Km)	Existing Width (m)	Existing Road Surface
19	Khara – Bhandarigaun – Muli – Airari – Garchina Road	8.433	3	Earthen
20	Khantakura – Daha – Airari Road	2.473	3	Earthen
21	Tatragar – Bhitrakhola – Gharanga – Robli Road	7.190	3	Earthen

(Source: DoR, field visit and municipality)



Map 47: Road classification on the basis of existing surface type



Map 48: Road classification on the basis of existing road width

6.1.1.3 Proposed Road

- According to the population served, market area and the settlements, new roads are proposed. Also from the sectoral discussion and views from the villagers, new roads are classified. These roads are classified for the easy accessibility of the people and goods. The classification of roads is:
 - Feeder road (30m)
 - District road (22m)
 - Urban road Class A (14m)
 - Urban road Class B (10m)
 - Urban road Class C (6m)
 - Foot trail

The following table shows the proposed roads and its classification,

Table 47: Proposed road class in Nalgad municipality

S.N.	Road Joining Settlements	Road Length (Km)	Existing Width (m)	Proposed Road Class	Proposed Road Width (m)
1	Dolpa Highway	19.760	7	Feeder Road	30

S.N.	Road Joining Settlements	Road Length (Km)	Existing Width (m)	Proposed Road Class	Proposed Road Width (m)
2	Panchkatiya – Phulchauli – Rokayagaun – Tamtu Road	1.901	7	District Road	22
3	Bairital – Anapani Road	9.937	5	A	14
4	Aulgurtha – Khatigurtha – Siuna – Pyari – Kalika Road	7.488	5	A	14
5	Aulgurtha – Siuna Road	13.078	5	A	14
6	Kiteni to Karuwa Road	4.685	4	B	10
7	Kiteni – Katke – Khalchaur – Thapla Road	7.806	4	B	10
8	Pipal Chaur – Khalchaur – Thapla Netilek Road	7.874	3	B	10
9	Kalimate – Khantakura Road	6.307	3	B	10
10	Chepka – Kiana – Netilekh Road	4.374	4	B	10
11	Dalli – Ma. Vi. Bhawan – Nalagad HP Bhawan – Thulo Bagar Road	0.684	4	B	10
12	Saile Sadhu – Rawat Gaun – Dhyar Gaun – Baniya Gaun Road	8.627	4	B	10
13	Kalpat – Badalek – Bheri Digar Road	5.862	3	C	6
14	Chip Chipe Chiuri Rija Road	1.659	3	C	6
15	Tilki Chaur – Gadi – Netakhali Road	1.438	3	C	6
16	Dalli – Kada Dalli – Bafel Gaun – Saldhara – Khagenkot – Dani Pipal	7.567	3	C	6
17	Tatapani – ward 4 – Manchaur – Mugra Khola Road	3.296	3	C	6
18	Khantakura – Phul Chauli – Mulyalthala – Netilek Road	5.039	3	C	6
19	Khara – Bhandarigaun – Muli – Airari – Garchina Road	8.433	3	C	6
20	Khantakura – Daha – Airari Road	2.473	3	C	6
21	Tatragar – Bhitrakhola – Gharanga – Robli Road	7.190	3	C	6

(Source: DoR, field visit and municipality)

The proposed roads are classified according to the necessity of people, use of road and infrastructures available around the area. The proposed road serves the people of the municipality for the exchange of the goods and the accessibility. Following table shows the number of population served by various roads:

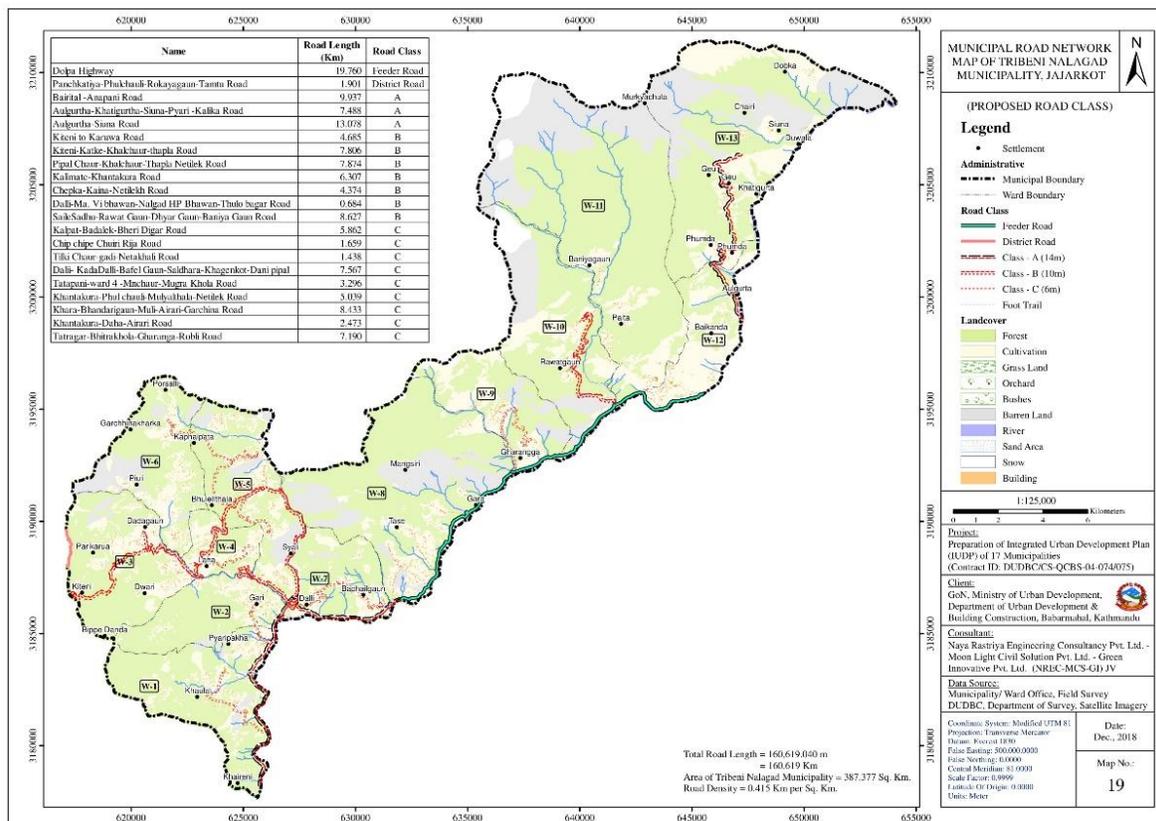
Table 48: Number of population served by roads in Nalgad municipality

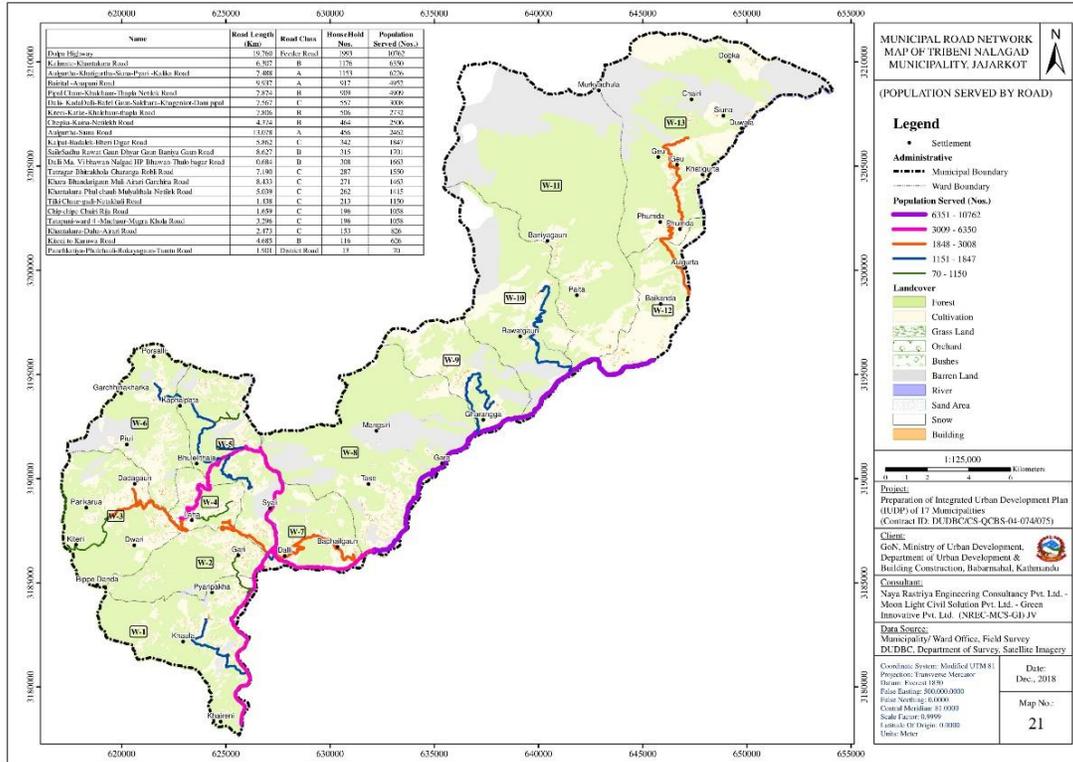
S.N.	Road Joining Settlements	Road Length (Km)	Proposed Road Class	House Hold Number	Population Served (Nos.)
1	Dolpa Highway	19.760	Feeder Road	1993	10762
2	Panchkatiya – Phulchauli – Rokayagaun – Tamtu Road	1.901	District Road	13	70
3	Bairital – Anapani Road	9.937	A	917	4952
4	Aulgurtha – Khatigurtha – Siuna –Pyari – Kalika Road	7.488	A	1153	6226
5	Aulgurtha – Siuna Road	13.078	A	456	2462
6	Kiteni to Karuwa Road	4.685	B	116	626
7	Kiteni – Katke – Khalchaur – Thapla Road	7.806	B	506	2732
8	Pipal Chaur – Khalchaur – Thapla Netilek Road	7.874	B	909	4909
9	Kalimate – Khantakura Road	6.307	B	1176	6350
10	Chepka – Kiana – Netilekh Road	4.374	B	464	2506
11	Dalli – Ma. Vi. Bhawan – Nalgad HP Bhawan – Thulo Bagar Road	0.684	B	308	1663
12	Saile Sadhu – Rawat Gaun – Dhyar Gaun – Baniya Gaun Road	8.627	B	315	1701
13	Kalpat – Badalek – Bheri Digar Road	5.862	C	342	1847
14	Chip Chiye Chiuri Rija Road	1.659	C	196	1058
15	Tilki Chaur – Gadi – Netakhali Road	1.438	C	213	1150
16	Dalli – Kada Dalli – Bafel Gaun – Saldhara – Khagenkot – Dani Pipal	7.567	C	557	3008
17	Tatapani – ward 4 – Manchaur – Mugra Kholo Road	3.296	C	196	1058

S.N.	Road Joining Settlements	Road Length (Km)	Proposed Road Class	House Hold Number	Population Served (Nos.)
18	Khantakura – Phul Chauli – Mulyalthala – Netilek Road	5.039	C	262	1415
19	Khara – Bhandarigaun – Muli – Airari – Garchina Road	8.433	C	271	1463
20	Khantakura – Daha – Airari Road	2.473	C	153	826
21	Tatragar – Bhitrakhola – Gharanga – Robli Road	7.190	C	287	1550

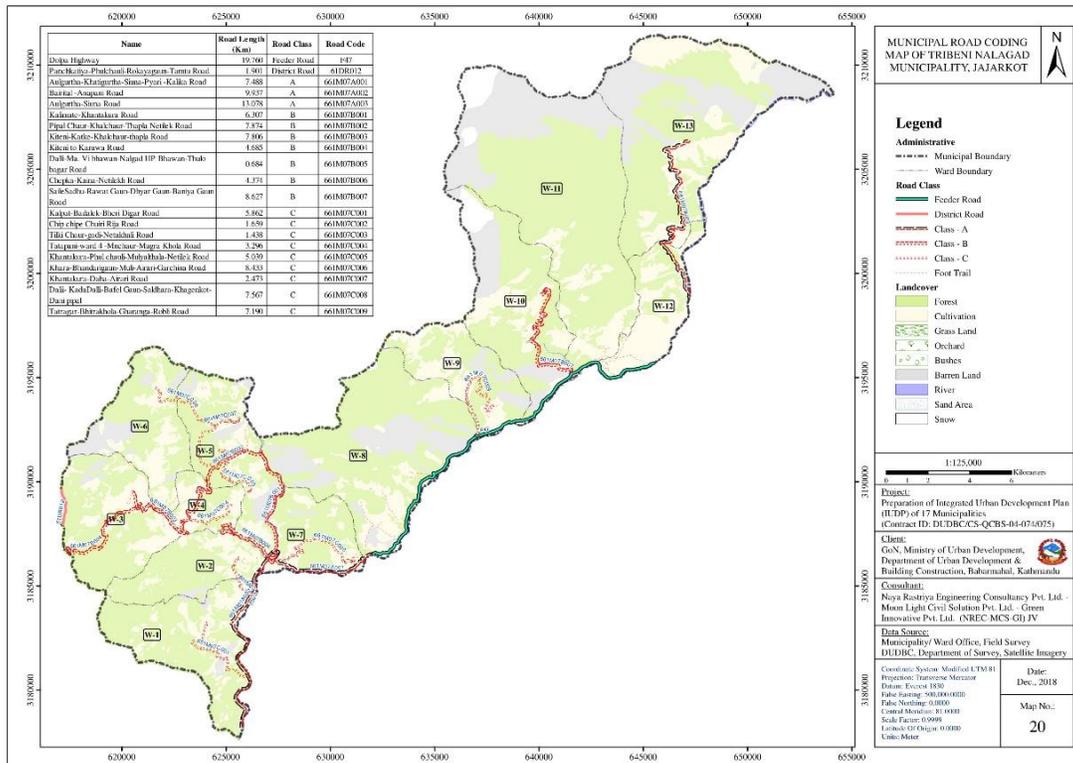
(Source: DoR, field visit and municipality)

Most of the population is served by the feeder road. It serves more number of settlements (1993). According to the presence of facilities and market, the use of road is increasing and so the population. The map below shows the population served by the roads of Nalgad municipality.





Map 50: Road classification on the basis of population served



Map 51: Road classification on the basis of coding

Above map shows the roads of the Nalgad municipality and coding of every road. Following table shows the coding of every road,

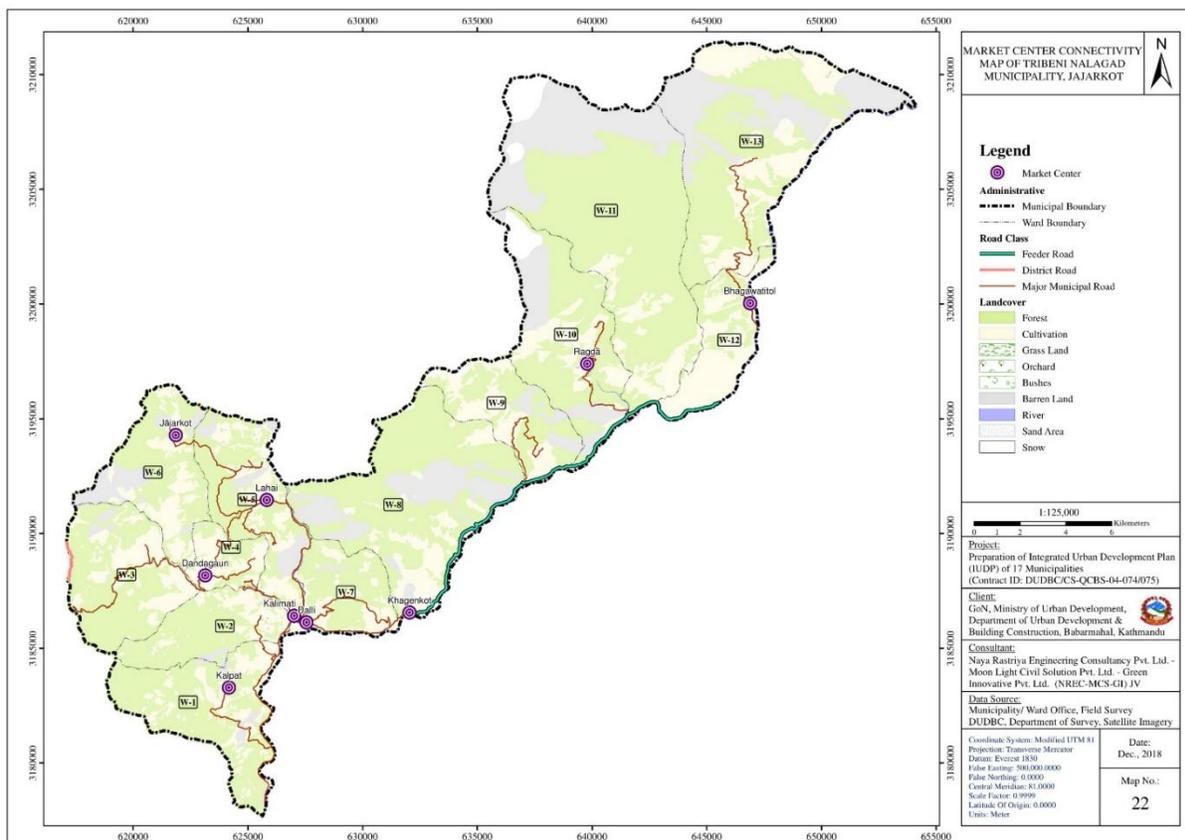
Table 49: Coding of roads in Nalgad municipality

S.N.	Road Joining Settlements	Road Length (Km)	Proposed Road Class	Road Code
1	Dolpa Highway	19.760	Feeder Road	F47
2	Panchkatiya – Phulchauli – Rokayagaun – Tamtu Road	1.901	District Road	61DR012
3	Bairital – Anapani Road	9.937	A	661MO7A001
4	Aulgurtha – Khatigurtha – Siuna –Pyari – Kalika Road	7.488	A	661MO7A002
5	Aulgurtha – Siuna Road	13.078	A	661MO7A003
6	Kiteni to Karuwa Road	4.685	B	661MO7B001
7	Kiteni – Katke – Khalchaur – Thapla Road	7.806	B	661MO7B002
8	Pipal Chaur – Khalchaur – Thapla Netilek Road	7.874	B	661MO7B003
9	Kalimate – Khantakura Road	6.307	B	661MO7B004
10	Chepka – Kiana – Netilekh Road	4.374	B	661MO7B005
11	Dalli – Ma. Vi. Bhawan – Nalgad HP Bhawan – Thulo Bagar Road	0.684	B	661MO7B006
12	Saile Sadhu – Rawat Gaun – Dhyar Gaun – Baniya Gaun Road	8.627	B	661MO7B007
13	Kalpat – Badalek – Bheri Digar Road	5.862	C	661MO7C001
14	Chip Chipe Chiuri Rija Road	1.659	C	661MO7C002
15	Tilki Chaur – Gadi – Netakhali Road	1.438	C	661MO7C003
16	Dalli – Kada Dalli – Bafel Gaun – Saldhara – Khagenkot – Dani Pipal	7.567	C	661MO7C004
17	Tatapani – ward 4 – Manchaur – Mugra Khola Road	3.296	C	661MO7C005
18	Khantakura – Phul Chauli – Mulyalthala – Netilek Road	5.039	C	661MO7C006

S.N.	Road Joining Settlements	Road Length (Km)	Proposed Road Class	Road Code
19	Khara – Bhandarigaun – Muli – Airari – Garchina Road	8.433	C	661MO7C007
20	Khantakura – Daha – Airari Road	2.473	C	661MO7C008
21	Tatragar – Bhitrakhola – Gharanga – Robli Road	7.190	C	661MO7C009

(Source: DoR, field visit and municipality)

Market center is the main factor for categorizing the road class. In Nalgad municipality, there are nine main market area which is connected with existing and proposed road network due to which there is accessibility for people. Those market center include Jajarkot, Lahai, Dandagaun, Kalimati, Dalli, Kalpat, Khagenkot, Bhagawati tole and Ragda. Following map shows the market area and its linkage with road roads,



Map 52: Market center of Nalgad municipality

6.1.1.4 Traffic Management Plan

Transport management in Nepal is affected by existing topographical condition. The vision of the transport management plan is to make the transport system safe, affordable, organized, non-polluting and service oriented through qualitative increase in vehicle and transport services.

Objectives:

- To develop the transport system so as to make it less expensive, safe, non-polluting, equipped with facilities, competitive and self-dependent
- To make the transport sector efficient, transparent, service oriented and effective

Strategy:

- Increase in participation of private sector in legal, institutional and policy related improvement
- Use of modern technology in driving license, number plate and vehicular emission
- Provision for implementation of third party insurance
- Priority for the public transportation system
- Precautions for controlling road accidents after studying its causes

Strategic projects:

- Programs for modernization of number plate and driving license
- Equipment's for checking number plates and driving license
- Public awareness program on road accidents

Expected Outcomes:

- Road accidents will decrease due to improvement in transport administration
- Vehicular pollution will decrease
- On site monitoring system will be established for vehicular inspection
- Competitive and economical transport system will be developed

6.1.1.5 Parking Management

Parking plays vital role to enhance the transportation system. Parking management refers to various policies and programs that result in more efficient use of parking resources. Cost-effective parking management programs can usually reduce parking requirements by 20-40% compared with conventional planning requirements, providing many economic, social and environmental benefits. Parking management system plays and will continue to play an important role in the revitalization of urban areas. Each form of parking management has its own benefits and disadvantages. Without the implementation of parking management system, vehicles are useless.

Objectives:

- Encourage use of alternative modes and reduce motor vehicle use (thereby reducing traffic congestion, accidents and pollution).
- Reduce compaction in the street and increment in the proper flow of vehicles

Strategy:

- Parking space serving multiple users and destinations
- Establishing of maximum parking standards
- Providing off – site or urban fringe parking facilities
- Establishing plans to manage occasional peak parking demands
- Improving parking facility design and operations to help solve problems and support parking management

Strategic projects:

- Preparing plan for proper parking management
- Provision for separate parking space rather than parking along road side

6.1.1.6 Road Safety

Road safety refers to the methods and measures used to prevent road users from being killed or seriously injured. Typical road users include pedestrians, cyclists, motorist and vehicle passengers.

Objectives:

- To help decrease in road accidents
- Easy and safe travel of road users and vehicle users

Strategy:

- Provision for sidewalks of suitable width for pedestrian traffic
- Traffic calming and speed humps
- Provision of separate speed limits for school and hospital areas
- Segregated pedestrian routes and cycle lanes away from the main highway

6.1.2 Logical Framework Approach (LFA) of Urban Transportation

Logical framework Approach (LFA) of Road						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> • Planned road network within municipality area • Advanced traffic management system for effective mobility 					

Logical framework Approach (LFA) of Road						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
• Connection of Nalgad municipality with nearby municipalities and settlements						
1.1	Improvement of road networks and Preparation of MTMP	0	1	Interlinkage of Nalgad Municipality with nearby cities	Workshop, PRA, FGD progress report meeting minutes & photographs	Approval & implementation
1.2	Maintenance and synchronization of traffic lights through government and private sectors	10%	100%	People friendly walking	Road inventory, photographs, Sectoral workshop	Prioritization of the project
1.3	Programs on public awareness related to road safety	0	1	Information to people about safety measures in road	Road inventory, photographs, Sectoral workshop	Awareness level of people and willingness
1.4	Upgrading earthen road into gravel road	160.619 Km	160.619 Km	Ease on modes of transportation in the municipality and its periphery	Road inventory, photographs, Sectoral workshop, meeting minutes & photographs	Project prioritization and budget allocation
1.6	Construction of bridge in wards 1, 2, 5, 8, 9, 10 and 12	0	21			
1.7	Construction of culverts in wards 1, 9, 11, 12 and 13	0	4			
1.8	Construction of road connecting Chepka, Kaina, Anapani and Dadagaun	10.702 Km	10.702 Km	Road connections including footpaths and cycling tracks for flat terrains and walking trails on difficult terrain	Meeting minutes & photographs, Sectoral workshop	Implementation through government
1.9	Construction and expansion of road system by land pooling and GLD roads	30%	100%	Planned road network and settlement	Meeting minutes & photographs, Sectoral workshop	Project prioritization and budget allocation
1.10	Improvement of existing road networking	40%	100%	Easy accessibility and walkable city	Road inventory, photographs, Sectoral	Budget allocation for the

Logical framework Approach (LFA) of Road						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1.11	Urgent construction of road structures and road furniture including bicycle lanes and foot paths	30%	100%		workshop, meeting minutes & photographs	mentioned project
1.12	Construction of cycle friendly road networks with minimum width of 2 meter	10%	100%	Safe and secure transportation system	Meeting minutes & photographs, Sectoral workshop	Budget allocation
1.13	Construction of road connecting Nalgad municipality and to all nearby RMs	40%	100%	Easy transportation	Meeting minutes & photographs, Sectoral workshop	

6.1.3 Water Supply Plan

Water supply plan is another important physical plan which matters for the long term strategy of the town. Availability of water resources makes Nalgad good location with sufficient attributes of water supply resources. It is important to consider as present half of the houses are accessed with water supply facility but with intermittent water supply and not all households are facilitated as well. The water supply facility is also promoted by the community approach. Tap is the major source of water supply for drinking purpose. Public water supply facilities and water supply for city purpose are often ignored in the planning. With the following strategic frameworks, water supply plan is proposed for the long term strategy.

Objective:

- Equitable, safe, adequate and affordable water supply facility to each households and institutions and for municipal purpose
- Sustainable water supply measures

Strategy:

- Continues water supply system installed in each household.
- Provision of water storage from rainwater harvesting in public spaces like Bus park, parks, roadside areas and other public spaces. Such water reservoirs could be used for city cleaning process.

- Promoting rainwater harvesting in household level by subsidizing on money and technical support.
- Regular monitoring of quality of water as defined by WHO guidelines, National water quality standards 2062 or any other, which one is more effective.
- Sustainable usage of water sources and conservation of water resources from illegal encroachment.
- Control in extraction of ground water which could affect the overall water table of the region.
- Provision of public water supply in crowded area or in every settlement.
- Provision of public drinking water in public areas
- Pricing the water cost in reasonable and scientific manner
- Provision of treatment plant that makes water more acceptable for a specific end-use.
- Proper network development for effective distribution of water

Hence, to attend these objectives and goals, proper necessary activities have been approached. The strategic vision of the water supply should be guided by safe, affordable and accessible water supply to all, as in the matter we should also be aware about the sustainable need of water supply plans and conservation of the water sources. Conservation of resources in sustainable manner and efficient use of water should be guiding principle in longer run. It is also important to have some policy guidelines to which could guide in longer run for water supply plan of 1 lakh population.

Strategic Projects:

With the above-mentioned framework, it is much clear regarding the strategy of water supply. Water supply lines laid on the urban roads along with drainage pipe are some of the primary infrastructure required for the plan. These lines are mentioned in the map and are subject to change as per the road geometry, if new settlements are growing. Bottom-line of the strategy is that, the source, storage, treatment and distribution system must demonstrate the capacity to serve future populations within the water service area with expected population of one lakh.

- One House One Tap for the proper flow of water supply in every households
- Construction of intake source tank
- Drinking water through pumping/lifting
- Construction of overhead tank

6.1.4 Logical Framework Approach (LFA) of water supply

Logical framework Approach (LFA) of Water Supply						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> • Adequate safe, reliable and affordable water supply facility • Rain water harvesting provision in HH and community level 					

Logical framework Approach (LFA) of Water Supply						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1.1	Drinking Water through Pumping/Lifting	0%	100%	Sustainable city development	DWSSO, PRA, FGD, sectoral workshop, progress report	Budget allocation and project prioritizations
1.2	Public taps installed along necessary junctions	10%	100%	Ease for travellers for drinking water and washing	DWSSO, PRA, FGD, sectoral workshop, progress report	Budget allocation and project prioritizations
1.3	Promoting rainwater harvesting in household level by subsidizing on money and technical support	0%	100%	Proper utilization of rain water and sustainable development	DWSSO, PRA, FGD, sectoral workshop, progress report	Extensive public participation in rainwater harvesting
1.4	Construction of Overhead Tank	0	5	Storage of water for various purpose	DWSSO, PRA, FGD, sectoral workshop, progress report	Budget allocation and project prioritizations
1.5	Programs on public awareness about clean drinking water	0	13	Knowledge among people about their health and importance of clean drinking water	DWSSO, PRA, FGD, sectoral workshop, progress report	Extensive public contribution and participation
1.6	Provision of treatment plant that makes water more acceptable for a specific end-use	0	1	Reuse of waste water which helps for the conservation of water	DWSSO, PRA, FGD, sectoral workshop, progress report	Connections of water supply from nearby source
1.7	One House One Tap for the proper flow of water supply in every households	30%	100%	Facility of pure drinking water in every house hold	DWSSO, PRA, FGD, sectoral workshop, progress report	Coordination from the municipality
1.8	Provision of public drinking water in public areas	30%	100%	Easy accessibility of drinking water during public programs	DWSSO, PRA, FGD, sectoral workshop, progress report	Budget allocation for purchasing the pipes and installation
1.9	Provision of drinking water plan	0	1	Sufficient availability of drinking water	DWSSO, PRA, FGD, sectoral workshop, progress report	Support from the municipality
1.10	Drinking water through pumping/lifting	0	1			

6.1.5 Drainage and Sewerage Network

Steep slope development has the potential to start a cycle of erosion and flooding. Water that falls on forests, grass and other natural areas has a relatively high infiltration rate into the soil. Roofs, concrete, pavement and other impervious surfaces increase the amount of rainwater that runs off the land surface. On a developed slope, this runoff is often placed onto steep slopes below the house and driveway. Without appropriate measures to control the velocity or volume of the water, excessive soil erosion and increased flooding can potentially occur. The increased volume and velocity of runoff can result in erosion of stream banks as the stream begins to form a larger channel to dissipate the energy of the water. Sediment from eroding stream banks can be deposited or transported directly in the stream. Runoff from steep slopes moves at high velocity and reaches downstream areas quickly, which can result in increased flash flooding.

Sustainable sanitation for healthy, green and clean city is the goal of Nalagad municipality. As demanded by the people of Nalagad in many public hearings, they want the city to be free from urban pollutions. One of the major problems in the urban areas is unscientific drainage system along with unsanitary disposal of such drainage and sewerage. After development planning and construction of drainage networks in developed city is another hindrance for infrastructure development. With the goal of clean, safe and sustainable sanitation program within the reach of every citizen, some of the focus sectors have been identified. In order to protect hillside houses from landslides and water damage, drainage devices are necessary to convey storm water quickly away from manufactured slopes and houses.

