

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. Bansgadhi municipality of Bardiya district in the Province 5 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 Bansgadhi municipality. Wider connectivity along with the national East-West highway and various link roads is another opportunity for prosperous Bansgadhi. Close proximity to the Bardiya National Park has also increased the potentiality of tourism development and biodiversity conservation in this municipality. Moreover, market exposed to different areas and urban centers including Nepalgunj, Dhangadhi and Butwal can enhance the economic development of this municipality. However, apart from these opportunities, there are some challenges in the municipality. The challenges include: increasing in-migration trends (from northern Hilly regions to the plain region of Bansgadhi) as compared to out-migration (from Bansgadhi to other urban areas within the district and outside); 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.

Long-term vision setting: Bansgadhi municipality is highly potential to cater long-term development under major four sectors i.e. Agriculture; Health, sanitation and education; Forestry and Industry. In particular, it has a huge potential to serve both as domestic market center serving hinterland areas with close linkage through diverse goods and services. Moreover, availability of abundant plain region and irrigation facility has enhanced the probability of agricultural productivity and transformation of traditional agriculture to the modern one along with grabbing local markets in and around the Bansgadhi municipality.

Prosperity of Bansgadhi has been thus aimed along with the beautiful, greenery and healthy city. This is how expressed in the long term vision- **æ;'Gb/ xl/ofnL / ;kmf zx/ ;d[4 / ;d'Ggt afF;u9L gu/Æ**. Compatible with this vision setting, an integrated urban development plan seems to be a vital one in achieving the municipal vision and mission at large by involving multiple sectors and stakeholders.

Trend Analysis: The consultants further 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-sequent points of time, i.e. 2004, 2010 and 2017. 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 increased by 1.29% in 13 years' period. This is a nominal increase and does not seem a significant change though, and could have been happened probably due to the increasing market area, infrastructures and in-migration trend. Following this, cultivation land is in decreasing trend in different years with a slow pace (decreased by 0.76% in 10 years). Similarly, the percentage of land covered by forest in 2008, 2013 and 2018 has been remained almost constant, i.e. 55.284%, 54.914% and 54.959% respectively. Likewise, water body in the municipality covers 1.54% in 2008, which is decreased in 2013 i.e. 1.18% and again it is slightly increased in 2018 i.e. 1.23%.

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 of Bansgadhi 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 24654.44 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 of Bansgadhi municipality, Detail Engineering Design of two projects has been recommended. They were selected among the prioritized list of different projects. The selection of two projects and their detail Engineering Design (DEDs) 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 DEDs in Bansgadhi municipality are: a) DED-I (Road); and b) DED-II (Road). Each of the proposed DEDs contained a detail drawing, design calculation and cost estimation. These prioritized projects along with DEDs have been submitted to DUDBC in different **Volumes 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 Bansgadhi 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
DED	Detailed Engineering Design
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

Table of Contents

PROJECT INFORMATION	i
SUBMISSION INFORMATION	i
ACKNOWLEDGEMENTS	ii
EXECUTIVE SUMMARY	iii
ACRONYMS/ABBREVIATIONS	vi
CHAPTER I: INTRODUCTION	1
1.1 Background of project	1
1.2 Objectives of the Study	2
1.3 Scope of Work	3
1.4 Expected Output	4
1.5 Structure of the Report.....	8
CHAPTER II: METHODOLOGY	10
2.1 Conceptual Framework.....	10
2.2 Field Team Mobilization.....	11
2.3 Secondary Data Collection and Conducting Survey	11
2.4 Public Consultation Plan.....	11
2.5 Primary Data Collection	13
2.6 Preparation of GIS Base Map and preparation of Thematic Maps	14
2.7 Data Analysis	20
2.8 Vision Setting.....	21
2.9 Sectoral Development Plans.....	22
2.10 Multi Sectoral Investment Plan	22
2.11 Preparation of DED	22
2.12 Preparation of Building Bye-Laws	22
2.13 Limitations of the Study.....	22
CHAPTER - III: EXISTING SITUATION/STATUS	24
CHAPTER-IV: SITUATION ANALYSIS OF THE MUNICIPALITY	27
4.1 Trend Analysis	27
4.1.1 Demographic Analysis	27

4.1.2	Land Use Analysis and Urbanization.....	27
4.1.2.1	Existing Land Use.....	27
4.1.2.2	Housing.....	28
4.1.2.3	Existing Urban Structure.....	29
4.1.2.4	Change in Built-Up Area.....	29
4.1.2.5	Risk Analysis.....	34
4.1.2.6	Open Space.....	38
4.2	Spatial Analysis.....	38
4.3	Social Analysis.....	59
4.3.1	Education.....	59
4.3.2	Health.....	60
4.3.3	Recreation.....	60
4.3.4	Inclusion.....	60
4.4	Economic Analysis.....	61
4.4.1	Agriculture.....	61
4.4.2	Livestock.....	61
4.4.3	Mining.....	61
4.4.4	Industry.....	61
4.4.5	Import and Export.....	61
4.4.6	Commercial.....	61
4.5	Financial Analysis.....	62
4.5.1	Revenue of Municipality.....	62
4.5.2	Expenditure of Municipality.....	63
4.6	Institutional Analysis.....	63
4.7	SWOT Analysis.....	64
4.7.1	Strengths.....	65
4.7.2	Weaknesses.....	66
4.7.3	Opportunities.....	68
4.7.4	Threats.....	69
4.8	Demand Analysis of Infrastructure.....	69
4.9	Potential Lead Sector Identification.....	77
CHAPTER V: DEVELOPMENT FRAMEWORK FOR MUNICIPALITY		78
5.1	Vision of the Municipality.....	78
5.2	Goal.....	78
5.3	Objectives.....	78
5.4	Strategies.....	78
5.5	Plans for Implementing Development Framework.....	78

5.6	DED Selection	79
CHAPTER VI: SECTORAL DEVELOPMENT PLANS		88
6.1	Introduction	88
6.2	Physical Development Plan.....	88
6.2.1	Land Use Zoning	88
6.2.2	Urban Expansion.....	90
6.2.3	Physical Development Issues and Problems	90
6.3	Urban Infrastructure Plan.....	91
6.3.1	Water Supply	91
6.3.2	Waste Water	93
6.3.3	Drainage	94
6.3.4	Solid Waste.....	95
6.3.5	Electricity	97
6.3.6	Telecommunication.....	99
6.4	Urban Transport Plan.....	101
6.4.1	Road Classification with ROW	102
6.4.2	Road Network.....	105
6.4.3	Parking Management	109
6.4.4	Issues and Problems	109
6.5	Social Development Plan	111
6.5.1	Education.....	111
6.5.2	Health	112
6.5.3	Social Security	114
6.5.4	Culture and Sports.....	115
6.5.5	Park and open spaces	116
6.5.6	Urban Social Service Centre	118
6.5.7	Social Development Issues and Problems.....	118
6.6	Economic Development Plan	119
6.6.1	Industrial Development and Trade Promotion	119
6.6.2	Employment Generation, Poverty Reduction.....	119
6.6.3	Regional Competiveness of Municipality	120
6.6.4	Agriculture Development	120
6.6.5	Strategic Location of Different Market Centre/Product Collect Centres	121
6.6.6	Possible Economic Zones Based on Local Economic Growth Potentials	121
6.6.7	Potential and Problems of Economic Development Plan.....	121
6.7	Tourism and Cultural Development Plan	122
6.7.1	Potentiality of Cultural and Tourism Development.....	122
6.7.2	Conservation of both Material and Non-Material Cultures.....	123
6.8	Financial Development Plan	126

6.8.1	Municipality Revenue Improvement Plan (MRIP).....	126
6.8.2	Assessment of Possible Financial Resources	127
6.8.3	Allocation of Development Budget	127
6.8.4	Promotional Strategy for Private Sector and Civil Society	129
6.8.5	Economic and Financial Analysis.....	130
6.8.6	Issues and Problems	130
6.9	Environmental Management Plan	132
6.9.1	Present Status.....	132
6.9.2	Issue and Problems	133
6.9.3	Strategy for Environment Management Plan	134
6.10	Disaster Risk Management Plan.....	137
6.10.1	Present Status.....	137
6.10.2	Issues and Problems	137
6.10.3	Adaptation Strategy for Disaster Management	138
6.11	Climate Change Adaptation Plan	141
6.11.1	Present Status.....	141
6.11.2	Issues and Problems of Disaster	141
6.11.3	Adaptation Strategy for Climate Change Mitigation	142
6.12	Institutional Development Plan	144
6.12.1	Issues and Challenges	146
CHAPTER VII: MULTI SECTOR INVESTMENT PLAN (MSIP).....		147
7.1	MSIP Program/ Project for Short Term.....	153
7.2	MSIP Program/ Project for Mid Term.....	163
7.3	MSIP Program/ Project for Long Term	169
ANNEXES		178
	Annex 1: DED Selection Matrix	183
	Annex 2: DED Selection matrix of Bansgadhi Municipality	187
	List of Tables	193
	List of Figures	194
	List of Photos	195
	List of Maps	195

CHAPTER I: INTRODUCTION

1.1 Background of project

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 Bansgadhi municipality, which lies in the Bardiya district, Province No. 5.

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. 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 (Economic Survey, 2018/2019).¹

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 is urbanizing at a faster pace and this transformation is irreversible. However, in the absence of coordinated planning and investment in urban sector, there is need to upscale the

¹ <https://mof.gov.np/uploads/document/file/pdf>

level of innovation, impact and outcomes. Urbanization and urban development is influenced and oriented by key policies of the state in sectors such as transport, agriculture, tourism, industry etc in addition to the policy pursued in the urban sector. A brief review of the extant policies such as National Transport Policy 2001, National Agricultural Policy 2004, National Urban Policy 2007, Industrial Policy 2011, Tourism Policy 2008, National Land Use Policy 2015 and National Urban Development Strategy 2017 provides the context for the Integrated Urban Development Plan (IUDP). The NUDS 2017 has provided a set of informed strategic set-up in Nepal's urban development. However, the reflection is pronounced in sprawled urban form, haphazard land use with environment degradation, congestion, deficit in water supply and other basic services. With six decades of planning experience, it is a high time to exercise coordinated, integrated, focused and strategic investments that promote harmonized development to fulfill our urban intentions. The preparation of IUDP is significant in this direction.

In the changing context of federalism, the Local Governance Operation Act (2074 BS) is now operating in the local units. 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.

1.2 Objectives of the Study

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 DED 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 DED project as per necessity. Necessary details engineering drawings have been accordingly submitted in separate volumes (as presented in Volume III-DED 1, Sections A, B, C & D; Volume III-DED 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)

1.5 Structure of the Report

The report is divided into five volumes i.e. Volume I – Main Report, Volume II – Municipal Profile, Volume III – Maps, Volume IV – Detailed Engineering Design and Volume V – Building Bye Law. For easy management of the whole report, it is divided into such volumes.

Each volumes contains different information about the respective municipality and its prepared plans.

The main report provides information about the methodology of the project, study and analysis of the municipality and proposed plans to be prepared for its development.

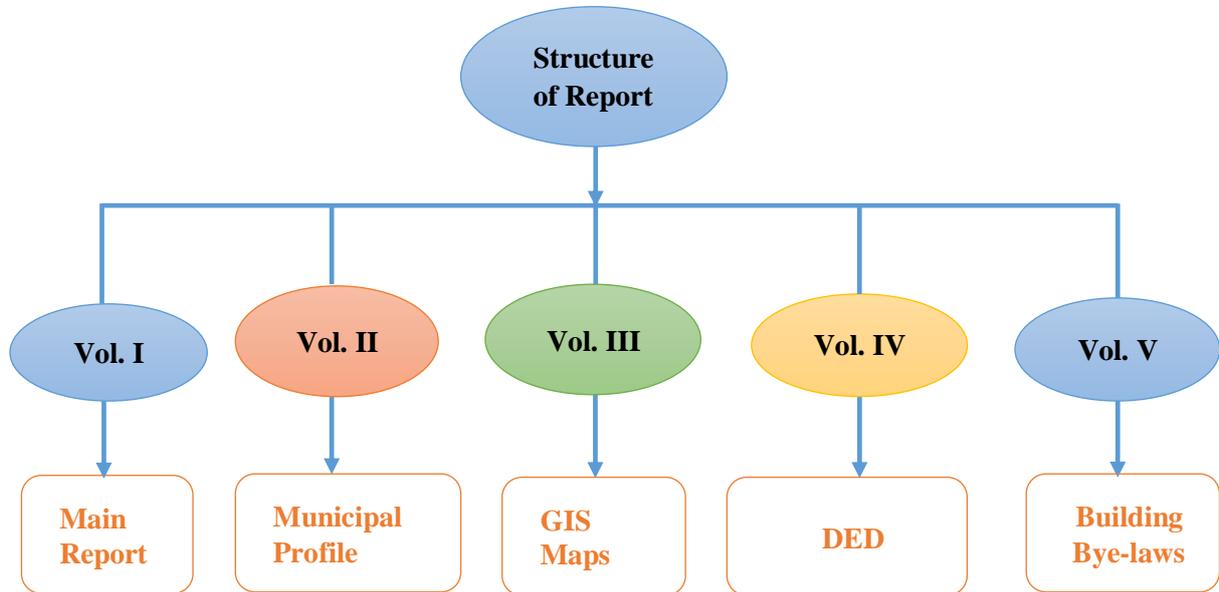


Figure 1: Flow chart of Structure of the report

CHAPTER II: METHODOLOGY

2.1 Conceptual Framework

This chapter briefly narrates the whole methodological approach and process adopted during the data collection, analysis and planning for the IUDP. There was data collection (primary and secondary data) and followed by field visit to validate the data and further information acquisition. Meetings were conducted on municipality level for preparing a development plan with participatory way. The data collected were analytically compared for identifying a gap in the planning process. Finally, an integrated urban development plan was prepared based on these findings. The figure below shows different phases for preparation of IUDP.

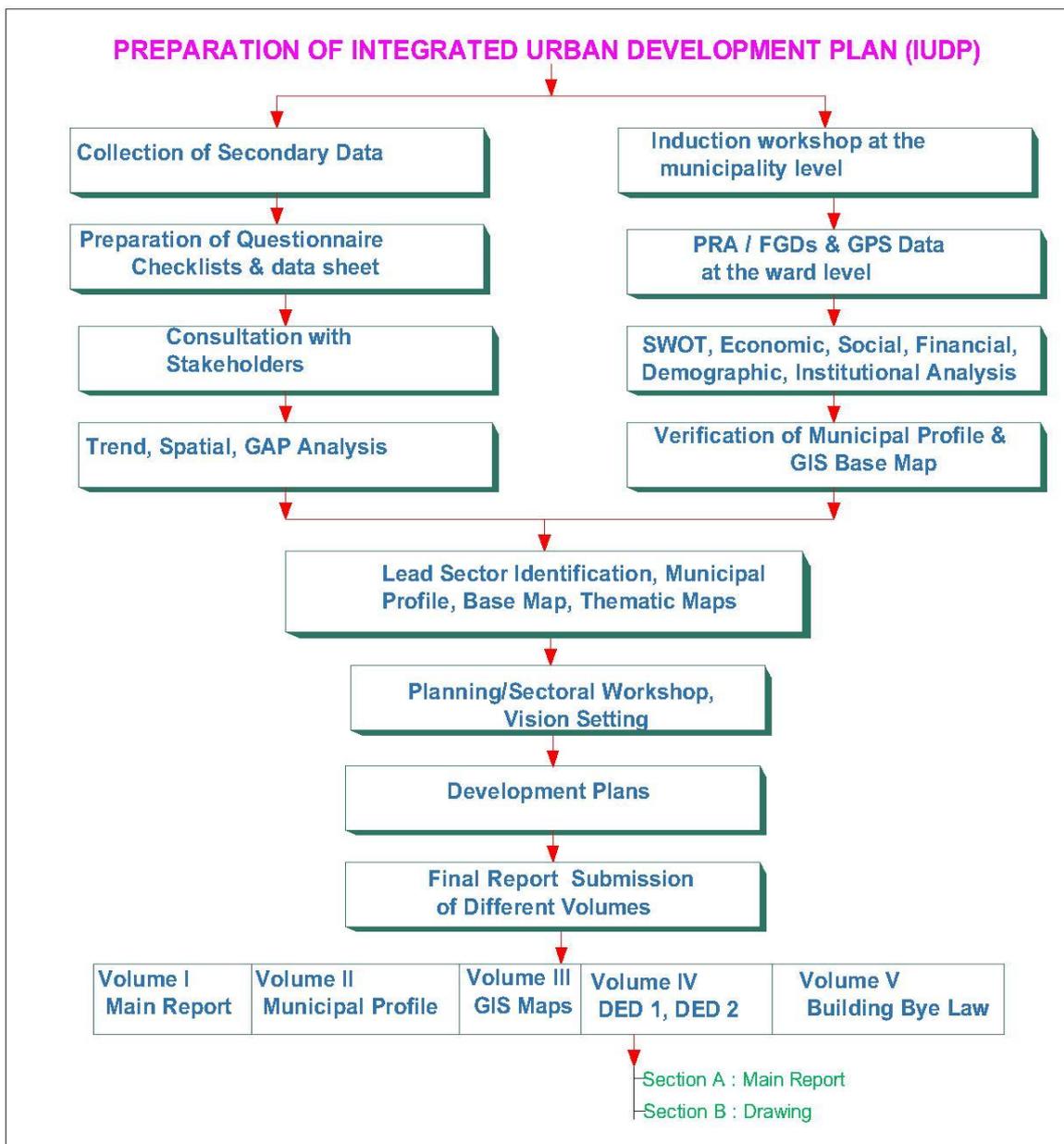


Figure 2: Methodological flow chart during IUDP Project of Bansgadhi Municipality

2.2 Field Team Mobilization

For conducting survey in the field, the required personals were appointed. Every team were provided with questionnaires, secondary data, maps, GPS and other required materials. The team consisted of a team leader, urban planner, engineer, social expert, GIS expert, environment expert and surveyor. The complete team collected every information related to the municipality for the preparation of the IUDP development plans.

2.3 Secondary Data Collection and Conducting Survey

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.

2.4 Public Consultation Plan

Induction Workshop at the Municipality Level

A one-day induction workshop was organized in the Bansgadhi municipality on Shrawan 11, 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.

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)
- 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.



Photo 1: Consultation with Municipal Authorities at Bansgadhi Municipality

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 DED projects from all the selected projects of the particular settlement.



Photo 2: FGD at Ward Level of Bansgadhi 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.

2.5 Primary Data Collection

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.

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.

2.6 Preparation of GIS Base Map and preparation of Thematic Maps

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.