Objective:

- Sanitation facilities in each household and institutions.
- Efficient and effective sewer and drainage networks within the city Open Defecation free zone

Strategy:

- Mandatory construction of toilet with septic tank/bio-gas in each household.
- Installation of drainage and sewerage pipe along the road side
- Installation of storm water drain
- Installation of water treatment plant before discharging from the outlet. Such treatment plant should be designed in more sustainable and organic manner, within the area of 5-7 Ropani.
- Promotion of organic treatment plant in institutional level for drainage treatment- Reed Bed Treatment Plant

Guiding Principle:

Some of the important guidelines for drainage and sewerage networks is guided with national goal for sanitation and other action plans. (Steering Committee for National Sanitation Action, 2011)

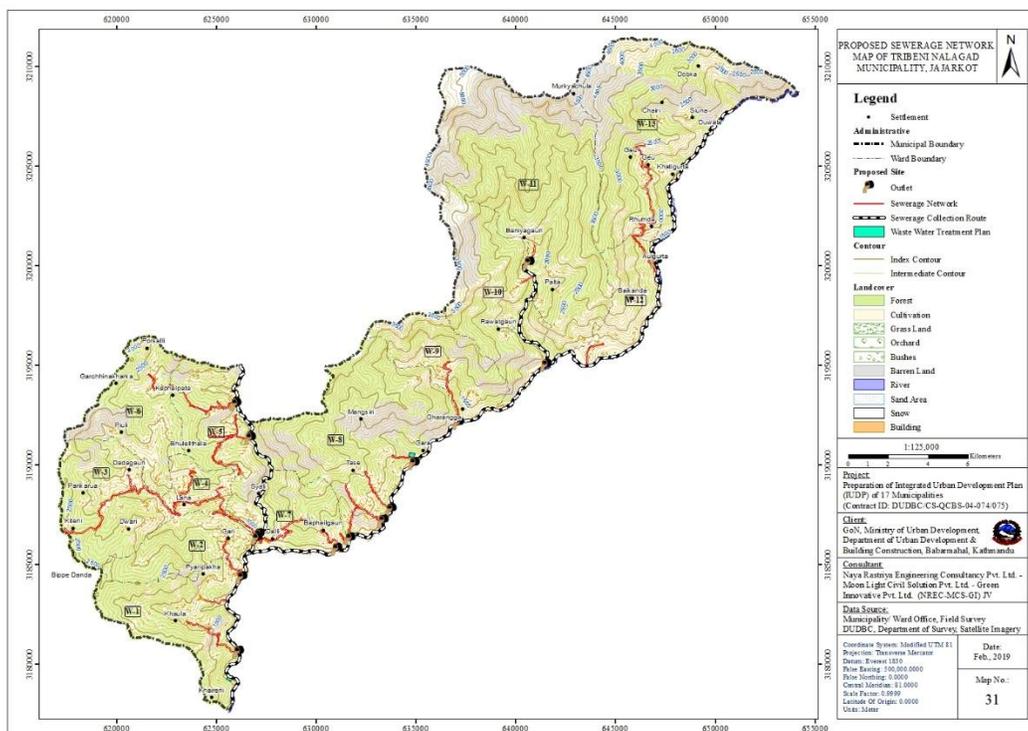
- Enhance synergy among the actors in sanitation development, including municipal government agencies, the private sector, NGOs, and others.
- Encourage the development of community-based sanitation services, especially in areas where public and private services are difficult to establish.
- Create enabling institutional and regulatory frameworks to accelerate sanitation services development.

Strategic Projects:

Drainage and sanitation is day to day process, hence needs to have some certain level of awareness in people. Apart from that there are some important large scale infrastructures required to control the drainage mechanism for the city including some required treatment plant. Some of the important projects are identified as:

- Design of the integrated drainage network and laying around the city considering the slope of Nalgad
- Reed Bed Treatment plant in some identified location

Map below shows the sewerage network of Nalgad municipality according to the contour of the municipality. It identifies the outlet point and location for waste water treatment plant. Outlets are proposed at Dalli, Baphailgaun, Gara and Gharangga. Due to the slope condition, the flow of rain water is according to the contour.



Map 53: Drainage and sewerage network

6.1.6 Logical Framework Approach(LFA) of drainage and sanitation

Logical framework Approach (LFA) of Drainage and Sanitation						
S.N	Output/Activities	Base Line 2018	Targ et 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> • Each HH and institution with toilet and septic tank • Drainage and sewerage lines installed along the road side of capacity as per demand • Easily accessible public toilets in public spaces 					
1.1	Installations of sewerage network along the road	86.00 Km	86.00 Km	Integrated Sewerage System	Municipal office, DWSS, RWSSP, NWSC, PRA, FGD	Budget allocation
1.2	Installations of sewer pipeline network and localize sewer treatment units	20%	100 %	No collection of rainwater on road and 100% HH with proper toilet and septic tank	Municipal office, DWSS, RWSSP, NWSC, PRA, FGD	Monitoring by concerned authority
1.3	Two waste water treatment plants, one in ward 1 at west of Thulo Bagar and next in ward 8 at the west of Gara	0	0.48 Sq. Km	Clean city, healthy city	Municipal office, DWSS, RWSSP, NWSC, PRA, FGD	Implementation by the municipality
1.4	Construction of public toilets in every wards	1	13			Use of public toilets by people
1.5	Programs on public awareness through radio/TV broadcasting/Publicity	0	1	People motivated toward cleaning their own city	Municipal office, DWSS, RWSSP, NWSC, PRA, FGD	Knowledge to people about the cleanliness
1.6	Use modern technology and adopt the 3Rs (reducing, recycling and reuse of waste)	0	1	Clean city, healthy city	Municipal office, DWSS, RWSSP, NWSC, PRA, FGD	Budget allocation and coordination from the municipality
1.7	Installation of storm water drain	20%	100 %	Beautification of the city by safe environment	Municipal office, DWSS, RWSSP, NWSC, PRA, FGD	Project prioritization and budget allocation
1.8	Promotion of organic treatment plant in institutional level for drainage treatment-Reed Bed Treatment Plant	0%	100 %	Sustainable approach for making environment safe	Municipal office, DWSS, RWSSP, NWSC, PRA, FGD	
1.9	Mandatory construction of toilet with septic	20%	100 %	Safe, clean and healthy city	Municipal office, DWSS, RWSSP,	Project prioritization

Logical framework Approach (LFA) of Drainage and Sanitation						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
	tank/bio-gas in each household				NWSC, PRA, FGD	and budget allocation

6.1.7 Solid Waste Management Plan

To attain the goal of systematic, effective and sustainable solid waste management, it is very important to proceed through the level of awareness of people in the town. In today's context, the proper disposal of waste from household has been a major problem. So segregation of solid waste at household level is also emphasized. Clean and dirt free Nalagad is envisioned by every citizen of the municipality. Participatory approach of solid waste management is one of the most important aspect of implementation.

Objective:

- Extensive promotion reuse, reduce and recycle of solid waste (3R)
- Effective management of sanitary land fill site
- To develop collection point and transfer station in the municipality
- Strong institutional mechanism for solid waste management

Strategies:

- Promotion of 3R (Reduce, Reuse and Recycle) for solid waste management at household level
- Discouraging of roadside storage of solid waste by constructing a transfer station within the radius of 5 KM.
- Landfill site construction
- Efficient use of landfill site and guiding with principle of zero waste to land fill site.
- Promotion of bio-gas installation to convert degradable waste to energy.
- Strict laws for the reuse and recycling with proper SWM unit in VDCs.
- Installation of solid waste bins along the road side and in public spaces.
- Segregation of waste in household level

Guiding Principle:

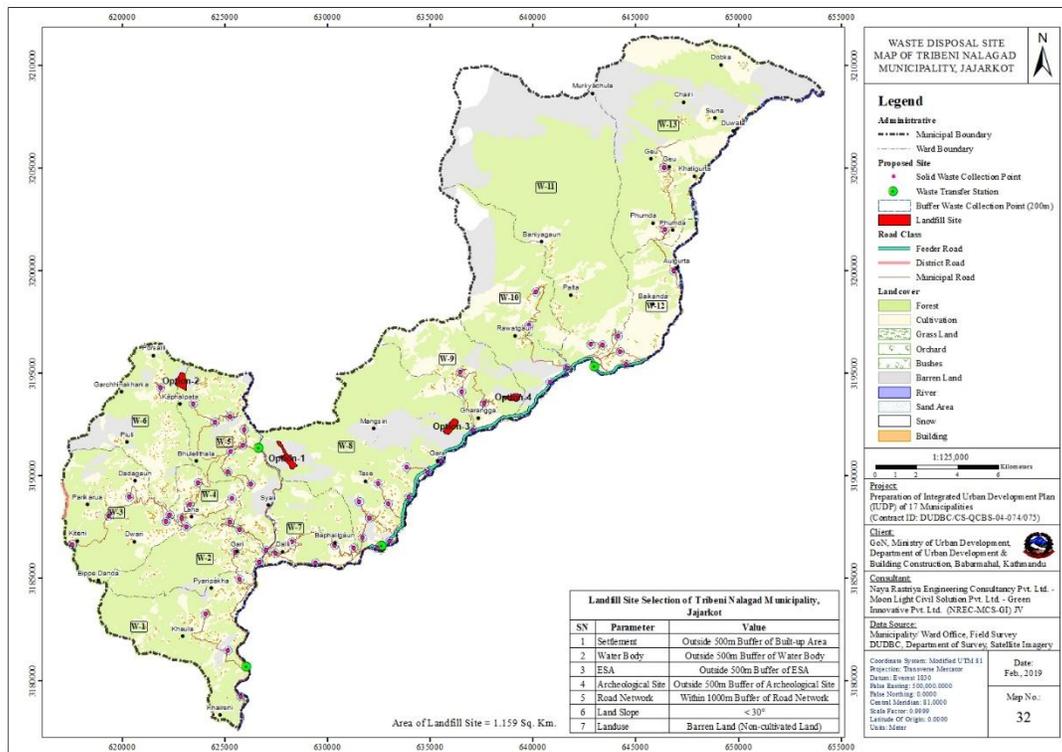
- Separate unit exclusively working in the field of sanitation and SWM, in local government.
- Participatory approach in SWM, so that people take it as asset to their personal level rather than the liability.

Strong institutional and legal mechanism to control the solid waste mechanism. For e.g. Random dumping of the waste in roadside, rivers or any other places except designated one should be severely punishable

Strategic Projects:

- Awareness campaign for solid waste management.
- Identification of Sanitary land fill site of around 20 ropani, at around 10-15Km distance of the city area, which would be able to cater as much as settlements around
- Transfer station within the city for collecting of solid waste
- Collection point at 200m buffer space from the settlement area
- Placement of dust bins along the urban roadside and in public spaces.

For the proper solid waste management plan, collection point is proposed at 200m buffer from the settlement area so that it will be accessible for people to collect waste at certain point. These points are proposed around the road surface so that it will be easy for truck to collect to the transfer station. The site for transfer station and land fill site is selected so that it is at distance from settlement area, river and accessible through road, As, the municipality is presented at sloppy land, so slope is also considered during selection of land fill site. Syali and Rawatgaun are selected for construction of land fill site in the municipality which is flat and away from settlement. Following map shows the location of collection point and transfer station.



Map 54: Waste disposal site map of Nalgad Municipality

6.1.8 Logical Framework Approach (LFA) Solid Waste Management

Logical framework Approach (LFA) of Solid Waste Management						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> • Systematic, effective and sustainable management of solid waste • Sanitary land fill site • Clean city with property laid out dustbin on road side 					
1.1	Promotion of bio gas installation and penalties on public disposal of solid waste	40%	100%	Clean and healthy city with sustainable solid waste management	Municipal office, DWSS, RWSSP, meeting and minutes, progress report	Efficiency of bio gas on winter season
1.2	Management of Garbage, Dust and maintaining clean environment to remain healthy	20%	100%	Helps to protect and maintain clean environment	Municipal office, DWSS, RWSSP, meeting and minutes, progress report	Project prioritization and budget allocation
1.3	Construction of landfill sites in ward 8 (Gokunwari), ward 8 (Buryausa), ward 5, 6 (Thapia) and in ward 9 (Ragda).	0	4 Sq. Km	Clean city without dumping of solid waste on road side	Municipal office, DWSS, RWSSP, meeting and minutes, progress report	Budget allocation
1.4	Awareness campaign and program on 3R's and segregation of solid waste	0	1	People aware about 3R concept and practicing sustainable SWM practices	Municipal office, DWSS, RWSSP, meeting and minutes, progress report	People's participation
1.5	Annual and long term strategy for SWM	0%	100%	Clean and healthy city with sustainable solid waste management	Municipal office, DWSS, RWSSP, meeting and minutes, progress report	People's participation
1.6	Establishment of Solid waste collection point in the municipality	0	60	Clean and healthy city with solid waste management	Municipal office, DWSS, RWSSP, meeting and minutes, progress report	Budget allocation and project prioritization

Logical framework Approach (LFA) of Solid Waste Management						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1.7	Waste transfer and recycle station one each in ward 12 (west of Thalung, 8 (east of Manmal), 8 (north east of Phulchaudi Danda) and 1 (Ghetma)	0	6	Proper management of solid waste for clean and healthy environment	Municipal office, DWSS, RWSSP, meeting and minutes, progress report	Coordination from the municipality
1.8	Installation of solid waste bins along the road side and in public spaces	30%	100%	Healthy environment	Municipal office, DWSS, RWSSP, meeting and minutes, progress report	Coordination from the municipality
1.9	Provision of strict laws for the reuse and recycling with proper SWM unit in the municipality	30%	100%	Clean and healthy city	Municipal office, DWSS, RWSSP, meeting and minutes, progress report	Project prioritization and budget allocation
1.10	Promotion of 3R (Reduce, Reuse and Recycle) for solid waste management at household level	10%	100%	Proper disposal of solid waste	Municipal office, DWSS, RWSSP, meeting and minutes, progress report	People's participation

6.1.9 Electricity and Communication

Another important aspect of modern urban planning is development of Information and computer technology. With the primary goal of providing, electricity and communication service to each individual in the town, the electricity and community plan is basically focused on optimization of resources in distribution of electricity and facilitation of communication services. Target of affordable and accessible electricity and communication are to be backed up by some objectives as follows.

Objective:

- Access of universal and affordable electricity and communication services.
- Promotion of alternative energy resources: Solar and wind energy
- Techno friendly city development

Strategies:

- Connecting power line with National grid
- Provision of smart electricity grid in each settlement for exchange of surplus energy among alternative energy and national grid. The project could be initiated as the pilot project in some of the settlement before experimenting in the whole city.
- Laying of underground wires for electricity and communication purpose.
- Subsidizing on alternative sources of energy, i.e. solar and wind energy, waste to energy and so on
- Technological upgrading of power stations and transmissions.
- Encouraging private and public sector to provide and upgrade the quality of internet and communication services.
- Promotion of FM, radio stations and other communication services through private and community participation.
- Wi-Fi hot-spots in the public spaces like bus parks, parks and other urban squares.
- Encouraging streetlights and other digital boards & devices connected with solar.

Guiding Principle:

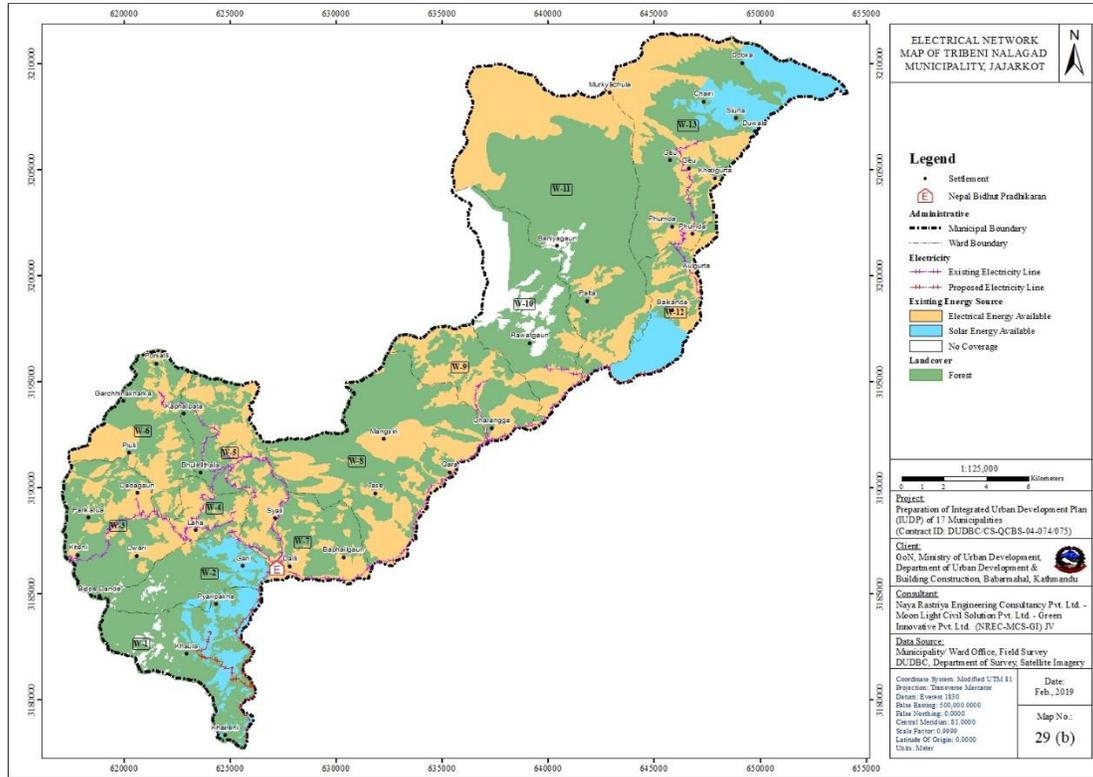
- Regulation and control mechanism for leakage of electricity.
- Promoting energy efficient household or institution devices
- Mandatory provision of installing alternative source of energy for at least 25% of total energy usage in the building. Especially in case of public, institutional and commercial building.

Strategic Projects:

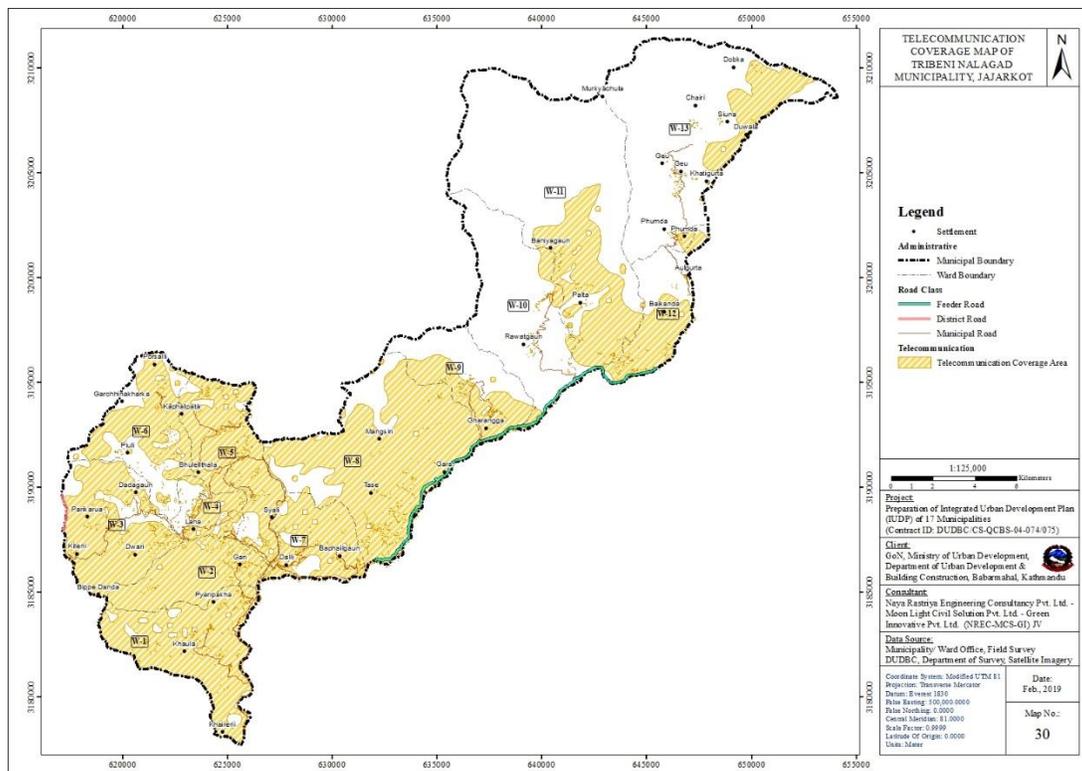
With those basic guidelines mentioned above promoting alternative energy and electrification of each household with NEA national grid, some of the important strategic projects identified are:

- Connecting the power line with National grid
- Construction of hydropower

Map below shows the accessibility of electricity and telecommunication in Nalagad municipality. Every wards of the municipality do not have access to electricity facility. People of Gari, Pyaripakha, Baikanda, Chairi, Siuna, Duwala and Dobka use solar energy as the source of electricity. And those areas which do not have the access to electricity are Baniyagaun, Rawatgaun, Bippe Danda and Khaula. Other areas have access to electricity. Those areas which are not in reach of electricity and telecommunication should be provided with the access to those during planning phase. Almost every settlement in the municipality have access to telecommunication facility.



Map 55: Access to electricity facility in Nalgad municipality



Map 56: Access to telecommunication facility in Nalgad municipality

6.1.10 Logical Framework Approach(LFA) of Electricity and communication

S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> Solar lighting on roads and public spaces Public and private ISPs Incentives for renewable energy usage 					
1.1	Construction of Sirpa Hydropower (30 KW)	0	1	Accessibility to electricity facility overall the municipality	Reports from MoIF, Nepal electricity authority (NEA), Municipal office	Budget allocation
1.2	Construction of five hydropower project at ward 2, 3, 8 and 13	0	5		Reports from MoIF, Nepal electricity authority (NEA), Municipal office	Budget allocation and prioritization from the municipality
1.3	Construction of NTC and NCELL tower in ward 2, 6, 10 and 13	0	4		Telephone and internet service in the municipality	Reports from MoIF, Nepal electricity authority (NEA), Municipal office
1.4	Upgradation of electricity	32.587 %	100%	Development in electricity and communication facility in the municipality	Reports from MoIF, Nepal electricity authority (NEA), Municipal office	Proper maintenance
1.5	Upgradation of telecommunication	52.598 %	100%			
1.6	ST and LT program for promoting private and government sector for qualitative internet and communication facility	30%	100%	Each and every locality facilitated with internet and telecommunication	Reports from MoIF, Nepal electricity authority (NEA), Municipal office	Budget allocation
1.7	Formulating energy policy for promoting renewable energy sources in public and private usage	0%	100%	FM station helps as the source of entertainment and awareness	Reports from MoIF, Nepal electricity authority (NEA), Municipal office	Availability of technology and skilled technicians
1.8	Investing and planning for smart grid electricity infrastructure	10%	100%	Universally available electricity facility and promotion of renewable	Reports from MoIF, Nepal electricity authority (NEA), Municipal office	Availability of technology and skilled

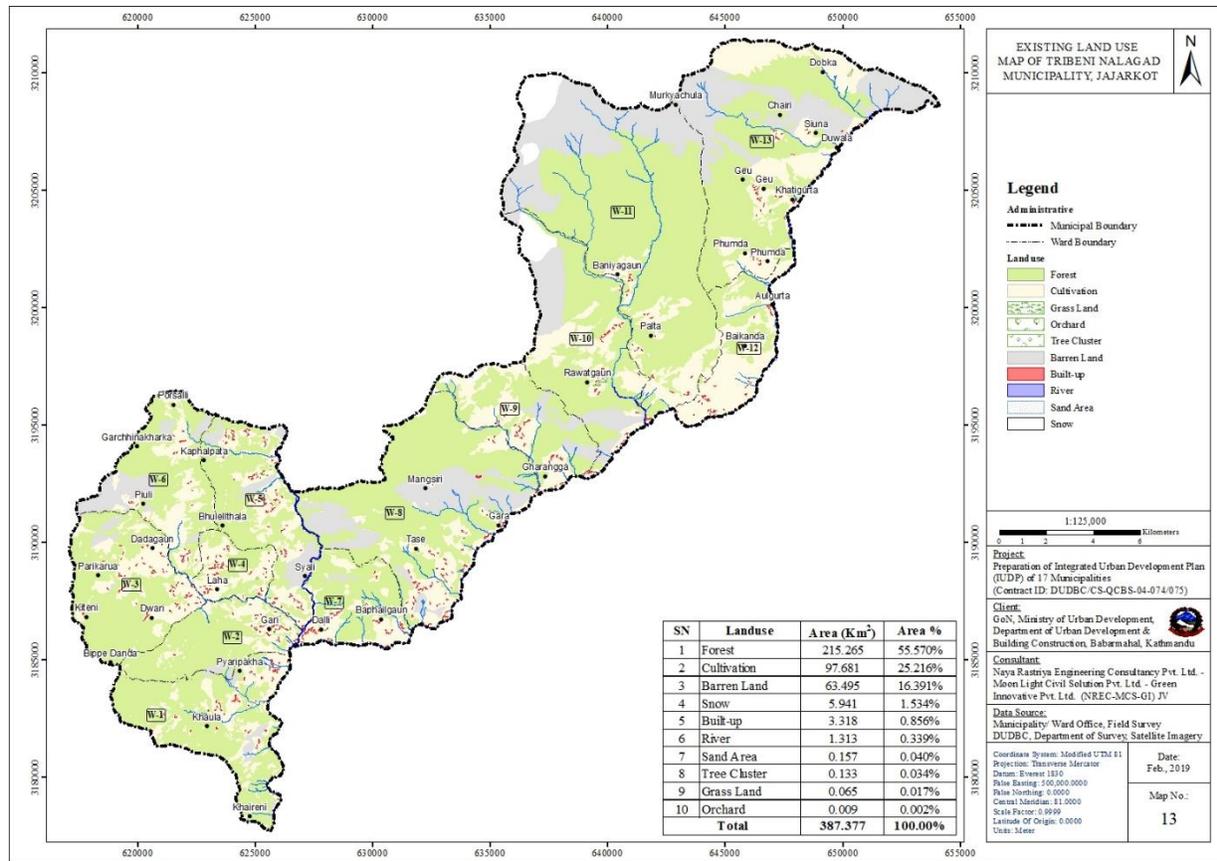
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
				source of energy in household and institutional level		technicians
1.9	Solar lights installed on roads and other public spaces	0%	100%	Easy and safe walkability around the roads	Reports from MoIF, Nepal electricity authority (NEA), Municipal office	Maintenance issue
1.10	Promotion and monitoring of FM stations	20%	100%	Proper news and communication facility in the municipality	Reports from MoIF, Nepal electricity authority (NEA), Municipal office	Availability of technology and skilled technicians
1.11	Wi-Fi hot-spots in the public spaces like bus parks, parks and other urban squares	0%	100%			
1.12	Encouraging streetlights and other digital boards & devices connected with solar	10%	100%	Easy and safe walking in the roads	Reports from MoIF, Nepal electricity authority (NEA), Municipal office	Proper maintenance

6.2 Land Use Plan

From the land use map of Nalgad municipality, we can see most of the area is covered by forest i.e. 55.570% of the total area and second large area is covered by the cultivation land i.e. 25.216%.

Considering the road and settlements, residential and commercial area are proposed for the easy accessibility and living standard of people. Those areas which carry importance from touristic point of view, are also declared as the tourism zone.

Further, land use map of the municipality has been presented below:

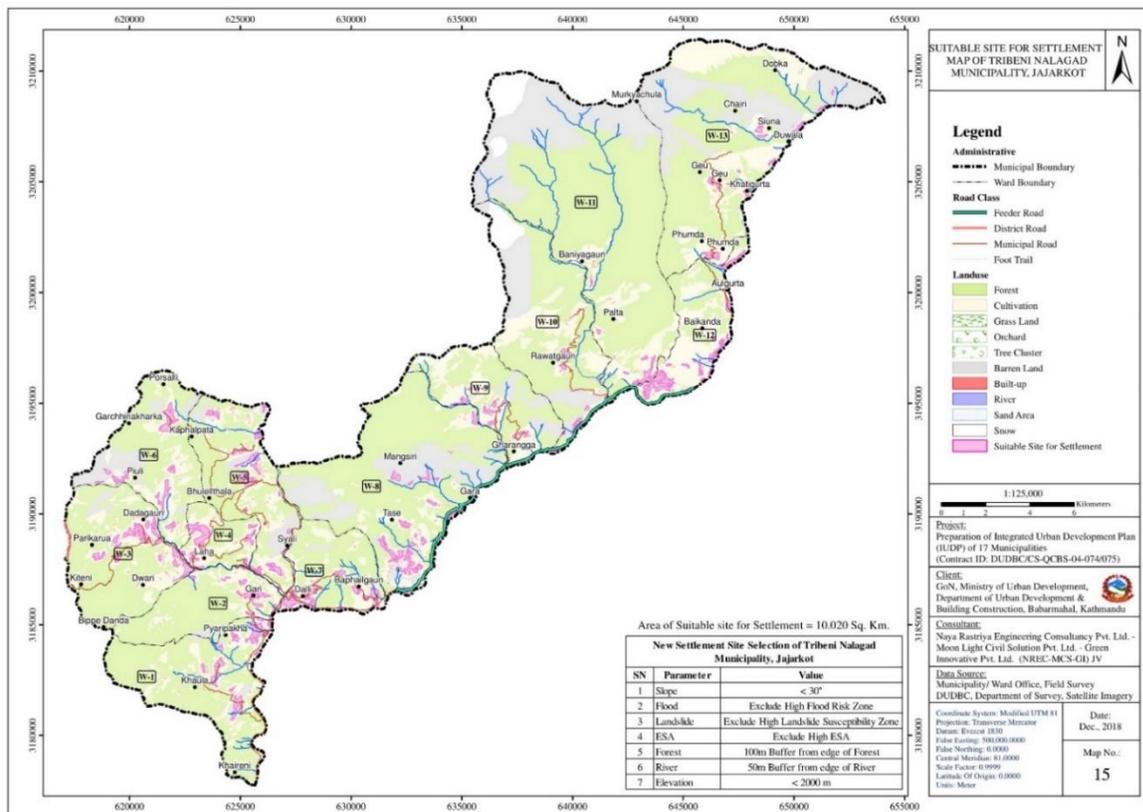


Map 57: Land use map of Nalgad Municipality

Table 50: Land cover of Nalgad Municipality

S.N	Land use	Area (Km ²)	Area %
1	Forest	215.265	55.570
2	Cultivation	97.681	25.216
3	Barren Land	63.495	16.391
4	Snow	5.941	1.534
5	Built-up	3.318	0.856
6	River	1.313	0.339
7	Sand Area	0.157	0.040
8	Tree Cluster	0.133	0.034
9	Grass Land	0.065	0.017
10	Orchard	0.009	0.002
	Total	387.377	100%

(Source: GIS Land Cover, 2018 (prepared for IUDP by NREC J/V))

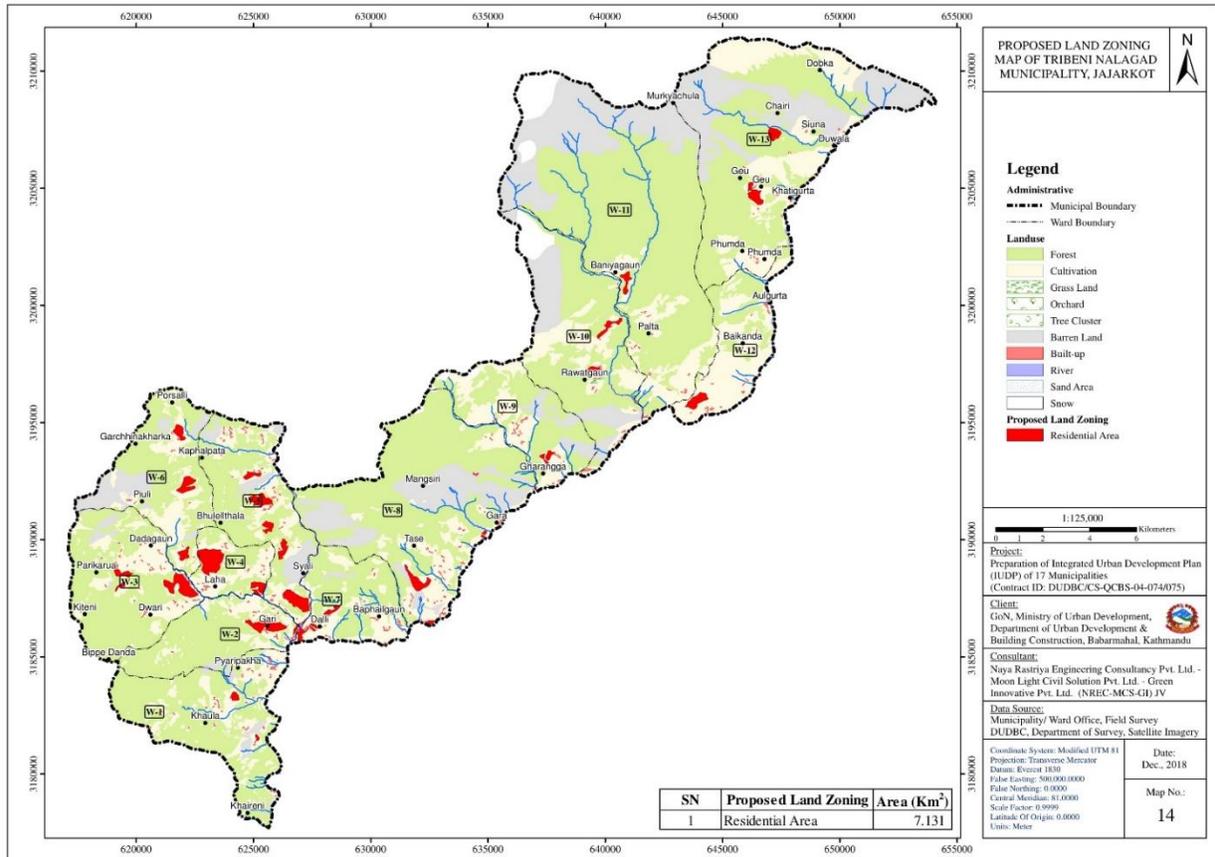


Map 58: Site feasibility for selection of settlement zone

For the proper selection of site for settlement and commercial area, certain indicators were considered i.e. slope, flood, landslide, environment sensitive area, forest. River and elevation. Above map shows the suitable area for zoning. Table below shows the selection criteria according to the indicators mentioned above,

Table 51: Criteria for site selection of settlement zone

New Settlement Site Selection of Nalgad Municipality, Jajarkot		
S.N.	Parameter	Value
1	Slope	<30°
2	Flood	Exclude High Flood Risk Zone
3	Landslide	Exclude High Landslide Susceptibility Zone
4	ESA	Exclude High ESA
5	Forest	100m Buffer from edge of Forest
6	River	50m Buffer from the edge of Forest
7	Elevation	<200m



Map 59: Proposed land use map of Nalgad municipality

Above map shows the proposed land use map of Nalgad according to the site selection map as discussed earlier. Residential, commercial, potential tourism area are proposed which helps in the future planning. Kaphalpata, Laha, Gari, Dalli, Khatigurta and Geu are proposed residential area. Table below shows the land use area of Nalgad,

Table 52: Proposed land use

S.N.	LANDUSE	AREA (SQ.KM)
1	Residential Area	7.131

(Source: GIS Land Cover, 2018 (prepared for IUDP by NREC J-V))

6.3 Social Development Plan

A Social Development Plan is a comprehensive plan that focuses on enhancing the quality of life for the citizens of a community and helps provide a direction for future decisions in the key areas identified by its community members. It is built through the collaborative efforts of citizens, organizations and government and creates a balance between the social, health and economic needs

of that community. The strength of a Social Development Plan lies in its ability to engage citizens, mobilize the community and to reinforce and build upon the work already being done.

Social development plan of Nalgaad municipality has been prepared in order to enhance the quality of life of the citizens along with their social security, health and educational amenities, and accessible service delivery systems in the municipality. The plan has been made by incorporating key social sectors of education, health, social security, and sports and recreation. With specified mission, goals, targets, strategies, and action plans, the Social Development Plan hereby follows a short-term (5 year), mid-term (10-year) and long-term (15 year) targets and subsequent action plans.

Planning Context

Nalgaad Municipality lies in Jajarkot District in Karnali Province (Province no. 6). Dadagaun, Lahai, Khagenkot, Ragda and Bhagwati VDCs were incorporated to form this new municipality while its formation in 2017. It covers a total area of 387.44 sq. km. This local unit shares boarder with Rukum district in the East, Berekot rural municipality and Dolpa district in the North, Kuse rural municipality in the West, and Bheri Municipality in the South. According to National Census 2011, the municipality has 4721 households and total population of 25,597. On the basis of exponential population growth rate of Jajarkot district for the 2001-2011, i.e. 2.39%., the existing population in the municipality in 2018 is 30191, while this is projected be 33975 in 2023, 38234 in 2028 and **43027** in 2033.

Though remaining far from the mainstream development of the country, Nalgaad Municipality bears a huge potentiality in development. Making a long term vision– “prosperous and peaceful city; a wave of sustainable development and good governance” – it truly clarifies the people of Nalgaad Municipality are confident that their municipality will only prosper through proper and strategic development plans oriented towards multiple sectors. Truly saying, the filling gaps into the Karnali Province and the federal government (Kathmandu) is real challenge for development plans in this municipality. In compatible with this statement, following Social Development Plan has been prepared and proposed:

6.3.1 Opportunities

- Recently elected local government and representatives after a long vacant
- Public hearing and grassroots democracy along with rising awareness and expectations
- Social mobility and technological development
- Special focus on education, health and social sector; growing concerns and issues of children, women, youth, elderly people and marginalized communities/ groups
- Abundant of natural resources in the municipality to foster socio-economic development of the municipality

6.3.2 Challenges

- Remote and hilly topographic setting of the municipality; Unplanned migration and haphazard settlement structures
- Low literacy rate, life expectancy, HDI and other development indices as compared to the national average and high rates of HPI and MPI
- Lack of urban scale health institutions with basic facilities including maternity services and other emergency services.
- Institutional problems related to capacity building, offices infrastructures; lack of sufficient appointment of technical manpower in education and up-gradation of existing infrastructure of existing schools and community schools.

Vision

To create Nalgaad municipality a harmonic, resilient, livable, creative, caring, healthy and inclusive community within 15 years

Goal

Goal 1- The municipality of Nalgaad is a safe and resilient community

Goal 2- Citizens are accessible to the quality services of education available to them and know how to access them

Goal 3-High quality health services are available to address the health needs.

Objective

Goal 1 related: Hold awareness, unity, harmony and community sentiment in the diverse and heterogynous socio-cultural and economic structure of the society in the municipality

Goal 2 related: Promote educational and human entitlement for all, and make a complete literate society contributing to national goal of education and thereof goal 4 of the SDG

Goal 3 related: Promote health entitlement for all, and make an efficient and free supply of basic health services to the community contributing to national goal of health and thereof the Goal 3 of the SDG

6.3.3 Education

This plan assumes that education is the backbone of overall development of the municipality and the community. Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, traditions, philosophies, habitus and habits. Educational methods include storytelling, discussion, teaching, training, and directed research. The methodology of teaching is called pedagogy. A right to education has been recognized by some governments and the United Nations. The 2030 Agenda includes 17 Sustainable Development Goals (SDGs), including SDG 4 on education.

Mission:

Increase access and quality of education and make a literate, competitive, innovative, dynamic society with the formation of human capital for the socio-economic transformation of Nalgaad municipality as a hub of educational service in the region

Goals:

- Promote accessible and affordable quality services of education to each and every citizens of the municipality
- Provide equity-based opportunities in education along with skill-based, contextual and quality services
- Expand job market-oriented and employment-based education with life learning skills and behavioral changes

Objective:

- Achieve 100% literacy in the municipality.
- Increase in quality of education and easily accessibility of higher and technical education/ training with adoption of specific strategies.
- Education for all: regardless of sex, caste, region and age group
- Prop-people administration and governance in the educational sector of municipality
- Specific guidelines for non-formal education and formal education (pre-elementary, elementary, secondary and higher)

Strategies:

- Elementary and secondary education in the easy accessibility of residential neighborhoods.
- Promotion of technical education from private and government sectors.
- Promotion of digital teaching methodology, including power point presentation
- Education for the persons with disability
- Encouraging education facility for backward society, gender equity and other economically deprived groups.
- Regular inspection, monitoring and evaluation of education quality.
- Emphasize on public participation from local unites for the overall management of school education
- By adopting the principle of cost recovery in higher education, emphasize on its opportunity, quality and diversification
- On the given condition of settlement structure and topographic site, provisioning of primary schools within travel distance of 15 minute; and provision of secondary schools within travel distance of 30 minute
- Incorporate education on crime prevention, drug awareness and anti-bullying into community initiatives

6.3.4 Health

Health is another important sector for social development. This plan assumes that healthy people are the productive resource for development. Health, as defined by the World Health Organization (WHO), is "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." This definition has been subject to controversy, as it may have limited value for implementation. Health may be defined as the ability to adapt and manage physical, mental and social challenges throughout life. A right to health has been recognized by some governments and the United Nations. The 2030 Agenda includes 17 Sustainable Development Goals (SDGs), including SDG 3 on health. This is also a part of Nepal's development agenda, and has been also adopted in local development planning in the new federal context after the promulgation of the Constitution in 2015.

Mission:

- Increase access and quality of health service and make a healthy (physically, mentally and psychologically) society enriching human capital for the socio-economic transformation of Nalgaad municipality as a hub of health service in the region

Goals:

- Promote accessible and affordable quality services of universal health care to each and every citizens of the municipality
- Provide equity-based opportunities in health services along with professional and quality services

Objective:

- Achieve 100% primary health care in the municipality with high access and affordability.
- Reduce health service dependency towards neighboring districts, and even to India.
- Increase in quality of medical investigation and promote professional services with adoption of specific strategies.
- Health for all: regardless of sex, caste, region and age group
- Pro-people administration and governance in the health sector of municipality (both community/ governmental and private)
- Specific guidelines for private health institutions to operate and provide the health services within the municipality

Strategies:

- Health facilities in the close distance from residential land use
- Promote private sectors in investing on health facilities (medical and para-medical) with close monitoring and administrative support from the municipality
- Identify and promote public-private partnership model for establishing large-scale hospital or medical care centers

- Awareness campaign regarding some of the common diseases like of STDS, AIDS, Hepatitis (all kinds) and control of epidemics and other communicable disease.
- Health facilities subsidized for economically deprived people with ward-level recommendation letter.
- At least one health care center for every 20,000 people within the accessible distance of 15-30 minutes.

6.3.5 Social Security

Nepali constitution of Nepal 2015 has committed for the inclusive social security strategies to all Nepali citizens. Given the context that the social security as a part of development process, this plan also aims to develop the municipality as a secure place to its possible fullest of the resources and happiness. Social security is "any government system that provides monetary assistance to people with an inadequate or no income. This is usually called welfare or a social safety net. Social security is asserted in Article 22 of the Universal Declaration of Human Rights, which states: Everyone, as a member of society, has the right to social security and is entitled to realization, through national effort and international co-operation and in accordance with the organization and resources of each State, of the economic, social and cultural rights indispensable for his dignity and the free development of his personality.

Mission:

Develop Nalgaad a safe, resilient and secure society enriching social capital and other livelihood capabilities of the municipal citizens, both physically and socially, in the long-term (by 2033)

Goals:

- Promote social security services of universal trust, care and harmony to each and every citizens of the municipality
- Provide equity-based opportunities in community services along with safety measures and we-feeling

Objective:

- Create safe and secure environment for the citizen and participate in community development activities
- Provide basic security irrespective of participation in specific subsidy programs for basic necessities such as food, clothing, housing, education, money and medical care
- Ensure tourist safety and security during stay and travel in the Nalgaad
- Make safety nets for the natural disaster and other uninvited incidents with community-level coping and resiliency building
- Response team from community level and from city level in case of disaster incidents.

Strategies:

- Community and city policing for safety, friendly and secure local environment.
- Street lighting and CCTV cameras installed for safe cities and proper traffics.

- Effective number of security personnel as per the ratio of population.
- Disable friendly infrastructure in public places or offices along with the particular incentive for severe cases of disabilities
- Addition of nominal amount to the old age allowance (provided by federal government) for the respect and trust building for the elderly people
- Special focus on family care and pregnancy care as a part of social security
- Help desks and police post at the major junctions and important public locations. Especially with addressing population of 10000 there must be one police post with one police station in town.
- Develop a Tourist police cell to advise and assist tourist in safety and security during stay in the municipality
- Adequate number of fire stations with skilled manpower
- Model community development beliefs and methods in work with community organizations and businesses
- Continue municipal efforts to bring groups together through social networking programs or events
- Hold awareness and training for the community organizations, including self-help groups, child clubs, youth clubs, mothers' groups, women groups, civil society groups, and so on
- Utilize research and data to direct actions

6.3.6 Recreation, Sports and Urban Infrastructures

Sustainable city and community rely on the premises of urban social infrastructures that are closely linked to the socio-economic life of people. Recreation and sports are such unavoidable components among the urban social infrastructures. Recreation is an activity of leisure, leisure being discretionary time. The "need to do something for recreation" is an essential element of human biology and psychology. Recreational activities are often done for enjoyment, amusement, or pleasure and are considered to be "fun". Complementary to this, sport(s) includes all forms of competitive physical activity or games which, through casual or organized participation, aim to use, maintain or improve physical ability and skills while providing enjoyment to participants, and in some cases, entertainment for spectators. The present social development plan also adheres this concept for the better future of the municipality.

Mission:

Create the municipality as a hub of sports and recreation in the long-run by 2033

Objective:

- Create the leisure time of people fruitful, creative and productive with pleasant environment for the citizen and participate in community development activities

- Provide basic recreational services irrespective of the age, sex, physical condition and other socio-economic attribute
- Mobilize the youth and develop sports to prepare able, strong and disciplined human resource required in the municipality
- Ensure yoga and mediation service in Nalgaad both from municipality as well as community level
- Develop a linkage of recreation, sports and tourism for the economic and multi-sectoral development of the municipality in long-term

Strategies:

- Promote skills in sports and extra curriculum activities from the early grade schools to higher level of education, ensuring equal participation of girl students in these programs
- Construct the parks and recreational zone on the non-built up areas for children and youths in walking distance from each settlement cluster
- Develop at least 5 % of total city area either as playground or open space (Playing equipment or recreational services); at least 1 for each 1000 populations.
- Local Park (.4 ha. per site), Community park (1 ha. per site), and Parade ground (2 ha. per site), for each 10,000; 20,000; and 1 lakh population respectively.
- Promoting private sector to invest in the entertainment industry like movies, theater or other fun theme parks.
- Promote codes of fair play and sportsmanship among the youths
- Avoid cheating, drug abuse, violence and doping in the name of play or competition
- Search options and promote the initiatives for recreation service as a source of income for the municipality by developing it as an organized way, linking infrastructures, health and education, etc.

6.3.7 Cultural and Heritage Development

Culture binds the community in a functional unit. It is a complex whole that serves to community people for making their society along with peace and harmony, co-operation and competition, conflict management and transformation, heritage and conservation. With this conceptualization, the municipality also focuses in the following respects:

Mission:

Develop the municipality a creative community, rich in heritage, and unique in identity through libraries, the local museum, the preservation of our heritage buildings, opportunities for artistic expression and places

Objective:

- Nalgaad is an inclusive to all cultures and heritages and celebrates this diversity.
- Arts are celebrated and opportunities to get involved are available for all ages.
- The municipality is host to a diversity of talent and creativity.

- The community of Nalgaad is home to a variety of cultural venues, historical buildings and programs that are available and accessible to all.

Strategies:

- Celebrate the spirit of heritage and the multiculturalism of community
- Increase awareness of the arts, culture and heritage of our community
- The community recognizes and embraces indigenous knowledge, customary practices and cultural heritage
- Develop and offer multicultural and historical training programs
- Showcase, celebrate and recognize local talent
- Continue planning with community organizations and businesses to provide the appropriate cultural facilities for the community
- Work with the elderly people and experts in developing a plan to expand the museum and historical village
- Present and connect local arts to people. Local arts and heritage give us community vitality, a path to creativity and innovation and a sense of who we are
- Organize an annual heritage/multicultural day – a celebration of roots in the community (e.g. frontier/pioneer, oil and gas, forestry, agriculture)
- Promote community multicultural events and cross-generational cultural activities
- Celebrate diversity of culture with food and dance with all ethnic groups in the community
- Continue to support community festivals and special events through staff assistance, financial resources and/or in-kind contributions or other municipal resources

6.3.8 Logical Framework Approach (LFA) of Economic Development Plan

Logical framework Approach (LFA) of Social Development Plan						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1	Education <ul style="list-style-type: none"> • Developing Nalagad municipality as educational hub • Establishment of good education institutions with diverse programs • Inclusive education policy promoting backward groups 					
1.1	Awareness Campaign	0	9	Skilled women empowerment in the municipality	City profile, DoE report, municipal office report. HDI report, I/NGO's reports	Government prioritization and budget allocation
1.2	Establishment of governmental/community school in each ward	60%	100%	Inclusive education for all children	City profile, DoE report, municipal office report. HDI report, I/NGO's reports	Involvement of government sector

Logical framework Approach (LFA) of Social Development Plan						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1.3	Governmental support to open primary, secondary and higher secondary schools	0	1	Basic education facility in the municipality	City profile, DoE report, municipal office report. HDI report, I/NGO's reports	Budget allocation and project prioritizations
1.4	Provision for technical education	0	9	Technical knowledge leads to capable manpower	City profile, DoE report, municipal office report. HDI report, I/NGO's reports	Government prioritization and budget allocation
1.5	Construction of technical schools and college	1	9			
1.6	Toilet and drinking water facility in every schools	30%	100%	Comfortable environment for at school	City profile, DoE report, municipal office report. HDI report, I/NGO's reports	Awareness and adaptation of new technological innovation in education
1.7	Establishment of science laboratory in schools	0	100%	Practical knowledge among children		
1.8	Establishment of library in every schools	10%	100%	Learning facility for students	City profile, DoE report, municipal office report. HDI report, I/NGO's reports	Coordination from the municipality
1.9	Trainings for teachers	0	1	Skilled teachers and generation of intelligent students		
1.10	Trainings for unemployed youths	0	1	Employment to every youths	City profile, DoE report, municipal office report. HDI report, I/NGO's reports	People's participation
2	Health <ul style="list-style-type: none"> • 50 – 100 Bed District hospital with paramedical health education facility • Free open defecation area • Subsidized health facilities for economically deprived community 					
2.1	Construction of 25 bedded hospital with all specific OPD and emergency services	0	1	Increase in number of patient from nearby districts	MoH, HDI, HDI report, municipal progress report	Budget allocation and availability of technology and precautions
2.2	CT Scan, USG, Digital X-ray facilities	0	1	Provision for health check-up with	MoH, HDI, HDI report, municipal progress report	Support from the municipality

Logical framework Approach (LFA) of Social Development Plan						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
				proper facility		
2.3	Declaration of the municipality as an ODA	0%	100%	Development of healthy Nalgad municipality	MoH, HDI, HDI report, municipal progress report	Coordination from the citizens of the municipality
2.4	Construction and maintenance of health post in every wards	6	13	100% citizen with health facility specially including mother and child	MoH, HDI, HDI report, municipal progress report	Regular monitoring and evaluation of health facilities
2.5	Public awareness programs related to health	0	1	Proper knowledge among citizens about health care facility	MoH, HDI, HDI report, municipal progress report	Facility of required infrastructures in the municipality
2.6	Construction of Public toilets in the municipality in each ward	1	13	Development of Healthy city	MoH, HDI, HDI report, municipal progress report	Support from the government
2.7	Yoga and meditation centre with registered doctor	0	2	Natural health care facility	MoH, HDI, HDI report, municipal progress report	Support from the municipality
2.8	Provision for ambulance facility	1	4	Ease for the transportation during health check up	MoH, HDI, HDI report, municipal progress report	Support from the municipality
2.9	Establishment of child care centre	1	13	Increase in child development	MoH, HDI, HDI report, municipal progress report	Prioritization of the project
2.10	Availability of Rabies Vaccines and Refrigerator	0	1	Controlling people from various diseases	MoH, HDI, HDI report, municipal progress report	Support from the municipality
2.11	Construction of health campus	0	1	Awareness among people about the health related issues	MoH, HDI, HDI report, municipal progress report	
2.12	Training for health professional	0	1	Skilled health personnel in	MoH, HDI, HDI report, municipal progress report	

Logical framework Approach (LFA) of Social Development Plan						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
				the municipality		
3	Security and safety <ul style="list-style-type: none"> • Integrated city surveillance • Pedestrian friendly planning and regular monitoring on vehicular safety • Identifying open spaces and establishment of emergency response team Community and city police coordinating for city safety and security					
3.1	Improvement of surveillance by strengthening and broadening safer cities program and local security management mechanisms	30%	100%	People friendly mobility and safety in mobility	Municipal report, Traffic record, local police record, meetings and minutes	Monitoring by concerned authority
3.2	Solar lights on roads and other public spaces	10%	100%	People friendly mobility and safety in mobility	Municipal report, Traffic record, local police record, meetings and minutes	Monitoring by concerned authority
3.3	Constructing separate lanes for pedestrians and vehicular mobility and community participation on neighbourhood safety	20%	100%	Safety for people who walk on the road due to separate lanes	Municipal report, Traffic record, local police record, meetings and minutes	Budget allocation
3.4	CCTV surveillance to be installed in the city and firefighting facility	20%	100%	Safety for women, children and others while walking on public space	Municipal report, Traffic record, local police record, meetings and minutes	Availability of technology and manpower
3.5	Establishing police station/ booths in city pockets and establish crime prevention strategy and emergency response team for disaster	1	3	Involvement of community and police working hand to hand for city safety and security	Municipal report, Traffic record, local police record, meetings and minutes	Monitoring by concerned authority
3.6	Establishment of at least one Early Childhood Development Centre in each ward of the municipality	0	9	Proper development of child	Municipal report, Traffic record, local police record, meetings and minutes	Approval and implementation

Logical framework Approach (LFA) of Social Development Plan						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
3.7	Establishment of day care centre for elderly people in all ward	0	9	Benefits for every people in the municipality	Municipal report, Traffic record, local police record, meetings and minutes	Monitoring by concerned authority
3.8	Establishment of residential care centre for the people with disabilities	0	1	Health service facility for every people	Municipal report, Traffic record, local police record, meetings and minutes	
3.9	Construction of old-age homes for the elderly people with residential facilities	0	1	Facility for elderly people	Municipal report, Traffic record, local police record, meetings and minutes	Support from the municipality
4	Recreation <ul style="list-style-type: none"> Identified recreation zone for daily purpose in closer proximity of settlements Increase participation of public and private parties in recreation industries Parks and open spaces at every neighbourhoods of the town 					
4.1	Land acquisition for open spaces and green parks	0	One open space in a community	Green parks and open spaces accessible to all	City profile, traffic record, meetings and minutes, progress report	Surveillance by concerned authority
4.2	Preparation of master plan for parks and reserves	0	1	Centre for recreation and outing for local people	City profile, traffic record, meetings and minutes, progress report	Availability of open space
4.3	Establishment of resorts and hotels for tourist	0	1	People visiting to Nalagad municipality for sports and recreation	City profile, traffic record, meetings and minutes, progress report	Infrastructural development
4.4	Promotion of water based adventure tourism	40%	100%	Active public participation in management and operation of water resources	City profile, traffic record, meetings and minutes, progress report	Budget allocation
4.5	People friendly city design with vegetation around the streets	30%	100%	Safe and secure green pockets	City profile, traffic record, meetings	Surveillance by concerned authority

Logical framework Approach (LFA) of Social Development Plan						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
				around the city	and minutes, progress report	
4.6	Establishment of youth and sports development centres in each wards	2	13	Utilization of available natural resources	City profile, traffic record, meetings and minutes, progress report	Implementation
4.7	Development of proper trekking route	20%	100%	Increase in number of tourist	City profile, traffic record, meetings and minutes, progress report	Budget allocation
4.8	Management of open spaces and play ground (at ward level)	1	13	Improvement in environment condition	City profile, traffic record, meetings and minutes, progress report	Support from the municipality
4.9	Management of children parks, and gardens and recreational parks (at the wards level)	1	13	National level development	City profile, traffic record, meetings and minutes, progress report	Approval and implementation
4.10	Formation of ward-wise team for specific games (football, volleyball and cricket)	1	13	Increase in extracurricular activities among youths	City profile, traffic record, meetings and minutes, progress report	Coordination from the municipality

6.4 Economic Development Plan

Nalgad Municipality is an urban municipality located in Jajarkot District in Karnali Province. Being a part of back warded district and economically poor country, Nalgad has not been economically progressed much. But in Nalgad municipality, economic condition of the people of this area is better in comparison to rest of the local bodies of the Jajarkot district since the headquarter of Jajarkot lies in this municipality. People have been involved in different economic activities beside agriculture. They have more than one source of income. Some members of such families are employed in government offices, corporations and Foreign Employment. Availability of organic rice, lots of land for animal husbandry, fertile land, irrigation facility, focus on vegetable production and poultry farming has developed the agriculture sector of the municipality. The major reason behind the backwardness of the municipality is the budget being focused upon agriculture and livestock and very less upon trade and industry.

Opportunities

- Nalgad is not much explored giving the chance of various opportunities.

- 410 MW Nalgad hydropower generation center.
- Being a part of back warded district, the central, provincial and local government provides tax concession to explore the area.
- Educating and providing skills to the local youth can be mobilized in the various sector of the municipality.
- Publicizing the various places via social media can attract internal and external tourist.

Challenges

- Making the output of different sectors of Nalgad compete with the output of rest of the municipalities.
- Convincing the youth to stay during the phase of development within the municipality.
- Attracting investors domestically and internationally with lack of proper infrastructure and development.
- Full employment of allocated capital budget of 2018/19 as per the plan.

6.4.1 Agriculture

Agriculture is the main occupation and major source of livelihood in the municipality. The agriculture system is subsistence and traditional. Commercialization in agriculture is essential. Attraction towards agriculture has been decreasing day by day. Nevertheless, vegetable farming and fish farming has been gradually increasing in the municipality. Dadagaun, Kaina, Kaul, Chakailcheur, Karua etc are some of agriculture centre of Nalgad Municipality The major crops in Nalgad municipality comprises of paddy, wheat, maize, oranges, fapar, potato, barley, chana, timur are the major agriculture products of the municipality for livelihood. Commercialization hasn't been much developed for agriculture.

6.4.1.1 Opportunities

The cropping pattern in the villages of municipality seems involving both seasonal and off-seasonal, but mostly the seasonal pattern of farming and cultivation. It further differs as per the topography of the land; different for pain land a fallow land. This results in wide range of agricultural products. 39.46% of land is occupied by Agricultural land in the municipality. Irrigation is a primary source for the agriculture to promote its productivity and commercialization. It is however partly developed in Nalgad municipality of Jajarkot. Mulakhola Halchaur Irrigation, Badakhola Canal irrigation, Kaphaldhara lupan Irrigation, Kuselikhola Mede Irrigation, Xahare khola Irrigation are found in ward 3 which are under use. Irrigation ranigurta is found in ward 13. And there is irrigation plan in ward 5 which in only half available.

6.4.1.2 Challenges

The status of the agricultural sector in Nepal has a poor standing. Lack of irrigation facilities as well as a limitation in the agricultural technology has resulted in lack of competitiveness and poor productivity. And this has resulted despite a majority of people engaged in agriculture, output is not as expected. Being a municipality within one of the poorest district, high profit cannot be

expected. With people having low level of income, unless the government doesn't fund the farmers, modernization in agriculture will not be possible.

Vision

Malnutrition free Nalgad with sustainable food security.

Goal

To self sustain the municipality and commercialize agricultural production.

Objective

- To remove malnutrition from the municipality.
- To aid in removing food scarcity from Karnali.
- Making the municipality self reliant by improving agricultural production and productivity
- Commercializing remote agricultural activities aiming to make it profitable and sustainable.

Strategies

- Training to traditional farmers for using modern tools of agriculture.
- To provide concessions to farmers, in order to reduce the production costs, based on farmers' economic capacity and status by increasing micro irrigation and rain water harvesting technology for ensuring regular supply of water.
- To ensure the sustainable utilization of important productive resources, such as land, water and labor.
- To increase agricultural loan investment by simplifying agricultural loan delivery processes and by facilitating the reduction of time and costs to acquire loan.
- To enhance competitive capacity by delivering available technologies to farmers thereby reducing the production cost of agricultural and livestock products.

6.4.2 Livestock

Livestock are domesticated animals raised in an agricultural setting to produce labor and commodities such as meat, eggs, milk, fur, leather, and wool. Eighty-three percent of the total population of Nepal lives in the rural areas. The principal means of livelihood of this majority is agriculture and livestock Buffalo, cow, chicken, goat, pig and fish are the major animal pocket areas of Nalgad municipality. Goat Keeping, Luv-Kush goat keeping, Chetanshil agro & goat keeping groups, Sudgera goat keeping group, Pragatishil fruits & vegetables farmer group, Upper mountain Goat keeping, Paribartan Goat keeping are the major livestock pocket area of the municipality. Nalgad Municipality lies on the closer proximity of west Rukum and Salyan district and is a market center for the two.

6.4.2.1 Opportunities

With such large number of animal service centre in the municipality, better commercialization of livestock is possible if new modern techniques used. Since the area isn't much explored and government has been giving tax concession to entrepreneur planning to invest in Karnali, maintaining a good infrastructure and retaining the semi skilled and skilled manpower within the municipality will create better FDI opportunities.

6.4.2.2 Challenges

As the Karnali region itself is backward with low income earning people, higher profits is not possible. With most of the youth migrating to the city areas and abroad for job, manpower is lagging in the municipality. Poor infrastructure makes it difficult for goods to be traded within the municipality also, leave alone the idea of exporting outside the municipality.

Vision

Livestock development for income stability.

Goal

To make the municipality self sufficient on food and nutrition by production of clean and standardized livestock.

Objective

- To make the municipality independent in livestock production and aid in reduction of malnutrition and food and nutrition security.
- To introduce technical sophistication in livestock rearing and make the whole process output oriented, commercialized and competitive to reduce import externally.
- To make livestock a lifelong source of earning for women and youth in the municipality.
- To ensure that the livestock is healthy so that it poses no harm on the health of the consumers.

Strategies

- Improve infrastructures to attract investors.
- Supplying livestock farmers, society, cooperatives and other businessman necessary technical, financial and other services in order to develop competitive capacity.
- Making the livestock development inclusive by Involving under privileged women and youth.
- Promotion of environment friendly livestock.

6.4.3 Tourism

Nalgad is famously known for the 410 MW Nalgad hydropower generation center in former Jajarkot District in Karnali Province. Besides, it has high potentiality of tourism development because of its unique social, cultural, economic and geographic features. The shadowed tourism destinations and products are needed to be explored and publicized, to bring the economic development in this region. The municipality is rich in locally renowned temples like Mant mandhir, Baapkada, Panch bhayar, Awalgurna, Dadha mathi, Bhagawati mandhir, Adsarsha tirtha (nalipa ghau), Tatopani jwalamukhi mandhir, Halchwar ram mandhir, Maibhagawati math mandhir, Dhani podhara etc.