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:

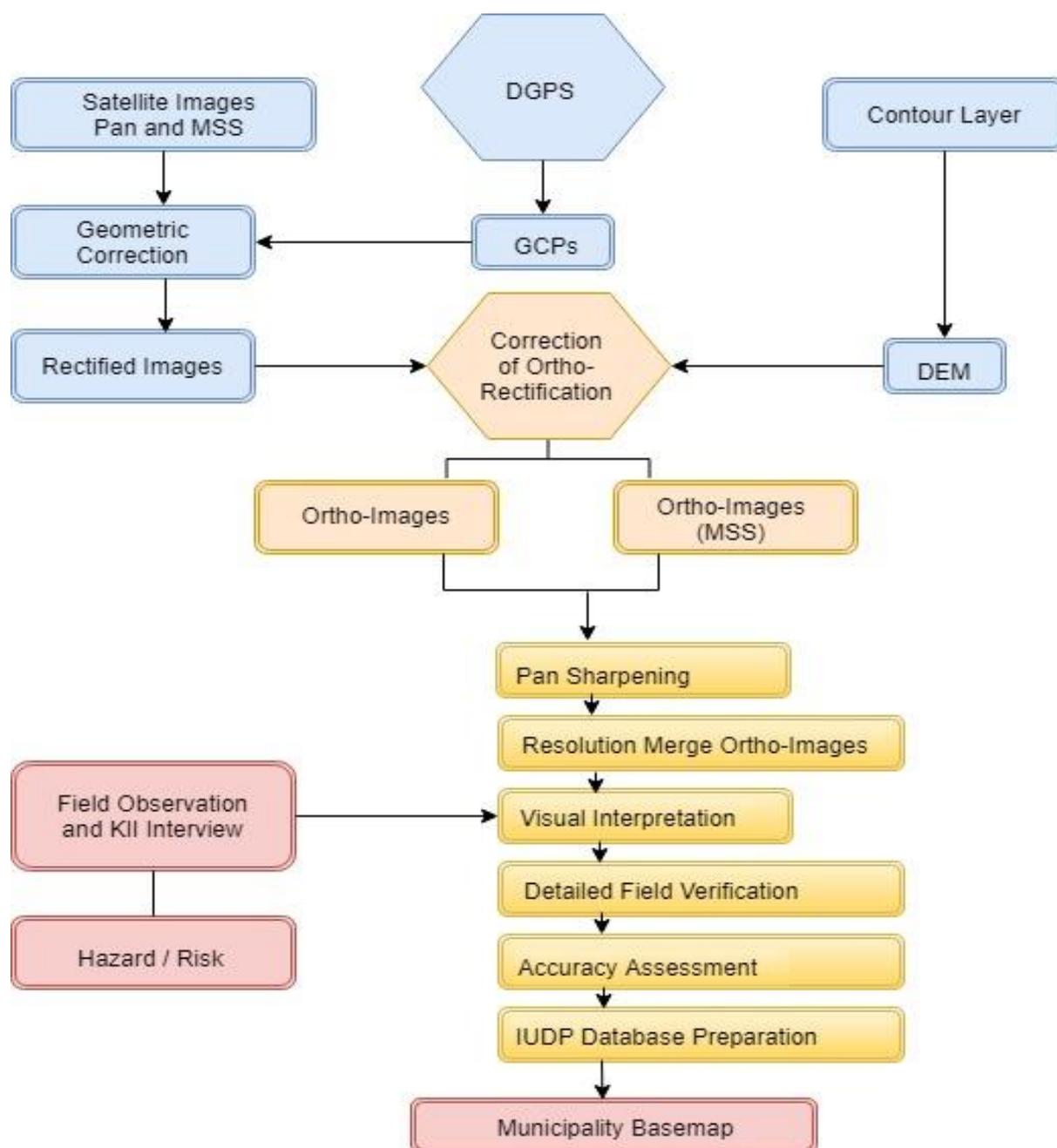


Figure 3: Flow Chart of Base Map Preparation Stage

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.

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.

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.

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.

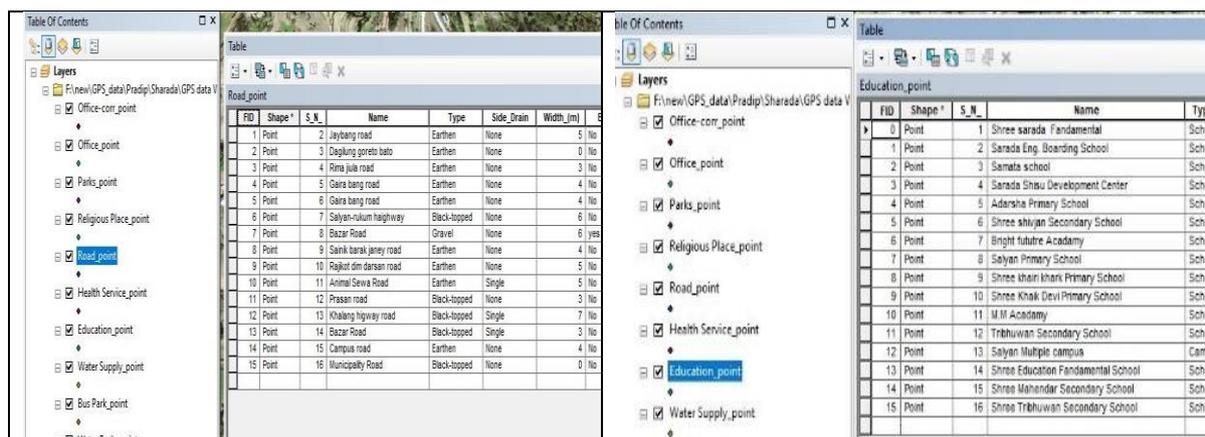


Figure 4: Spatial data of municipality

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: Bansgadhi Municipality lies within the bounding box of coordinates (81046'18.21", 28024'20.54") and (81024'35.66", 28012'33.06") 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 Bansgadhi 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:

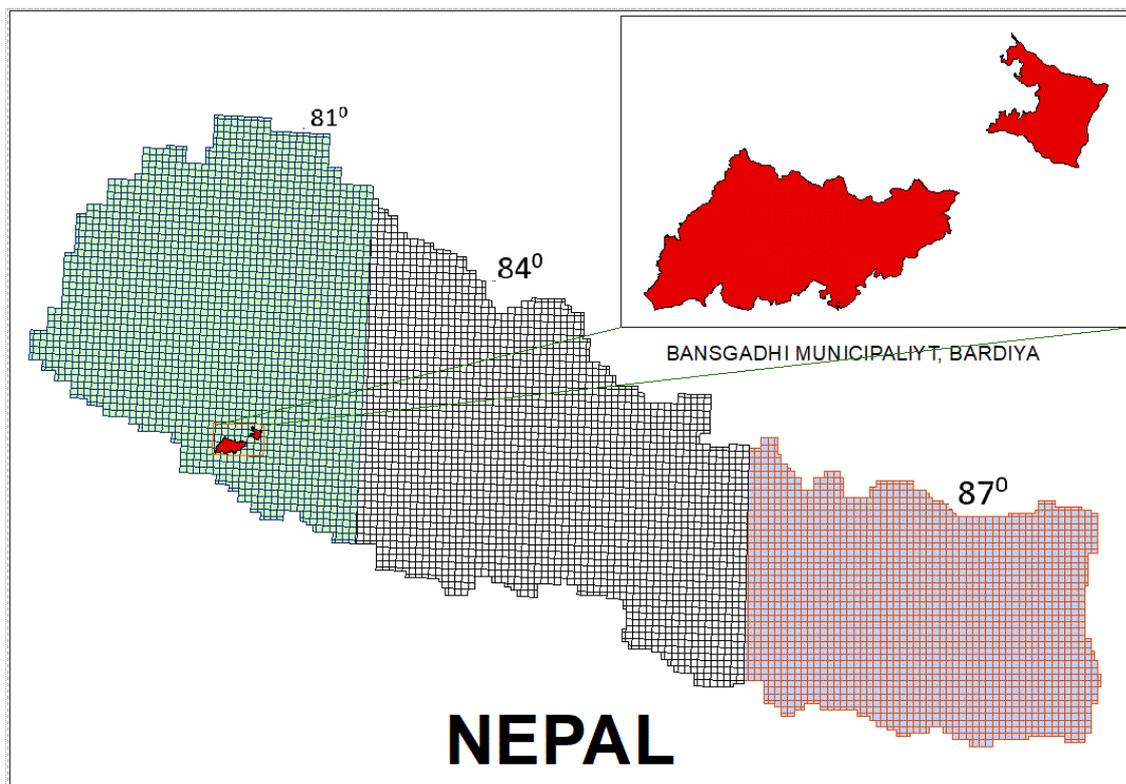
Table 1: Transformation Parameter from WGS84 Datum to Everest 1830 Datum

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° for Bansgadhi Municipality
- False Easting: = 500000.000m
- False Northing: = 0.000m
- Scale Factor: = 0.9999000000
- Latitude of Origin: = 0.000
- Linear Unit: = Meter



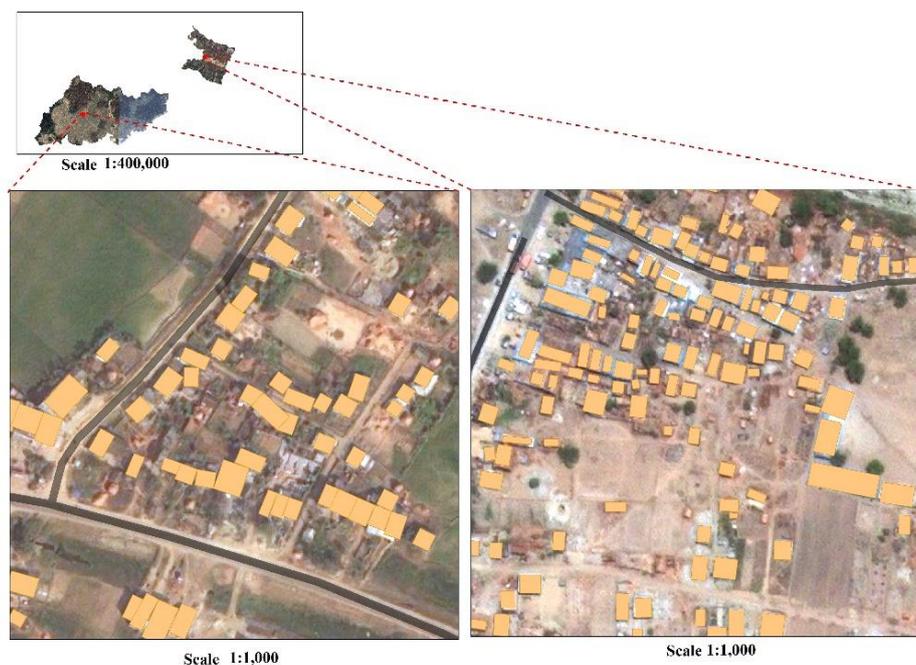
Map 1: Modified Universal Transverse Project system of Nepal

Digitization of Satellite Image

The high resolution satellite image of Bansgadhi 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 2: High Resolution Satellite Image of Bansgadhi Municipality



Map 3: Digitization of Satellite Image of Bansgadhi Municipality

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.

2.7 Data Analysis

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.

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.

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.

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.

Infrastructure and Necessity

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

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.

2.8 Vision Setting

Selection of vision is done during the sectoral workshop which was conducted at Ashoj 18-19, 2075 B.S. on municipality level. The consultant facilitated the workshop to set a long term vision for the municipality along with the identification of lead sectors.



Photo 3: Vision Setting workshop conducted at Bansgadhi Municipality

2.9 Sectoral 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.

2.10 Multi Sectoral Investment Plan

Various important sectors and programs were selected during the sectoral workshop. Investment plans were prepared for every programs. Such plans revealed short and long term programs, tentative cost estimate and probable financing sources. Those plans and programs were prioritized in sequential manner for the planning period of each five years. Multi sectoral investment plan was prepared for prioritizing projects according to its importance and estimating required budget and investing sectors for related projects.

2.11 Preparation of DED

After the meetings and discussions with local bodies, related NGO/INGO, local parties and other stakeholders, various plans and programs were listed which will help for the long term development of the municipality. By considering the vision of the municipality and the DED selection criteria provided by DUDBC, the major projects for DED were selected. Further, the DED selection matrix is attached in **Annex-1**.

2.12 Preparation of Building Bye-Laws

Bye laws is the guiding factor for development of the municipality. Studying land use map and the housing pattern of the municipality, bye laws was prepared. Various sectors like road, open space, different institutes, industrial areas, river and lakes, etc. were considered during the preparation of bye laws. Floor Area Ratio (FAR) and Ground Coverage Ratio (GCR) of different area should be different considering its land use pattern and built up areas. Considering the GIS based map and settlement pattern, bye laws for different areas will be different. Further, derail bye laws of the municipality are presented in **Volume-V**.

2.13 Limitations of the Study

Though the IUDP project is comprehensive in nature and there are many activities/ tasks assigned as per the ToR of the agreement, the report has been constrained along with the following limitations:

- i. Time span of the project is limited (9 months) as compared to a wide range of the activities (to be done) to accomplish the project
- ii. The ToR does not tell about the scope and mandates of Household Survey which, in turn, significantly limits the validity and reliability of the findings
- iii. The attribute information of individual house about roof type, construction material type and house occupancy is not included in geo-database for preparation of base-map because the household survey was out of the scope of the project.
- iv. Database of the municipality is not established in a scientific system; so data is not available to show the trend of demographic changes (including migration), agricultural production, number of tourist flow, economy (expenditure, revenue) and climate change
- v. As per the new Constitution, the local levels are restructured in March 2017 (and formed 753 local units) in which many former VDCs have been merged into a single municipality; so that the integration of secondary data (including the CBS database of 2011) is also problematic to produce a congruence for a single new municipality in the changing context (particularly in terms of demographic status, health and education, and caste/ ethnicity)

The analysis of regional perspective (on competitiveness, external factors, tourism, market relations and agriculture) has been limited due to data constraints as it would need a wider domain of regional analysis and data integration. However, the linkage analysis can reveal the regional comparative analysis

CHAPTER - III: EXISTING SITUATION/STATUS

Introduction: According to new administrative structure of Government of Nepal, Bansgadhi Municipality is situated in Bardiya district in Province no. 5. Bansgadhi municipality lies within a co-ordinate from (81046'18.21", 28024'20.54") and (81024'35.66", 28012'33.06"). It is located 25 km Northern wests from Bardiya headquarter Gulariya. Bansgadhi municipality have an area of 206 Sq. km. The boundary of the Bansgadhi has been delineated as Banke district at east, Barbardiya municipality at west, Bardiya National park at north and Badaiya Lake at south. Bansgadhi municipality was initially formed in 2014 December by merging 3 VDCs including Sawikal Belwa, Motipur and Daudadakala. When the state-restructuring was made in 2017, the previous boundary and area maintained same as previous. It consists of 9 wards.

Demographic Status: According to the Bansgadhi Municipality profile 2017, the total household size is 13272. The total population of the municipality is 63287 where 30405 (48.04%) are male and 32882 (51.96%) are female. People from diverse ethnic and religious groups live together with harmony in the municipality. The average household size of the municipality is 4.8. The ward no. 8 is the largest in terms of household (i.e. 1821 HHs), but ward no 9 have largest population size i.e. 8654. While as the smallest, ward no. 1 have only 502 HHs which have also the lowest population size, i.e. 2461 in total.

Physical Status: The majority of total land area in Bansgadhi is covered by forest (i.e. 49.85%). 41.04% of land is occupied by cultivation, 7.75% is occupied by barren land. The remaining 1.35% of land is covered by grassland, orchard, tree cluster, river, pond area, sand area and built-up. Most of the road in the municipality are gravel roads, two roads are black topped and others are earthen roads. Width of the road in the municipality ranges from 2m to 14m and the width of highway is 30m. The municipality also have the facility of postal services. There are 3 postal service office in the municipality. In terms of telecommunication, GSM (Nepal Telecom), CDMA and NCELL are widely used in the municipality. Only 4 wards (3, 5, 8 and 9) have solid waste collection facility. The municipality comprise with 96.1% toilet facility including both Simple pit and RCC toilet in household level.

Social Status: It represents the colorful social structure of caste and ethnicity, including Brahmin, Chhetri, Dalit, Janajati and mixed type. The majority (39.31%) of the people are Madhesi Janajati. Similarly, Hilly (34.22%) are Brahmin/Chhetri/Thakuri & Sanyasi, (12.85%) are hilly Dalit, (10.10%) are hilly Janajati and (3.51%) are Muslim and others. Furthermore, the majority of people (96.86%) follows Hindu religion whereas (1.73%) follow Christian, (1.23%) follow Muslim and remaining 0.18% follow Buddhist religion. In terms of educational status 88.02% of the population is literate whereas remaining 11.98% are illiterate. There are 21 farmer's group, 6 mother's group, 10 youth clubs and 7 social groups. There are altogether 57 schools out of which two of them are providing technical subjects and 1 is providing inclusive education for blind students. And there are 2 campus providing higher education, i.e. Bachelor in management faculty. There are altogether 3 health posts in ward no 3, 5 and 7, 2

urban health post and 1 community health post. The municipality consist of 1 permanent and 3 temporary police station.

Economic: The major market center of the municipality is Babai Chepang Market, Puspanagar Market, Lakhana Market, Gaudi Market, Bansgadhi Market, Laxman Saptahik Market, MachaGadh Market. In addition, on Sunday and Friday there is the conduction of *Haat Bazar* in Mahadev Saptahik Market, ward no. 3 and in Laxman Market, Kakaura Market, ward no.8. The majority of the people (31016) are engaged in Agriculture and animal husbandry. Similarly, 4698 populations are engaged in Foreign employment, 3729 in labor work, 1042 in business and 1019 in service sector. Rice mill, furniture, chowmein and grill are major industries. The major crops produced in this municipality are paddy, wheat, mustard and Red lintels. Fish farming, Poultry farm, cow farming, pig farming, buffalo farming is the growing business in Bansgadhi municipality.

Environmental: The altitude of Bansgadhi municipality ranges from 146 to 1355 m from mean sea level. The municipality comprise of Tropical (89% of area) and Subtropical (2% of area) zone. The municipality covers northern slope Chure Range and Terai in southern. With regard to the slop, 89% of the area is gentle, 10% of area is moderate and remaining 1% is steep. There are 40 community forest in the municipality and it covers 2885 Hectors. The municipality consist of 12 lakes. Babai River, Dunduwa River and Gyang River are the rivers that flows through Bansbari municipality. To monitor the activities and protect the forest there are 3 *Ilika* forest office. The average annual rainfall rain 1130 mm. The maximum temperature of this municipal rise up to 43°C and the temperature falls up to 7.5 °C. The annual average maximum wind speed is 1.39 m/s and the minimum is 1.20m/s. similarly, the annual average precipitation ranges from 1321 mm to 1845mm.

Financial Status: In Bansgadhi, there are 25 cooperatives, 2 microfinances, 3 money transfer, 11 bank and there are other small financial institutions listed during the intuitional survey. The total budget expenditure of the municipality is Rs.565628000. The total current year estimated expenditure of the municipality is Rs.267700000. Similarly, the capital expenditure is Rs.297928000. The total revenue collected for the municipality is Rs.303111000. The total budget allocated for the municipality by the government of Nepal in fiscal year 2018-2019 is Rs.157654000. And the estimated revenue from internal tax is Rs.145457000. As the revenue of the municipality is lesser than the expenditure, the municipality has budget deficit.

Institutional organizational structure: After the federalization, the local government operation Act, 2017 was introduced which provides the legal framework for local government to operate. Bansgadhi municipality is operating as per the duties, function and responsibilities as provided by the Act.

Religious, Culture and Tourism:

Due to the unique culture of the native people(*Tharu*) the municipality have its own culture and tradition. Bardiya National Park, Chepang Village and Chayama Simsar area are the major tourist destination in the municipality. Similarly, one of the major cultural heritage of this

municipality is Kedareshwar Dham which is located in ward no.5. Here are 17 such potential tourism sites including 50 religious and cultural sites. In addition, as the municipality is comprise of diverse ethnic and religious group they celebrate various festivals ranging from new year, Buddhajayanti, Janai Purnima, Dashain, Tihar, Maghi to Christmas day.