6.4.3.1 Opportunities

The people in Nalgad are simple and hospitable. The religious tolerance here is also wonderful. The government is increasing the number of hotels here to facilitate the better stay of tourists. The renovation of available tourist destinations and development of new possible areas of recreation within the municipality is bound to attract more local and international tourists. The Nalgad Municipality is rich in ecological and cultural diversity. Community based organizations and financial/social institutions are functioning well. Gradual development of tourism infrastructure such as electric power, internet facilities and networks of mobile phone is taking place. Private sector's investment in tourism and agriculture sector is increasing.

6.4.3.2 Challenges

There is less infrastructural development related to tourism industry. In comparison with other provinces, the flow of domestic and international tourists is very less in this province. This has adversely affected the tourism promotion in this Municipality. The incoming entrepreneurs have not envisioned the possible growth of tourism here. The constitutional provision regarding the division of tourism benefits among the federal, provincial and local government is not fair because it is biased towards the local government. Central level tourism development organizations do not show interest in promoting new tourism destinations especially in Karnali Province.

Vision

“Developing tourism sector for economic prosperity of Nalgad Municipality”

Goal

Employment generation and economic growth through the tourism industry.

Objective

- To develop Nalgad Municipality as new tourism destination by devising and implementing tourism development plan.
- To identify and preserve important cultural heritage sites in the Municipality.
- To explore and preserve non-material (intangibles) cultural resources in the Municipality.

- To appraise strength and challenges of tourism development approaches in the Municipality.

Strategies

- Involving public, private, local level and community for tourism development.
- To ensure that rural tourism positively impacts the local level.
- To develop seasonal recreation activities for tourist.
- Improvement infrastructures for facilitating the construction of lodges and hotels to support the tourism industry.

Programs

- Yearly cultural feast in Nalgad municipality.
- Regular cleanliness program around tourist sites.
- Continuation of Nalgad water shed tourist year 2075
- Programs to promote tourist areas of the municipality all over Nepal.

6.4.4 Micro-Enterprises/Industry

In Nalgad there are number of small, medium scale and cottage industries. Beekeeping, fruits and nursery production, grill, furniture production, are major industries. Therefore, they are generating some employment opportunities for local as well as for rural people. The necessary raw materials for furniture and factories are found from same municipality and from neighboring municipalities. The furniture industry makes tables, chairs, beds, cupboard etc. The market for this product is confined mostly to Nalgad and its surrounding area. Among them furniture factory and nursery production are very important to generating employment opportunities for local people. There are about seven industries including one beekeeping industry, 2 nursery production industries, few furniture and other industries. There are no any big and large-scale industry is located in the municipal area. Moreover, none of the industries are reported as polluter in the market place.

6.4.4.1 Opportunities

With tax concessions being provided by the government, the municipality can attract different FDI from within the country and also outside. With very few industries, that too only small, medium scale and cottage industries, any new idea will be worth a try in the municipality.

6.4.4.2 Challenges

With the chunk of unskilled and semi skilled manpower within the municipality and maximum youth out migrating, will make it difficult for enterprises to run. Lack of internal production of raw materials along with poor infrastructure to connect to each part of the country may aid in rise of cost of production. It will be a challenge to export the products to places outside the municipality. Trading within the municipality may not do just to the price of the product due to low level of earning of people.

Vision

Infrastructure development for industry based economy.

Goal

Develop the infrastructures within the municipality and give youth the facilities to stay back in the municipality for improving the industry based economy within Nalgad.

Objective

- To develop infrastructures to attract investment in medium and large scale industries.
- To increase the output of small and cottage industries so that they can contribute to the process saving for medium and large scale industries.
- To attract direct investment from national and international investors publicizing the tax concessions provided by the state to create employment opportunities.

Strategies

- Giving training to the people for quality production.
- Implementation of plans and policies for making the infrastructures necessary for the micro enterprises available within the municipality.
- Publicizing the availability of tax concessions within the municipality.
- Optimal utilization of local resources for fostering of small, medium and cottage industries.
- Provisional and local coordination for an all-round development of micro enterprises.
- Preparation and implementation of necessary plans, institutions, laws, and procedures for creating investment inducing environment.

6.4.5 Logical Framework Approach (LFA) of Economic Development Plan

Logical framework Approach (LFA) of Economic Plan						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> • Developing Nalgad municipality as economically sustained region and economic centre for nearby municipalities • Connection of road with nearby cities • Subsidizing livelihood and promoting business for economically backward groups • Promotion for agricultural and livestock industries 					
1.1	Establishment of seeds production and collection centre	0	1	Sufficient and production of agricultural products	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	Support from the government
1.2	Construction of cold store	0	1	Proper storage of agricultural products for future use	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	People's participation and budget allocation

Logical framework Approach (LFA) of Economic Plan						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1.3	Irrigation project and its maintenance	30%	100%	Production of crops in every areas	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	Budget allocation
1.4	Training centre for farmers and animal husbandry	30%	100%	Information about production of agricultural products and maintenance of livestock	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	Coordination from the municipality
1.7	Monitoring for control of illegal market	20%	100%	Development of market areas and measures to promote market	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	
1.8	Establishment of modern breeding centre	0	1		Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	
1.9	Establishment of market areas feasible for both producers and consumers	0	1		Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	Project prioritization
1.10	Establish/strengthen the links between informal and formal (e.g. garbage collection, prevention of communicable diseases, water and sanitation)	0%	100%	Increase in export of local products	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	Approval and implementation of IUDP budget allocation
1.11	Create designated business premises for garage, stalls etc.	0	1	Promoting production in the municipality	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	Approval and implementation
1.12	Construction of export/import transfer stations	0	1	Development of market centre	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	Budget allocation and improvement in production
1.13	Provision of necessary access to markets for businessman and clients	30%	100%		Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	

Logical framework Approach (LFA) of Economic Plan						
S.N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1.14	Promotion of exporting local goods and services	20%	100%	Increase in productivity and enhancement of local products	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	Budget allocation
1.15	Promotion of new technology and technique in agriculture activity	0%	100%	Increase in production	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	
1.16	Upgrade existing market/ build open air market	0	1	Development of market area	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	Higher rate of productivity and independent farmers
1.17	Use of modern technologies for quality and mass production	0	1	Modern knowledge and mass production	Report from ministry of finance, municipal office, I/NGO's report, PRA, FGD	

6.5 Financial Development Plan

The formulation of Financial Development Plan enables and guides in the identification and mobilization of resources required during the period for Nalgad Municipality. The following things/ subjects will be considered while formulation the financial plan.

- Analysis and projection of the municipality income and expenditure, revenue improvement action plan,
- Financial analysis and assessment of possible financial resources for the implementation of IUDP in each municipality.
- Allocation of development budget (for coming five years), cost sharing among sectorial agencies, and expenditure management action plan
- Promotional strategy of private sector and civil society (PPP)
- Financial and economic analysis of proposed prioritized projects

6.5.1 Identification of Possible Financial Resources

Each year, the Nalgad Municipality Council must adopt a five-year financial plan, with the current year of the plan being the annual budget. The financial plan identifies both operating and capital expenditures balanced against revenues from such sources as:

- Property tax
- sale of services

- grants
- transfers from other governments
- Land and House tax
- Business Tax
- Vehicle Parking Tax
- Service Tax in Tourism
- Fines, Forfeitures & Penalties
- Interest & Investment Income
- Rents & Concessions
- Federal Revenue
- State Revenue
- Charges for Services
- Recovery of Government Costs
- Other Revenues

The financial plan is developed by Council through their strategic planning process and identifies for staff and the public what types and quality of services are to be provided. A public consultation process is required for the financial plan and the municipality must produce annual audited financial statements in accordance with generally accepted accounting principles.

To formulate a financial plan of the future for Nalgad Municipality to achieve fiscal sustainability coming years.

Mission:

To achieve sustainable inclusive development such that it ensures overall development of the municipality.

Goal:

Maintain fiscal sustainability through prudent financial plans that balance anticipated revenue with long-term needs.

Strategies:

By identifying all the possible resources that fulfills the need for long term expenditure.

By maintaining fiscal balance through fiscal equalization transfer from center.

By identifying and exploring several areas for sustainable sources of revenue for the municipality.

6.5.2 Five Year Sectoral Plan of Nalgad Municipality

The above table shows the coming five years' sectorial budget allocation of Nalgad municipality estimated in thousand rupees. The sectorial allocation overhead mainly comprises expenditure on

Infrastructure, Agriculture, Social Development, Environment and Disaster Risk Reduction and other expenditures. The data presented below are in rupees thousand figures.

Table 53: Five year sectoral plan of Nalgad Municipality

Five Year Sectorial Allocation of Budget in Rs(000)	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24
Infrastructure	37318	38065	38826	39603	40395	41203
Agriculture	5375	5483	5592	5704	5818	5934
Social Development	35608	36320	37047	37787	38543	39314
Environment and DRR	2150	2193	2237	2282	2327	2374
Others	122091	124532	127023	129564	132155	134798
Total	202542	206593	210725	214939	219238	223623

(Source: Nalgad Municipality Budget, 2018/19)

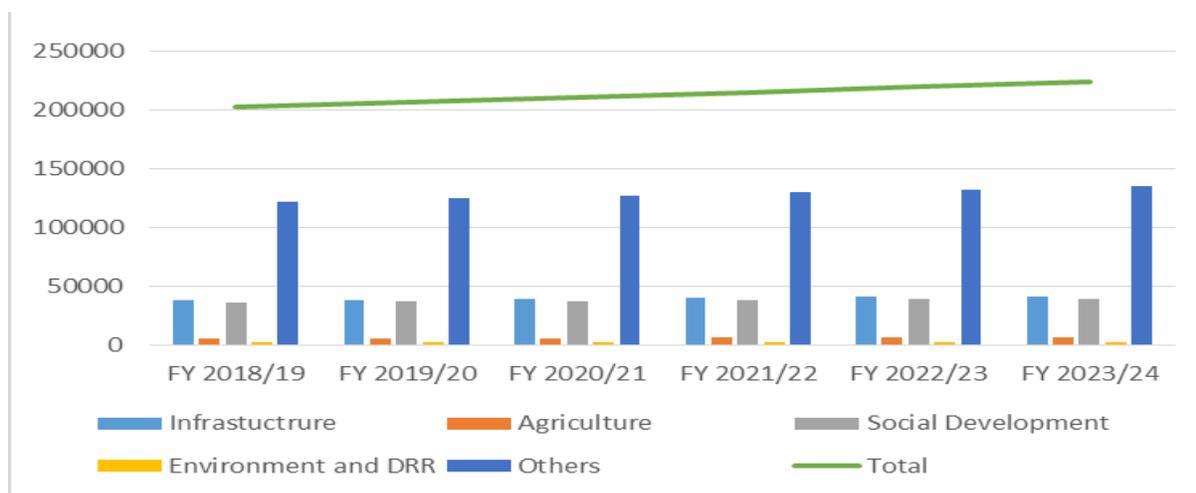


Figure 14: Five Year Sectorial Allocation of Budget

(Source: Bheri Municipality Budget, 2018/19)

Infrastructure:

It is estimated that the total budget allocation for Infrastructure sector in FY2018/19 is Rs. 37318. Similarly the projected expenditure required for infrastructure in FY 2019/20, FY 2020/21, FY 2021/22, FY 2022/23 and FY 2023/24 will be Rs. 38065, Rs.38826, Rs.39603, Rs.40395 and Rs.41203 respectively.

Agriculture:

It is estimated that the total budget allocation for agriculture sector in FY2018/19 is Rs. 5375. Similarly the projected expenditure required for agriculture in FY 2019/20, FY2020/21, FY

2021/22, FY 2022/23 and FY 2023/24 will be Rs.5483, Rs.5592, Rs.5704, Rs.5818 and Rs.5934 respectively.

Social Development (Health, Education, Drinking Water):

It is estimated that the total budget allocation for social development sector in FY2018/19 is Rs 35608. Similarly the projected expenditure required for social development in FY 2019/20, FY2020/21, FY 2021/22, FY 2022/23 and FY 2023/24 will be Rs. 36320, Rs.37047, Rs.37787, Rs.38543 and Rs.39314 respectively.

Environment and Disaster Risk Reduction:

It is estimated that the total budget allocation for Environment and Disaster Risk Reduction sector in FY2018/19 is Rs. 2150. Similarly the projected expenditure required for Environment and Disaster Risk Reduction in FY 2019/20, FY2020/21, FY 2021/22, FY 2022/23 and FY 2023/24 will be Rs. 2193, Rs.2237, Rs.2282, Rs.2327 and Rs. 2374 respectively.

Other Sector:

It is estimated that the total budget allocation for other sector in FY2018/19 is Rs. 122091. Similarly, the projected expenditure required for other overhead in FY 2019/20, FY2020/21, FY 2021/22, FY 2022/23 and FY 2023/24 will be Rs. 124532, Rs.127023, Rs.129564, Rs.132155 and 134798 respectively.

6.5.3 Revenue and Expenditure Projection For 15 Years

The purpose of the financial forecast is to evaluate current and future fiscal conditions to guide policy and programmatic decisions. A financial forecast is a fiscal management tool that presents estimated information based on past, current, and projected financial conditions. This will help identify future revenue and expenditure trends that may have an immediate or long-term influence on government policies, strategic goals, or community services. The forecast is an integral part of the annual budget process. An effective forecast allows for improved decision-making in maintaining fiscal discipline and delivering essential community services.

Expenditure Projection for 15 Years:

Table 54: Expenditure projection for 15 years

Projected Budget Expenditure	FY 2018-19	FY 2023-24	FY 2028-29	FY 2033-34
current expenditure	187900	207457	229049	252889
capital expenditure	165900	183167	202231	223280
total	353800	390624	431280	476168

(Source: Nalgad Municipality Budget, 2018/19)

The table shows the projected buget expenditure for 15 years in thousand rupess figure.It shows the current expenditure of FY 2018/19 is Rs. 187900 and the projected current expenditure for next five year , ten year and fifteen year is projected as Rs. 207457, Rs.229049 and Rs.252889

respectively. It shows the capital expenditure of FY 2018/19 is Rs. 165900 and the projected current expenditure for next five year ,ten year and fifteen year is projected as Rs. 183167, Rs.202231 and Rs.223280 respectively. Thus, the total expenditure for the FY 2018/19 is Rs. 353800 for next five years, ten years and 15 years is Rs. 390624, Rs.431280 and Rs.476168 respectively.

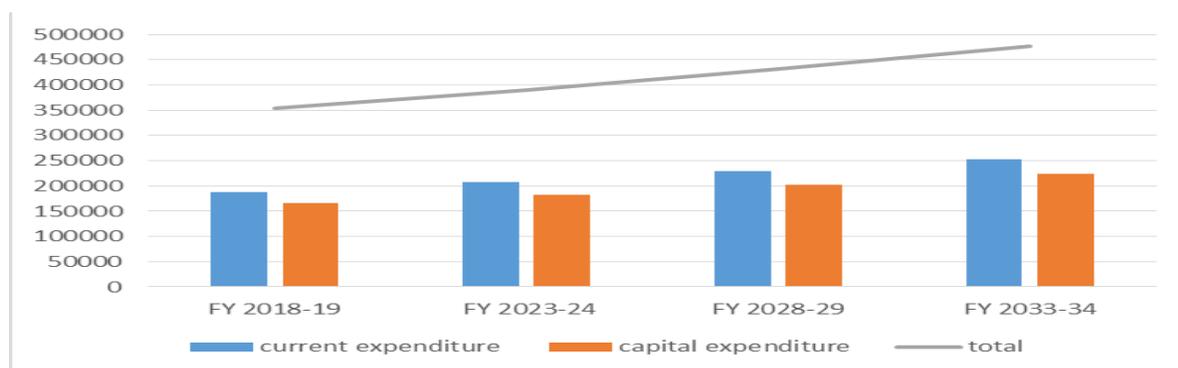


Figure 15: Expenditure Projection For 15 Years

(Source: Nalgad Municipality Budget, 2018/19)

The inability on the part of municipality to spend development budget directly affects the development and construction activities in the municipality which in turn affects the provision of municipal services and facilities to its citizens. In other words, the low level of expenditure for infrastructure and other development works means longer period for the completion of development works which will directly lead to longer period in the provision of services and facilities. This indicates that there is an urgent need to enhance the capacity of municipal staff in order to increase their capacities to spend the allocated development budget every year to avoid delay in the completion of the development projects and programs.

Revenue Projection for 15 Years:

Table 55: Revenue projection for 15 years

Projection of Revenue for 15 years Plan period	FY 2018-19	FY 2023-24	FY 2028-29	FY 2033-34
Transfer from government	243100	268402	296338	327181
Sources from internal taxes	45670	50423	55671	61466
others	45779	50544	55804	61613
Total	334549	369369	407813	450259

(Source: Nalgad Municipality Budget, 2018/19)

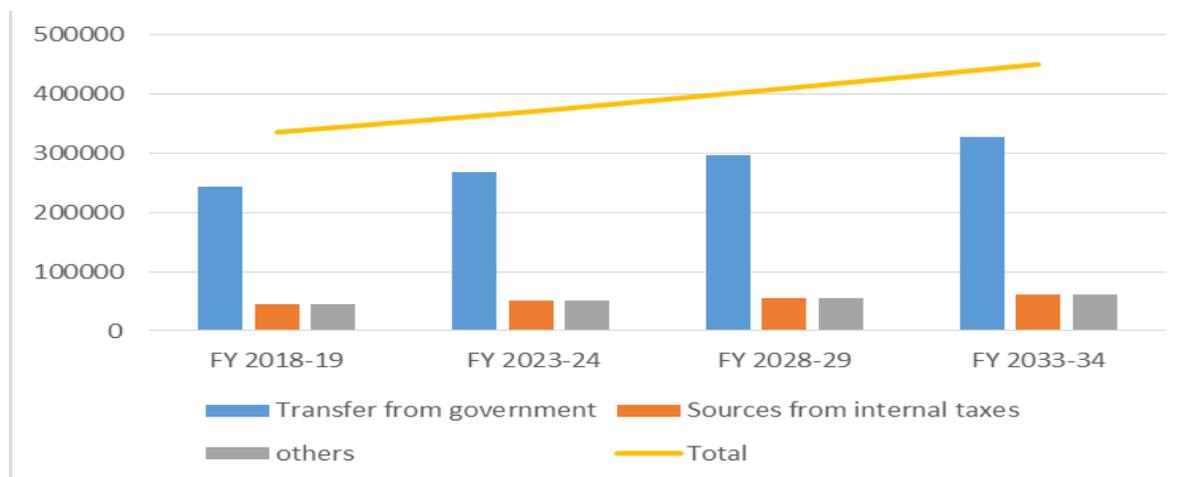


Figure 16: Projection of Revenue for 15 years

(Source: Nalgad Municipality Budget, 2018/19)

The table shows the projected Revenue for 15 years generated from both external and internal sources of Nalgad municipality shown in thousand rupee figure .It shows the total revenue from different sources in FY 2018/19 is Rs. 334549 and the projected revenue for next five year , ten year and fifteen year is projected as Rs. 369369, Rs.407813 and Rs.450259 respectively.

6.5.4 Revenue and Expenditure Gap

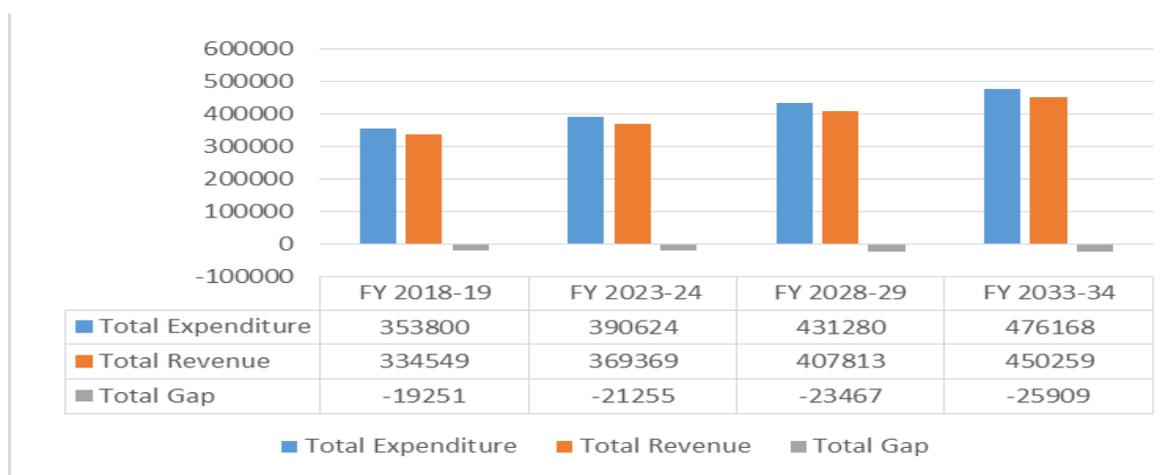


Figure 17: Revenue and Expenditure Gap

(Source: Nalgad Municipality Budget, 2018/19)

The given projected revenue and expenditure suggests that there will always be in fiscal deficit for next 15 years as per the projection in thousand rupees' figure. Nalgad municipality requires that each year's budget be balanced. Balancing the budgets will require a combination of

expenditure reduction and/or increment in revenues. Strategies and proposed solutions to address these issues, as well as the public service effects of these challenges, can be found below.

6.5.5 Logical Framework Approach (LFA) of Financial Development Plan

Logical framework Approach (LFA) of Financial Plan						
S . N	Output/Activities	Base Line 2018	Targ et 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> • Introducing modern/scientific land and property taxation • Effective monitoring and implementation of financial plan to meet target • Private sector friendly financing model 					
1. 1	E- Taxation for increasing transparency	0%	100%	Efficient and effective status of city	TAX and land revenue, report from FNCCI, progress report	• Surveillance by concerned authority
1. 2	Implementation of combined property tax	30%	100%	Integration of larger property under value based taxation	TAX and land revenue, report from FNCCI, progress report	Cooperation from the government
1. 3	Appointment of new technical staffs	60%	100%	Effective work	TAX and land revenue, report from FNCCI, progress report	Project prioritization
1. 4	Identification of asset and its proper management	20%	100%	Efficient and effective financing	TAX and land revenue, report from FNCCI, progress report	Budget allocation
1. 5	Borrowing and systematic allocation of grants and funds for different stakeholders	20%	10%	Increase in investment and business	TAX and land revenue, report from FNCCI, progress report	Surveillance by concerned authority
1. 6	Provision of tax relief/exemptions	30%	100%	Effective collection of taxation	TAX and land revenue, report from FNCCI, progress report	Budget allocation
1. 7	Extending territory of local taxation	50%	100%			
1. 8	Appointment of new technical staffs	30%	100%	Improvement in technical knowledge	TAX and land revenue, report from FNCCI, progress report	People's participation and coordination

6.6 Conservation, Cultural and Tourism Development Plan

Tourism represents journey of tourist for making entertainment through various tourism activities within a short period of time (World Tourism Organization [WTO], 2013)². The World Travel and Tourism Council (WTTC) estimates that tourism sector now accounts for 9.5% of global GDP, a total of US\$ 7 trillion, and 266 million directly and indirectly jobs created in 2016 (World Travel and Tourism Council [WTTC, 2017]³). Nepal is also known as an important tourist destination in the global tourism market. That is why the trend of investing by public and private sectors in tourism service infrastructure also has been increased annually. Till mid-January 2016, 538970 international tourist visited Nepal with 13.1 length of per tourist average staying days. Total earning from tourism sector was 486341000 US\$ (MOCTCA, 2016⁴).

More so, governments of developing countries, international development agencies, and Non-Government Organizations (NGOs) see tourism promotion as an opportunity to initiate development processes (Organization for Economic Cooperation and Development [OECD], 2010). Even in our context, tourism sector has been becoming important segment for economic growth, employment generation and poverty alleviation (National Planning Commission [NPC], 2010). Recently, contribution of tourism sector on GDP is targeted to increase by 4 percent up to fiscal year 2018/19 (NPC, 2017⁵). Here is why, government of Nepal has been formulated Tourism Vision 2020 with aims to increase annual international tourist arrivals to 2 million by 2020 and enhancing community participation in tourism activities.

6.6.1 Potentiality Of Cultural And Tourism Development In Nalgad Municipality

Nalgad is famously known for the 410 MW Nalgad hydropower generation center in former Jajarkot District in Karnali Province. Besides, it has high potentiality of tourism development because of its unique social, cultural, economic and geographic features. The shadowed tourism destinations and products are needed to be explored and publicized, to bring the economic development in this region.

- a) **Social and Cultural Diversity:** The municipality is rich in locally renowned temples like Mant mandhir, Baapkada, Panch bhayar, Awalgurna, Dadha mathi, Bhagawati mandhir, Adsarsha tirtha (nalipa ghau), Tatopani jwalamukhi mandhir, Halchwar ram mandhir, Maibhagawati math mandhir, Dhani podhara etc. The majority of the people live here are Janjati, Dalits, Brahmin and Chettris, and there are minorities which are

² World Tourism Organization (WTO). (2013). *UNWTO News Conference on International Tourism Results and Prospects for 2014*. HQ, Madrid, Spain 20 January 2014.

³ World Travel and Tourism Council (WTTC). (2017). *Annual Research: Key Facts. Travel and Tourism Economic Impact*. Author.

⁴ Ministry of Culture, Tourism & Civil Aviation (MOCTCA). (2016). *Tourism Statistics*. Planning & Evaluation Division. Kathmandu: Author.

⁵ National Planning Commission (NPC). (2017). *Nepal's Sustainable Development Goals, Baseline Report, 2017*. Government of Nepal, National Planning Commission, Kathmandu, Nepal.

Sarki, Magar, Thakuri, Dhami, Sanyasi/Dashnami and Kaami. The different social organizations numbering 14 farmer’s groups, 10 agricultural and animal farming clubs, 2 youth clubs, 6 women’s group, 3 child service groups are actively involved in community development activities.

- b) Agro-tourism and Local Products:** Dadagaun, Kaina, Kaul, Chakailcheur, Karua etc are name of some agriculture centre of this Municipality. The major agriculture products here are Paddy, maize, wheat, oragnes, vegetables, millet, potato, fapar, bhatmas, timmur etc. People have begun the commercial farming as well.
- c) Ecology, Flora and Fauna:** This local unit shares boarder with Rukum district in the East and Dolpa district in the North. Because of the geographic diversity, the climate here is suitable for plant life like Tejpat, Uttis, Kaulo, Setubar, Lonta, Okhhar, Kurillo, Silpari, Red mushroom, Samaya, Chirailo, Khirailo, Pach aale, Satuwa, Vulte, Kauja, Bek etc. Nalgad municipality is endowed with many streams and running water bodies like Thulo Bheri, Jhumre Khola, Sangata Khola, Piuli khola, Nalgad River and so on. There are 22 community forests with different tree species like Sirpa, katus, Uttis saal, Kurilo, Padam Chalo, samayare, kaulo, Lajpat, Saal chilaune etc and Ghorol, Ratwa, Boar, Monkey, fox, Tiger, deer, wild chicken, Ghoral, Bear, Boar, Red Panda, Monkey, Danphe, Sunagiddi, Kalij. The majority of total land area in Nalgad is covered by Forest (i.e. 60.06%).
- d) Public Service Delivery and Economy:** There are few irrigation projects in the Municipality like Mulakhola Halchaur Irrigation, Badakhola Canal Irrigation, Kaphaldhara Lupan Irrigation etc. The Municipality has hydropower projects like Nalgad hydropower project, Saita bheri khola hydropower (16 kW), Bagmare hydropower (45 kW), Rani Khola hydropower (11 kW), Lahare khola hydropower (32 kW), Rular Hydropower (25 kW), Sirpa khola Hydropower (32 kW), Chadakhola Hydropower (7 kW), Dokhukhola hydropower (9 kW), Dabiya khola Hydropower (12 kW), Chokha Hydropower (2 kW) etc. Dolpa highway is the main road in this Municipality connecting 7 wards, ward-2, ward-7, ward-8, ward-9, ward-10and ward-11. Ring road Jajarkot to Dolpa connects Jajarkot District with the Dolpa. There are different sources of drinking water in Nalgad Municipality. Tap or pipe water is the main source of drinking water. About 57.46% people are literate with at least 23 educational institutions. There are half dozens of health service providing institutions. Villagers have been involving in diversified livelihood activities such as agriculture, remittance and local business for generating economy. The major marketing areas include Lupan, Bhaisiti, Pokhara tole, Ragunath tol, Seteti tol, Yerari Tole and Pokhara.

Table 56: Components of Tourism of Nalgad Municipality

Components	Categories
Accessibilities	-Availability of air and road transportation

	-Trekking routes located in Churia (Siwalik) range to Mahabharat range
Accommodations	-Small hotel, restaurant and tea stall in few numbers
Attractions	-Greenery forest land, agriculture and pasture land having altitude -Hill side, river streams, ponds, temples, caves, water fall and old care center -Hinduism and diverse ethnic cultural norms and values
Amenities	-Traditional musical instruments Panche Baja and Bhajan Samuha (A group of people singing a religious song with traditional musical instruments) -Religious and cultural feasts and festivals as well as trade fares
Activities	-Jungle safari in red panda protected forest, organic vegetable faming, Goat keeping and bee keeping, sightseeing, trekking and hiking
Actors	-Youth club, fathers group, mothers group, cultural groups, saving groups, government and non-government organizations
Affinities	-Mutual understanding among villagers belong to all the religious groups
Advertisements	-Descriptive information through maps and magazines -Hosts request guests to visit again in the villages -Networking with tour and travel agents

(Source: PRA/FGD 2018)

Vision

- “Developing tourism sector for economic prosperity of Nalgad Municipality”

Mission

- The mission of this plan is to develop tourism for economic prosperity through the conservation of natural and cultural resources.

Goals

- Develop tourism sector for economic progress and creating employment opportunities.
- Promote sustainable growth through the conservation of natural and cultural resources.

Objectives

- To develop Nalgad Municipality as new tourism destination by devising and implementing tourism development plan.
- To identify and preserve important cultural heritage sites in the Municipality.
- To explore and preserve non-material (intangibles) cultural resources in the Municipality.
- To appraise strength and challenges of tourism development approaches in the Municipality.

Strategies

- Coordinating with public, private, cooperative and community sector to promote and develop tourism.
- Developing easy accessibility/connectivity with nearby touristic destination.
- Planning the training regarding homestay for hospitality and other tourism related activities.

- Providing good facility for resorts, hotels, paying guest houses, homestays and other sorts of accommodations.
- Offering economic benefits to the local people through tourism entrepreneurship.
- Promoting internal tourism by conducting tourism activities in all seasons.
- Integrated and facilitative infrastructure development in already available and newly explored touristic sites.
- Developing and differentiating the tourism sector and attracting foreign investors as well as Non Residential Nepali.
- Developing local level tourism development and management committee for planning, implementing and monitoring tourism related projects providing tourism services.
- Making arrangement for Tourist Police to advise and assist tourists in safety and security during traveling, trekking, and other adventurous sports and night staying.
- Promotion of sustainable livelihood program linking with tourism by commercialization of rural products and providing training to them as of such.
- Proper marketing of the tourism related services in national and international tourism market.
- Encouraging and attracting private sectors' investment in the tourism and agriculture sectors.
- Establishment of cultural museum, fun parks, view towers and learning resource centers.
- Establishment of research cell for the conservation, culture and tourism development in the Municipality.

6.6.2 Potential Risks and Challenges for The Successful Implementation

- There is less infrastructural development related to tourism industry.
- In comparison with other provinces, the flow of domestic and international tourists is very less in this province. This has adversely affected the tourism promotion in this Municipality.
- The incoming entrepreneurs have not envisioned the possible growth of tourism here.
- The constitutional provision regarding the division of tourism benefits among the federal, provincial and local government is not fair because it is biased towards the local government.
- Central level tourism development organizations do not show interest in promoting new tourism destinations especially in Karnali Province.
- There is a lack of promotion and marketing of tourism products of this Municipality.
- The encroachment of the historic properties by development activities such as road construction is on the increase.
- The number of tourists visiting this Municipality, the length of their stay and the amount of their daily expenses have not increased significantly.
- Tourism related information are not available.
- Tourism revenue benefits are not systematically recorded and they are not equitably distributed among the direct and indirect beneficiaries.
- No systematic research on tourism issues has been conducted so far.

- Only recently were tourism sites explored.
- The tourism services and destinations are yet to be categorized.
- Identified peculiar tourism products are yet to be promoted effectively.
- Local people belonging to Brahmin and Chhetri communities are not attracted to tourism sector for religious and cultural reasons.

6.6.3 Strengths and Opportunities for The Targeted Outcomes

- The Nalgad Municipality is rich in ecological and cultural diversity.
- Community based organizations and financial/social institutions are functioning well.
- Gradual development of tourism infrastructure such as electric power, internet facilities and networks of mobile phone is taking place.
- Private sector's investment in tourism and agriculture sector is increasing.
- The federal government has prioritized the reconstruction of touristic and archaeological heritages.
- The plan prepared for the tourism development gives a guideline for bringing about changes in the tourism sector in this Municipality.
- The high flow of remittance in the municipality can be invested for developing tourism service infrastructures.
- The highly educated and skillful local youths can be mobilized in agriculture and tourism sectors that are interrelated to economic progress.
- The Local Governance Act 2074 has granted power to the local levels to collect revenue from local tourism entrepreneurs and tourists. That fund can contribute to sustainable development of tourism infrastructures.
- The devolution of power to the local governments has helped in developing tourism sector, its promotion and expansion by identifying, implementing, monitoring and evaluating projects.
- The ward offices can facilitate and monitor homestay tourism falling under its jurisdiction.
- The local governments have devolved power to conserve and develop language, culture and fine arts by preparing local level policies, laws and plans.
- The New Constitution of Nepal (2015) has guaranteed the right of property and it has also equipped every citizen with right to gain profit from the tourism business. This can also contribute to the development of tourism sector.

6.6.4 Logical Framework Approach (LFA) of Conservation, Cultural and Tourism Plan

Logical framework Approach (LFA) of Tourism Development Plan						
S. N	Output/Activities	Base Line 2018	Targ et 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> • Identification of hiking trails, touristic spots and adventurous sports in tourism • Promoting tourism friendly hospitality and investment in tourism sector 					

Logical framework Approach (LFA) of Tourism Development Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
<ul style="list-style-type: none"> Integrated institutional body comprising of stakeholders from different sectors (INGOs, local people and other stakeholders) 						
1.1	Preparing/updating tourism development plan	0	1	Recreational activities leads to the increase in flow of local and international tourism	Municipal office, meting and minutes, progress report	Infrastructural development
1.2	Management of Chhamare, Radadas, Nayarkot, Gauthali, Tiptipe cave	20%	100%	Establishment of clean city	Municipal office, meting and minutes, progress report	Budget allocation
1.3	Management of Siddha Sahi Kawari Mandir Nahakuli	0	1		Municipal office, meting and minutes, progress report	Willingness of private sector to invest
1.4	Preparation of implementation guidelines and monitoring framework of tourism development plan	0	13	Enhancement of tourism through promotion	Municipal office, meting and minutes, progress report	Approval and implementation
1.5	Formation of Tourism Development and Management Committee (TDMC) in every wards	0	1	Enhancing local and international tourism	Municipal office, meting and minutes, progress report	Provision of required infrastructure for the development of tourism
1.6	Organizing workshops/training for tourism development planners and policy makers	0	1	Increase in techniques for the promotion of tourism	Municipal office, meting and minutes, progress report	Project prioritization
1.7	Organizing hospitality management, handicraft making and awareness raising on natural and cultural conservation trainings to the local people	0	1			

Logical framework Approach (LFA) of Tourism Development Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1.8	Developing temple tourism activities especially in Bhagwati Mandhir, Adsarsha Tirtha, Dadha Mathi Bhagawati, Mant Mandhir, Garuledi Tirtha stall (Dhyarghau), Ghutupani Tantra Tole, Halchwar Ram Mandhir, Maibhagawati Nath Mandir, Mai, Bramhadevta Mandir	0	1	Increase in cultural tourism	Municipal office, meeting and minutes, progress report	Maintenance of cultural heritages
1.9	Developing Bheri River Rafting (Chisapani) to Rimna, and boating at Khantakura river	30%	100%	Promotion of tourism	Municipal office, meeting and minutes, progress report	Support from the municipality
1.10	Conserving water falls like; Tallo Chara Jharana and Chokha Bheukhola (Faan Chaur)	20%	100%			
1.11	Assessing the disaster prone sites in the tourist places	1	1	Safe and secure area for visiting touristic site	Municipal office, meeting and minutes, progress report	
1.12	Preparation of visual documentary of the touristic sites and uploading it in websites and social sites	0	1	Advertisement leads to the increase in local and international tourism	Municipal office, meeting and minutes, progress report	Coordination from the municipality
1.13	Establishing the Travel and Tours Companies in central level by the local entrepreneurs	0	1	Easy accessibility and information to tourist before visiting the site	Municipal office, meeting and minutes, progress report	
1.14	Organizing cultural tourism and trade fare (Mahotsab)	0	1	Improvement in recreational activities	Municipal office, meeting and minutes, progress report	Budget allocation

Logical framework Approach (LFA) of Tourism Development Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1. 15	Keeping the Tourism Information Desk nearby Municipality office with digital information boards	0	1	Easy for tourist to know about the destination	Municipal office, meeting and minutes, progress report	Support from the municipality
1. 16	Construction of airport at Badalekh, Mulya Thalta	0	1	Easy transportation for tourist to reach the destination	Municipal office, meeting and minutes, progress report	Support from the government

6.7 Institutional Development Plan

Institutional development plan of Nalgaad municipality has been prepared in order to (a) diagnosing current development level (of local government entity/ commune); (b) planning and designing institutional changes (developing a real, but long-term plan of institutional development); (c) practical realization of the plan (implementation of appropriate development tools); and (d) audit of results—after each improvement cycle, which allows improving efficiency of the entity or commune. The plan has been made by incorporating key social sectors of education, health, social security, and sports and recreation. With specified mission, goals, targets, strategies, and action plans, the Institutional Development Plan hereby follows a short-term (5 year), mid-term (10-year) and long-term (15 year) targets and subsequent action plans.

Efficient and effective administration directly influences the improvement of citizen's quality of life. Thus important is the institutional potential, which can be used in this process in relation to competent officials, efficient organization and decision making structures, mechanisms of resource use and finally partnership between local population and public affairs. The essence of local government is the “execution of power in a specified territory by its citizens through performing the tasks assigned by law by the state. The goal of local government is satisfying collective needs of population of a given territory and creating good conditions of its individual development”. One of such tools is the Institutional Development Planning (IDP) method for local community.

Planning Context

Truly saying, the filling gaps into the Karnali Province and the federal government (Kathmandu) is real challenge for development plans in this municipality. In compatible with this statement, following Institutional Development Plan has been prepared and proposed:

Nalgaad Municipality lies in Jajarkot District in Karnali Province (Province no. 6). Dadagaun, Lahai, Khagenkot, Ragda and Bhagwati VDCs were incorporated to form this new municipality while its formation in 2017. It covers a total area of 387.44 sq. km. This local unit shares boarder with Rukum district in the East, Barekot rural municipality and Dolpa district in the North, Kuse rural municipality in the West, and Bheri Municipality in the South. According to

National Census 2011, the municipality has 4721 households and total population of 25,597. On the basis of exponential population growth rate of Jajarkot district for the 2001-2011, i.e. 2.39%., the existing population in the municipality in 2018 is 30191, while this is projected be 33975 in 2023, 38234 in 2028 and 43027 in 2033.

Though remaining far from the mainstream development of the country, Nalgaad Municipality bears a huge potentiality in development. Making a long term vision– “prosperous and peaceful city; a wave of sustainable development and good governance” — it truly clarifies the people of Nalgaad Municipality are confident that their municipality will only prosper through proper and strategic development plans oriented towards multiple sectors.

6.7.1 Opportunities

- Recently elected local government and representatives despite a huge turmoil of vacant local bodies since 2002 to 2017
- Public hearing, participatory planning, and platform of grassroots democracy
- Special focus on education, health and social sector
- Issues of children, women, youth, elderly people and marginalized communities/ groups
- Abundant of natural resources in the municipality to foster socio-economic development of the municipality
- While some communities are growing and prospering, many have opportunities that make it easy to provide or pay for basic services such as policing, recreational services and emergency measures planning, or to manage day-today operations and plan for the future.

6.7.2 Challenges:

- Remote and hilly topographic setting of the municipality
- Current local governance legislation is prescriptive in nature. Many communities feel constrained by these specific requirements. Others feel that if an issue isn't expressly identified in law, they cannot take action. A balanced approach will be required going forward
- Low literacy rate, life expectancy, HDI and other development indices as compared to the national average and high rates of HPI and MPI
- Institutional problems related to capacity building, offices infrastructures.
- Lack of urban scale health institutions with basic facilities including maternity services and other emergency services.
- In many smaller rural areas, the population is declining as residents are moving to more urban areas. This reduces the amount of property taxes collected, resulting in less revenue coming in to support the delivery of services to the community

- Lack of sufficient appointment of technical manpower in education and up-gradation of existing infrastructure of existing schools and community schools.

Vision

To create Nalgaad a good governed, well-participated, institutionally organized, locally adaptive, and well-skilled human resource in the long run, by coming 2033, in order of priority of Nalgaad, and Nepal as a whole

Mission

To be acknowledged locally and nationally as a first-class municipality whose performances in designed projects and public relations to the community consistently meet standards of excellence in the service delivery

Planning Philosophy

In face of changing political economy of Nepal and state-restructuring through the Constitution promulgated in 2015, Nalgaad has essentially two choices - to let the future take its course and strive to adjust to it, or to anticipate change and attempt to shape it. There is some historical evidence for decentralization and Local Self-Governance (Act) of being proactive. Moreover, past efforts have proved to be both innovative and insightful: the first, but now not the only local levels to adopt federal; the first, but now not the only this municipality to develop a well-performing and sound-functioning municipality in Jajarkot, surrounding districts, and in Nepal; the second. Many of the present policy initiatives of the Government of Nepal, such as, tourism and hospitality, environmental protection, education and public health, agriculture and co-operative, building byelaws etc. have to be adjusted with the planning of institutional development in Nalgaad municipality. As this municipality face the next decade, what are the reasonable assumptions concerning the future dynamics that will be the imperatives for its overall development? Therefore, the planning should believe certain characteristics and needs of the future society and citizens of Nalgaad as a whole.

Goal

Goal 1- The municipality of Nalgaad is well-performed with the principles of good governance and people's mobilization

Goal 2- Citizens are aware and habitual for the use and innovation of local skills and indigenous knowledge and customary practices

Goal 3- Well implementation of IUDP with human resource management, institutional coordination and capacity building

Objective

Goal 1 related: Hold awareness and strict follow-up of transparency, accountability, right to information, and responsibility in the diverse and heterogenous setting of the service delivery and

development activities along with people's ownership and benefit sharing in the outcomes of development

Goal 2 related: Promote sensitization and we-feeling of local heritage, resource, skills, indigenous practices, appropriate technologies and alternatives of development for the benefit of the local community and its identity in the long-run

Goal 3 related: Strengthen the organizational capacity and scientific human resource and leadership development for the implementation of IUDP along with formation of capabilities and entitlements of the municipality

Goal 1, 2 and 3 related: Legislation and implementation of IUDP in Nalgaad municipality, which supports Action Plan for a New Local Governance System in federal context of Nepal.

Strategy

- Putting in place a fair and effective property taxation system.
- Developing a policy toward fairer allocation of local responsibilities for roads, so that communities that choose to join together can afford road services.
- Action Plan for a New Local Governance System in the municipality; establishing a new, fairer cost-sharing model for public services in Nalgaad.
- Defining the factors that make communities sustainable and supporting communities in the assessment of their sustainability (the ability to effectively deliver services to citizens).
- Providing assistance to communities interested in considering community restructuring or sharing services.
- Promoting the use of different tax rates in different areas to reflect the level of service being received when communities choose to join together.
- Defining capacity criteria for the establishment and restructuring of service deliveries, including determining the minimum targets for population and the property tax base.
- Making information available on how property tax other revenues collected from the public are used and the costs of providing services.
- Devolution of resources along with the authority; Strong implementation and effective execution of comprehensive planning documents.
- Increasing performance and capacity building of the government employees with regular training and exchange of knowledge within the department
- Integrated service through single window system: Formation of integrated service center (City Center) could be interesting steps towards it. The integrated service center could be elaborated with further detailed institutional plan, but it needs to have one single data entry system which would ease the costumer for any government service rather than running for every single department for single task.

- Separate authority for monitoring and evaluation of government activities for quality and timely completion.

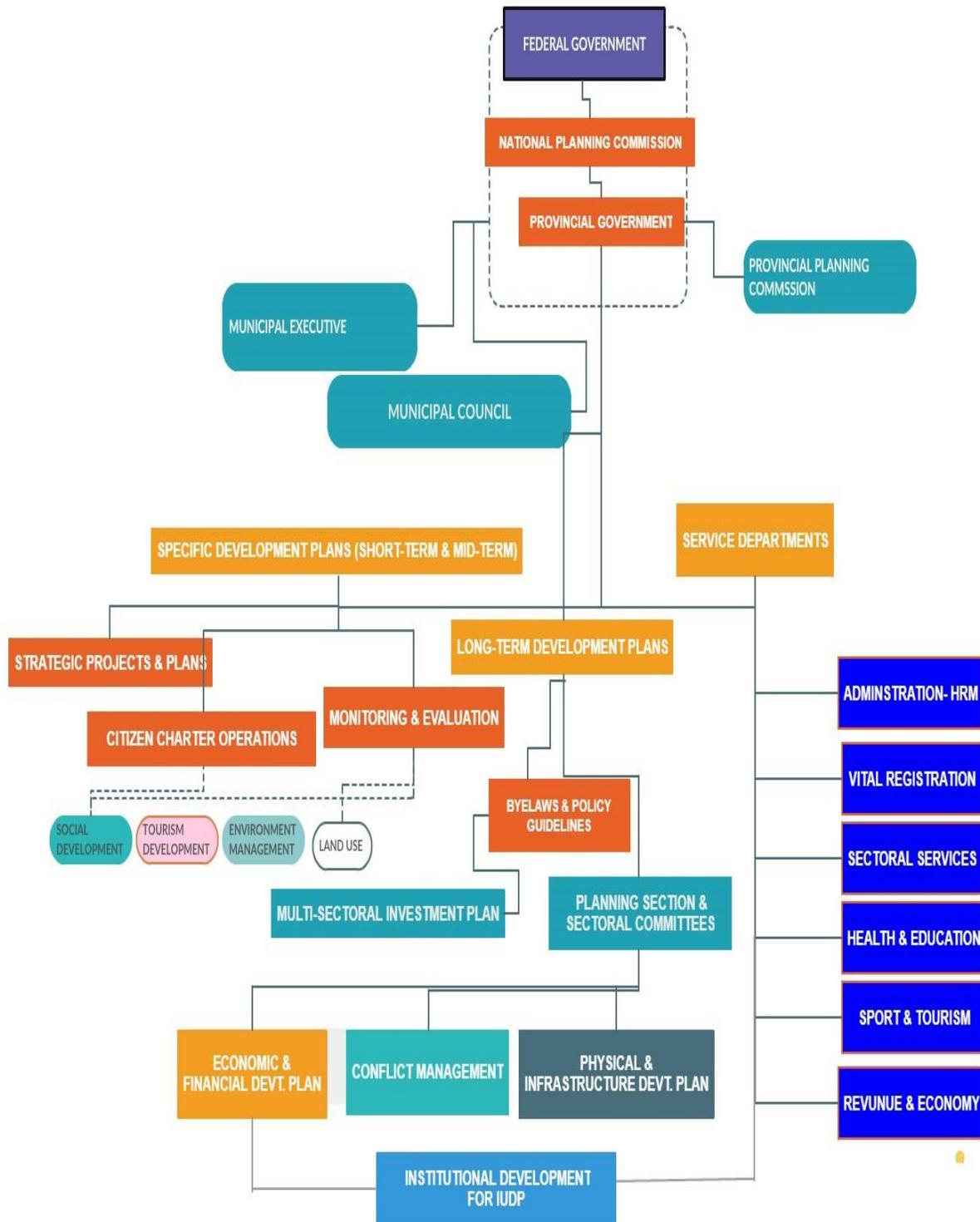


Figure 18: Institutional development plan with different line agencies, sectors and departments

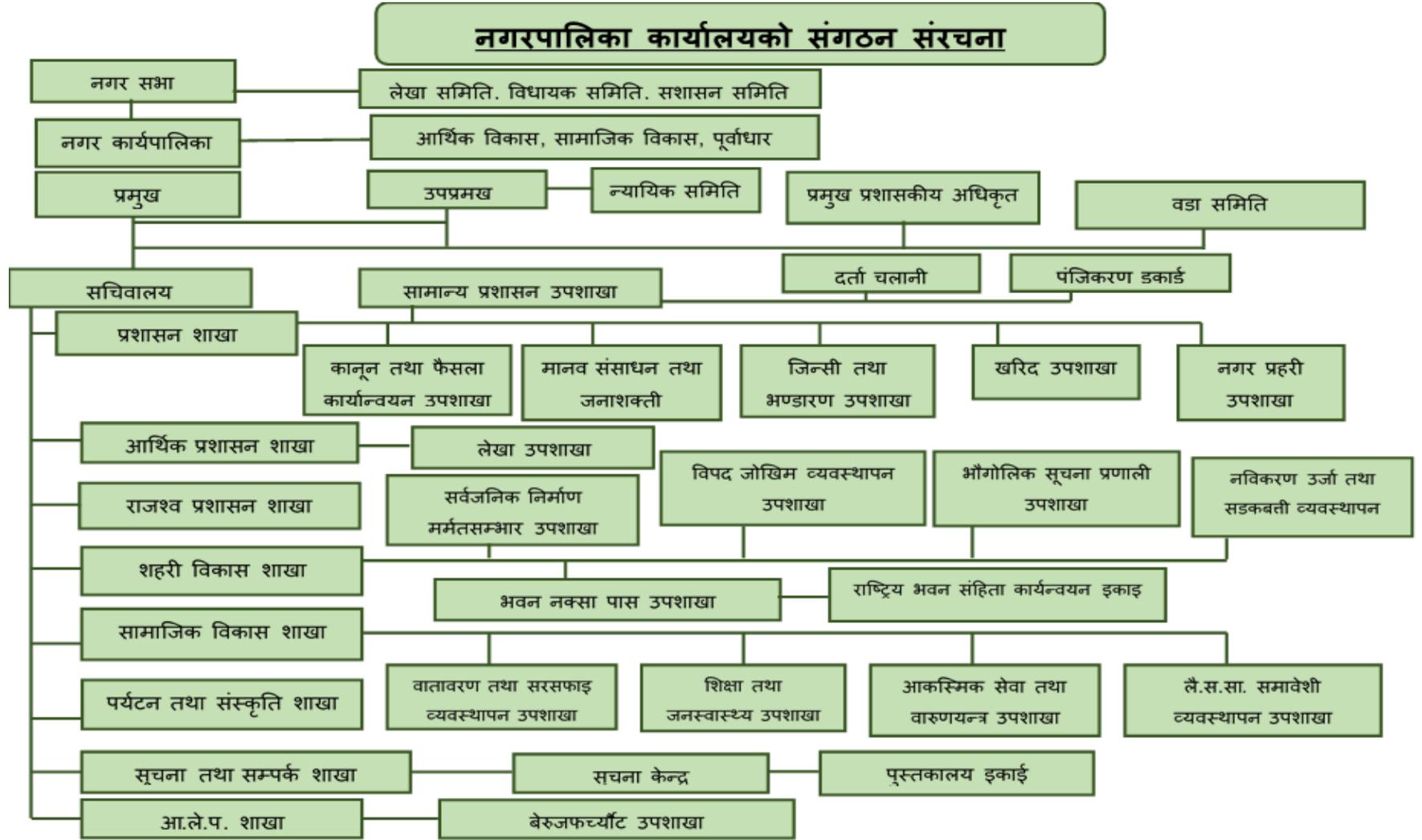


Figure 19: Administrative structure of Municipality

6.7.3 Expected Outcomes

- Digitized data base system, including GIS, with both hardware and software expertise and installation
- An increased number of communities are aware of their capacity, and are pursuing opportunities to become sustainable local governments.
- More autonomous local governments with the capacity to contribute to the sustainability of the communities they serve.
- A larger portion of the municipality with locally elected representatives who can represent the communities they serve and are accountable for the decisions they make.
- Action Plan for a New Local Governance System in the municipality
- Fairer distribution of costs; residents pay for the services they receive.
- Increased public awareness of property tax use and service costs.
- Increased collaboration and service sharing amongst communities.
- Stronger and more integrated planning on regional approaches to address public service needs.
- Concurrent boundaries to facilitate the planning and delivery of many local, regional, and provincial services.
- Stronger self-help and civil society groups, benefitting from the collective strength of communities to meet common needs, and plan for the future.

6.7.4 Logical Framework Approach (LFA) of Institutional Development Plan

Logical framework Approach (LFA) of Institutional Development Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> • Regular monitoring and evaluation of institutional bodies with reference to public opinion • Evolution of resources for the implementation of plans 					
1.1	Construction of multipurpose municipal building	0	1	Development of the municipality	Municipal office, meetings and minutes, progress report	Coordination from the municipality
1.2	Establishment of information centres for common information sharing platform	0	1	Ease and efficiency in public works	Municipal office, meetings and minutes, progress report	Improvement in legal framework for co-ordination among different sectorial agencies

Logical framework Approach (LFA) of Institutional Development Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1.3	Creation of active interactive website to minimize paper work and single window system for similar or interlinked work	0	1	Systematic arrangement of public works	Municipal office, meetings and minutes, progress report	Adaptation of technological advancement
1.4	Provision of separate authority for monitoring and evaluation of government works for quality and timely completion	0	1	Knowledge based manpower and offices	Municipal office, meetings and minutes, progress report	Co-operation from NGOs, INGOs
1.5	Establishment of information and intelligence gathering systems for regular trainings and knowledge exchange workshops	0	1	Skilled manpower	Municipal office, meetings and minutes, progress report	No intervention from political groups and strong government
1.6	Provide education and capacity building for participatory integrated development plan	0	1	Skilled manpower	Municipal office, meetings and minutes, progress report	Prioritization from the municipality
1.7	Preparation of guideline and installation of software of E-governance	0%	100%	Development of the municipality by proper guidelines	Municipal office, meetings and minutes, progress report	Coordination from the government
1.8	Institutional coordination and networking	30%	100%	Development of proper institutions	Municipal office, meetings and minutes, progress report	Coordination from the municipality
1.9	Organizational capacity building	20%	100%	Management of government office	Municipal office, meetings and minutes, progress report	
1.10	Digitalization of data-base system	10%	100%	Easy computer based works	Municipal office, meetings and minutes, progress report	Support from the municipality

6.8 Environment Management Plan

Nalagad is rich in natural resources however, the increasing pressure of the population on those resource and other challenges mentioned above have been making the situation worst along with planning and economic imperative. It is now recognized that for development to be sustainable environmental concerns have to be integrated into the planning process. Because, an integrated plan for sustainable urban development comprises a system of interlinked actions which seeks to bring about a lasting improvement in the economic, physical, social and environmental conditions of a city or an area within the city. In other words, Urban Planning is a large-scale concept concerned with planning and development at all levels (architectural, infrastructural, ecological, economic, and even political). The basic concern of city-town planning is the internal form, structure, function, and appearance of urban areas. Physical aspects such as buildings, roads, land use, etc., play an important role in urban planning, at the same time social, economic and technological forces should also be considered while planning so that a healthy environment is created in the city/town.

Planning Context

Nalagad is one of the developing Municipality lies in Jajarkot District. It lies within the bounding box of coordinates (82°35'8.83", 29°1'2.79") and (82°11'46.34", 28°42'47.75") in modified universal transverse Mercator coordinate system. Nalagad, is located inside Karnali Province (Province no. 6) of Nepal and the boundary of which has been delineated as a district in the east, Jajarkot District in the west, Rolpa District in the north and Sanibheri & Bfikot Rural Municipality in the south. The municipality was formed through restructuring the administration in 2017 when government cancelled all old administration system and introduce new 753 local level administrative body. Now, it is divided into total 13 wards after merging Dadagaun, Laha, Khagenkot, Ragda and Bhagwati VDCs.

It is one of the rapidly urbanizing Municipality among three municipalities of Jajarkot District. According to National Census 2011, the municipality has 4721 households and total population of 25,597.

Vision

The Slogan of Vision is: समृद्ध र सफा नगर, दिगो बिकास र सुसासनको लहर

With the above stated slogan, the vision of the Nalagad municipality is to make the municipality productive and clean. Nalagad Municipality for-sees for their sustainable development. People of Nalagad Municipality wish to visualize their city as beautiful and picturesque, which clearly suggest their intentions of clean and healthy city environment.

Goal

Building clean and healthy city is the overall goal of the environment management plan of Nalagad municipality.

Objective

- To identify key environmental issues, fix them and reduce environmental degradation
- To promote environment friendly and sustainable development trend
- To secure low carbon emission and preventing ecological footprints.
- To protect water, land, forest and air from possible pollution and destruction.
- To maintain green and healthy city environment to rise the quality of human life
- Formation of artificial water bodies to address the micro-climate and manage rainwater.
- Cycle friendly and pedestrian friendly mobility plan
- Separate industrial zone and buffer zone identified from water bodies.

Strategy

- 1 Provision of EIA and IAA for bigger influencing project with third party evaluation criteria.
- 2 Strict laws or bylaws for protection of water bodies and forest areas.
- 3 Promotion of 3R (Reduce, Reuse and Recycle) concept in Solid waste management and segregation of organic and non-organic waste at HHs level.
- 4 Promotion of environment friendly materials to use in households and in commercial purpose.
- 5 Provision of treatment of waste-water/ waste product from industries or hospitals.
- 6 Promotion of electrical vehicles.
- 7 Preservation of agriculture land and clear delineation of conservation zone for natural resources.
- 8 Roadside plantation.
- 9 Identification of green pockets within the different areas of town.

6.8.1 Challenges in Environment

Development is indispensable however; some of the issues identified in Nalagad municipality, which are creating or likely to impact negatively, are as follows:

Land Resources

Scarcity of land and increase in landlessness, unplanned construction of residential houses, shops, markets and roads affecting agricultural land (loss of agricultural land), decreasing fertility of soil due to absence of organic manure, top soil erosion and hardening of soil, Decrease in water retention capacity of soil are seen as main concerns.

Housing and Urbanization

Urban development in case of this municipality is characterized through unplanned urban growth at the center and urban expansion in the hinterlands stimulated by urban sprawl. Its urbanization is imbalanced and yet to be recognized as engines of economic growth and suffer with demands of basic infrastructural services. Some other specific major problems found in this municipality are loss of agricultural land due to urban expansion, lack of enforcement of zoning in the urban

areas, weak local government institutions who handle urban problems, inadequate and unplanned road and migration of rural people to urban area at an increasing rate.

Waste Management

There is the practice of incineration of industrial waste and waste disposal in streams. Incineration is practiced for the management of hospital waste. The municipality has challenge in disposal of household, industrial and hospital waste. There is no appropriate landfill site and septic tank system. There is no compost system in the municipality. Solid waste management and open drainage system are the main sanitation problem of this area which might be causative agent for the water borne diseases. There is no well facility of drain at the side of road in the municipality. Drain facility is present at bazar areas only. There is no any major efforts and future plan for waste water management in the municipality.

Agricultural Practices

Agriculture is the main occupation and major source of livelihood in the municipality. The agriculture system is subsistence and traditional. Commercialization in agriculture is essential. Attraction towards agriculture has been decreasing day by day. Absence of Identification of the wards/villages for agricultural pocket zone and its promotion accordingly for commercial farming. Lack of modern equipment in agricultural activities and irrigation problem are also major issues.

Water Resources

Drinking water supply and poor sanitation is the main environmental issue in the municipality. Many wards in the municipality have not good water supply system. Availability of water is also decreasing so, water needs to be to be exploited most optimally and with great caution to achieve a bare minimum sustainability to feed the growing population.

Natural Resources and Biodiversity

The rangelands which are present along the riverside are suffering from an enormous grazing pressure and wetland biodiversity is threatened by encroachment of wetland habitat, unsustainable harvesting of wetland resources, industrial pollution, agricultural runoff, introduction of exotic and invasive species into wetland ecosystems and siltation. In higher altitude, biodiversity is suffering due to ecological fragility and instability of environment, deforestation and poor management of natural resources, inappropriate farming practices and climate change. Forest loss has contributed to floods, soil erosion and stagnant agricultural output in many area of the municipality.

Education and Awareness

There is lack of higher secondary school and college near municipality so, many students leave study after SLC. Lack of sufficient appointment of technical manpower in education and upgradation of existing social and physical infrastructure of existing schools and community schools. The level of environmental awareness is generally low. This does much to exacerbate the process of environmental degradation.

Health

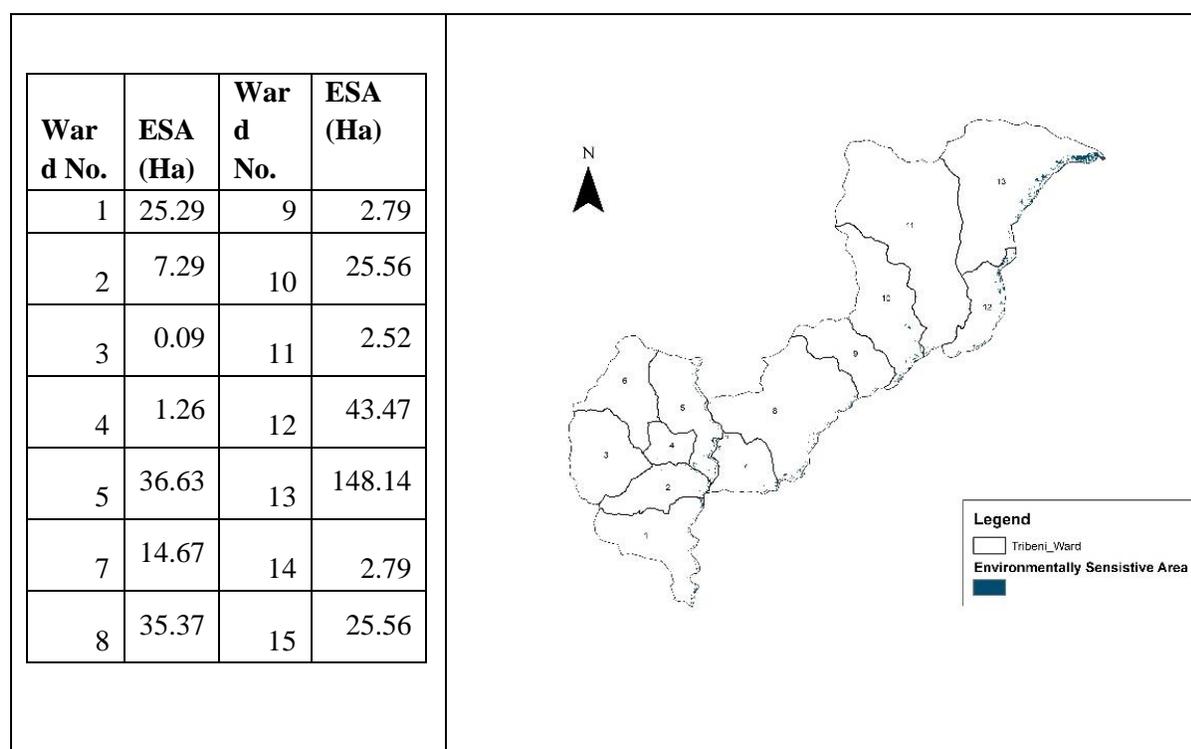
Health facility is not so good in Nalgad municipality. There is lack of urban scale health institutions with basic facilities including maternity services and other emergency services.