CHAPTER-IV: SITUATION ANALYSIS OF THE MUNICIPALITY

4.1 Trend Analysis

4.1.1 Demographic Analysis

There was no municipal growth rate being a newly formed municipality. As per the household survey 2017, 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 Bardiya district, i.e. 2.21%. Following the same progression rate, the existing population in the municipality in 2018 is **64686**, while this is projected to be **72156** in 2023, **80490** in 2028 and **89786** in 2033. Further, the projected population of the municipality is shown in the table below:

Table 2: Population Projection of Bansgadhi Municipality

Ward	HHs (2017)	Population (2017)			Existing & Projected Population (@2.21%)			
		Total	Male	Female	2018	2023	2028	2033
1	502	2461	1137	1324	2515	2806	3130	3491
2	1499	6940	3366	3574	7093	7913	8826	9846
3	1806	8490	4123	4367	8678	9680	10798	12045
4	1685	8468	4154	4314	8655	9655	10770	12014
5	1756	7213	3439	3774	7372	8224	9174	10233
6	1538	8102	3983	4119	8281	9237	10304	11494
7	990	4945	2393	2552	5054	5638	6289	7016
8	1821	8014	3691	4323	8191	9137	10192	11370
9	1675	8654	4119	4535	8845	9867	11006	12278
Total	13272	63287	30405	32882	64686	72156	80490	89786

(Source: CBS, 2011; MoFALD, 2017)

The increasing growth rate of the municipality is the result of increasing infrastructures like education, health, etc. Ward 9 of the municipality has the highest number of population which is the result of increasing road and other infrastructure. Such

4.1.2 Land Use Analysis and Urbanization

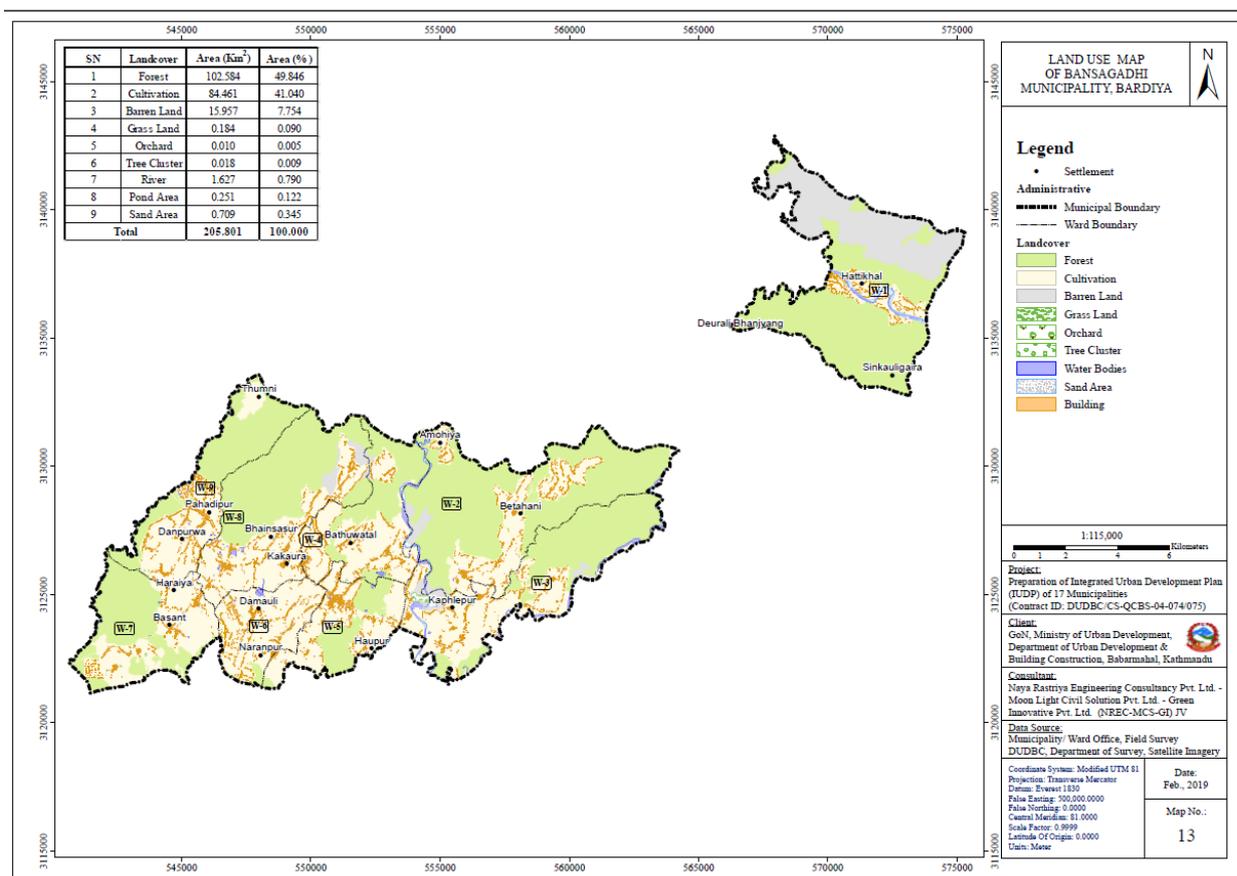
4.1.2.1 Existing Land Use

The majority of total land area in Bansgadhi is covered by forest (i.e. 49.85%). 41.04% of land is occupied by cultivation, 7.75% is occupied by barren land. The remaining 1.35% of land is covered by grassland, orchard, tree cluster, river, pond area, sand area and built-up. Further, it is presented below:

Table 3: Land cover of Bansgadhi municipality

S.N.	Land cover	Area (km ²)	Percentage (%)
1	Barren land	15.96	7.75
2	Cultivation	84.46	41.04
3	Forest	102.58	49.85
3	Grassland	0.18	0.09
4	Orchard	0.01	0.00
5	Pond Area	0.25	0.12
6	River	1.63	0.79
7	Sand Area	0.71	0.34
8	Tree Cluster	0.02	0.01
	Total	205.80	100

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

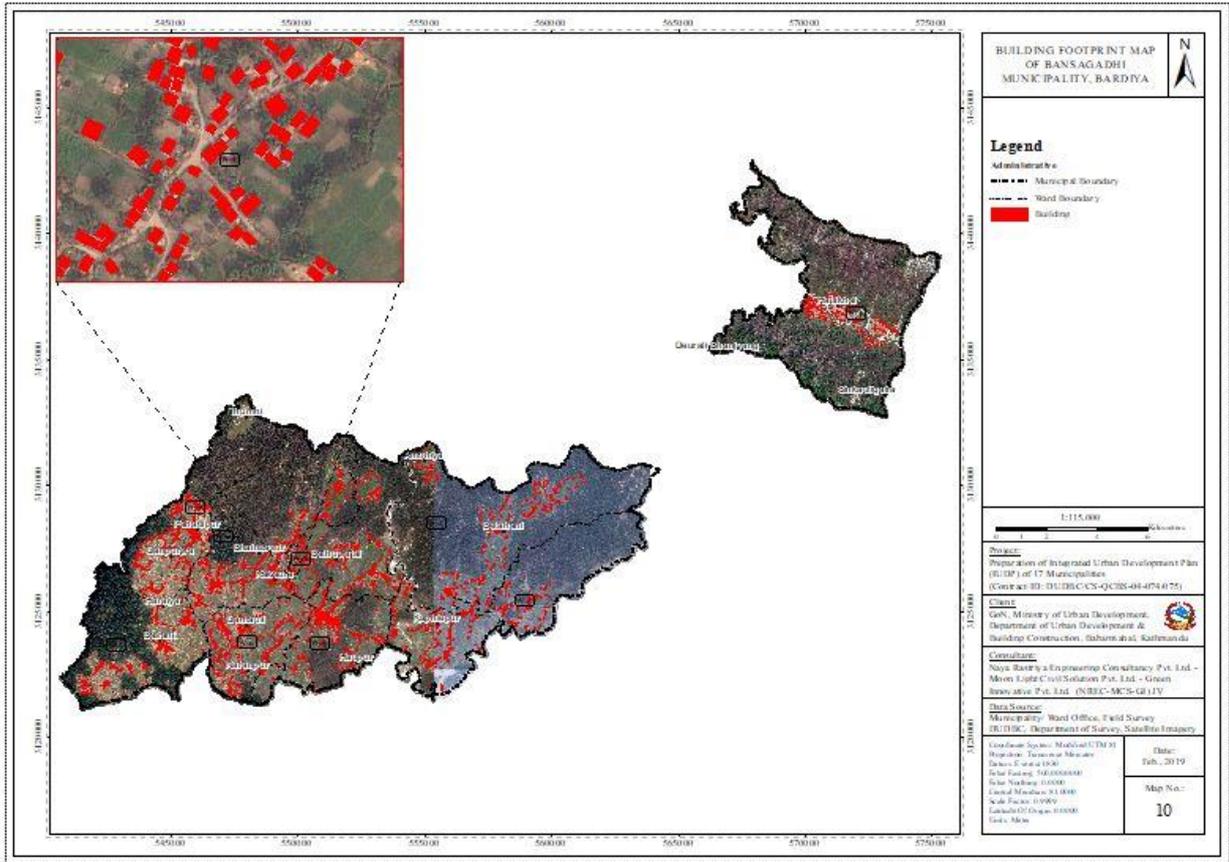


Map 4: Land Use Map of Bansgadhi Municipality

4.1.2.2 Housing

Being at Terai, the municipality is facilitated with Highway and other urban roads. Settlements are developed around the periphery of roads. In some inner areas like Betahani, Damauli and Basant there are haphazard development of housing. Concentration of buildings are seen

around market centers i.e Macha Gadh, Kakaura, Bansgadhi, Lakhana, Mahadeva and Babai Market. Except Mahadeva, other market centers are developed around the main highway. Linear pattern of development of housing is seen in inner urban roads. Housing or settlement pattern is increased in the municipality in comparison to early years.



Map 5: Settlement pattern in Bansgadhi Municipality

4.1.2.3 Existing Urban Structure

Mixed pattern of settlement is seen along the main highway of the municipality. Market area is the major area for mixed development i.e. at Basant, Bansgadhi and Kakaura. Commercial complex, banks, schools, health post and government institution are located in the market area. Apart from market areas, other parts of the municipality are residential like Danpurwa, Haraiya, Naranpur, Kaphlepur and Hattikhal. Availability of roads help for the easy accessibility. Urban roads are developed along almost every settlement. The regional linkage between Kathmandu, Banke and Surkhet is seen in the municipality for the exchange of goods and products.

4.1.2.4 Change in Built-Up Area

Due to the location and its history, we can see comparatively more settlement as compared to hill side settlement. The land use of Bansgadhi 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 Bansgadhi municipality of year 2004, 2010 and 2017.

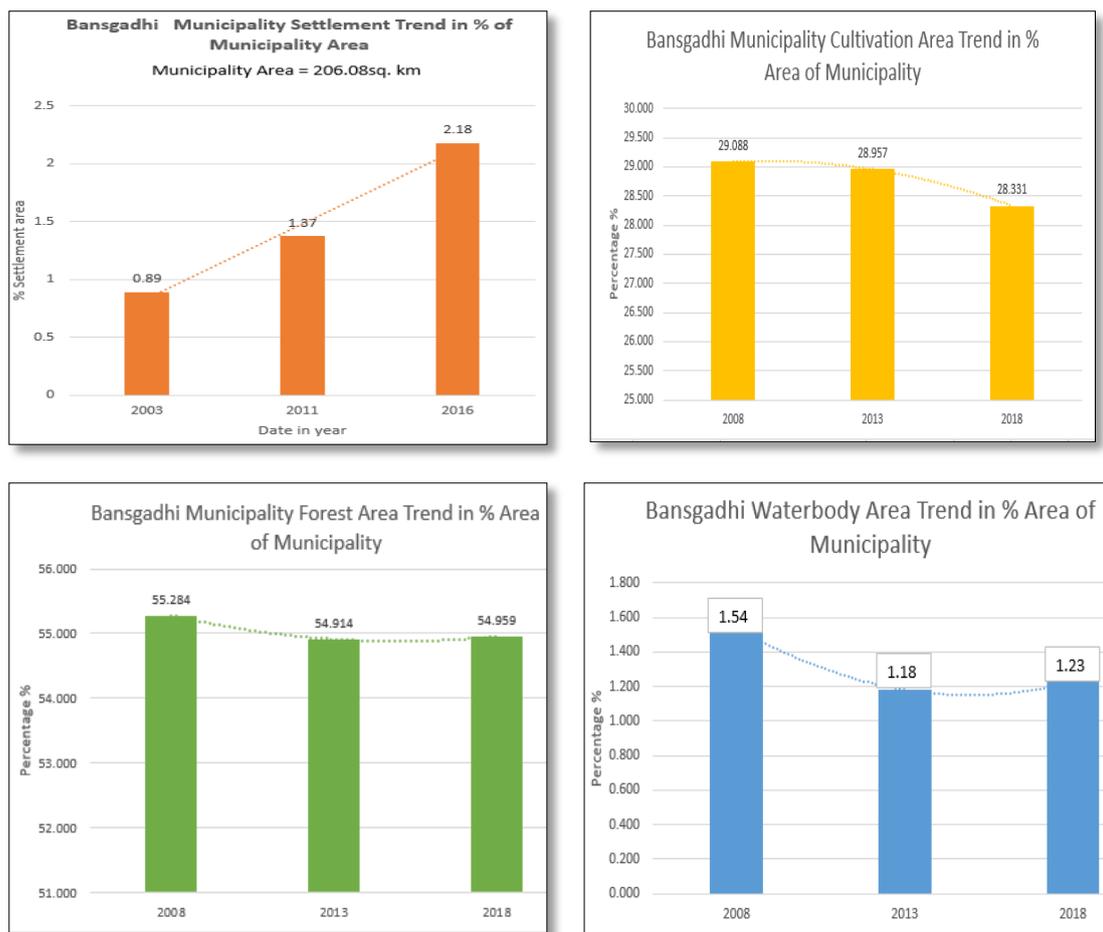
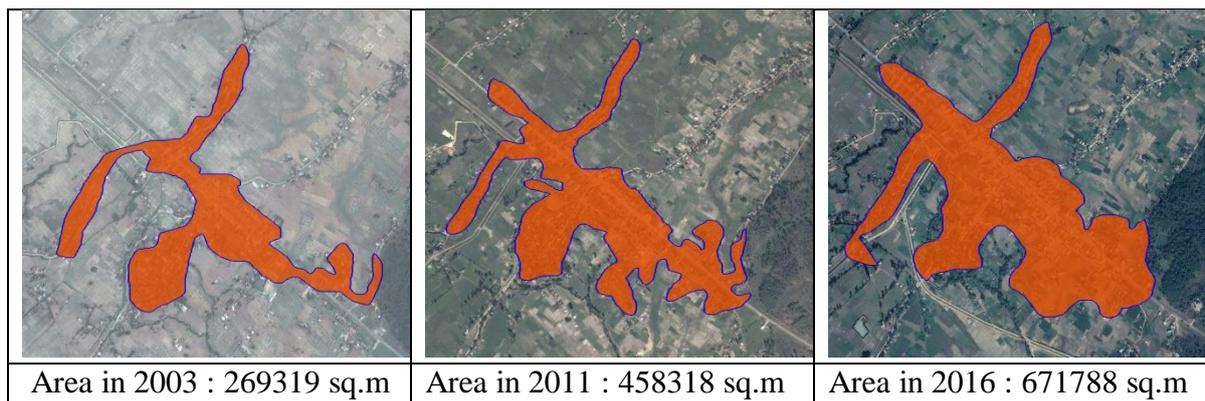


Figure 5: Changing area for forest and water bodies in three different years

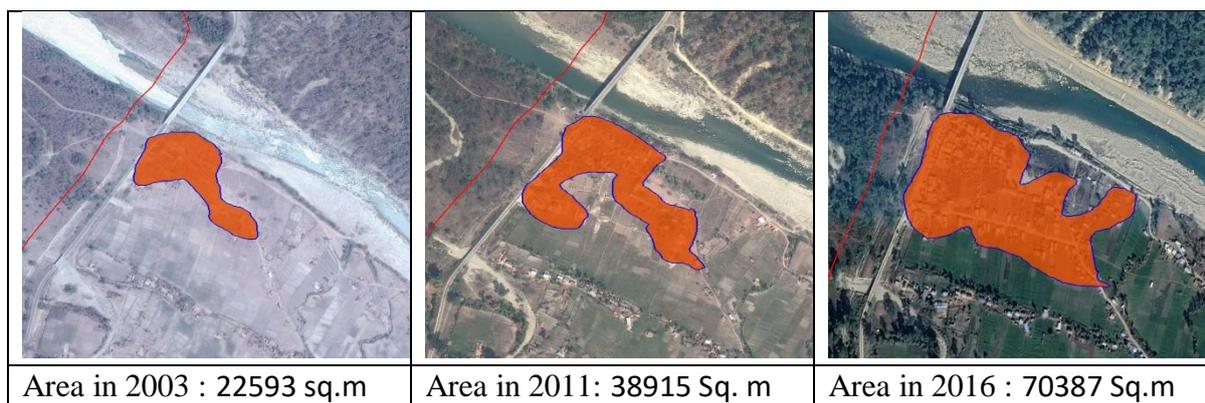
In the above graph, it shows the changing land use pattern of Bansgadhi in years in terms of percentage. The area of the municipality is 206.08 sq.km. The settlement area is increased by 1.29% in 13 years' period. Due to the increasing market area and migration, we can see the change in settlement pattern. Due to the accessibility of road network, there is increase in settlement area in the municipality. Similarly, cultivation land is in decreasing trend in different years (decreased by 0.76% in 10 years). So, we can see that settlement is increasing around cultivation land which automatically results in decreasing in cultivation area.

Another graph shows the change in the forest area of the municipality which indicates decreasing in the forest area. The percentage of land covered by forest in 2008, 2013 and 2018 are 55.284%, 54.914% and 54.959% respectively. There is 0.37% decrease in the forest area from 2008 to 2013 and it is almost constant till 2018 i.e. 54.949%. It indicates the negative impact in the environmental development as there is decreasing rate of forest area. Water body in the municipality covers 1.54% in 2008, which is decreased in 2013 i.e. 1.18% and again it is slightly increased in 2018 i.e. 1.23%. The decrease in area of water body indicates the drying of the water covered land and also encroachment of the respective land.