Transport and Communication

All the wards are connected by graveled and earthen roads beside these nowadays numbers of new road track have been constructed to touch all the community of the municipality. However, indiscriminate and unplanned or unsupervised rural road development causing increased landslides ability and drainage problem. There are inadequate culverts and no concrete rode therefore, creates problem during rainy season.

6.8.2 Environment Sensitivity Areas

Among 13 Ward, 8 wards except ward no. 2,3,4,8 and 11 are environmentally sensitive. Ward no. 2, 6 & 11 are highly sensitive with environment problems like flood, drought and landslides. The management activities for this sensitive zones are given on Action Plan section.



Map 60: Environment Sensitive Areas of Nalgad Municipality

6.8.3 Expected Outcomes

The expected outcome from the implementation of this management plan is the continual improvement of the environment performance with following benefits: -

- Healthy Lifestyle

- Hazard Mitigation
- Development of Green Cities

6.8.4 Logical Framework Approach (LFA) of Environment Management Plan

Logical framework Approach (LFA) of Environmental Management Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> • Preserved conservation zone for natural resources in Land Use Plan • Pedestrian friendly city promoting electric vehicles and cycles • Sufficient open spaces around city with road side plantation 					
1.1	Sewerage and Garbage Disposal Management	0	13	Clean and healthy environment	Reports from Department of Environment, Department of Forests, progress report	Support and coordination from the municipality
1.2	Afforestation and reforestation of all types of classes of depleted and denuded forest lands, waste lands and range land through people's participation	0%	100%	Prevention and beautification of the environment	Reports from Department of Environment, Department of Forests, progress report	
1.3	One ward one park campaign	1	13	Recreation facility for almost every citizens	Reports from Department of Environment, Department of Forests, progress report	Prioritizing project
1.4	Scientific land use planning	20%	100%	Assessment of the area for proper planning	Reports from Department of Environment, Department of Forests, progress report	Approval and implementation of IUDP
1.5	Plantation along the road side and buffer zone along the rivers	20%	100%	Preserved water bodies, forest and agricultural land	Reports from Department of Environment, Department of Forests, progress report	Surveillance by concerned authority
1.6	Sufficient buffer zone development in forest areas	30%	100%	Preserved forest land	Reports from Department of Environment, Department of Forests, progress report	Maintenance of forests
1.7	Proper zoning of the lands	20%	100%	Properly planned developments	Reports from Department of Environment, Department of Forests, progress report	Eco friendly development

Logical framework Approach (LFA) of Environmental Management Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1.8	Provision of park and tree plantation in open spaces	30%	100%	Eco friendly development	Reports from Department of Environment, Department of Forests, progress report	Maintenance of open spaces
1.10	Protect agricultural land by Laws	30%	100%	Eco friendly development	Reports from Department of Environment, Department of Forests, progress report	Maintenance of green areas
1.11	Conservation of bio-diversity and ecosystem services	30%	100%			
1.13	Promotion of public electric vehicles	30%	100%	Healthy environment without emission of polluted gas	Reports from Department of Environment, Department of Forests, progress report	Approval and implementation
1.14	Public awareness program related to conservation of forest	0	18	Information among citizens about importance of environment	Reports from Department of Environment, Department of Forests, progress report	Approval and implementation

6.9 Disaster Risk Management Plan

Nepal faces a variety of natural hazards, which every year cause a significant number of casualties and loss of assets. Disaster caused by flood, landslide, earthquake, epidemics, fire drought, famine, hailstorm, and some other hydro-meteorological events are most frequent. The fragile Himalayan geology, mountainous topography and variable monsoon rainfall are the primary factors responsible for various hazard events in Nepal.

High population growth with haphazard migration and encroachment into marginal land, ecologically sensitive areas, deforestation, agricultural activities on steep slopes, lack of disaster awareness and preparedness have resulted in vulnerability of natural resources and communities. These hazards mixed with vulnerabilities have contributed to turning the hazard events into disasters with large numbers of casualties and huge damage and loss of homes and assets.

Planning Context

Nepal faces a variety of natural hazards, which every year cause a significant number of casualties and loss of assets. Disaster caused by flood, landslide, earthquake, epidemics, fire drought, famine, hailstorm, and some other hydro-meteorological events are most frequent. The fragile Himalayan geology, mountainous topography and variable monsoon rainfall are the primary factors responsible for various hazard events in Nepal.

High population growth with haphazard migration and encroachment into marginal land, ecologically sensitive areas, deforestation, agricultural activities on steep slopes, lack of disaster awareness and preparedness have resulted in vulnerability of natural resources and communities. These hazards mixed with vulnerabilities have contributed to turning the hazard events into disasters with large numbers of casualties and huge damage and loss of homes and assets.

Vision

The only one choice “Creation of Disasters risk free Municipality”

Goal

Combating each situation of disaster to prevent it, to control it, and to save people & their properties from its impact.

Objective

- ❖ Enhance preparedness and adaptive capacity of local government, community and local groups.
- ❖ Participatory approach of disaster risk reduction.
- ❖ Disaster responsive urban design features.
- ❖ Implementation of disaster resilient building bye-laws.

Strategy

- ❖ Preparation of Risk Sensitive Land Use Plan (RSLUP) and strict implementation.
- ❖ Implementation of bye-laws and building codes.
- ❖ Enhance human resource and institutional capacity of local government by regular training and safety drills.
- ❖ Participatory approach in community level and local level for disaster risk management program.
- ❖ Regular awareness campaign regarding pre-disaster and post-disaster events.
- ❖ Identification of high-risk areas with hazard mapping and resettlement of such, if necessary.
- ❖ Identification and delineation of disaster evacuation zone.
- ❖ No built up development in land which is greater than 30 degree.

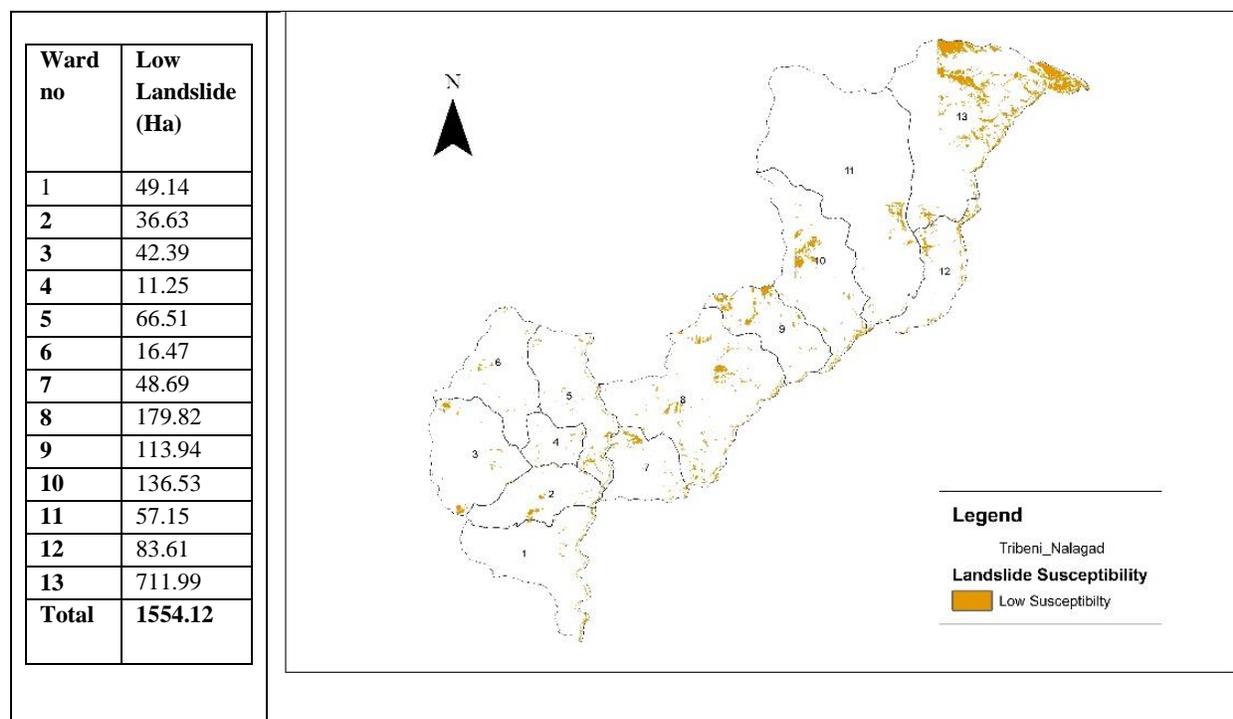
Policy recommendations (Guiding Principle):

- ❖ Effective implementation of RSLUP
- ❖ Effective implementation of building bye-laws and building codes.
- ❖ Awareness regarding the pre and post disaster management by incorporating in the daily newspapers, academics (curriculum), or any other means of interaction methods.
- ❖ Policy Guiding documents:
 - Local Disaster Risk Management Planning Guideline-LDRMP, 2068
 - National Strategy for Disaster Risk Management in Nepal, 2008

6.9.1 Disaster Risk in Nalgad Municipality

Landslide Risk

Landslide and erosion which are the common problems associated with rivers and are natural drivers of changing landscape in some part of the municipality. Land at Bhagwati is most susceptible to landslide followed by Khagenkot. In the municipality every wards are affected by the landslide among which ward no. 13 and ward no. 8 are adversely affected. A total of 1554.12 ha area is affected by landslide. The Landslides map and its affected area of Nalagad municipality is shown below.



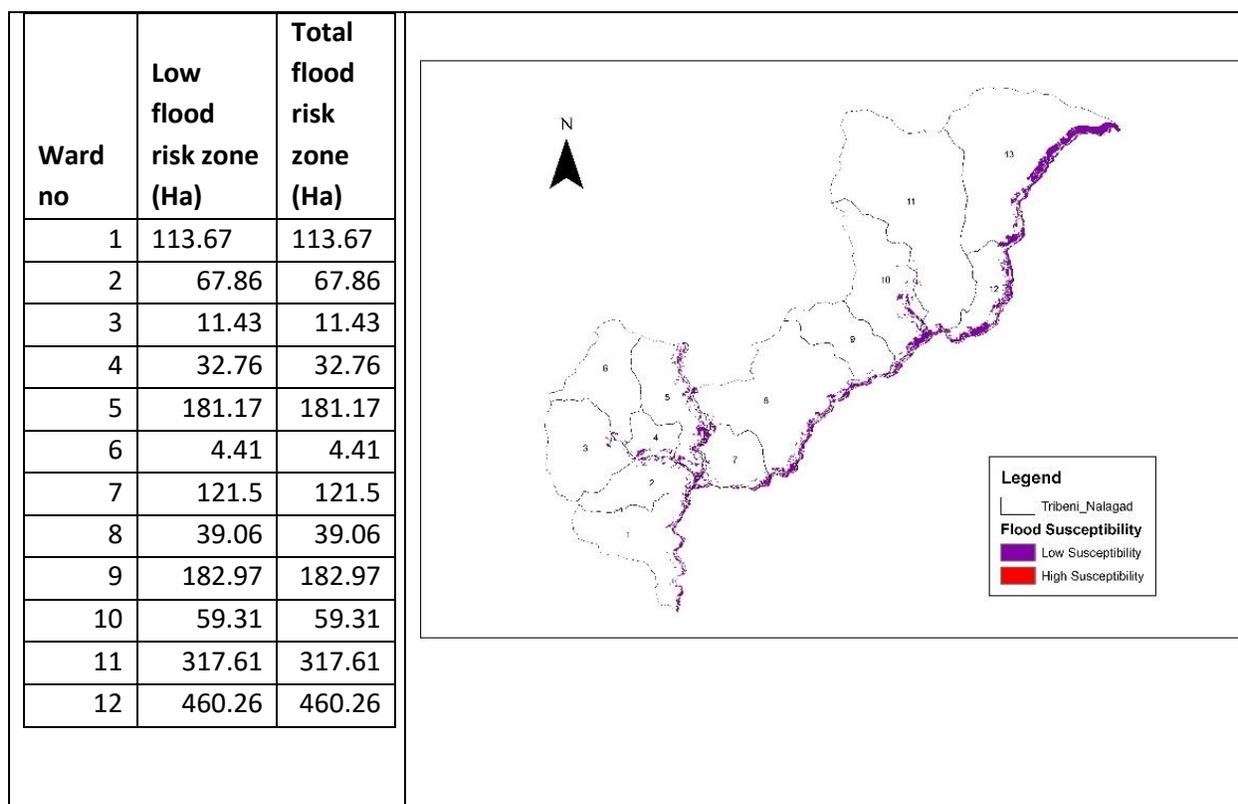
Map 61: Landslides prone zone of Nalgad Municipality

Flood Risk

Settlements along or nearby lower reaches of Bheri River and Rapti Rivers, etc. especially Dondakhola, Bhalkhola, Bhalakhola, Bhattekholark, Nalagad bagar Jayamire, Kharkhara Khola, Lata khola, Gijakhola, Bheri River, Thanke khola, Bhimkhola, Chahari khola, Pipalkhawar, Dubagar, Bahaune etc. are more prone to floods. The people in such areas are at risk of flood hazard and so, these people need to be shifted from these areas to the safer areas without the risk of being flooded and other risks.

The settlement areas located near to the river bank are more prone to flooding and others natural hazards. Million tons of soil nutrients are lost annually from agricultural land as a result of soil erosion and flooding. The assessment of the flood area indicates that vulnerable area lying in flood plain area, need immediate action to take against flood such as river training or embankment or

levee construction to protect the given area from further degradation due to flood. The south east part of almost all wards are susceptible to flood.

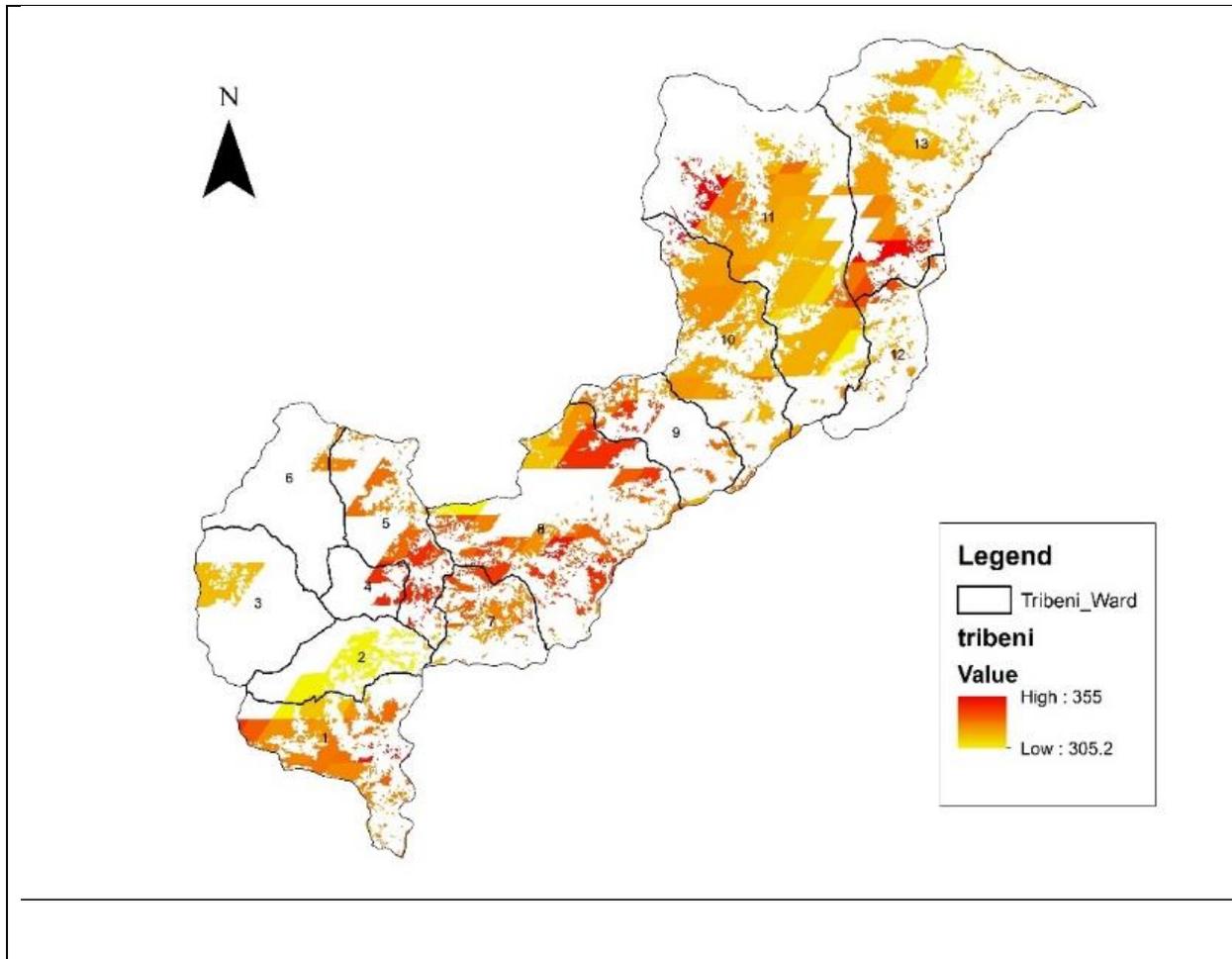


Map 62: Flood prone zone of Nalgad Municipality

Fire Risk

The municipality consists of community managed forest areas and the risk of forest fire as well. Shifting cultivation is a common practice in Nalagad municipality that includes slashing and burning, which generally occur during the dry and windy months of the year. It creates incidences of spreading of fire beyond the boundaries of designated plots into the adjoining forests. Other common uses of fire by farmers include burning crop residue and converting forest to agricultural land. Because fire removes the organic matter and provides an ash bed, which facilitates the growth of grasses, local people set fire to gather ash, which is locally used as manure.

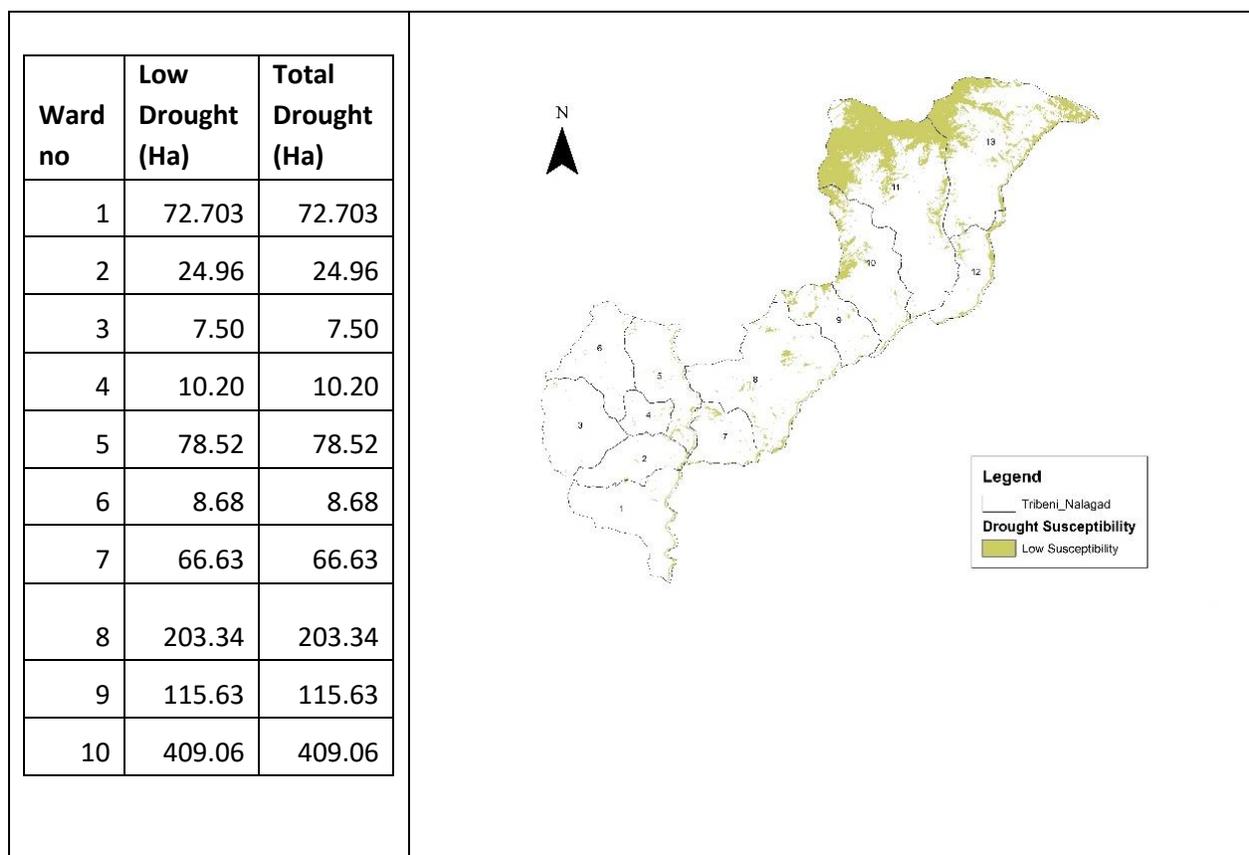
The practice of constructing houses using thatch/straw for roofing is not common, clustered settlement in market areas, careless smoking and negligence in cooking create less risk of fire in the settlement areas. The risk of fire is mainly likely to outbreak during the windy and the dry season e.g. Chaitra & Baisakh. Ward number 10, 11 and 13 are more sensitive area. The lack of equipment and skilled human resources such as trained fire fighters pose serious challenges in the municipality. There is also potentiality of forest fire in Nalagad municipality as shown in the map below.



Map 63: Forest Fire Risk Zone of Nalgad Municipality

Other Risk

Loss of cultivated land, grass/grazing and forest land due to river encroachment is some common problems, while in some parts abandoned by channels or old riverbeds have been brought into cultivation or reused as grazing areas or used for tree plantations in hazard areas. Drought Mahamari is observed along the roads and forests. The river morphology is unpredictable i.e. increase bank cutting, bifurcation and flooding which one is common problem and reoccur every year. Regarding this, sand extraction is also common in some rivers for household purpose causing huge impact on riverine environment such as destruction of aquatic habitat, flooding, change in river morphology etc. There is deforestation and habitat degradation in all wards due to construction of rural roads. The big settlement areas are located near to forest area causing further degradation of forest. Another major disaster is the drought. Drought is a natural phenomenon that has drastic implications on human lives, food insecurity and natural resources degradation. Due to drought peoples are suffering from water shortages affecting agriculture, with social consequences such as famine, hunger, and migration. In Nalgad municipality, Ward no. 11 seems to be highly affected from the drought.



Map 64: Drought Risk Zone of Nalgad Municipality

6.9.2 Expected Outcomes

- Increased awareness of the economic and social added-values of disaster risk management.
- Enhanced technical and managerial capacity to cope with disasters.
- Better knowledge of current disasters characteristics, impacts and management.
- Guidelines for the elaboration and adoption of disaster risk management.

6.9.3 Logical Framework framework (LFA) of Disaster Risk Management Plan

Logical framework Approach (LFA) of Disaster Risk Management Plan						
S. N	Output/Activities	Base Line 2018	Tar get 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> • Rapid hazard appraisal technique, multi-hazard map of all urban areas • Safe building code implementation • Identified open spaces and disaster evacuation zones in each neighbourhoods 					

Logical framework Approach (LFA) of Disaster Risk Management Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1.1	Building of embankment and (river) spur in high risk locations	0%	100%	Measures applied for controlling disasters	Progress Report, Meetings and Minutes, FGD	Budget allocation and project prioritization
1.2	Preparation of multi hazard map and RSLUP	0	1	Emergency response team and evacuation zones within the reach of community	Progress Report, Meetings and Minutes, FGD	Approval and implementation of IUDP
1.3	Identification of high-risk areas in all urban areas and relocating disaster prone settlements	30%	100%	Landuse and Byelaws implementation	Progress Report, Meetings and Minutes, FGD	Budget allocation and project prioritizations
1.4	Awareness campaign	0	1	Preparedness of people related to disaster	Progress Report, Meetings and Minutes, FGD	Availability of skilled manpower to train others
1.5	Mandatory enforcement of land use regulation, by-laws and building code in all urban areas	40%	100%	Safe building construction practices	Progress Report, Meetings and Minutes, FGD	Effectiveness of local government
1.6	Plantation in soil erosion risk areas	30%	100%	Disaster free settlement	Progress Report, Meetings and Minutes, FGD	Availability of evacuation areas, safe shelters and water source for fire station
1.7	Establishment of disaster risk management unit/focal person/desk/coordinator at DDC level	0	1	Participatory approach of disaster risk reduction and mitigation plan	Progress Report, Meetings and Minutes, FGD	Participation of institutions and community during disaster
1.8	Enhancement of human resource and institutional capacity	30%	100%	Managed resources for the development of the municipality	Progress Report, Meetings	Budget allocation and

Logical framework Approach (LFA) of Disaster Risk Management Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
					and Minutes, FGD	project prioritizations
1.9	Proper infrastructure Development with proper design with respect to land availability	0	1	Safe and disaster resilient city	Progress Report, Meetings and Minutes, FGD	
1.10	Training on disasters	0	1	Information about precautions to be applied during disaster	Progress Report, Meetings and Minutes, FGD	Participation of institutions and community during disaster
1.11	Effective implementation of forest management plans as well as develop mechanism to control shifting cultivation or slash burning as well as to encourage improvised stove (Sudhariyako chulo) system	30%	100%	Conserved and managed forest areas	Progress Report, Meetings and Minutes, FGD	Budget allocation
1.12	Promotion of rain water harvesting technology	20%	100%	Management of rain water and its utilization for various purposes	Progress Report, Meetings and Minutes, FGD	Prioritization of the project
1.13	Mitigate hazard with appropriate technology	30%	100%	Hazard free city	Progress Report, Meetings and Minutes, FGD	
1.14	Construction of embankment and (river) spur in high risk locations	0%	100%	Flood control in the municipality	Progress Report, Meetings and Minutes, FGD	Support from the government

Logical framework Approach (LFA) of Disaster Risk Management Plan						
S. N	Output/Activities	Base Line 2018	Tar get 2033	Indicator	Means of Verification	Assumption
1. 15	Provisions of financial support to the victims, plans to prevent hazards in upcoming seasons	10%	100 %	Proper facility for the people during disaster	Progress Report, Meetings and Minutes, FGD	Coordination from the municipality

6.10 Climate Change Adaptation Plan

The impacts of climate change are already being witnessed globally. In particular, Least Developed Countries (LDCs), as defined by the United Nations (UN), “are highly vulnerable to economic and environmental shocks and have low levels of human assets”.

Climate change increases temperatures and modifies precipitation patterns, resulting in a wide variety of consequences such as sea level rise, melting of glaciers, reduction/loss of terrestrial and marine biodiversity, increase in the risk of coastal erosion and in the occurrence and severity of weather-related disasters, decrease in water resources availability and many others. These changes will likely affect also a number of socio-economic sectors such as agriculture, forests, fisheries and aquaculture, energy, infrastructure, tourism and health. Two types of responses are required in order to address climate change: mitigation and adaptation. The first one deals with the causes of climate change and therefore aims at reducing greenhouse gas emissions (GHGs), while the second one deals with the unavoidable consequences and aims at reducing the vulnerability to climate.

Adaptation is needed at all levels of administration, from the local level up to the international one. Even if climate change is a global issue, communities, regions and states will experience climate change impacts to different degrees and in different ways. The ability to cope and adapt to climate change will depend on the varying severity and nature of climate impacts between regions and will vary across populations, economic sectors and regions in Nepal.

If mitigation is a global concern, adaptation is undoubtedly a local issue.

Nobody and nothing will be spared; no person, people or nation. Individuals, organizations and governments will have therefore to identify their own best solutions if they would like to succeed under a changing climate.

The Government of Nepal has an extended history of attempting to reduce poverty and increase the capacity of local communities to adapt and built resilience to natural disasters and climate change impacts. The government has enforced the climate change policy 2067 (2011) and this policy envisions a country spared from the adverse impacts of climate change, by considering climate justice, through the pursuit of environmental conservation, human development and sustainable development all contributing toward a prosperous society.

The adaptation has been identified as a necessary consideration for current and future effects. The country has been a focus of climate change adaptation planning. Adaptation to climate change is the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Significantly, climate change is the national issue, but it could be addressed with the implementation of adaptation plan at local level as well. Conservation of agriculture land and forest land, protection of water resources could overall summarize for climate responsive action. Adaptation is the only strategy to become climate change resilient. Efficient use of water and energy and promoting local resources and indigenous knowledge can be the bases for developing adaptation strategies to climatic changes. Reducing vulnerabilities, developing coping mechanisms and implementing adaptive measures are the only solutions to the problem of climatic changes.

Planning Context

Nalagad Municipality is particularly vulnerable to climate change impacts for a variety of environmental, social, and economic reasons. Average temperatures have been rising steadily since the 1970s. The municipality covers the area of 387 km² and an elevation of 1737m. The topography of the Municipality constitutes flattened-sloppy land, i.e. flats land with some hilly lands and with sharp slopes. Bheri River flows in Nalagad municipality which is a major threat for food and soil erosion as well as a beneficial irrigation system. Even, it is one of those area in Nepal which faces a lot of earthquake shakes.

Poverty and a lack of individual and institutional capacity are the primary reasons that the population of Nalagad is particularly vulnerable to climactic changes. There are 89 settlements in total in Nalagadh. They are of both small and large in terms of the HHs occupancy, and the area has not been covered here for analysis. The caste/ ethnic composition seems a mixed one comprising Dalits, Brahman, Chhetri, Janajati Magar and Thakuri. However, some of the settlements have been dominated mostly by one caste.

In addition, more than 80% of the population relies on agriculture for their livelihood and the sector contributes one-quarter of Nepal's gross domestic product; regrettably, agriculture is highly sensitive to climactic and biophysical changes. The population concentrated in the upper regions of Nalagad are the most vulnerable, largely due to poverty and high reliance on subsistence agriculture.

Vision

Control of disasters and poverty alleviation through climate change adaptation and mitigation plan in Nalagad municipality

Goal

Identification and implementation of all essential remedial measures to control climate change impacts in Nalagad municipality.