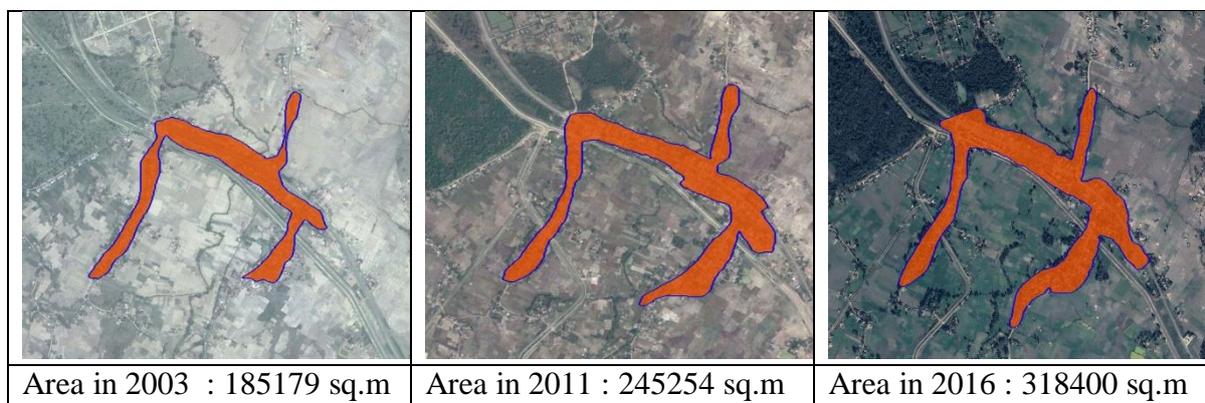
The map below illustrates the change in the settlement, cultivation, forest and water body of various settlements are also presented below:



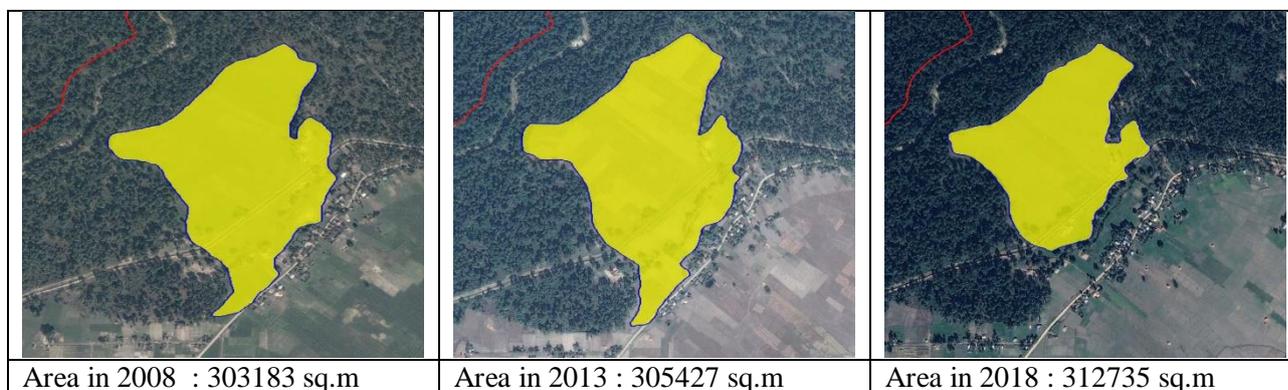
Map 6: Settlement pattern of Motipur



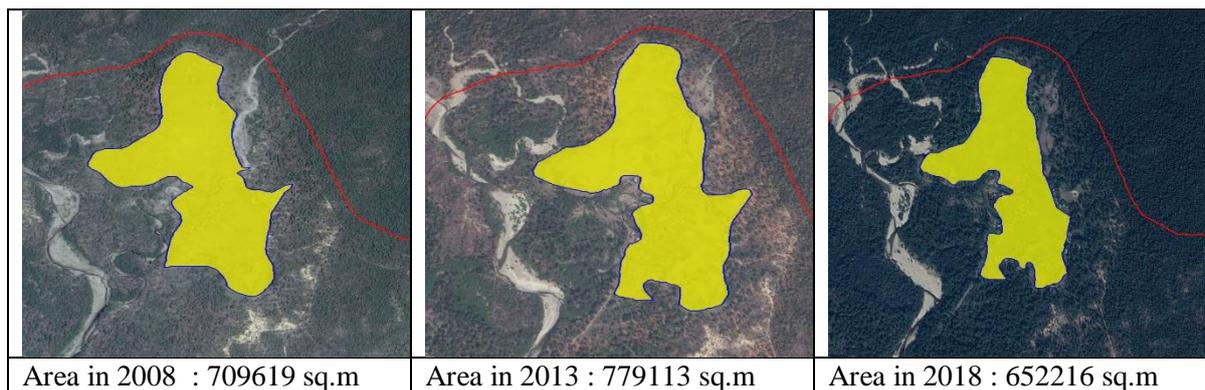
Map 7: Settlement pattern of Babai



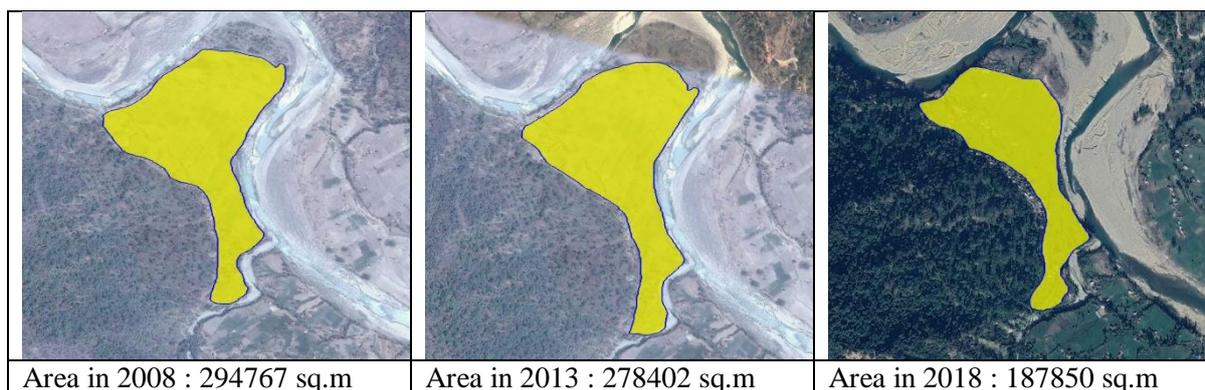
Map 8: Settlement pattern of Pahadipur



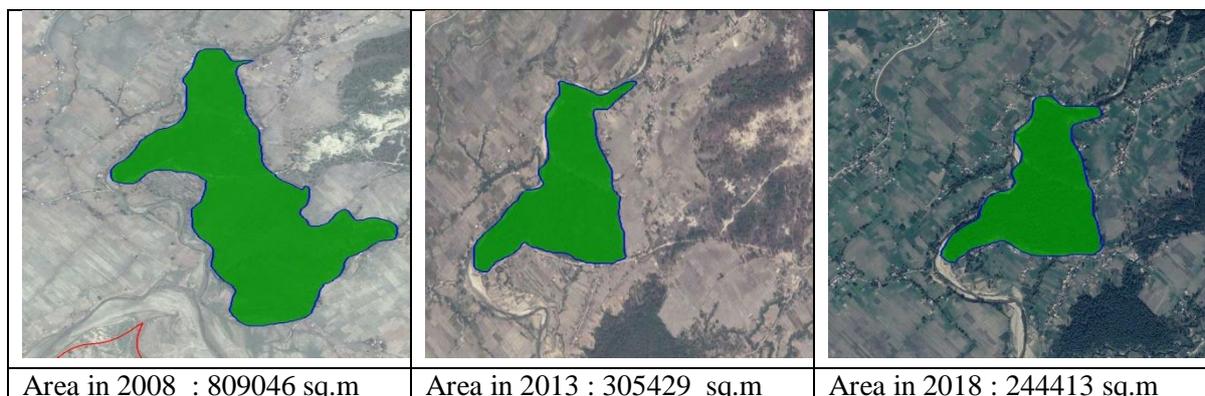
Map 9: Cultivation Land pattern of Deudakala



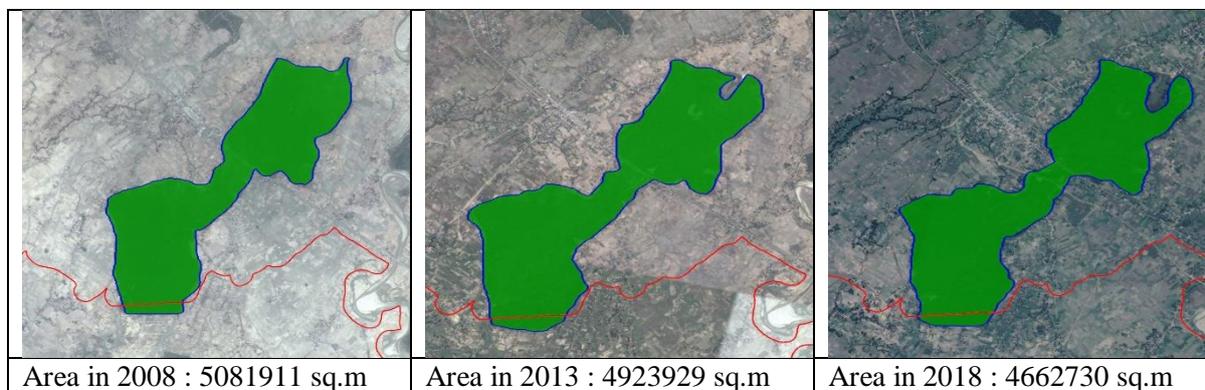
Map 10: Cultivation Land pattern of Ambhiya



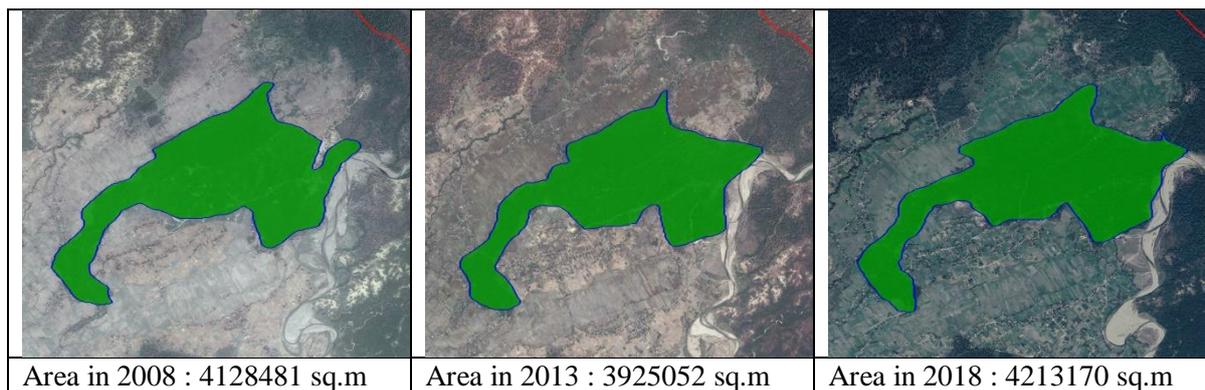
Map 11: Cultivation Land pattern of Belawa



Map 12: Forest pattern of Belawa



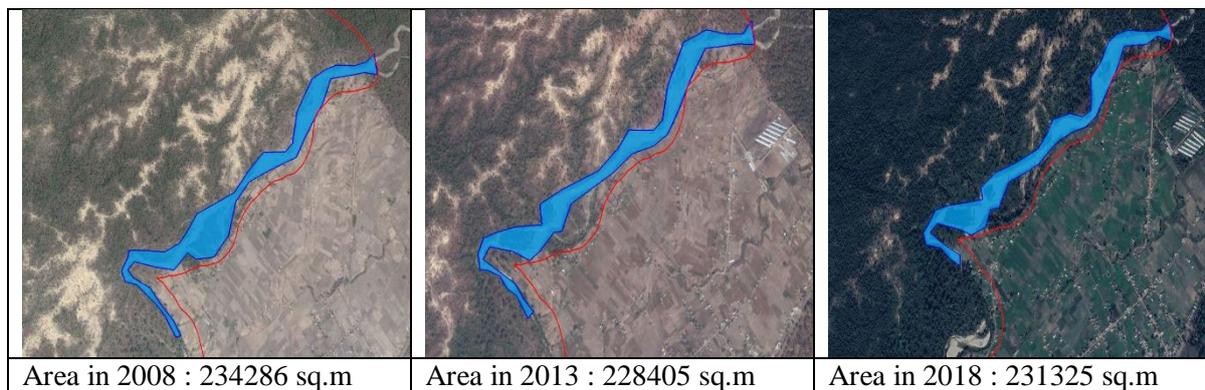
Map 13: Forest pattern of hasnapur



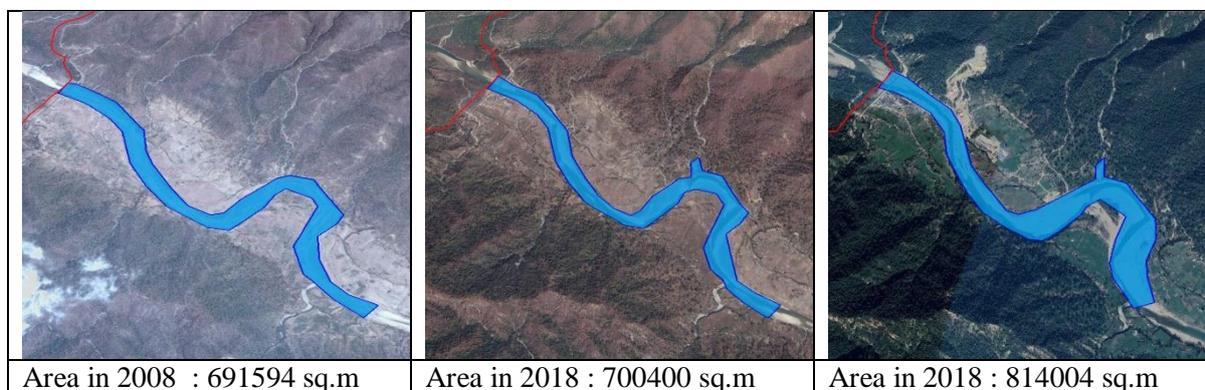
Map 14: Forest pattern of Bansgadhi



Map 15: Water body pattern of Chamakpur



Map 16: Water body pattern of Lauha khola

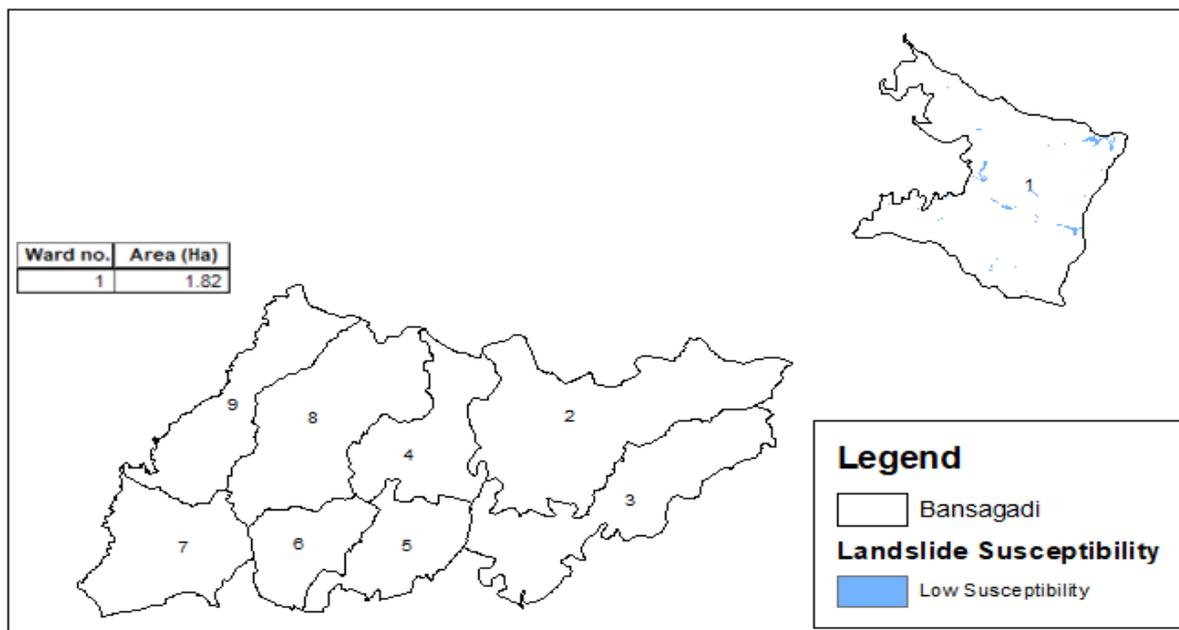


Map 17: Water body pattern of Babai

4.1.2.5 Risk Analysis

Landslide Risk

Landslide risk analysis was done through GIS by analyzing various driving factors of landslide, various data including Normalized Difference Vegetation Index (NDVI), Precipitation data, Slope and elevation data were used to carry-out geo-spatial analysis to identify the areas prone to landslide.



Map 18: Landslides prone zone of Bansgadhi Municipality

Only some parts of ward 1 (1.82 Ha) have low susceptibility to landslide while other wards of Bansgadhi are not affected by landslide hazard.

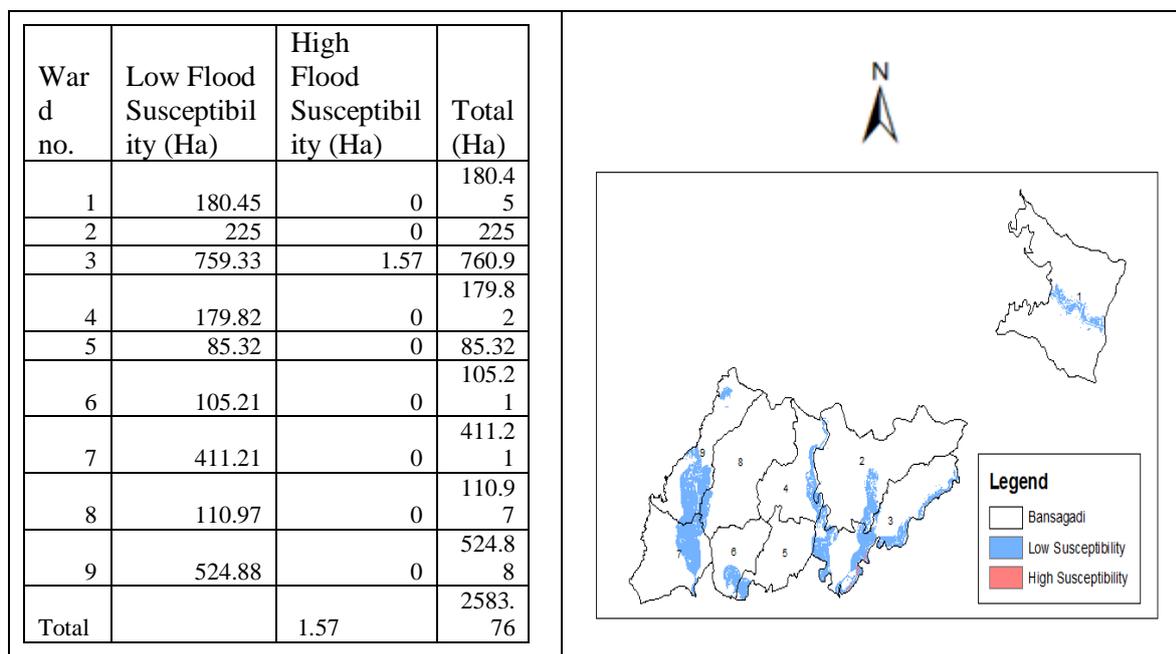
Flood Risk

Babai River cutting and flooding are the major environmental problems of Bansgadhi municipality. Babai River cuts in its bank occasionally. According to intuitional survey, 2018, During the year (2015-2017) 7 People died from flood in the municipality. 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.

Landslide risk analysis was done through GIS by analyzing various driving factors of flood, various data including Normalized Difference Vegetation Index (NDVI), stream order, Slope and elevation data were used to carry-out geo-spatial analysis to identify the areas prone to flood.

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. Ward no. 5 and 8 are not much effected by the flood while remaining ward are affected

by flood among which ward no 3 is in high risk of flood. Overall, 2583.76 Ha of total area is in the risk of flood, where 1.57 ha area in ward no. 3 is in high risk of flood. The flood susceptible areas of Bansgadhi are shown in the map below.



Map 19: Flood prone zone of Bansgadhi Municipality

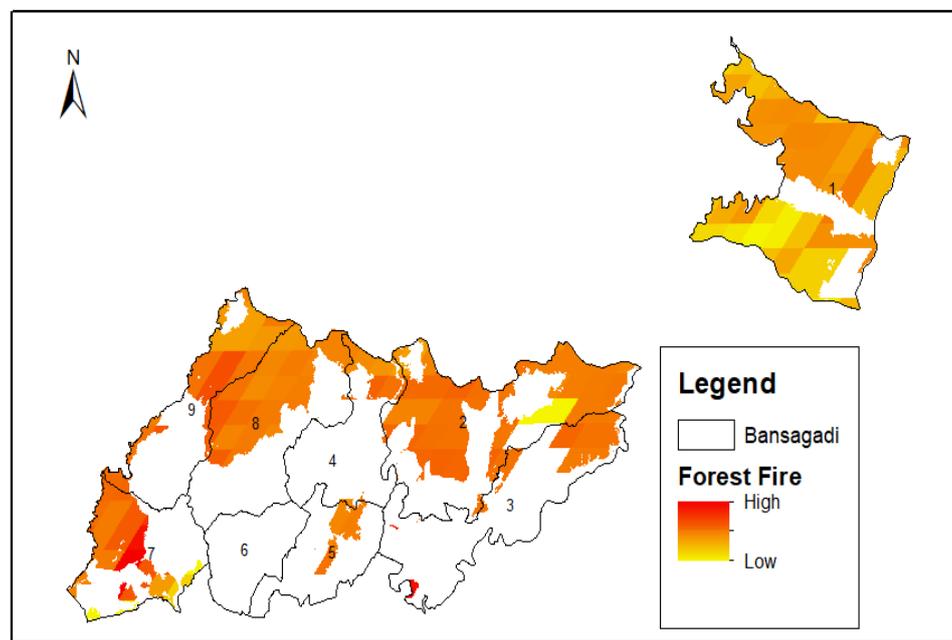
Table 4: Status of disaster in Bansgadhi municipality

Major disasters	Ward	Risk	Displacement of settlement	Available plan/importance
Flood	1	Loss of property and people	Yes	Embankment
Wind		Loss of Wealth and people	Yes	Criteria for House construction
Landslide		Extremely	Not much	Afforestation
Animal Attacking		Loss of People	No	Electrical Wire
Fire		Loss of property	No	Fire brigade
Flood	2	Extreme risk	Yes	
Fire		Extreme Risk	Yes	Fire brigade, Ambulance
Flood	3	Extreme	Yes	Embankment
River Cutting		Extreme	Yes	Embankment
River Cutting	4	Loss of Cultivated land	No But possible	Embankment
Animal Attacking		Loss of Crops	No	Electrical Wire, <i>Jaali</i>
Flood, Inundation	5	-	No	Sewerage, Culvert Construction
Wild animal attacking		-	No	Road embankment, Drain embankment

Major disasters	Ward	Risk	Displacement of settlement	Available plan/importance
Fire		-	No	Construction of low risk infrastructure
Wind		-	No	-
Flood	6	Loss of Property and Life	Yes	Motipur- Gaidapokhar embankment
Animal attacking		Loss of property and life	Yes	Electrical Wire, <i>Jaali</i>
Flood	7	Loss of property and life	Yes	Embankment
Animal Attacking		Loss of property and life	Yes	Electrical Wire
Fire		Loss of property and life	Yes	Need of Fire brigade
Flood	8	Loss of property and life	Yes	Embankment, Sewerage, Traditional cleanness of drain
Animal attacking		Loss of property and life	Yes	Electrical wire
Flood	9	Loss of property and life	Yes	Embankment
River Cutting		Reduce land	Yes	Embankment

(Source: PRA/FGD, 2018)

Fire Risk

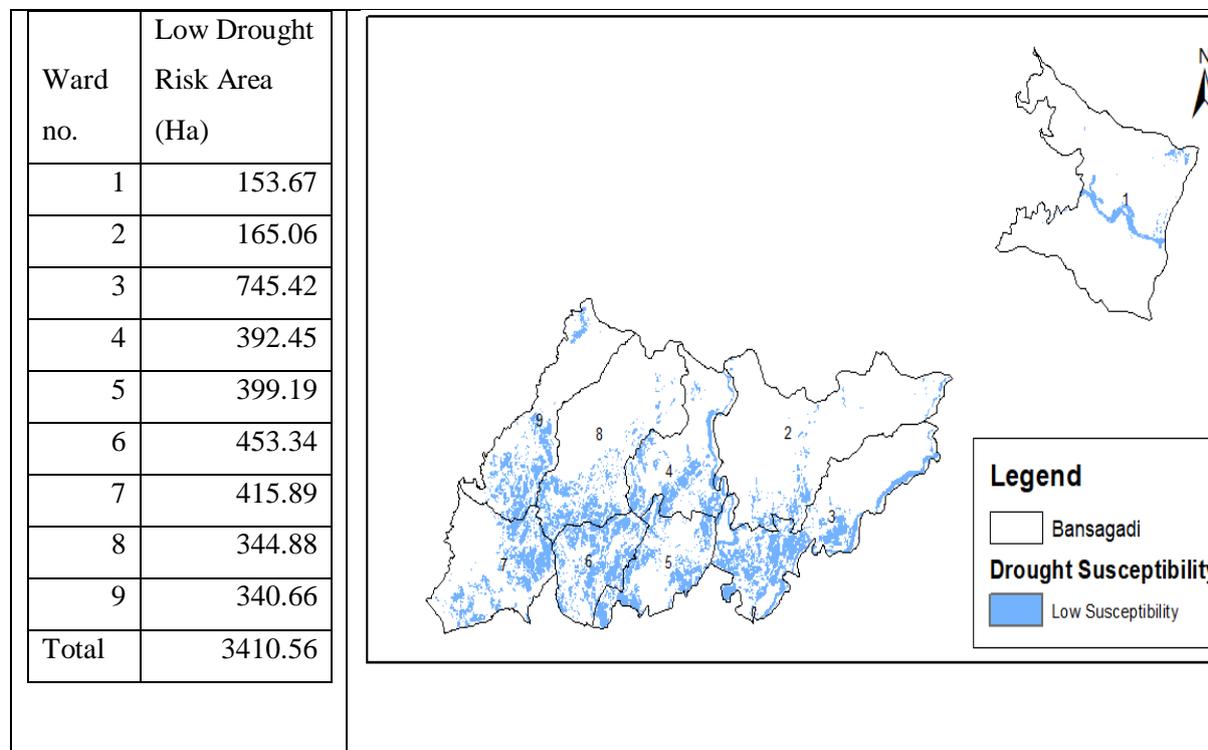


Map 20: Forest Fire Risk Zone of Bansgadhi Municipality

The municipality consists of 40 community forests areas and thus also has risk of forest fire. 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. Forest fire is likely to occur during the windy and the dry season e.g.

Chaitra & Baisakh. Ward number 1, 2, 3, 7, 8 and 9 are more susceptible to forest fire as seen in the map below. The lack of equipment and skilled human resources such as trained fire fighters pose serious challenges in the municipality.

Other Risk



Map 21: Drought Risk Zone of Bansgadhi Municipality

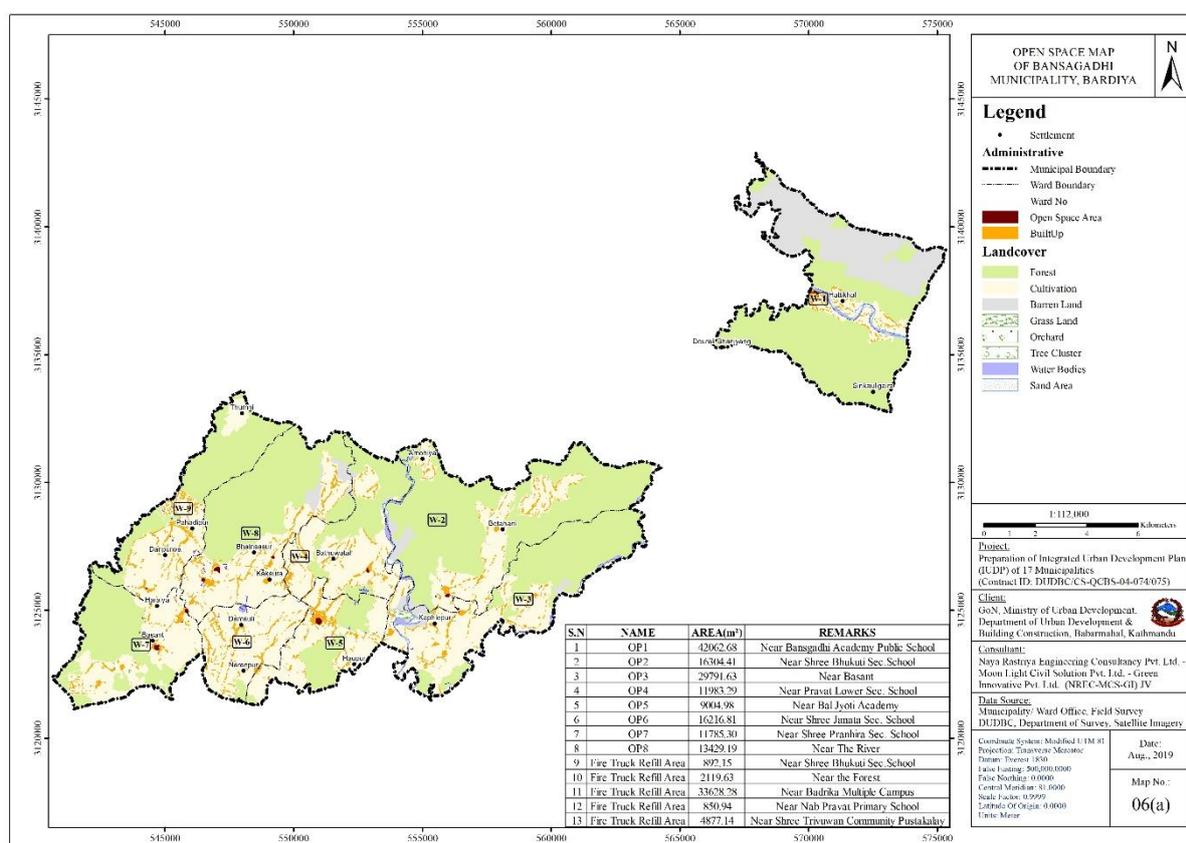
Loss of cultivated land, grass/grazing and forest land due to river encroachment is some common problems, while in some parts abandoned by channels or old riverbeds have been brought into cultivation or reused as grazing areas or used for tree plantations in hazard areas. The river morphology is unpredictable 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. Drought risk analysis was done through GIS by analyzing various driving factors of drought, data including Normalized Difference Vegetation Index (NDVI) and Normalized Difference Water Index (NDWI) were used to carry-out geo-spatial analysis to identify the areas prone to drought.

In Bansgadhi municipality, 34.1 sq. km of total area is likely to be affected from the drought. Ward no. 3, 5, 6, 7 and 9 seems to be highly susceptible to drought as seen in the map below.

4.1.2.6 Open Space

There is 41.04% of cultivable land in the municipality. These are also the open land but they are not calculated as open spaces. In the municipality, there are thirteen major open spaces which are used for various purposes i.e. recreation, sports, etc. The area of open spaces ranges from 2 ropani to 82 ropani. Those space lies near Bansgadhi school, Basant, Bal Jyoti Academy, Shree Pranhira Sec. School, Badrika Multiple campus, Pravat Primary School and Tribhuvan Community Pustakalaya. Conservation of these open space is most in the developing area like Bansgadhi. The map showing open space in Bansgadhi municipality is shown below:



Map 22: Map showing open spaces in Bansgadhi Municipality

4.2 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.

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.

Health

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

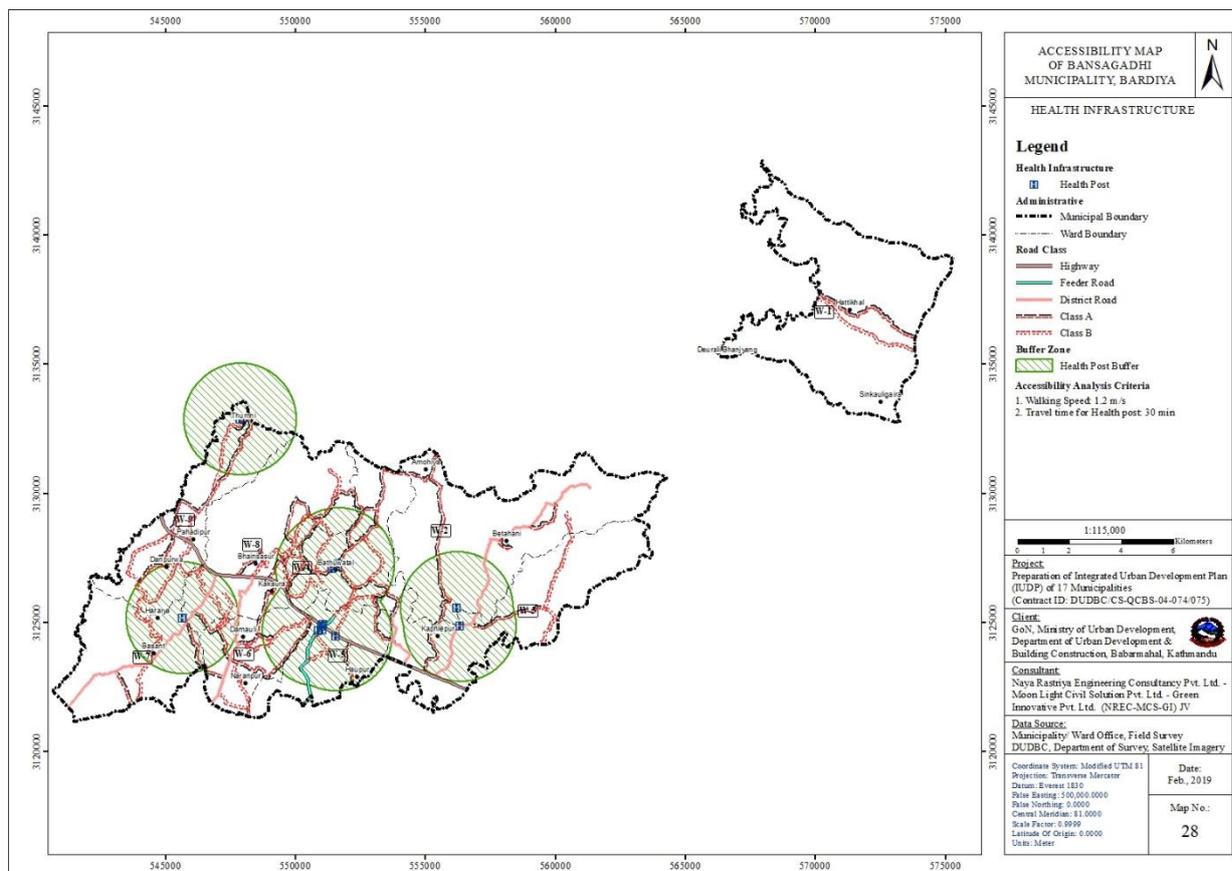
Analysis Criteria

- 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 Terai region, the Walking Speed for a healthy citizen: 1.2 m/s

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



Map 23: Easy Accessibility Analysis result for health Service

From the analysis, it seems that there is health post but no hospital in this municipality as this municipality needs to health facility needs to be improve mainly in ward no. 1, and 2.

Educational facility

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

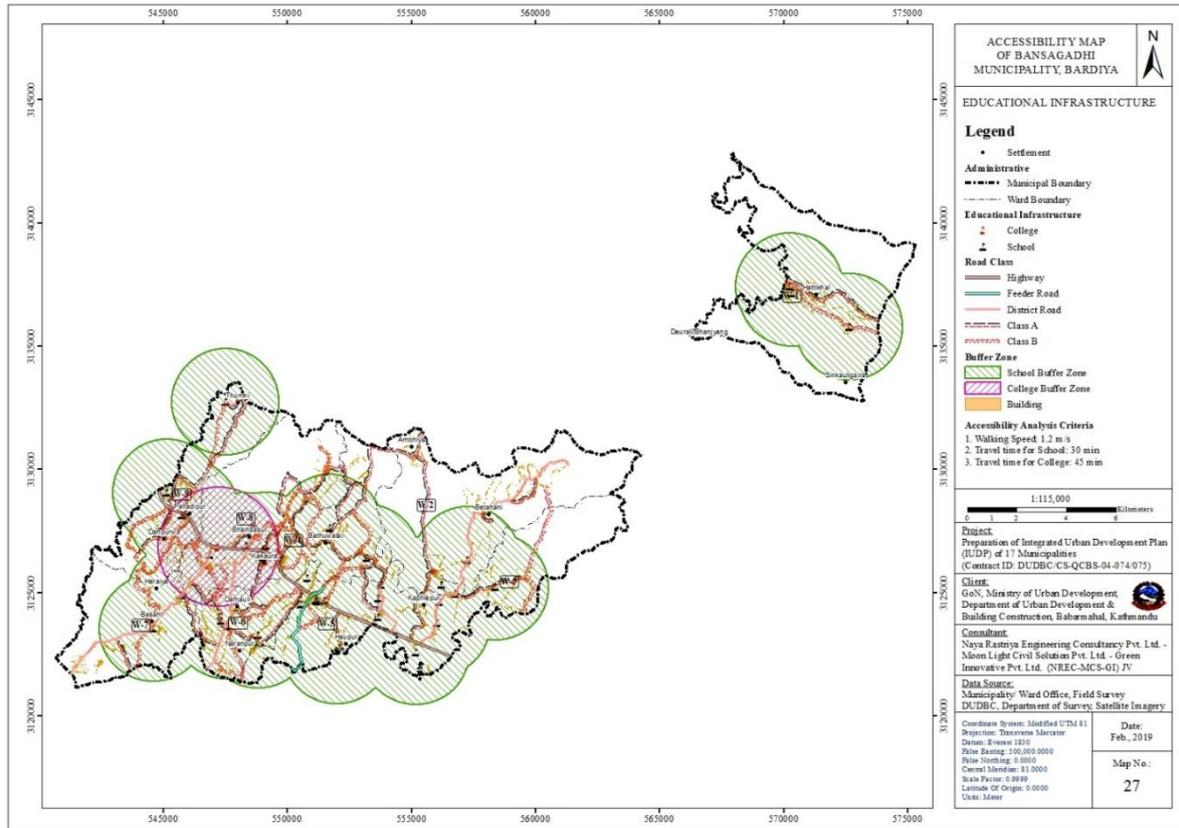
Analysis Criteria

- 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 Terai region, the Walking Speed for a healthy citizen: 1.2 m/s

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



Map 24: Easy Accessibility Analysis result for Education

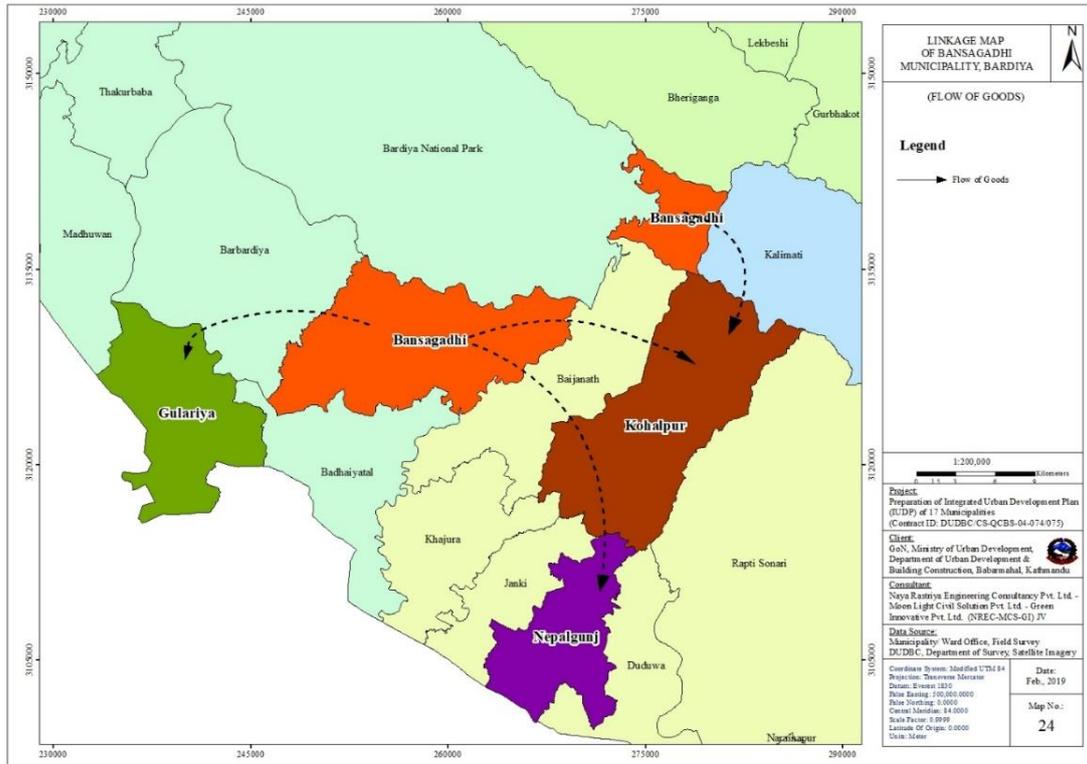
From the analysis, it seems this municipality is very rich in education. Although in ward nos. 2 and 4 needs to improve education facility in higher level. Modern and technical school needs to be establish in this municipality.