Objective

- Creating resiliency and reducing the carbon footprint of urban development
- To conserve and enhance the health of natural systems (including climate) and areas of environmental significance.

Strategy

- Plantation of trees along the roadside.
- Protection of forest, agriculture land and water bodies.
- Identification of green parks, if not, delineation of green pockets as the lungs to the city.
- Promotion of electric or low carbon emission vehicles.
- Pedestrian friendly city planning.
- Provision of environmental friendly building material in building construction.
- Climate responsive urban design
 - Pervious Pavement (Pervious asphalt, Pervious concrete etc.)
 - Urban forestry
 - Bio-sale/ Vegetated sale
- Strong implementation of environment protection laws: especially regarding boring of water, encroachment of urban open spaces, water bodies and others.
- Energy efficient building technology.
- Implementation of sustainable building design guidelines
- Preservation of terrain land

6.10.1 Impact of Climate Change

Agriculture and Food Security

Decreasing productivity as well of low quality of the products due to change in precipitation, drought, new plant diseases and pathogens, etc. due to this reason, use of chemical fertilizers, pesticides and insecticides have increased in excessive amount to enhance the productivity. Chemical fertilizers have their place increasing plant nutrients in adverse weather conditions or during times when plants need additional nutrients, there are also several harmful effects of chemical fertilizers. Some of the harms absorbed in the agriculture land include waterway pollution, chemical burn to crops, increased air pollution, acidification of the soil and mineral depletion of the soil. Similarly, the credits of pesticides include enhanced economic potential in terms of increased production of food and fiber, and amelioration of vector-borne diseases, then their debits have resulted in serious health implications to man and his environment. There is now overwhelming evidence that some of these chemicals do pose a potential risk to humans and other life forms and unwanted side effects to the environment.

Forest and Biodiversity

Ecosystem and climate models suggest that climate change will have a variety of impacts on the distribution of forest organisms and populations as well as impact ecosystem function and

composition. In general, it is expected that habitats will shift towards the poles and move upwards in elevation. With the shift of these habitats, forest biodiversity will be forced to adapt and as a result, species compositions in forests is likely to change and those species and populations which are already vulnerable will potentially become extinct. Further with climate change there will be a greater incidence of extreme climatic events, such as floods and droughts. These types of events will further affect forest plant and animal populations and can leave forests more prone to disturbances such as fire and disease. The impacts of climate change have already been started in this municipality such as early flowering, unseasonal raining, drought, heavy rainfall, introduction of invasive or alien species, new type of plant pathogens etc. This situation eventually affecting to people living in rural and remote areas where their livelihoods are highly dependent on forests and biodiversity for the ecosystem services they provide.

Water Resources

Erratic and excessive precipitation is a common phenomenon. Because of steep slope, maximum wind speed, and flood, there is higher chance of landslide, soil erosion, riverbank cutting. In the lower belt, there is problem of waterlogged condition and problem of clean drinking water due to poor drain system of urban areas. In the Whole municipality, the Ground water is shrinking that leads to shortage of drinking water.

Human Health

The socioeconomic costs of health problems caused by climate change are considerable. Many infectious diseases, including water-borne ones, are highly sensitive to climate conditions, like increased geographical spread of diarrheal diseases with the slight increases of temperature. New borne diseases are seen which were not common in previous time. Climate change is bringing new and emerging health issues that leads to increase the risk of cardiovascular, respiratory and renal diseases in the municipality.

6.10.2 Expected Outcomes

- ❖ Enhanced capacities of stakeholders on climate change through municipal office leadership as a provider of technical knowledge and expertise.
- ❖ Improved Integration of food security and nutrition, agriculture and forestry consideration within the National and state level agenda on climate change through reinforcement of Nalagad municipality.
- ❖ Strengthened coordination and delivery of Nalagad municipality's work on climate change.
- ❖ Climate change risks and adaptation measures integrated into key national policies, plans and programs for water, agriculture, biodiversity and livestock management.

6.10.3 Logical Framework Approach (LFA) of Climate Change Adaption Plan

Logical framework Approach (LFA) of Climatic Change Adaptation Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
1	<ul style="list-style-type: none"> Climate responsive use of material Adaption of green architecture Sufficient ground water recharge and timely rainings 					
1.1	Public awareness campaign related to climate change	1	13	Information to public about the climate change and its impact on environment	Report from Meteorological Forecasting Division, progress report	Budget for program and campaign
1.2	Development of pedestrian friendly roads	10%	100%	Wise selection of materials in built environment	Report from Meteorological Forecasting Division, progress report	Availability of material used in roads and pavements
1.3	Land use zoning with buffer around the industrial zone	20%	100%	Use of effective technology	Report from Meteorological Forecasting Division, progress report	Availability of climate responsive material
1.4	Promotion of energy efficient architecture	0	1	Green architecture around the city	Report from Meteorological Forecasting Division, progress report	Climate response building
1.5	Promotion of alternative energy	0	1	Use of effective technology	Report from Meteorological Forecasting Division, progress report	Protection of climate form global warming
1.6	Updating the climate change data	0	1	Knowledge about the climate and factors responsible for climate change	Report from Meteorological Forecasting Division, progress report	Approval and implementation
1.7	Training on climate change adoption agriculture farming as well as cattle farming	0	1	Knowledge among farmers about impacts of climate change	Report from Meteorological Forecasting Division, progress report	
1.8	Controlling of soil erosion, landslide and river bank cutting through	0%	100%	Healthy and safe city	Report from Meteorological Forecasting Division, progress report	Project prioritization

Logical framework Approach (LFA) of Climatic Change Adaptation Plan						
S. N	Output/Activities	Base Line 2018	Target 2033	Indicator	Means of Verification	Assumption
	application of bioengineering method					
1.9	Plantation along road side	10%	100%	Clean city	Report from Meteorological Forecasting Division, progress report	Approval and implementation
1.10	Conservation of water sources	30%	100%	Clean water source leads to fresh environment	Report from Meteorological Forecasting Division, progress report	Support from the municipality

6.11 Multi – Sector Investment Plan (MSIP)

As we’ve already discussed in earlier sections of financial plan and economic development plan, a city development of 15-year plan with ambition of one lakh population needs lots of investment. With model of public private partnership modality of infrastructural Investment, it is also expected to have investment of private sector in city infrastructure projects. Apart from security and major strategic roads, in most of the sector we can expect the investment from private sectors and from other donor agencies. We have to understand that this entire budget should be funneled down through the single channel of local project implementation body, which could be TDC or any other new autonomous body. For this projects are identified under different sections, which could be new construction, upgrading existing scenario or upgrading the existing quality or capacity. With some standard rate of similar contemporary projects, under different headings, cost estimation is allocated. As we know that these development plans have target period of 15 years, we’ve divide into 3 major milestones, short term, midterm and long term projects. Depending upon the priority of the project and possible budget required, different projects are put under different time frame. Some longer term projects may fall under different time period and some of the projects are continuous process throughout the development, like: training and updating the institutional capacity.

Highest investment is done under health and physical infrastructures. Apart from the road, health and education are the most prioritized sector under social development plan to increase the dependency of the town within wards and between the cities. In yearly basis, budget will be spent on training and awareness campaigns on various issues on longer term. It is also important to consider that large amount of investment is under the recreation, where as that will be spent on buying chunk of lands on urban areas, as the city is already grown or cost is very high. Good investment is allocated on improving the institutional capacity of the different service oriented

institutions in the form of institutional development plan, financial plan or in terms of security as well by making citizen friendly city.

Large investment is expected from private sectors as well, especially in the field of housing, job opportunities, entertainments, recreations and others. Private sectors are obvious to focus on profit oriented investment such as in industries, economic field along with some well-known field like education and health. In the field of solid waste management, disaster risk mitigation plan, environment conservation plan or in the field of climate change, non-governmental organizations are expected to be in good part.

Such national and international organizations will help to improve the institutional capacity as well as promote the awareness regarding the topic. Finally, it is expected that more participatory model of investment is promoted which not only eases the investment burden of central government but also helps to build the ownership among the resident of that city. Basic summary of the MSIP is shown below:

Table 57: Multi Sectoral Investment Plan for 15 years

Summary											
Multi Sectoral Investment Plan (MSIP) 15 Years (NRs. Million)											
S.N	Description	Anticipated Budget on Thematic Urban Development Program									Total of 15 Years
		Existing %	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-2028 (5 Years)	2028-2033 (5 Years)	Total	
1	Physical Development Plan	51%	11%	10%	10%	10%	9%	28%	22%	100%	
		23634.93	2493.11	2464.00	2411.00	2375.88	2207.88	6561.00	5122.06		
2	Social Development Plan	7%	19.31%	17.38%	15.13%	12.01%	11.57%	17.31%	7.30%	100%	
		3433.60	662.95	596.73	519.48	412.35	397.35	594.50	250.50		
3	Economic Development Plan	23%	10.42%	10.40%	10.16%	10.15%	10.15%	48.17%	0.55%	100%	
		10637.50	1108.60	1106.10	1081.10	1079.60	1079.60	5124.50	58.00		
4	Financial Development Plan	0.017%	37.50%	12.50%	12.50%	9.38%	9.38%	18.75%	0.00%	100%	
		8.00	3.00	1.00	1.00	0.75	0.75	1.50	0.00		
5	Conservation, Culture and Tourism Development plain	16%	11.24%	10.33%	10.23%	9.50%	9.48%	45.59%	3.63%	100%	
		7281.00	818.50	752.00	744.50	692.00	690.00	3319.50	264.50		
6	Institutional Development Plan	1%	40.15%	20.64%	20.64%	1.70%	1.70%	7.58%	7.58%	100%	
		528	212	109	109	9	9	40	40		
7	Environment Management Plan	0.41%	8.53%	8.53%	7.61%	7.28%	7.28%	30.58%	30.18%	100%	
		190.50	16.25	16.25	14.50	13.88	13.88	58.25	57.50		
8	Disaster Risk Management Plan	1%	8.52%	8.22%	8.14%	8.14%	8.16%	29.41%	29.41%	100%	
		493.00	42.00	40.50	40.13	40.13	40.25	145.00	145.00		
9	Climatic Change Adaption Plan	1%	10.86%	10.86%	10.86%	10.86%	10.86%	22.86%	22.86%	100%	
		350.00	38.00	38.00	38.00	38.00	38.00	80.00	80.00		
		100%									
	Total Budget	46556.53	5394.41	5123.58	4958.70	4661.58	4476.70	15924.25	6017.56	46556.77	

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)								
Summarized Budget and responsible agencies								
SN	Activities	Total Cost	Central Government	Province Government	Municipality	I/NGO	others	Remarks
1	Physical Development Plan	23634.93	11817.47	5908.73	2363.49	2363.49	1181.75	
1.1	Road	17279.06	8639.53	4319.77	1727.91	1727.91	863.95	
1.2	Water Supply	1068.30	534.15	267.08	106.83	106.83	53.42	
1.3	Drainage and Sanitation	2504.71	1252.35	626.18	250.47	250.47	125.24	
1.4	Solid Waste Management	130.36	65.18	32.59	13.04	13.04	6.52	
1.5	Electrical and Communication	2652.50	1326.25	663.13	265.25	265.25	132.63	
2	Social Development Plan	3433.60	1716.80	858.40	343.36	343.36	171.68	
2.1	Education	1361.10	680.55	340.28	136.11	136.11	68.06	
2.2	Health	246.50	123.25	61.63	24.65	24.65	12.33	
2.3	Security and Safety	660.00	330.00	165.00	66.00	66.00	33.00	
2.4	Recreation	1166.00	583.00	291.50	116.60	116.60	58.30	
3	Economic Development Plan	10637.50	5318.75	2659.38	1063.75	1063.75	531.88	
4	Financial Development Plan	8.00	4.00	2.00	0.80	0.80	0.40	
5	Conservation, Culture and Tourism	7281.00	3640.50	1820.25	728.10	728.10	364.05	
6	Institutional Development Plan	528.00	264.00	132.00	52.80	52.80	26.40	
7	Environment Development Plan	190.50	95.25	47.63	19.05	19.05	9.53	
8	Disaster Risk Management Plan	493.00	246.50	123.25	49.30	49.30	24.65	
9	Climatic Change Adaption Plan	350.00	175.00	87.50	35.00	35.00	17.50	

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
1.Physical Development Plan														
1.1 Road and Bridge														
1.1.1	Construction of main roads	Number		4.00		544.00	15 years	40.00	40.00	40.00	40.00	40.00	200.00	144.00
1.1.2	Causeways	Number		10.00		100.00	10 years	10.00	10.00	10.00	10.00	10.00	50.00	0.00
1.1.3	Construction of Feeder/ Branch Roads	Number		12.00		250.00	10 years	25.00	25.00	25.00	25.00	25.00	125.00	0.00
1.1.4	Upgrading earthen road into gravel road	km		160.62	27.00	4336.71	15 Years	300.00	300.00	300.00	300.00	300.00	1500.00	1336.71
1.1.5	Construction of bridge in ward 1, 2, 5, 8, 9, 10 and 12	m	21	385.24	20.00	7704.80	15 Years	525.00	525.00	525.00	525.00	525.00	2625.00	2454.80
1.1.6	Construction of culvert in ward 1, 9, 11, 12 and 13.	m	11	66.55	1.00	66.55	15 Years	5.00	5.00	5.00	5.00	5.00	25.00	16.55
1.1.7	Construction of road connecting different areas like Chepka, Kaina, Anapani and Dadagaun	Lumpsum				2000.00	15 Years	150.00	150.00	150.00	150.00	150.00	750.00	500.00
1.1.8	Improvement of road networks and preparation of MTMP	Lumpsum				2.00	1 year	2.00	0.00	0.00	0.00	0.00	0.00	0.00
1.1.9	Construction and expansion of road system by land pooling and GLD roads	Lumpsum				1000.00	15 Years	75.00	75.00	75.00	75.00	75.00	375.00	250.00
1.1.10	Urgent construction of road structures and road furniture	Lumpsum				100.00	5 years	20.00	20.00	20.00	20.00	20.00	0.00	0.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
	including bicycle lanes and foot paths													
1.1.11	Maintain and synchronize traffic lights through government and private sectors	Lum psum				25.00	5 years	5.00	5.00	5.00	5.00	5.00	0.00	0.00
1.1.12	Construction of road connecting Nalagad municipality and to all nearby RMs	Lum psum				100.00	5 years	20.00	20.00	20.00	20.00	20.00	0.00	0.00
1.1.13	Construction of cycle friendly road networks with minimum width of 2 meter	Lum psum				25.00	5 years	5.00	5.00	5.00	5.00	5.00	0.00	0.00
1.1.14	Construction of pedestrian pathways on each local, collector and sub-arterial road, width varying as per requirement but not less than 2 meter on each side	Lum psum				25.00	5 years	5.00	5.00	5.00	5.00	5.00	0.00	0.00
1.1.15	Improvement of existing road networking	Lum psum				1000.00	15 Years	75.00	75.00	75.00	75.00	75.00	375.00	250.00
Total						17279.06	0.00	1262.00	1260.00	1260.00	1260.00	1260.00	6025.00	4952.06
1.2 Water Supply														
1.2.1	Wide Drinking Water Construction	Num ber		3.00	30.00	90.00	10 years	10.00	10.00	10.00	10.00	10.00	40.00	0.00
1.2.2	R.V.T Tank	Num ber		55.00		10.00	5 years	2.00	2.00	2.00	2.00	2.00		0.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
1.2.3	Pipe Line Laying	Num ber		50.00		150.00	10 years	10.00	10.00	10.00	10.00	10.00	50.00	50.00
1.2.4	One House One Tap for the proper flow of water supply in every households	HH		4721.00	0.00	11.80	5 years	2.00	2.00	2.00	2.00	3.80	0.00	0.00
1.2.5	Waste Management Dustbin	Num ber		500.00		1.50	5 years	0.50	0.25	0.25	0.25	0.25	0.00	0.00
1.2.6	Public Toilet Construction	Num ber		50.00		30.00	10 years	3.00	3.00	3.00	3.00	3.00	15.00	
1.2.7	Intake Source Tank	Num ber		200.00		20.00	10 years	2.00	2.00	2.00	2.00	2.00	10.00	
1.2.8	City Sewer Construction	Num ber		20.00		100.00	15 years	7.00	7.00	7.00	7.00	7.00	35.00	30.00
1.2.9	Drinking Water through Pumping/Lifting	Num ber		25.00		30.00	10 years	2.00	2.00	2.00	2.00	2.00	10.00	10.00
1.2.10	Mineral Water Purification center Construction	Num ber		3.00		300.00	10 years	40.00	40.00	40.00	30.00	30.00	120.00	
1.2.11	Overhead Tank Construction	Num ber		5.00		50.00	10 years	5.00	5.00	5.00	5.00	5.00	25.00	
1.2.12	B.P.T Tank	Num ber		150.00		50.00	5 years	10.00	10.00	10.00	10.00	10.00		
1.2.13	Installation of public tabs along necessary junctions	Num ber		15.00	0.20	3.00	2 years	2.00	1.00					

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
1.2.14	Provision of drinking water plan	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
1.2.15	Water supply project maintenance and upgrade	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
1.2.16	Construction of mineral water purification center	LS				2.00	2 years	1.00	1.00	0.00	0.00	0.00	0.00	0.00
1.2.17	Construction of overhead tank	Number		1.00		50.00	2 years	25.00	25.00	0.00	0.00	0.00	0.00	0.00
1.2.18	Provision of water storage from rainwater harvesting in public spaces like Bus park, parks, roadside areas and other public spaces	LS				20.00	3 years	10.00	5.00	5.00	0.00	0.00	0.00	0.00
1.2.19	Promoting rainwater harvesting in household level by subsidizing on money and technical support.	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
1.2.20	Provision of public drinking water in public areas	LS				30.00	2 years	15.00	15.00	0.00	0.00	0.00	0.00	0.00
1.2.21	Provision of treatment plant that makes water more acceptable for a specific end-use	LS				50.00	15 years	4.00	4.00	4.00	4.00	4.00	15.00	15.00
1.2.22	Construction of intake source tank	LS				10.00	2 years	5.00	5.00	0.00	0.00	0.00	0.00	0.00
1.2.23	Drinking water through pumping/lifting	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
Total						1068.30	0.00	159.50	153.25	106.25	91.25	93.05	340.00	125.00
1.3 Drainage and Sanitation														
1.3.1	Installation of Sewerage Network	Km		86.00	1.00	86.00	10 years	10.00	10.00	10.00	10.00	10.00	36.00	0.00
1.3.2	Two waste water treatment plants, one in ward 1 at west of Thulo Bagar and next in ward 8 at the west of Gara	Sq. km	2.00	0.24	20.00	4.71	5 years	1.00	1.00	1.00	1.00	0.70	0.00	0.00
1.3.3	Mandatory construction of toilet with septic tank/bio-gas in each household.	HH		4721.00	0.50	2360.50	5 years	500.00	500.00	500.00	500.00	360.50	0.00	0.00
1.3.4	Design of the integrated drainage network	LS			1.00	1.00	1 year	1.00	0.00	0.00	0.00	0.00	0.00	0.00
1.3.5	Set up public toilet in public zone	Number		10.00	1.00	10.00	3 years	5.00	3.00	2.00	0.00	0.00	0.00	0.00
1.3.6	Programs on public awareness through radio/TV broadcasting/Publicity	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
1.3.7	Use moderns technology and adopt the 3Rs (reducing, recycling and reuse of waste)	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
1.3.8	Installation of storm water drain	LS				20.00	3 years	10.00	5.00	5.00	0.00	0.00	0.00	0.00
1.3.9	Promotion of organic treatment plant in institutional level for	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
	drainage treatment- Reed Bed Treatment Plant													
Total						2504.71	0.00	528.50	520.50	519.50	512.50	372.70	43.50	7.50
1.4 Solid Waste Management														
1.4.1	Waste transfer and recycle station one each in ward 12 (west of Thalung, 8 (east of Manmal), 8 (north east of Phulchaudi Danda) and 1 (Ghetma)	Number	4.00	4.00	5.00	20.00	5 years	4.00	4.00	4.00	4.00	4.00	0.00	0.00
1.4.2	Solid waste collection points	Number	60.00	60.00	0.20	12.00	2 years	6.00	6.00	0.00	0.00	0.00	0.00	0.00
1.4.3	Construction of landfill sites in ward 8 (Gokunwari), ward 8 (Buryausa), ward 5, 6 (Thapia) and in ward 9 (Ragda).	Sq.Km	4.00	4.00	4.00	16.00	3 years	5.00	5.00	6.00	0.00	0.00	0.00	0.00
1.4.4	Promote biogas installation and penalties on public disposal of solid waste	LS				15.00	15 Years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
1.4.5	Provision of separate dustbin for HH for degradable and non-degradable waste	HH		472.10	0.00	2.36	1 year	2.36	0.00	0.00	0.00	0.00	0.00	0.00
1.4.6	Promotion of 3R (Reduce, Reuse and Recycle) for solid waste management at household level	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
1.4.7	Annual and long term strategy for SWM	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
1.4.8	Efficient use of landfill site and guiding with principle of zero waste to land fill site.	LS				20.00	5 years	4.00	4.00	4.00	4.00	4.00	0.00	0.00
1.4.9	Strict laws for the reuse and recycling with proper SWM unit in the municipality	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
1.4.10	Installation of separate solid waste bins along the road side and in public spaces.	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
1.4.11	Segregation of waste in household level	LS				15.00	15 Years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
Total						130.36	0.00	25.36	23.00	18.00	12.00	12.00	20.00	20.00
1.5 Electrical and Communication														
1.5.1	Construction of Nalgad Hydropower	MW		410.00		200.00	5 years	40.00	40.00	40.00	40.00	40.00	0.00	0.00
1.5.2	Construction of Bagmare Khola laghu HP Nalgad municipality 4	KW		45.00		150.00	5 years	30.00	30.00	30.00	30.00	30.00	0.00	0.00
1.5.3	Construction of Rural Hydropower Nalgad Ward No.7	KW		25.00		130.00	5 years	25.00	25.00	25.00	25.00	30.00	0.00	0.00
1.5.4	Construction of Kafalbata Hydropower Programme Nalgad Ward No.6	KW		32.00		145.00	5 years	30.00	30.00	30.00	30.00	25.00	0.00	0.00
1.5.5	Construction of Sirpa Hydropower	KW		30.00		140.00	5 years	30.00	30.00	30.00	30.00	20.00	0.00	0.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
1.5.6	Badalekh Hydropower Project	KW		9.00		110.00	5 years	20.00	20.00	20.00	25.00	25.00	0.00	0.00
1.5.7	Dekhu Khola Project Ward No.8	KW		15.00		125.00	5 years	25.00	25.00	25.00	25.00	25.00	0.00	0.00
1.5.8	Chepka Hydropower Ward No.2	KW		13.00		120.00	5 years	25.00	25.00	25.00	25.00	20.00	0.00	0.00
1.5.9	Sangata hydropower Ward No. 3	KW		16.00		130.00	5 years	30.00	25.00	25.00	25.00	25.00	0.00	0.00
1.5.10	Bheri Khola Hydropower Project Ward No. 13	KW		15.00		130.00	5 years	30.00	25.00	25.00	25.00	25.00	0.00	0.00
1.5.11	Nalasingh Khola Hydropower Project Ward No.13	KW		18.00		135.00	5 years	30.00	30.00	30.00	25.00	20.00	0.00	0.00
1.5.12	Nalgad Ward No.2 Nahakuli Lek NTC and NCELL Tower	Number		1.00		4.00	5 years	1.00	1.00	1.00	0.50	0.50	0.00	0.00
1.5.13	Nalgad Ward No.13 Katera Danda NTC and NCELL Tower	Number		1.00		4.00	5 years	1.00	1.00	1.00	0.50	0.50	0.00	0.00
1.5.14	Nalgad Ward No.6 Nayerkot NTC and NCELL Tower	Number		1.00		4.00	5 years	1.00	1.00	1.00	0.50	0.50	0.00	0.00
1.5.15	Nalgad Ward No.10 Chaite Goth NTC and NCELL Tower	Number		1.00		4.00	5 years	1.00	1.00	1.00	0.50	0.50	0.00	0.00
1.5.16	Nalgad Municipality FM Station Establishment as per the Necessity	Number		1.00		3.00	5 years	1.00	0.50	0.50	0.50	0.50	0.00	0.00
1.5.17	Dobhan Khola Nalgad Ward No.8 New Hydropower Construction	Number		1.00		160.00	5 years	35.00	35.00	35.00	30.00	25.00	0.00	0.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
1.5.18	Chauran Hydropower Project	Number		1		150.00	5 years	30.00	30.00	30.00	30.00	30.00	0.00	0.00
1.5.19	Dhauri Khola Hydropower Ward No.1	Number		1		170.00	5 years	35.00	35.00	35.00	35.00	30.00	0.00	0.00
1.5.20	Lahare Khola Hydropower Sirke	Number		1		150.00	5 years	30.00	30.00	30.00	30.00	30.00	0.00	0.00
1.5.21	Smokeless Stove	LS				1.00	5 years	0.25	0.25	0.25	0.13	0.13	0.00	0.00
1.5.22	Expansion of electricity	Sq.Km		260.51		200.00	10 years	20.00	20.00	20.00	20.00	20.00	100.00	0.00
1.5.23	Expansion of telecommunication	Sq.Km		183.18		200.00	5 years	40.00	40.00	40.00	40.00	40.00	0.00	0.00
1.5.24	ST and LT program for promoting private and government sector for qualitative internet and communication facility	LS				10.00	10 years	1.00	1.00	1.00	1.00	1.00	5.00	0.00
1.5.25	Formulating energy policy for promoting renewable energy sources in public and private usage	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
1.5.26	Investing and planning for smart grid electricity infrastructure	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
1.5.27	Solar lights installed on roads and other public spaces	LS				25.00	10 years	3.00	3.00	3.00	3.00	3.00	10.00	
1.5.28	Promotion and monitoring of FM stations	LS				15.00	15 Years	1.00	1.00	1.00	1.00	1.00	5.00	5.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
1.5.29	Wi-Fi hot-spots in the public spaces like bus parks, parks and other urban squares	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
1.5.30	Encouraging streetlights and other digital boards & devices connected with solar	LS				15.00	15years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
Total						2652.50		517.75	507.25	507.25	500.13	470.13	132.50	17.50
Grand Total Physical Development plan						23634.93		2493.11	2464.00	2411.00	2375.88	2207.88	6561.00	5122.06
2. Social Development Plan														
2.1 Education														
2.1.1	Building Construction	Number		72		180	5 years	40.00	40.00	40.00	30.00	30.00	0.00	0.00
2.2.2	Teachers Training	Number		15		15	15 Years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
2.2.3	Teachers Vacancy	Number		150.00		200.00	15 Years	15.00	15.00	15.00	15.00	15.00	75.00	50.00
2.2.4	Parents Awareness	Number		10.00		5.00	15 Years	0.50	0.50	0.50	0.25	0.25	1.50	1.50
2.2.5	Furniture	Number		800.00		5.00	5 years	1.00	1.00	1.00	1.00	1.00	0.00	0.00
2.2.6	Fencing	Number		71.00		30.00	5 years	6.00	6.00	6.00	6.00	6.00	0.00	0.00
2.2.7	Toilet and Drinking Water	Number		71.00		50.00	2 years	25.00	25.00	0.00	0.00	0.00	0.00	0.00

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SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
2.2.8	Extra Curriculum Activities	Num ber		71.00		10.00	2 years	5.00	5.00		0.00	0.00	0.00	0.00
2.2.9	Science Laboratory	Num ber		18.00		18.00	3 years	6.00	6.00	6.00	0.00	0.00	0.00	0.00
2.2.10	ICT Lab	Num ber		18.00		18.00	3 years	6.00	6.00	6.00	0.00	0.00	0.00	0.00
2.2.11	Library	Num ber		18.00		18.00	3 years	6.00	6.00	6.00	0.00	0.00	0.00	0.00
2.2.12	SIP construction Update	Num ber		355.00		17.00	5 years	4.00	4.00	3.00	3.00	3.00	0.00	0.00
2.2.13	Primary Treatment or First Aid	Num ber		71.00		3.60	1 year	3.60	0.00	0.00	0.00	0.00	0.00	0.00
2.2.14	Exam Enhancement	Num ber		71.00		10.00	15 Years	1.00	1.00	1.00	1.00	1.00	5.00	
2.2.15	Prize and Rewards	Num ber		5.00		0.50	1 year	0.50	0.00	0.00	0.00	0.00	0.00	0.00
2.2.16	Campus Enhancement	Num ber				100.00	15 Years	7.00	7.00	7.00	7.00	7.00	35.00	30.00
2.2.17	Technical Education	Num ber				50.00	15 Years	4.00	4.00	4.00	4.00	4.00	20.00	10.00
2.2.18	Stadium Construction	Num ber		1.00		50.00	5 years	10.00	10.00	10.00	10.00	10.00	0.00	0.00
2.2.19	Municipal Running Shield Competition	Num ber		5.00		5.00	15 Years	0.50	0.50	0.50	0.25	0.25	1.50	1.50

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
2.2.20	Unemployed youths Training Programme	Number		5.00		2.50	15 Years	0.25	0.13	0.13	0.13	0.13	1.00	1.00
2.2.21	Awareness campaign	LS				7.50	15 Years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
2.2.22	Governmental support to open primary, secondary and higher secondary schools	LS				100.00	5 years	20.00	20.00	20.00	20.00	20.00	0.00	0.00
2.2.23	Provision for required infrastructures	LS				15.00	15 Years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
2.2.24	Establishment of primary school	Number				70.00	2 years	35.00	35.00	0.00	0.00	0.00	0.00	0.00
2.2.25	Construction of model school	Number				100.00	3 years	50.00	25.00	25.00	0.00	0.00	0.00	0.00
2.2.26	Training for teachers	LS				15.00	15 Years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
2.2.27	Enhancement of campus	LS				15.00	15 Years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
2.2.28	Establishment of technical schools	Number		1.00	60.00	60.00	4 Years	15.00	15.00	15.00	15.00			
2.2.29	Establishment of technical college	Number		1.00	100.00	100.00	5 years	20.00	20.00	20.00	20.00	20.00		
2.2.30	Establishment of governmental/community school in each ward	Number		13.00	7.00	91.00	10 years	10.00	10.00	10.00	10.00	10.00	41.00	

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
Total						1361.10	0.00	295.85	266.63	200.63	147.13	132.13	202.50	116.50
2.2 Health														
2.2.1	Provision of Health post (Ward)	Number		7		35	10 years	4.00	4.00	4.00	4.00	4.00	15.00	
2.2.2	PHCC (Primary Health Care Centre)	Number		2		10	10 years	1.00	1.00	1.00	1.00	1.00	5.00	
2.2.3	Community Health Unity	Number		7		2	5 years	0.50	0.50	0.75	0.13	0.13		
2.2.4	Health Education Based Camp	Number		2		10	10 years	1.00	1.00	1.00	1.00	1.00	5.00	
2.2.5	School health education program	Number		2		5	5 years	1.00	1.00	1.00	1.00	1.00		
2.2.6	Community health Education	Number		2.00		10.00	10 years	1.00	1.00	1.00	1.00	1.00	5.00	
2.2.7	Yoga	Number		2.00		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
2.2.8	Health Camps	Number		2.00		10.00	10 years	1.00	1.00	1.00	1.00	1.00	5.00	
2.2.9	Cervical Cancer Screening	Number		2.00		15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
2.2.10	Ophthalmic health Camp	Number		2.00		15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
2.2.11	General camp	Number		2.00		1.50	10 years	0.10	0.10	0.10	0.10	0.10	1.00	