Linkage Analysis

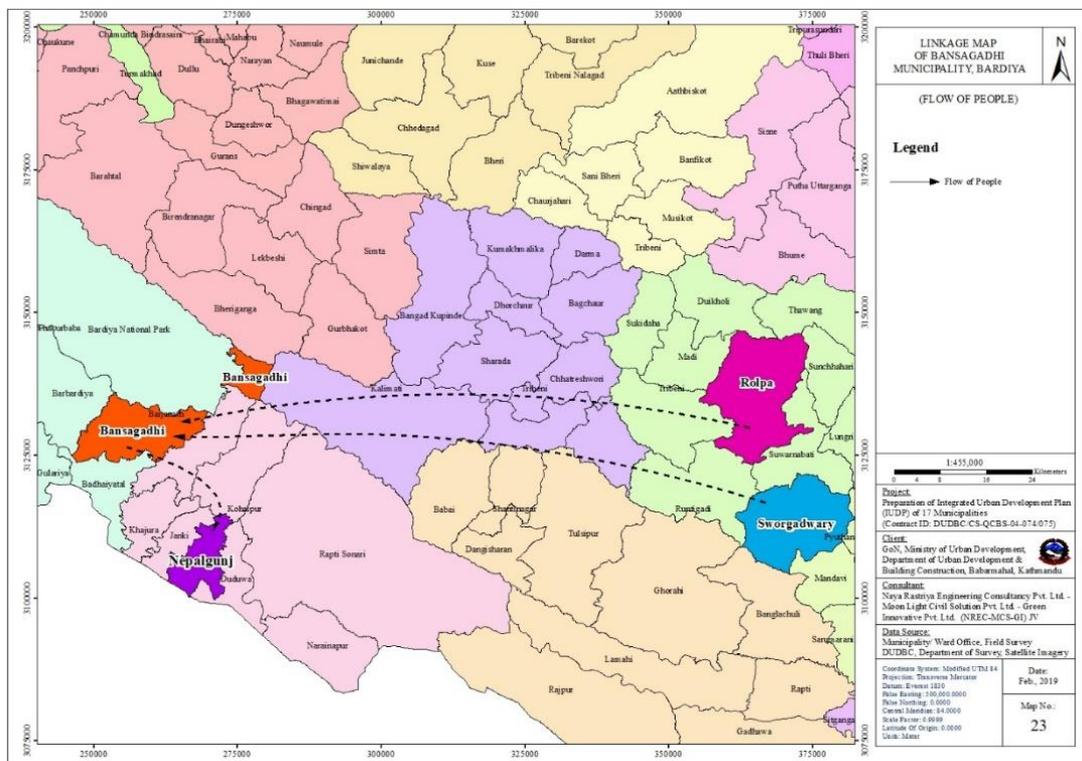
One of the important aspects of this IUDP is to grow the municipality with ambitious target of making it physically, socially, culturally and economically benefited and also making the municipality sustainable for long run. It also ensures equal opportunity for different sub-areas and different social 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. Basically, Hattikhali is the market center for nearby VDCs and municipalities. The municipality is connected through highway, feeder road and district road, so the flow of good seems to be easy

Sworgadwari seem migrating to Bansgadhi for the limited facilities. Growing number of out migration is also one of the major problem either that be within the nation or out of nation.



Map 26: Map showing linkage of goods



Map 27: Map showing flow of people

Intra- Regional

Hattikhal is the major market center of the municipality. These places are connected to main highway, so there is growing market and they serve to other areas of the municipality. Places like Haupur and Basant depend on these market center for goods and services. Most of the settlement pattern is seen along the major highway and feeder road.

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.

Suitable Site for Settlements

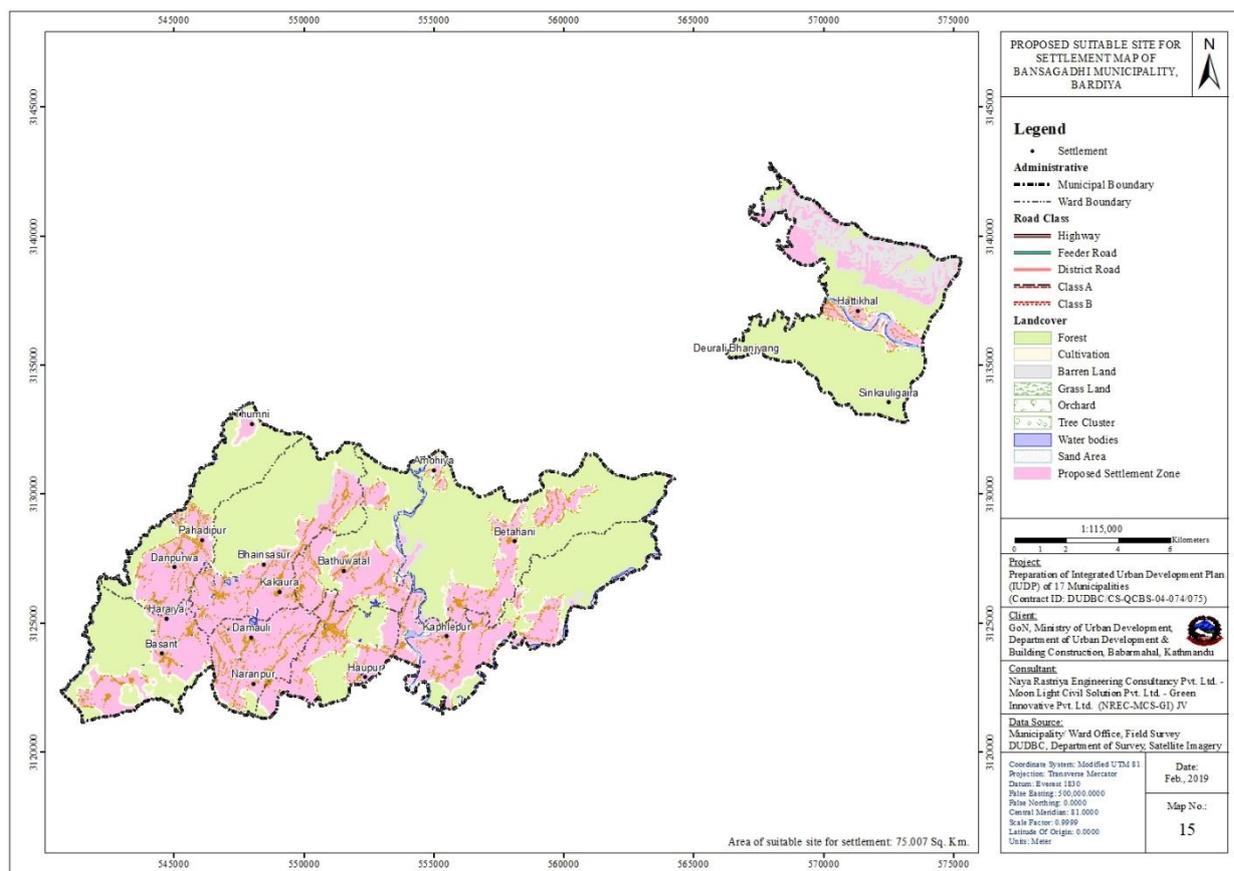
The adopted criteria for suitable site selection for settlement are tabulated below:

Table 5: Criteria for Suitable Site Selection

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 free from the risk of land slide. For this vary purpose, the slope of the suitable settlement cannot be more than 30⁰

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 28: Suitable site for settlement

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 this “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 6: 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 locate 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 same municipality.

Thus, the above multi criteria spatial analysis identify 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 process. 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 Bansgadhi Municipality, the result is shown below:

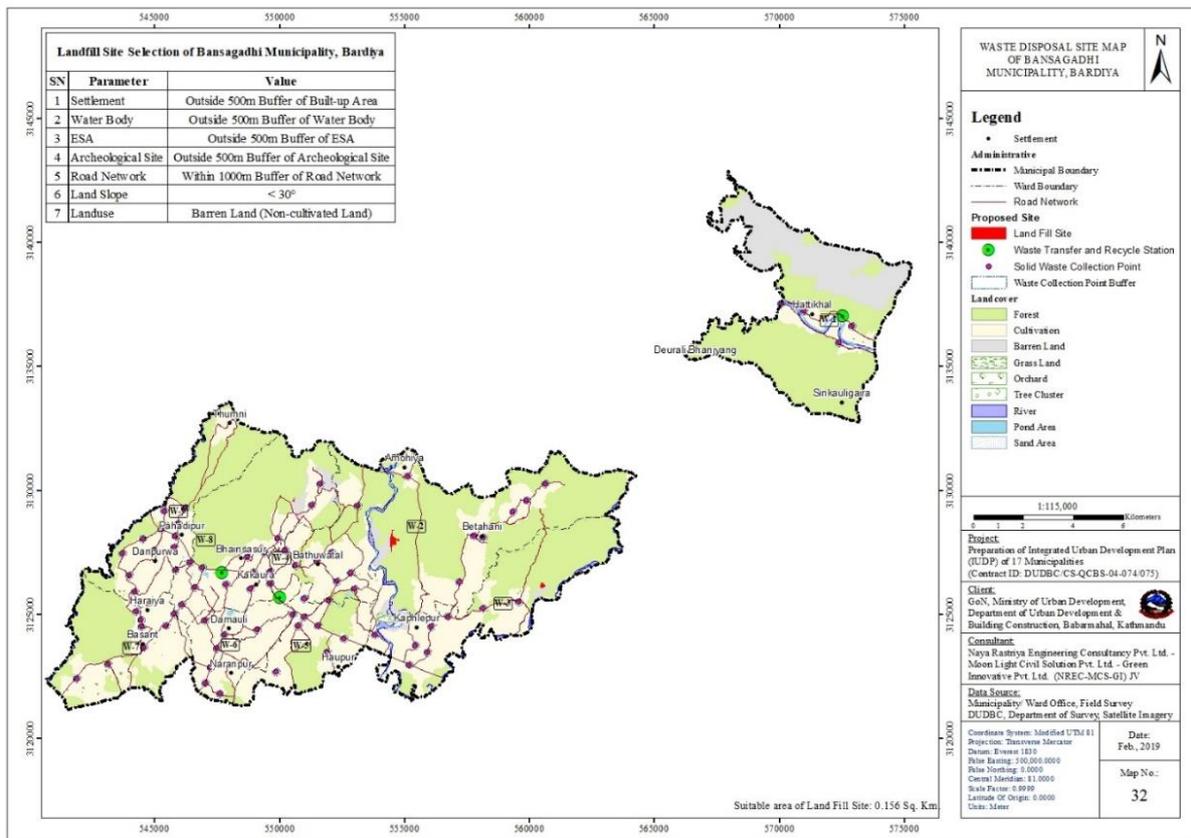


Table 7: Suitability Analysis for Landfill Site

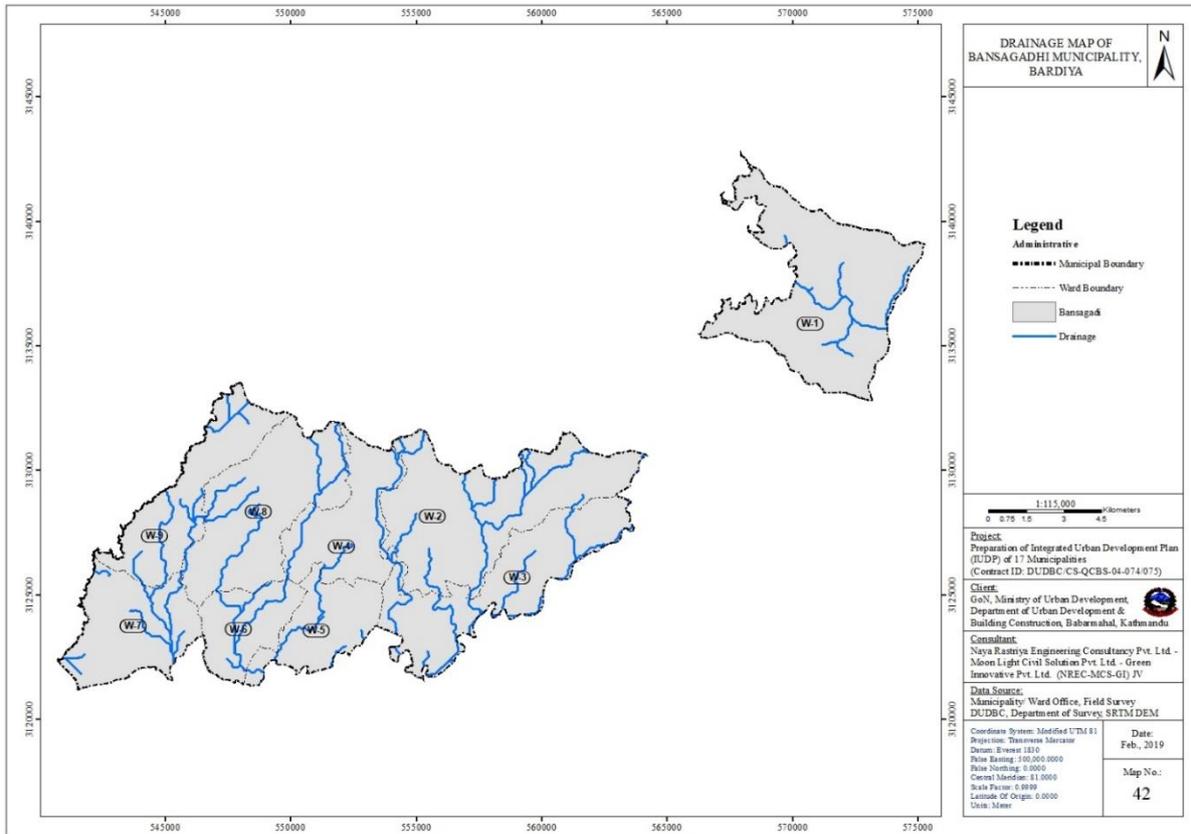
From the analysis, about 0.156 sq. km area has been find suitable for landfill site.

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 Bansgadhi municipality is about 151.076 km. The drainage map of the municipality is shown on the map.

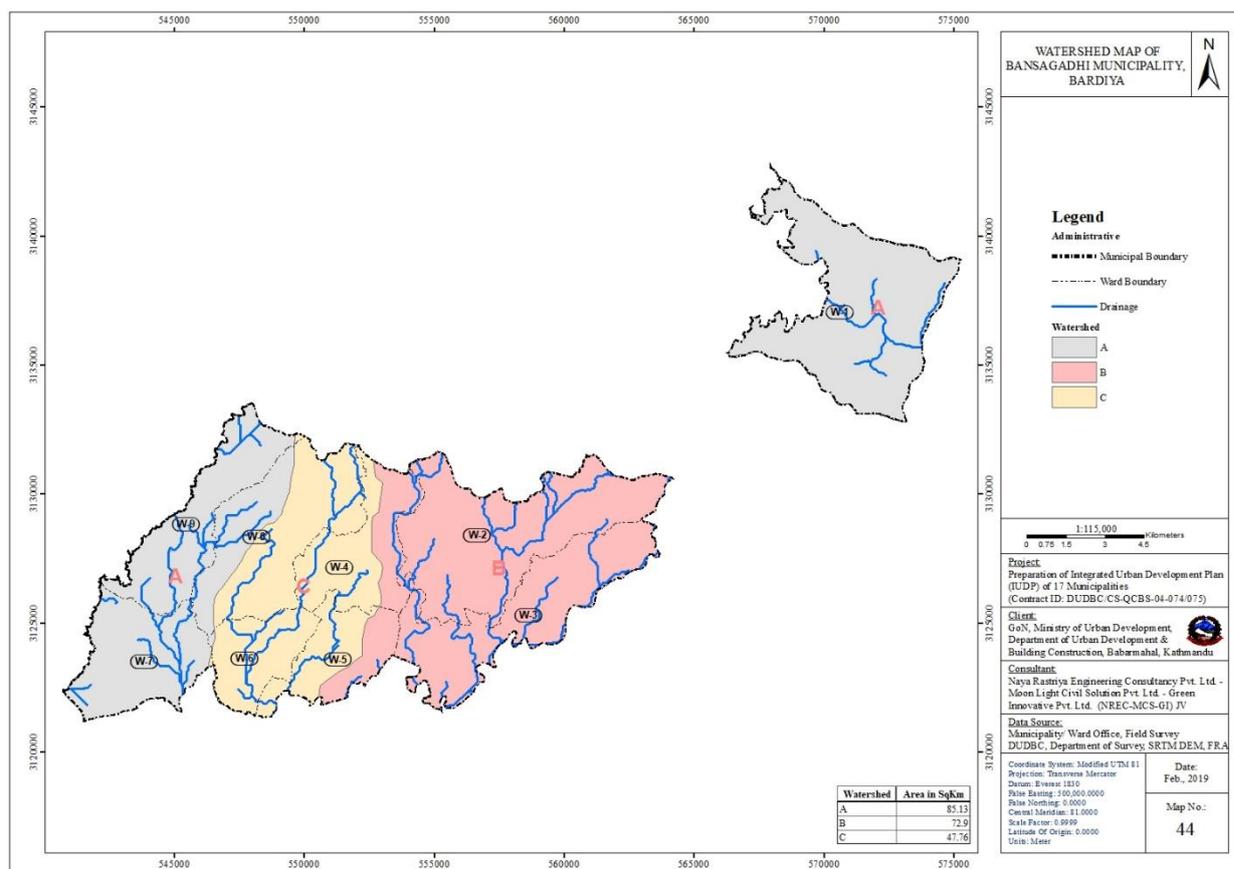


Map 29: Drainage Map of Bansgadhi Municipality

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 Bansgadhi municipality is given on map shown below.



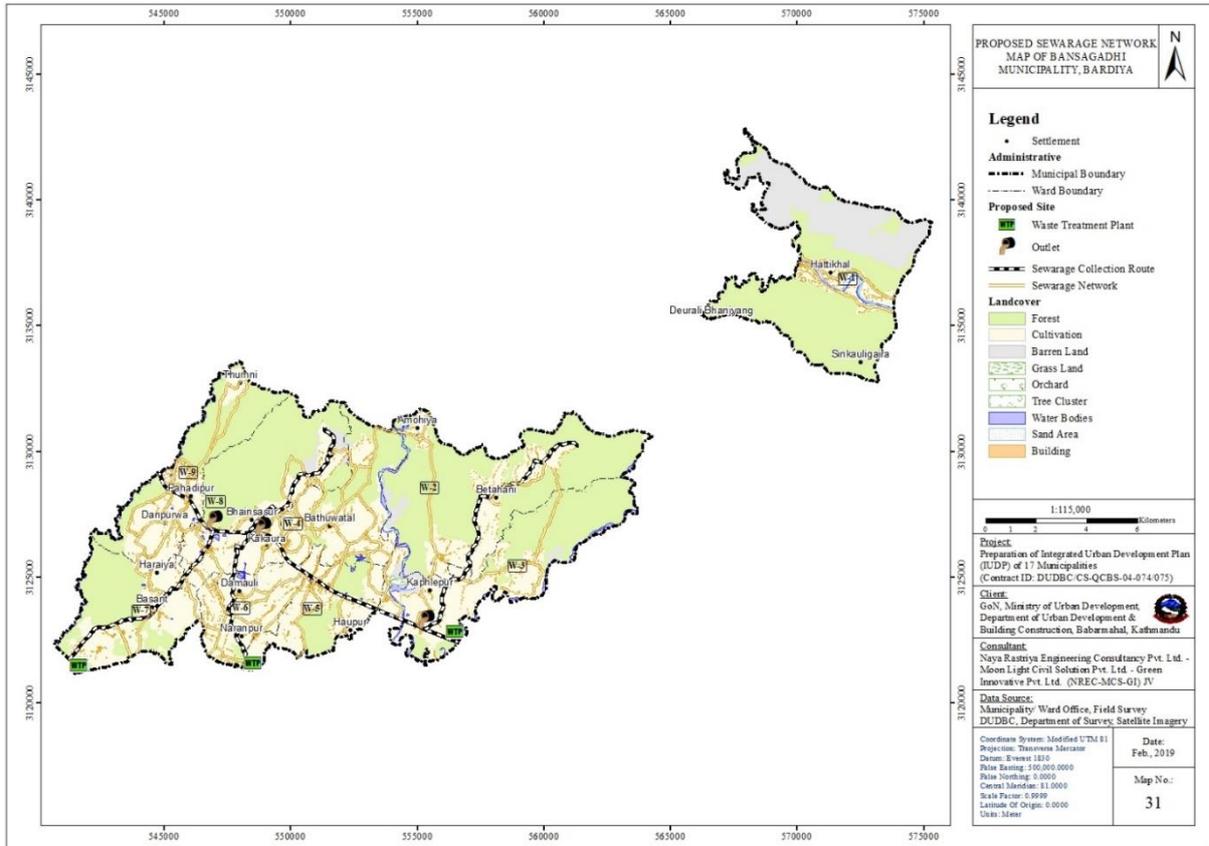
Map 30: Watershed Map of Bansgadhi Municipality

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 Bansgadhi Municipality, the result is shown below:



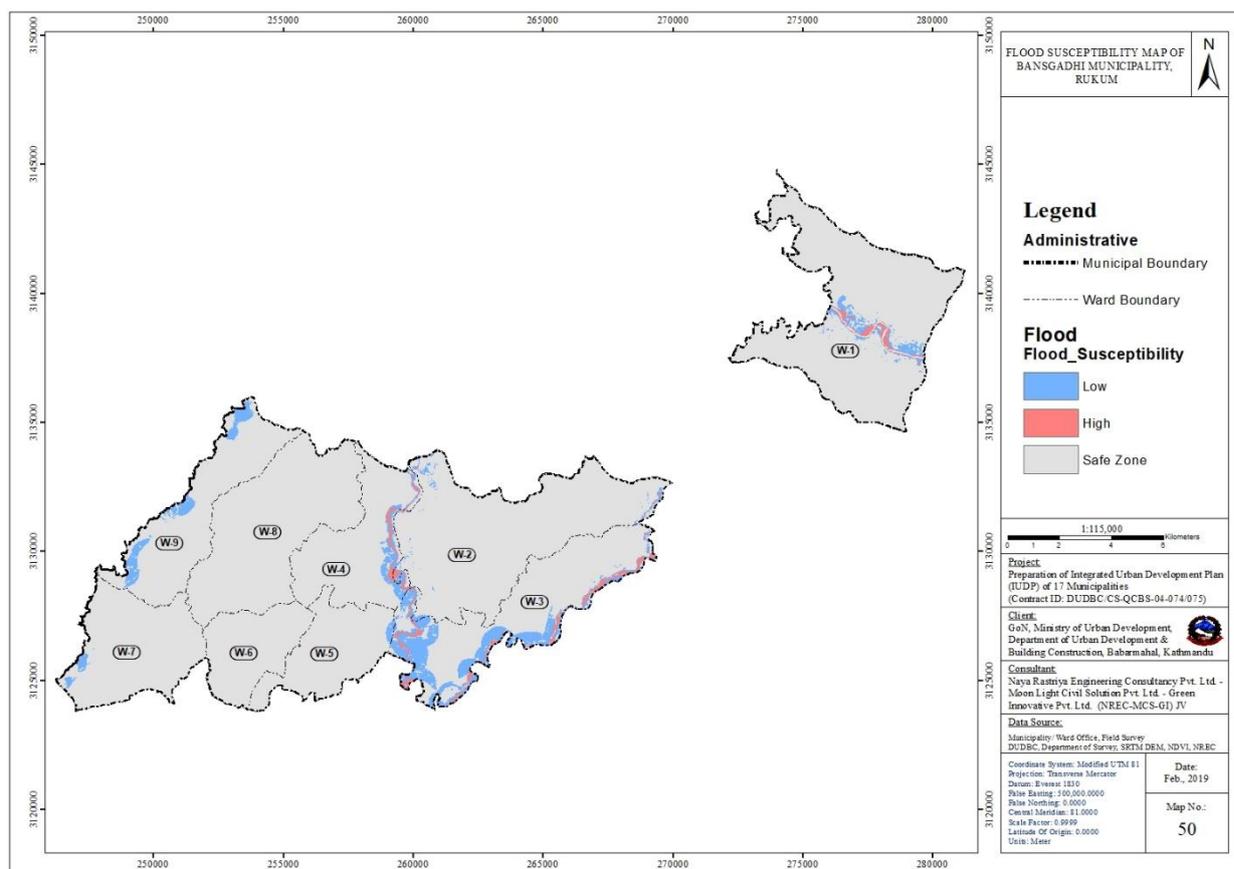
Map 31: Suitable Layout for Sewerage Network

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 8: 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 32: Flood Susceptibility Map of Bansgadhi Municipality

Table 9: Ward-wise Flood Risk zone of Bansgadhi Municipality

Ward no.	Low Flood Susceptibility (Ha)	High Flood Susceptibility (Ha)	Total (Ha)
1	180.45	0	180.45
2	225	0	225
3	759.33	1.57	760.9
4	179.82	0	179.82
5	85.32	0	85.32
6	105.21	0	105.21
7	411.21	0	411.21
8	110.97	0	110.97
9	524.88	0	524.88
Total		1.57	2583.76

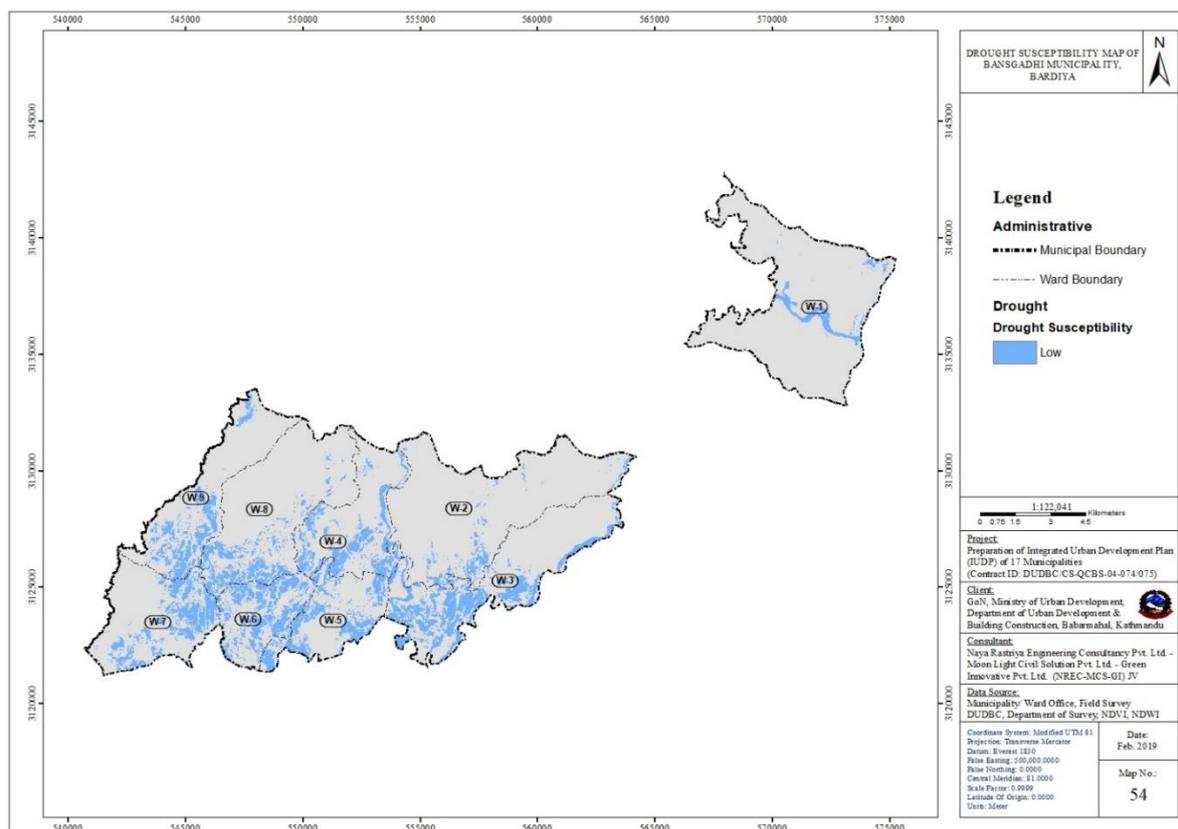
Drought Susceptibility Analysis

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 10: 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



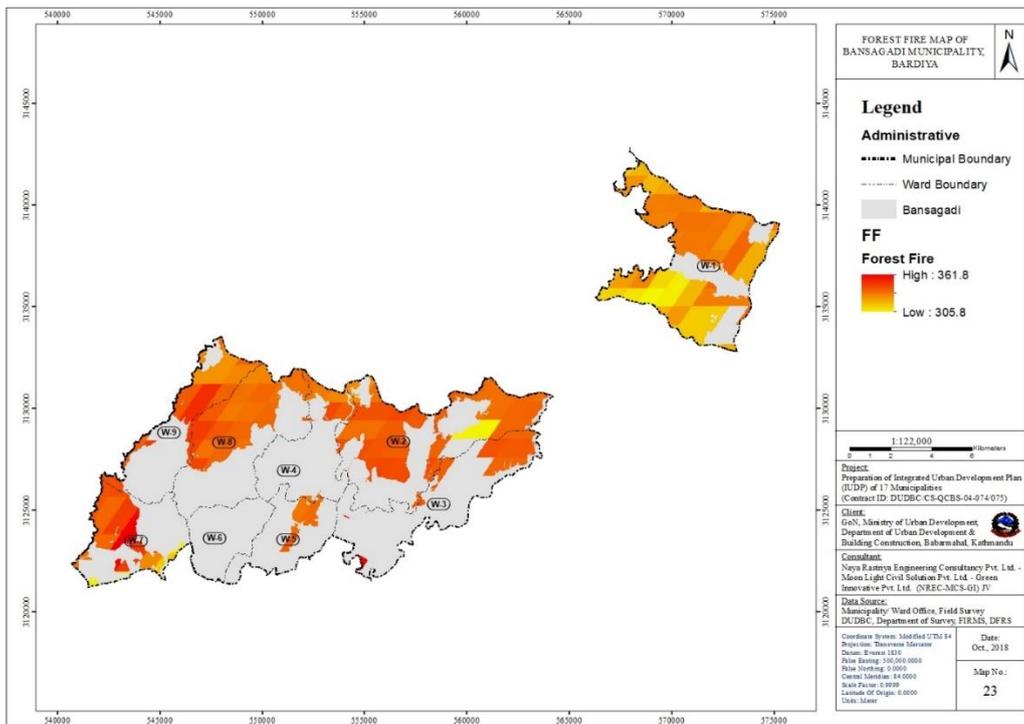
Map 33: Drought Susceptibility Map of Bansgadhi Municipality

Table 11: Ward-wise Flood Risk zone of Bansgadhi Municipality

Ward no.	Low Drought Risk Area (Ha)
1	153.67
2	165.06
3	745.42
4	392.45
5	399.19
6	453.34
7	415.89
8	344.88
9	340.66
Total	3410.56

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.



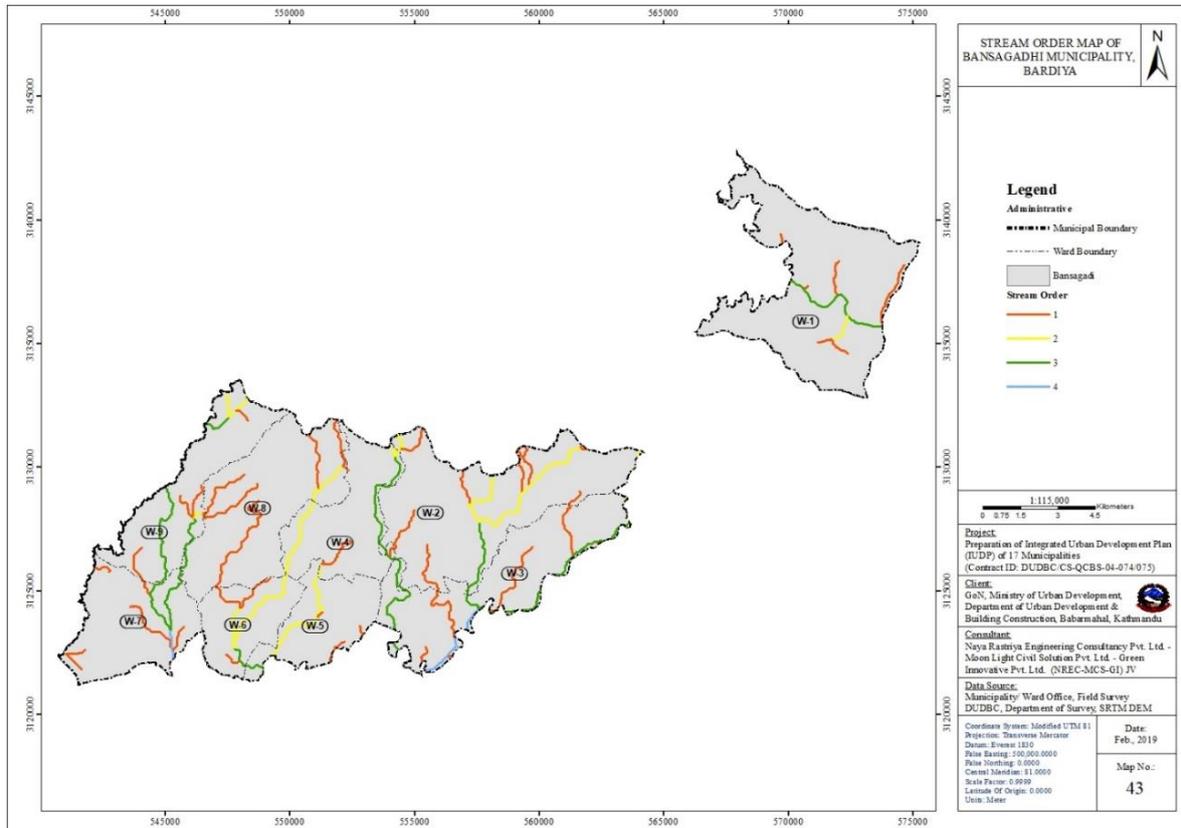
Map 34: Forest Fire Analysis

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 were clipped by Forest Types of Nepal in order to depict the forest fire only. In Bansgadhi municipality, there is high risk of the forest fire in western part of ward nos. 1, Northern part of ward no.2, 7 and 8.

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 through third order

streams are also called headwater streams and constitute any waterways in the upper reaches of the watershed. The Stream order map of Bansgadhi municipality is as follows:



Map 35: Stream Order Map of Bansgadhi Municipality

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.

Map 36: Total Number and Length of Different Stream Order

Stream Order	Total Number	Distance (Km)
First Order	41	69.858
Second Order	22	34.808
Third Order	20	44.497
Fourth Order	7	4.829

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.