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
2.2.12	Uterine prolapse immunization	Number		2.00		1.00	1 years	1.00						
2.2.13	Strengthen Immunization Program	Number		1.00		10.00	10 years	1.00	1.00	1.00	1.00	1.00	5.00	
2.2.14	Deep Freezer	Number		1.00		0.50	1 years	0.50						
2.2.15	Trained Health Professional	Number		1.00		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
2.2.16	Hospital: 25 bedded with all specific OPD and emergency services	Number		1.00		30.00	5 years	6.00	6.00	6.00	6.00	6.00		
2.2.17	Ambulance	Number		1.00		2.00	1 years	2.00						
2.2.18	X-Ray: Radiographer	Number		1.00		1.50	1 years	1.50						
2.2.19	Strengthen Lab Services	Number		1.00		1.50	2 years	1.00	0.50					
2.2.20	Availability of Rabies Vaccines and Refrigerator	Number		1.00		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
2.2.21	Radiant Warmer	Number		1.00		0.50	1 years	0.50						
2.2.22	Emergency Natural and Humanitarian Management Kosh	Number		1.00		1.00	1 years	1.00						

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
2.2.23	Construction of health post in each ward	Number	13	13.00	1.00	13.00	5 years	3.00	3.00	3.00	2.00	2.00		
2.2.24	Facility for ambulance	Number		2.00	2.00	4.00	2 years	2.00	2.00					
2.2.26	Declaration of the municipality as an ODA	LS				5.00	5 years	1.00	1.00	1.00	1.00	1.00		
2.2.27	Primary health care center	Number	1			5.00	2 years	3.00	2.00					
2.2.28	Community-based health care clinic with maternal care, lab and pharmacy	Number	1			10.00	5 years	2.00	2.00	2.00	2.00	2.00		
2.2.29	Yoga and meditation center with registered doctor	Number	2		10.00	20.00	10 years	2.00	2.00	2.00	2.00	2.00	10.00	
2.2.30	Public toilets in the municipality in each ward	Number	13		1.00	13.00	2 years	7.00	6.00					
2.2.1	Provision of Health post (Ward)	Number		7		35	10 years	4.00	4.00	4.00	4.00	4.00	15.00	
Total						246.50		49.10	40.10	29.85	28.23	28.23	61.00	10.00
2.3 Security and Safety														
2.3.1	Improvement of surveillance by strengthen and broaden safer cities program and local security management mechanisms	LS				15.00	15 Years	1.00	1.00	1.00	1.00	1.00	5.00	5.00

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
2.3.2	Solar lights on roads and other public spaces	LS				25.00	5 years	5.00	5.00	5.00	5.00	5.00		
2.3.3	Create employment for the youth and establish registration centres for the jobless youth – cottage industries	LS				75.00	15 Years	5.00	5.00	5.00	5.00	5.00	25.00	25.00
2.3.4	Constructing separate lanes for pedestrians and vehicular mobility and community participation on neighbourhood safety	LS				75.00	5 years	5.00	5.00	5.00	5.00	5.00	25.00	25.00
2.3.5	CCTV surveillance to be installed in the city and firefighting facility	LS				25.00	5 years	5.00	5.00	5.00	5.00	5.00		
2.3.6	Establishing police station/booths in city pockets and establish crime prevention strategy and emergency response team for disaster	LS				50.00	5 years	10.00	10.00	10.00	10.00	10.00		
2.3.7	Establishment of at least one Early Childhood Development Center in each ward of municipality	Number	1.00	13.00	7.00	91.00	10 years	10.00	10.00	10.00	10.00	10.00	41.00	
2.3.8	Day Care centers (in all wards) for the elderly people	Number	13.00	13.00	8.00	104.00	15 years	7.00	7.00	7.00	7.00	7.00	35.00	34.00
2.3.9	Establishment of residential care center for the people with disabilities	Number	1.00	5.00	20.00	100.00	10 years	10.00	10.00	10.00	10.00	10.00	50.00	
2.3.10	Old-age homes for the elderly people with residential facilities	Number	2.00	5.00	20.00	100.00	15 years	7.00	7.00	7.00	7.00	7.00	35.00	30.00

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SN	Activities	Unit	Nos	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
Total						660.00	0.00	65.00	65.00	65.00	65.00	65.00	216.00	119.00
2.4 Recreation														
2.4.1	Land acquisition for open spaces and green parks	LS				50.00	5 years	10.00	10.00	10.00	10.00	10.00		
2.4.2	Establishment of resorts and hotels for tourist	LS				50.00	5 years	10.00	10.00	10.00	10.00	10.00		
2.4.3	Promotion of water based adventure tourism	LS				20.00	15 years	2.00	2.00	2.00	2.00	2.00	5.00	5.00
2.4.4	Develop proper trekking route	LS				10.00	3 years	5.00	3.00	2.00				
2.4.5	People friendly city design with vegetation around the streets	LS				100.00	5 years	20.00	20.00	20.00	20.00	20.00		
2.4.6	Formation of ward-wise team for specific games (football, volleyball and cricket)	number		13.00	0.50	6.50	1 year	6.50						
2.4.7	Management of children parks, and gardens and recreational parks (at the wards level)	number		13.00	0.50	6.50	1 year	6.50						
2.4.8	Management of open space (for 1000 people) and a playground (for 2000 people as audience) (at ward level)	number		13.00	50.00	650.00	5 years	150.00	150.00	150.00	100.00	100.00		
2.4.9	Formation of community groups for managing parks and spaces	number		13.00	0.50	6.50	1 year	6.50						

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2.4.10	Construction of community halls (with library, convention and musical facility)- in each ward	number		13.00	20.00	260.00	10 year	30.00	30.00	30.00	30.00	30.00	110.00	
2.4.11	Establishment of youth and sports development center in each wards of the municipality	number		13.00	0.50	6.50	1 year	6.50						
Total						1166.00	0.00	253.00	225.00	224.00	172.00	172.00	115.00	5.00
Grand Total Social Development plan						3433.60	0.00	662.95	596.73	519.48	412.35	397.35	594.50	250.50
3. Economic Development Plan														
3.1	Service Center	Number		2		4.00	10 years	0.50	0.50	0.50	0.50	0.50	1.50	
3.2	Agriculture Products Collection Center	Number		1		20.00	5 years	4.00	4.00	4.00	4.00	4.00		
3.3	Various Crops	Number		4		12.00	10 years	1.00	1.00	1.00	1.00	1.00	7.00	
3.4	Seeds Production Center Establishment	Number		5		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
3.5	Various Crops Pocket and Block Formation	Number				11.50	10 years	1.00	1.00	1.00	1.00	1.00	6.50	
3.6	Summer and Winter fruits Farming Area	Ha				5.00	5 years	1.00	1.00	1.00	1.00	1.00		
3.7	Business vegetables farming (Farmers Involved)	person		25 Person		20.00	5 years	4.00	4.00	4.00	4.00	4.00		

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				Per Year										
3.8	Seasonal/Non-Seasonal based farmers	person		26 Per son Per Year		2.50	5 years	1.00	0.50	0.50	0.25	0.25		
3.9	Agricultural Farm Construction and Execution	Number		10		10.00	5 years	2.00	2.00	2.00	2.00	2.00		
3.10	Cold Store Construction	Number		1		30.00	5 years	6.00	6.00	6.00	6.00	6.00		
3.11	Animal health Camps	Number		5 annually		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
3.12	Dipping Tank Construction	Number		13		1.50	5 years	0.50	0.25	0.25	0.25	0.25		
3.13	Animal Farm Establishment	Number		5		2.50	5 years	1.00	0.50	0.50	0.25	0.25		
3.14	Animal health and Treatment	Number		per year		2.00	5 years	1.00	0.25	0.25	0.25	0.25		

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3.15	Animal Vaccination and preservation	Number		per year		5.00	15 years	0.50	0.50	0.50	0.50	0.50	1.50	1.00
3.16	Animal Emergency Treatment	Number		per year		5.00	15 years	0.50	0.50	0.50	0.50	0.50	1.50	1.00
3.17	Agriculture and Animal Services/Farmers Library	Number		4 annually		5.00	15 years	0.50	0.50	0.50	0.50	0.50	1.50	1.00
3.18	Training and farmers visit	Number		5		7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
3.19	Small Irrigation project and Maintenance	Number		10 per year		15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
3.20	Wide Range Irrigation			2.5		15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
3.21	Sprinkle Irrigation	Number				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
3.22	Lift Irrigation Project	Number		2		20.00	5 years	4.00	4.00	4.00	4.00	4.00		
3.23	Increment of animal service center from 2 number to 5 number	Number		1		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
3.24	Goat Source and Grass Source center	Number		5 per		5.00	5 years	1.00	1.00	1.00	1.00	1.00		

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				year										
3.25	Soap, juice and bittern rice industry	Number		1		10000.00	10 years	1000.00	1000.00	1000.00	1000.00	1000.00	5000.00	
3.26	Honey Collection center Establishment	Number		1		0.50	5 years	0.10	0.10	0.10	0.10	0.10		
3.27	Mines Exploration (Copper, Glass, Iron)	Number		3		10.00	5 years	2.00	2.00	2.00	2.00	2.00		
3.28	Cold Store Establishment	Number		1		30.00	5 years	6.00	6.00	6.00	6.00	6.00		
3.29	Raw Material Collection and Distribution Center Establishment	Number		1		10.00	5 years	2.00	2.00	2.00	2.00	2.00		
3.3	Medicinal herbs collection and Refinery Center Establishment	Number		1		10.00	5 years	2.00	2.00	2.00	2.00	2.00		
3.31	Mini Market	Number		1		100.00	10 years	10.00	10.00	10.00	10.00	10.00	50.00	
3.32	Agricultural Products Collection center	Number		1		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
3.33	Dairy Industry	Number		2		3.00	5 years	1.00	0.50	0.50	0.50	0.50		
3.34	Animal Meat Center	Number		2		8.00	5 years	2.00	2.00	2.00	1.00	1.00		
3.35	Establish/strengthen the links between informal and formal (e.g. garbage collection, prevention of	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50

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	communicable diseases, water and sanitation)													
3.36	Create designated business premises for garages, stalls, etc.	LS				20.00	5 years	4.00	4.00	4.00	4.00	4.00		
3.37	Construction of export/import transfer station	LS				50.00	2 years	25.00	25.00					
3.38	Provide necessary access to markets for businessmen and clients	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
3.39	Promote exporting local goods and services	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
3.4	Promote new technology and techniques in agricultural activity	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
3.41	Upgrade existing market/build open air market	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
3.42	Training to the farmers	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
3.43	Use of modern technologies for quality and mass production	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
3.44	Establishment of modern breeding center	LS				50.00	5 years	10.00	10.00	10.00	10.00	10.00		
3.45	Establishment of market areas feasible for both producers and consumers	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
Total						10637.50	0.00	1108.60	1106.10	1081.10	1079.60	1079.60	5124.50	58.00
4. Financial Development Plan														
4.1	E- Taxation for increasing transparency	LS				2.00	5 years	0.50	0.50	0.50	0.25	0.25		
4.2	Implementation of combined property tax	LS				4.00	10 years	0.50	0.50	0.50	0.50	0.50	1.50	
4.3	GIS mapping within the city	LS				2.00	1 year	2.00	0.00	0.00	0.00	0.00	0.00	0.00
4.4	Provision of Impact free (Pollution Tax)							0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.5	Asset management							0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.6	Borrowing, grants and funds for different stakeholders							0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.7	Provision of tax relief/exemptions							0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.8	Extending territory of local taxation							0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.9	Publicizing the tax concessions provided by the state							0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.10	Retrofitting of old and dilapidated government buildings							0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.11	Appointment of new technical staffs							0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Cost						8.00	0.00	3.00	1.00	1.00	0.75	0.75	1.50	0.00
5. Conservation, Culture and Tourism														

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
5.1	Rafting Services Starting	Num ber		1.00		0.50	1 year	0.50						
5.2	Siddha Sahi Kawari Mandir Nahakuli	Num ber		1.00		1.50	1 year	1.50						
5.3	Tatopani kayakhet	Num ber		1.00		10.00	2 years	5.00	5.00					0.00
5.4	Tallu Koti Mai Bhagwati Mandir	Num ber		1.00		9.00	5 years	2.00	2.00	2.00	2.00	1.00		
5.5	Lahare Gumthale Tirthasthal Dhyar Gaun	Num ber		1.00		10.00	10 years	1.00	1.00	1.00	1.00	1.00	5.00	
5.6	Bageshwori Mandir Thetei Gairi	Num ber		1.00		9.00	5 years	2.00	2.00	2.00	2.00	1.00		
5.7	Masta Mandir Karuwa	Num ber		1.00		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
5.8	Malika Mandir Dandagaun	Num ber		1.00		3.50	5 years	1.00	1.00	0.50	0.50	0.50		
5.9	Saikawar religious place Phamda	Num ber		1.00		7.00	5 years	2.00	2.00	1.00	1.00	1.00		
5.10	Bhagwati Mandir Phumda	Num ber		1.00		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
5.11	Ram Janaki mandir dalli	Num ber		1.00		150.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00	50.00
5.12	Tourist Place Khantakura	Num ber		1.00		150.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00	50.00

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
5.13	Aasare Mandir Piuli	Number		1.00		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
5.14	Chyang Deuti Mandir DandaGaun	Number		1.00		6.00	5 years	2.00	1.00	1.00	1.00	1.00		
5.15	Siddraka Pahila, Chhamare Gufa	Number		1.00		8.00	5 years	2.00	2.00	2.00	1.00	1.00		
5.16	Naulo Than Mandir thargaun	Number		1.00		7.00	5 years	2.00	2.00	1.00	1.00	1.00		
5.17	Radadas Gufa Pali	Number		1.00		4.00	5 years	1.00	1.00	1.00	0.50	0.50		
5.18	Nayarkot Bhote Gufa	Number		1.00		4.00	5 years	1.00	1.00	1.00	0.50	0.50		
5.19	Gauthali Gufa	Number		1.00		4.00	5 years	1.00	1.00	1.00	0.50	0.50		
5.20	Tiptipe Deurali Gufa	Number		1.00		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
5.21	Mastam Kal Mandir Thapla	Number		1.00		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
5.22	Bhaiyar Manadir Pharsa	Number		1.00		5.00	5 years	1.00	1.00	1.00	1.00	1.00		
5.23	Rafting provision	LS				5.00	1 year	5.00						
5.24	Construction of temples	LS				200.00	3 years	100.00	50.00	50.00				

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
5.25	Management of Chhamare, Radadas, Nayarkot, Gauthali, Tiptipe cave	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
5.26	Preparing/updating tourism development plan	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
5.27	Preparing implementation guidelines and monitoring framework of tourism development plan	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
5.28	Formation of Tourism Development and Management Committee (TDMC) in every wards	number		13.00	0.50	6.50	15 years	0.50	0.50	0.50	0.50	0.50	2.00	2.00
5.29	Organizing workshops/training for tourism development planners and policy makers	number		15.00	0.50	7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
5.30	Organizing hospitality management, handicraft making and awareness raising on natural and cultural conservation trainings to the local people	number		15.00	0.50	7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
5.31	Developing the roster of local youths highlighting their academic and professional expertise in tourism sector	number		15.00	1.00	15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
5.32	Construction of airport at Badalekh, Mulya Thalta	number		1.00	100.00	100.00	10 years	100.00	100.00	100.00	100.00	100.00	500.00	

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
5.33	Developing Bheri River Rafting (Chisapani) to Rimna , and boating at Khantakura river	LS				1.00	1 year	1.00						
5.34	Conserving Bheri river (Bhir Mauri Living Place)	number		15.00	0.50	7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
5.35	Conserving and developing Rabsa Cave, Thulabazar Darbare Cave, Durabar Cave (garbey), Bhotegaauri Cave, Dahakhana Cave, Chamere Cave, Kakra oralt Cave, Piultit ashare Cave, Fukne Cave and Bherlotey Cave	number		15.00	10.00	150.00	15 years	10.00	10.00	10.00	10.00	10.00	50.00	50.00
5.36	Constructing Rabsa to Jureli and Anapani Cable Car, Rimna to Jhureli, Hurdey Radhalon and Anapani Cable Car	LS				5000.00	10 years	500.00	500.00	500.00	500.00	500.00	2500.00	
5.37	Developing temple tourism activities especially in Bhagwati Mandhir, Adsarsha Tirtha, Dadha Mathi Bhagawati, Mant Mandhir, Garuledi Tirtha stall (Dhyarghau), Ghutupani Tantra Tole, Halchwar Ram Mandhir, Maibhagawati Nath Mandir, Mai, Bramhadevta Mandir	LS				50.00	15 years	4.00	4.00	4.00	4.00	4.00	15.00	15.00
5.38	Conserving forest areas like; Roopchaur Pangeychaur (Raap), Famda Bhigichaur (Famda Khudi	LS				50.00	15 years	4.00	4.00	4.00	4.00	4.00	15.00	15.00

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
	Raniban (Khudi) and starting jungle safaris													
5.39	Conserving water falls like; Tallo Chara Jharana and Chokha Bheukhola (Faan Chaur)	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
5.40	Developing Dware Lekh and Kadke Dham Lekh as paragliding sites	LS				5.00	1 year	5.00						
5.41	Assessing the disaster prone sites in the tourist places	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
5.42	Offering diploma level hotel management and agriculture related program in selected secondary schools	LS				50.00	5 years	10.00	10.00	10.00	10.00	10.00		
5.43	Forming the national and international “Youth Samparka Manch”	number		1.00	0.50	0.50	1 year	0.50						
5.44	Preparing the visual documentary of the touristic sites and uploading it in websites and social sites	number		1.00	0.50	0.50	1 year	0.50						
5.45	Establishing the Travel and Tours Companies in central level by the local entrepreneurs	number		10.00	10.00	100.00	10 years	10.00	10.00	10.00	10.00	10.00	50.00	
5.46	Celebrating the Tourism Visit Year-2020	number		1.00	1.00	1.00	1 year	1.00						

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
5.47	Organizing the cultural tourism and trade fare (<i>Mahotsab</i>)	number				150.00	15 years	10.00	10.00	10.00	10.00	10.00	50.00	50.00
5.48	Keeping the Tourism Information Desk nearby Municipality office with digital information boards	LS				0.50	1 year	0.50						
Total Cost						7281.00	0.00	818.50	752.00	744.50	692.00	690.00	3319.50	264.50
6. Institutional Development Plan														
6.1	Construction of multi-complex building	Number	1	1		400	3 years	200	100	100				
6.2	Provide education and capacity building for participatory integrated development plan	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
6.3	Establish communication centers for common information sharing platform	Number		1.00	1.00	1.00	1 year	1.00						
6.4	Create an active interactive website to minimize paper work and single window system for similar or interlinked works	Number		1.00	1.00	1.00	1 year	1.00						0.00
6.5	Establish information and intelligence gathering systems for regular trainings and knowledge exchange workshops	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
6.6	Separate authority for monitoring and evaluation of government	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
	works for quality and timely completion													
6.7	Strengthening TDOs	LS				1.00	1 years	1.00						
6.8	Strict follow of Citizen charter	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
6.9	Prepare guideline and install software of E-governance	LS				5.00	5 years	1.00	1.00	1.00	1.00	1.00		
6.10	Digitalization of data-base system	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
6.11	Appropriate and optimum use of local technologies, local food products and indigenous cultural products	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
6.12	Human resource for IUDP	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
6.13	Institutional coordination and networking	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
6.14	Organizational capacity building	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
Total Cost						528.00	0.00	212.00	109.00	109.00	9.00	9.00	40.00	40.00
7. Environment Development Plan														
7.1	Forest Conservation Programme	Number		13.00		7.00	5 years	2.00	2.00	1.00	1.00	1.00		

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
7.2	Community Forest utilization Committee	Num ber		13.00		7.00	5 years	2.00	2.00	1.00	1.00	1.00		
7.3	Afforestation Programme	Num ber		26.00		2.00	5 years	0.50	0.50	0.75	0.13	0.13		
7.4	Education and awareness Programme	Num ber		13.00		7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
7.5	Conservation Area Establishment (Ward No.13 Pyarilek to Ward No.7 Bhegun)	Num ber				2.00	10 years	0.25	0.25	0.25	0.25	0.25	0.75	
7.6	Scientific land Use Planning	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
7.7	Plantation along the road side and buffer zone along the rivers	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
7.8	Sufficient buffer zone development in forest areas	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
7.9	Protect agricultural land by Laws	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
7.10	Proper zoning of the lands	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
7.11	Provide park and plant tree in open spaces	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
7.12	Sustainable Land use management	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
7.13	Inventory of Degraded Land	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
7.14	Sewerage and Garbage Disposal Management	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
7.15	Biodiversity and Ecosystem Services Conservation	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
7.16	Promotion of public electric vehicles	LS				15.00	15 years	1	1	1	1	1	5	5
Total Cost						190.50	0.00	16.25	16.25	14.50	13.88	13.88	58.25	57.50
8. Disaster Risk Management Plan														
8.1	Municipal Level Disaster Risk Management account Establishment	LS				2.00	5 years	1.00	0.50	0.13	0.13	0.25		
8.2	Preparation of multi hazard map and RSLUP	Number		1		1.00	1 year	1.00						
8.3	Byelaws and implementation	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.4	Identification of high-risk areas in all urban areas and relocating disaster prone settlements	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.5	Awareness campaign	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
8.6	Mandatory enforcement of land use regulation, by-laws and building code in all urban areas	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.7	Plan and implementation appropriate periodic drills	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.8	Public awareness program	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.9	Enhance human resource and institutional capacity	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.10	Establishment of disaster risk management unit/focal person/desk/coordinator at DDC level	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.11	Development of watershed management plan	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.12	Restoration of degraded and denuded slopes	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.13	Effective implementation of forest management plans as well as develop mechanism to control shifting cultivation or slash burning as well as to encourage improvised stove (Sudhariyako chulo) system	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.14	Plantation in soil erosion risk areas	LS				20.00	15 years	2.00	2.00	2.00	2.00	2.00	5.00	5.00

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
8.15	Promote use of organic fertilizer and organic farming system	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.16	Building of embankment and (river) spur in high risk locations	LS				50.00	5 years	10.00	10.00	10.00	10.00	10.00		
8.17	Construction of conservation ponds, water collection ponds	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.18	Promotion of rain water harvesting technology	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.19	Training on disasters	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.20	Mitigate hazard with appropriate technology	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.21	Coordinate with the DDRC to return the disaster displaced persons to their respective places	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.22	Provisions of financial support to the victims, plans to prevent hazards in upcoming seasons	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
8.23	Fire extinguishers	LS				150.00	15 years	10.00	10.00	10.00	10.00	10.00	50.00	50.00
Total						493.00	0.00	42.00	40.50	40.13	40.13	40.25	145.00	145.00
9. Climatic Change Adaptation Plan														
9.1	Public awareness campaign	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50

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Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos	Qty.	Rate	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
9.2	Updating the climate data	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
9.3	Develop pedestrian friendly roads	LS				50.00	5 years	10.00	10.00	10.00	10.00	10.00		
9.4	Water recharging pavements	LS				50.00	5 years	10.00	10.00	10.00	10.00	10.00		
9.5	Land use zoning with buffer around the industrial zone	LS				5.00	5 years	1.00	1.00	1.00	1.00	1.00		
9.6	Sufficient parks and green buffer around roads	LS				5.00	15 years	1.00	1.00	1.00	1.00	1.00		
9.7	Promotion of energy efficient architecture	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
9.8	Activities promoting alternative energy usage and improved stoves	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
9.9	Organic fertilizer and pesticide manufacture training	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
9.10	Training on climate change adoption agriculture farming as well cattle farming	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
9.11	Activities promoting off season vegetable farming system	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
9.12	Plantation in road side	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Nalgad Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRs: Million)														
SN	Activities	Unit	Nos .	Qty.	Rat e	Total Cost	Time (Year)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-28 (5Year)	2028-33 (5 Years)
9.13	Awareness programme	LS				7.50	15 years	0.50	0.50	0.50	0.50	0.50	2.50	2.50
9.14	Water sources conservation	LS				15.00	15 years	1.00	1.00	1.00	1.00	1.00	5.00	5.00
9.15	Control of soil erosion, landslide and river bank cutting through application of bioengineering method	LS				150.00	15 years	10.00	10.00	10.00	10.00	10.00	50.00	50.00
Total						350.00	0.00	38.00	38.00	38.00	38.00	38.00	80.00	80.00
Grand Total						46556.53	0.00	5394.41	5123.58	4958.70	4661.58	4476.70	15924.25	6017.56

7 CHAPTER VII: CONCLUSION AND IMPLEMENTATION STRATEGY

The IUDP project has been executed by Department of Urban Development and Building Construction, Ministry of Urban Development, Government of Nepal. Due to the current reform of administrative structure of Government of Nepal (GoN), it is essential for each municipality to go with a planned development along with different plans for different periods. Nalgad municipality of Jajarkot district in the Karnali Province (Province No. 6) is also one of the project areas of IUDP where it is expected to contribute overall development of the municipality in the long-run. The project comprises various aspects of urban planning and analysis by incorporating multi-sectoral issues of development, which includes physical, social, economic, financial, environmental and institutional. The project is the comprehensive analysis of regional attributes, local needs and aspirations, urban services and future prospects of this municipality for the subsequent 5, 10 and 15 Years. The rationality and scope of the project thus lies in the new context of state-restructuring and urban planning.

In the new federal context of state-restructuring, recently elected local government after a long political turmoil has been a great opportunity for Nalgad municipality. Abundant of natural resources in the municipality to foster socio-economic development is the most potential opportunity for overall development in the long run. However, apart from these opportunities, there are some challenges in the municipality. The challenges include: increasing out-migration trends; haphazard settlement and absence of land use plan; lack of urban scale health and educational institutions; low availability of recreational activities/ services, and institutional problems related to capacity building and infrastructural development of the municipality in the changing context of local development and federal set-up. Hilly remote topography, low transportation connectivity, low development indices and weaker market linkages are the most challenging aspects of economic development of this municipality in the changing context of local development and federal set-up.

From the analysis of different opportunities and possible threats along with the subsequent discussions of municipal stakeholders, the planners have concluded the lead sectors of Nalgad municipality as: 1) Health and education; 2) Agriculture; and 3) Tourism; 4) Infrastructure; and 5) Industry. Though remaining far from the mainstream development of the country, this Municipality bears a huge potentiality in development in future. Making a long term vision— *समृद्ध र सफा नगर : दिगो बिकास र सुसासनको लहर*—“prosperous and peaceful city; a wave of sustainable development and good governance”—it truly clarifies that the municipality wants to promote sustainable development with good governance.

The consultants studied the trend analysis of the municipality which includes the review of prepared maps and other information which gives historical development pattern in three subsequent points of time, i.e. 2004, 2011 and 2018. The trend has been analyzed in terms of settlement structure, and changes in forest coverage, land use, cultivation, and water bodies. The

settlement area is also increased by 0.03% in 9 years' period. There is minimum increase in the settlement area. Similarly, cultivation land is decreased by 0.008% from 2004 to 2011 and again increased by 0.063% from 2011 to 2018. Following this, the percentage of land covered by forest in 2004, 2011 and 2018 are 25.868%, 26.108% and 26.540% respectively. There is a nominal (i.e. 0.672%) increment in the forest area from 2004 to 2018. Similarly, water body in the municipality is decreased by 0.023% from 2004 to 2017.

Some of the observed information and views collected from the local people and from different focused group discussion are placed in the ward analysis. It was conducted in every wards, and there was a set of ten criteria for the analysis. The ranking (A, B and C) was compared with the number (0-13 for this municipality) in the cumulative frequency assigned for each criteria in each wards. The ward analysis of Nalgad municipality shows that the wards having 'C' ranking (i.e. 2, 7, 11 and 12) are the most developed wards in comparison to other wards. As the wards 1 and 6 fall to the category of "A", it shows that they lacked basic infrastructural services and urban facilities to the greater extent. Then after, ward 3, 4, 5, 8, 9, 10 and 13 have low facilities as having grade "B" with intermediate level of development status. The wards with the ranking 'A' should be prioritized first in development plans which then should be followed for categories of 'B' and 'C'.

The spatial analysis has been one of the important outcomes of this project for this project. The planners have endorsed different analytical components to make a comprehensive spatial analysis. Accessibility analysis has been done bringing together all aspects of transport system as per distribution of population and road network along with spatial distribution of various infrastructures such as education facilities, health facilities, market places etc. in different land zoning. Linkage analysis of the municipality indicates adjacency of the municipality with its hinterlands in terms of social mobility and movement of goods, services and people in and out involving both inter and intra regional perspectives. The demand for new residential areas in the municipality is rapidly increasing because of increasing population, migration and urbanization. The identified suitable settlement sites can be delineated on map, which shows the spatial distribution of topographically suitable and safe, climatically pleasant and environment friendly area for settlement, based on topographical, hydrological and environmental data. Similarly, flood & drought susceptibility analysis, forest fire analysis, stream order analysis, buffer analysis, Population served analysis have been also included to compliment the spatial analysis.

On the basis of infrastructure and necessities, a demand analysis has been also included involving the parameters of population size, space requirement, and road types, etc. as defined by Planning Norms and Standard 2013. The gap of infrastructures between existing scenario and planning norms is studied which helps further for the planning of the municipality.

Among all the development plans proposed with the IUDP in this municipality, the MSIP has been a summarization of detail projects and investment attributes for different years both in short term and long-term. It comprises specific investment plan with respect to defined sectoral goals, objectives, strategies and activities to fulfil the long-term vision of the municipality. In total, the projected MSIP budget for 15 years in this municipality is NPR 46556.53 million, which has been

allocated for different plans and sectors. For completion of most of the strategic projects, time frame ranges from 1-5 years to maximum time frame of 1-15 years particularly for physical infrastructures.

With consultation of local stakeholders and municipal representatives, Detail Engineering Design of two projects has been recommended from two different sectors. They were selected among the prioritized list of different projects. The selection of two projects and their detail project reports (DPRs) has been made out of the different project lists in the municipality which were then analyzed on the basis of criteria provided by the DUDBC. The recommended DPRs in this municipality are: a) DPR-I (Road); and b) DPR-II (Multi-purpose municipal building). Each of the proposed DPRs contained a detail drawing, design calculation and cost estimation. These prioritized projects along with DPRs have been submitted to DUDBC in different Volumes (III and IV) and in the main report as well (Volume I).

Based on the situation analysis, some key recommendations for the comprehensive development of this municipality are stated herewith:

- Improvement of physical infrastructures for upgrading the living standard of citizens and maximizing the reach of public to such facilities.
- Utilization of natural resources for the benefit of the city without hampering the environment.
- Enhancement of touristic spots for improving economy.
- Commercialization of agriculture for enticing young generation and accelerating economic growth rate.
- Creating environment for alluring citizens for involvement in strategic projects.
- Increment of resources both financial and manpower on energy efficiency and renewable energy.
- Preservation and improvement of culture and heritage of ethnic groups.
- Formulation of programs focused on marginalized groups, women and children welfare.
- Address child friendly, disable friendly and gender friendly issues during building design and construction.
- Increasing the efficacy of local government through transparent and hassle free service delivery.
- Establish coordination and collaboration between INGOs, NGOs and user groups through efficient capacity development.

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ANNEXES