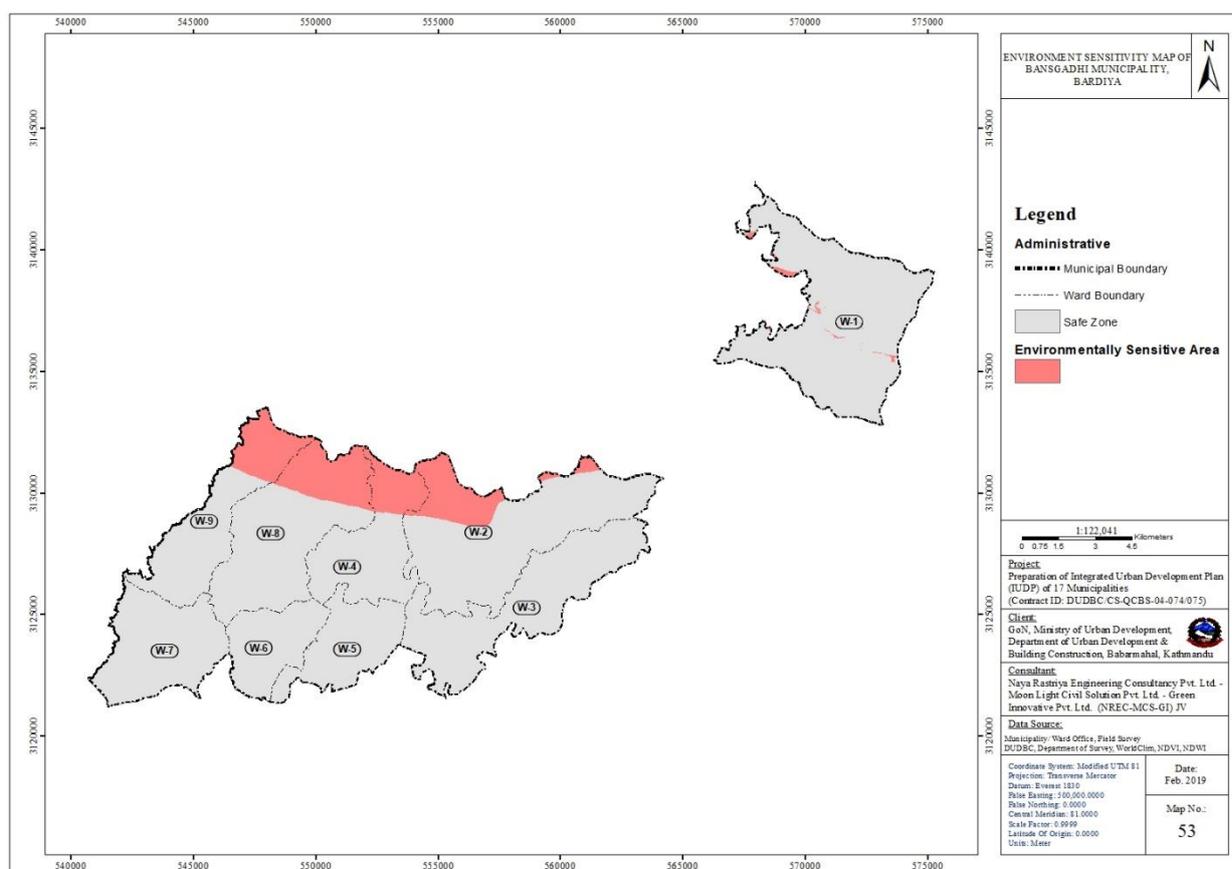
Forest Area

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.

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 Bansgadhi municipality, ESA zone is given below.



Map 37: Environment Sensitive Area

Further, it is shown presented in the table below:

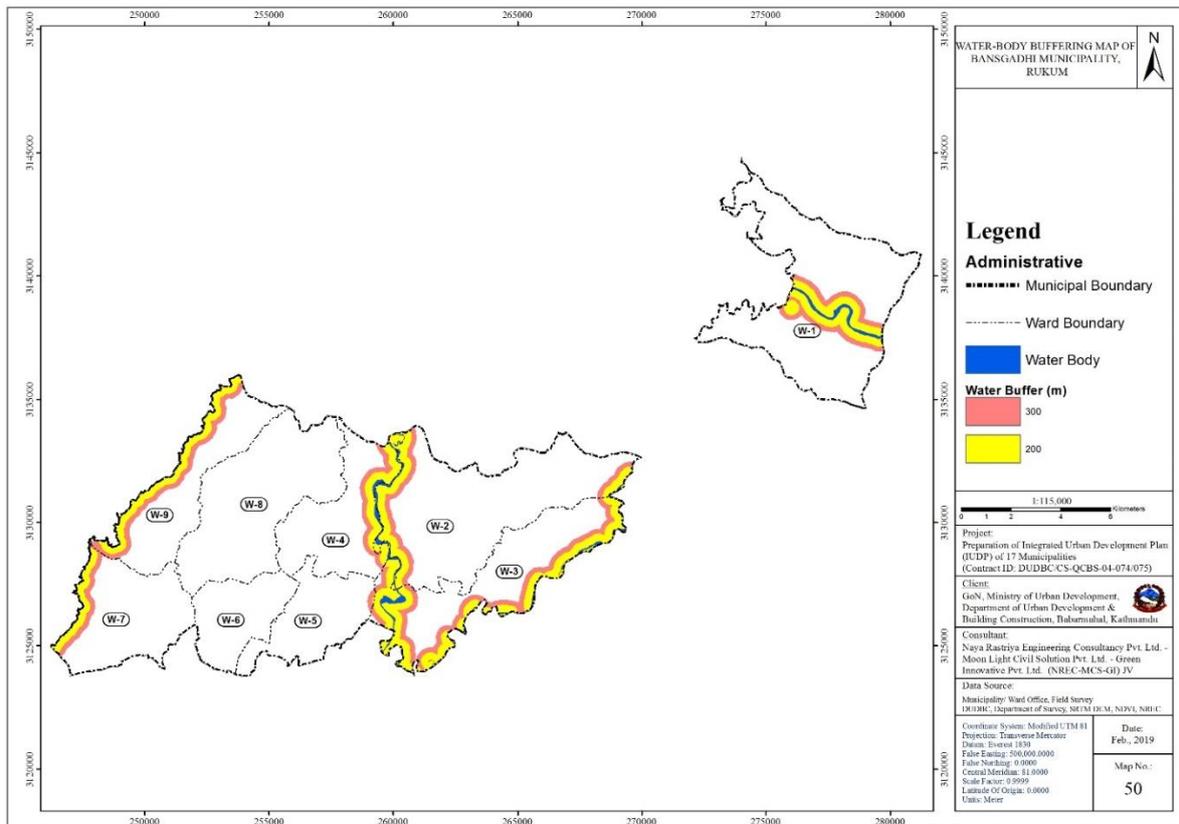
Table 12: Environment Sensitive Area

Ward No.	Area (ha)
1	70
2	695
4	419
8	731
9	563
Total	2478

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 Bansgadhi municipality is given on map:



Map 38: River Buffer Map of Bansgadhi Municipality

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.

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 Bansgadhi Municipality, the result is shown below:

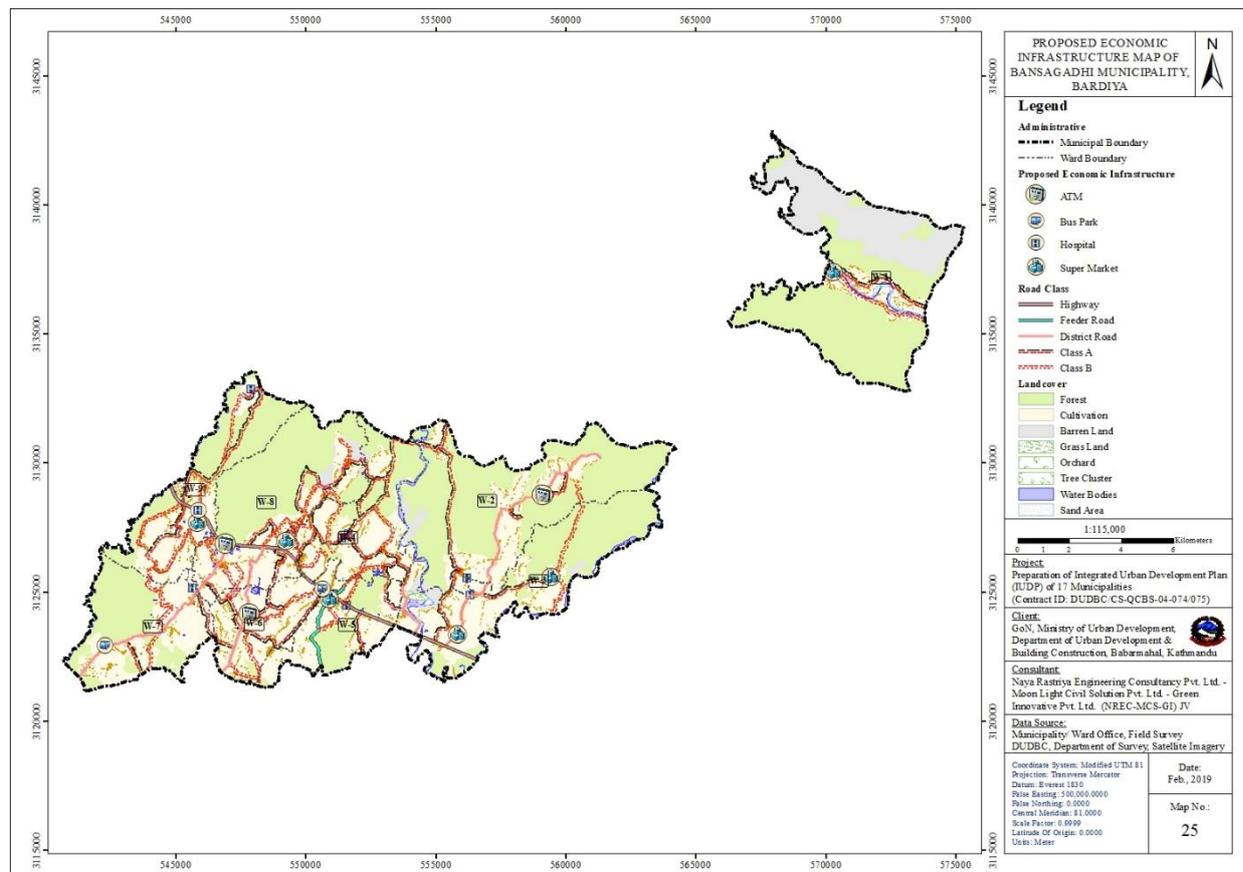
Table 13: Road classification on the basis of population service

Name	Road Class	Road Length (Km)	Household Nos.	Population Served
Pahadpur-Belawa	Highway	14.083	6820	33964
Motipur-Basgadi	Feeder Road	4.422	2192	10916
Gauripaira-Resampur	District Road	8.423	2403	11967
Lakhana-Ghaireni	District Road	11.812	2983	14855
Bangaudi-Naranpur	District Road	5.763	3418	17022
Uttar Bhaka Road	District Road	2.387	788	3924
Ratna Rajmarga-Salyan Border	A	4.897	1126	5607
Belawa-Banmudawa-Amohiya	A	5.353	446	2221

Name	Road Class	Road Length (Km)	Household Nos.	Population Served
Laxmana- Amohiya	A	8.124	810	4034
Jaljala- Ghaireni	A	3.538	203	1011
Betahani- Jaljali	A	3.538	384	1912
Lok Rajmarga-Belawa- Lakshamanapur-Shantipur- Banmudawa	A	3.688	858	4273
Belawa-Mahadeva	A	3.07	650	3237
Uttar bhakari-Madaha- Newada-Shankhariya- Matariya-Bathuwa	A	5.866	1360	6773
Milanchok-Bathuwa-Asneri	A	2.037	317	1579
Uttar Bhakari-Chamakpur Ring Road	A	5.313	510	2540
Kakaura-Riharpur-Dangpur- Koldada-Asneri	A	6.344	1190	5926
Shankhariya-Raji Tole- Dangpur	A	1.775	544	2709
Hauptur-Lok Rajmarga	A	1.749	161	802
Motipur-Laxmana	A	7.894	1402	6982
Sattariya-Damauli	A	2.305	715	3561
Damauli-Amiliya-Kakaura	A	3.976	914	4552
Badki Deuda-Dangpur- Damauli	A	3.564	308	1534
Sadhapurba-Badhaiyatal	A	1.325	127	632
Bangaudi-Jhanaiya-Bhaisasur- Dangpur Ring Road	A	1.978	918	4572
Machhagadh-Thumani	A	8.763	753	3750
Machhagadh-Toraiya	A	2.015	177	881
Ratna Rajmarga-Babai Khola Bajar-Khote Khola-Salyan Border	B	4.715	569	2834
Mahadeva-Rajha	B	4.296	261	1300
Mahadeva-Dakhin	B	2.108	146	727
Banbagiya-Manikapur- Bathuwa	B	4.374	390	1942
Radhakrishna Chok-Dangpur- Link Road	B	3.211	230	1145
Laxmana School-Madaha Road	B	2.549	949	4726
Newada-Motipur	B	2.184	244	1215
Bansgadhi-Laksmanpur	B	2.016	949	4726
Milanchok-Jharpur-Bathuwa	B	1.546	244	1215
Shankhariya-Pipaltari	B	0.475	173	862
Kakura- Rampur	B	2.102	936	4661
Basgadhi-Hasnapur	B	4.406	260	1295
Narayanpur-Soltitol-Dangpur	B	2.512	101	503

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 this “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 40: Shown Proposed Economic Infrastructure

4.3 Social Analysis

4.3.1 Education

In terms of educational status 88.02% of the population is literate whereas remaining 11.98% are illiterate. There are altogether 55 schools out of which two of them are providing technical subjects and 1 is providing inclusive education for blind students. And there are 2 campus providing higher education, ie, Bachelor in management faculty

However, Bansgadhi municipality lack higher education and the existing secondary schools building standard needed to be upgrade.

4.3.2 Health

There are altogether 3 health posts in ward no 3, 5 and 7. 2 urban health post and 1 community health post.

From the analysis, it seems that there is health post but no hospital in this municipality. And the remaining wards, 1,2, 4, 6, 8 and 9 have no access to health post.

4.3.3 Recreation

There are various places on the municipality for recreation. There are groups such as Panche Baja Samuha, Bhajan Samuha for musical entertainment. Similarly, the physical infrastructure such as view tower, various trekking routs, Chautari are also regarded as recreation places. The actors responsible for conducting recreational activities are Youth club, fathers group, mothers group, cultural groups, saving groups, government and non-government organizations.

4.3.4 Inclusion

People from diverse ethnic and religious groups live together with harmony in the municipality. The majority (39.31%) of the people (24876) are Madhesi Janajati. Similarly, 21659 Hilly (34.22%) are Brahmin/Chhetri/Thakuri & Sanyasi, 8130(12.85%) are hilly Dalit, 6395(10.10%) are hilly Janajati and 2227(3.51%) are Muslim and others. Tharu which falls under the Madhesi Janajati are the dominant caste in the municipality.

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 14: List of the elected representatives in Bansgadhi Municipality

S.N.	Designation	Name of representatives	Contact Number
1	Mayor	Salikram Adhikari	9858027106
2	Deputy Mayor	Sushma Chaudhary	9812479478
3	Ward chair-1	Jayaraj Pandey	9858085642
4	Ward chair-2	Ghamanda Chand	9858080812
5	Ward chair-3	Prem Raj Paudel	9858080814
6	Ward chair-4	Rajman Chaudhary	9858086128
7	Ward chair-5	Narendra Giri	9848151803
8	Ward chair-6	Dasharath Tharu	9858072720
9	Ward chair-7	Gangaram Thrau	9868044172
10	Ward chair-8	Tulprasad Gautam	9858029740
11	Ward chair-9	Jaybahadur Chand Thakuri	9858030148

(Source: MoFALD, 2017)

In the election with regard to their caste Madhesi janajati and Brahmin/Chhetri were the dominance in the local level representatives in the municipality. In terms of inclusion, the representation from Dalit are found in negligible number.

4.4 Economic Analysis

4.4.1 Agriculture

In Bansgadhi municipality wide range of agricultural products are produced. Commercialization in agriculture is essential. Vegetable farming and fish farming has been gradually increasing in the municipality. Paddy, wheat, Red Lintels, and mustard are the major crops produced in the municipality.

4.4.2 Livestock

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. The farms have been also developed as the animal pocket center that Buffalo, goat, pig, chicken and cow are the major animal pocket areas of Bansgadhi municipality. Majority of population is involved in Agriculture and labor. In addition of profession some people are involving in business as well. In Bansgadhi municipality, economic condition of the people of this area is better in comparison to rest of the local bodies of the Bardiya district. 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.

4.4.3 Mining

The mines and minerals in the municipality yet to be explored but the extraction of sand, stone and pebble are common in the municipality.

4.4.4 Industry

In Bansgadhi there are number of small, medium scale and cottage industries. Basnet Chowmein factory, Rara Noodles Company, CG Company, Atithi water company, Pragati herbs company are the major industry in the municipality. Beside this Rice mill, furniture and grill are widely found in the municipality.

4.4.5 Import and Export

Exchange of goods and services are common amongst the nearby districts or within districts. Exchange of any of such has direct impact in economic development of the region. Bansgadhi municipality lies on the closer proximity of Banke district and Gulariya municipality. Bardiya national park is the major destination nearby from the municipality and it serves as tourist destination and may help in the development of the area by entering foreign currency. The majority of goods are imported from nearby district, Gulariya. The goods come from Kathmandu, Kohalpur and Nepalgunj and are redistributed to other municipalities.

4.4.6 Commercial

There are 10 major market areas in the municipality. Usually, *Haat bazar* is conducted in Mahadiwa and laxmana area. Other small market includes Chepang and Kakaura bazar. The list of name of the major markets and its types has been presented below:

Table 15: Major market Areas of Bansgadhi Municipality

Ward	Name of the Market	Type of Market	Remarks
1	Babai Chepang Market	Permanent market	
3	Puspanagar Market, Lakhana Market and Gaudi Market	Permanent market	
	Mahadev Saptahik Market	Haat bazar	Sunday
5	Bansgadhi Market	Permanent market	
8	Laxman Market, Kakaura Market	Haat bazar	Friday
	Laxman Saptahik Market	Permanent market	
9	MachaGadh Market	Permanent market	

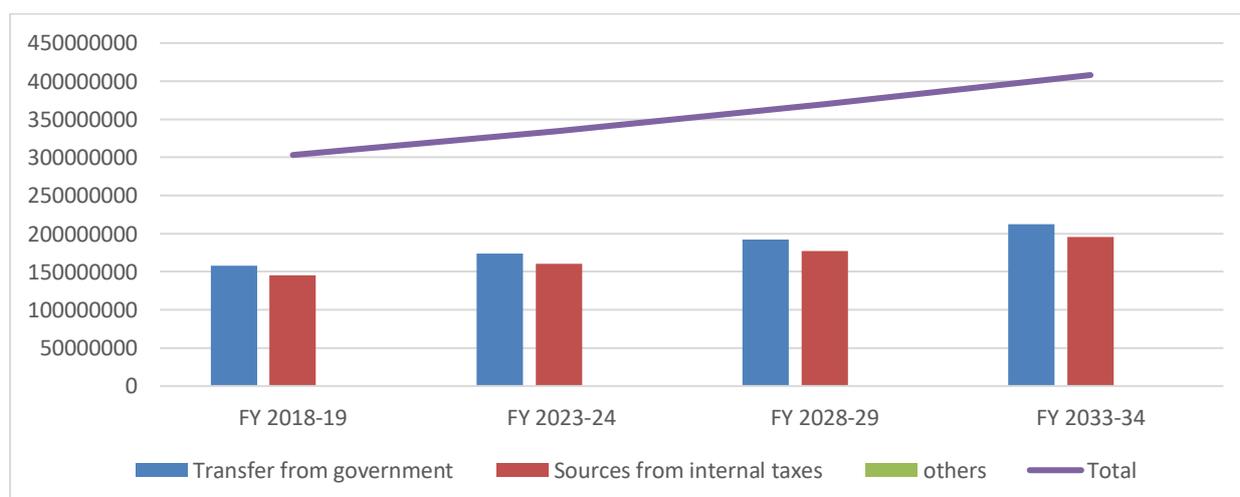
(Source: FGD/PRA, 2018)

4.5 Financial Analysis

4.5.1 Revenue of Municipality

The table shows the projected Revenue for 15 years generated from both external and internal sources of Bansgadhi municipality. It shows the total revenue from different sources in FY 2018/19 is Rs. 303111000 and the projected revenue for next five years, ten years and fifteen years is projected as Rs. 334659036.3, Rs. 369490617.6 and Rs.407947497.9 respectively.

Projection of Revenue for 15 years Plan period	FY 2018-19	FY 2023-24	FY 2028-29	FY 2033-34
Transfer from government	157654000	174062754.9	192179346.3	212181527
Sources from internal taxes	145457000	160596281.4	177311271.3	195765970.9
Others	0	0	0	0
Total	303111000	334659036.3	369490617.6	407947497.9



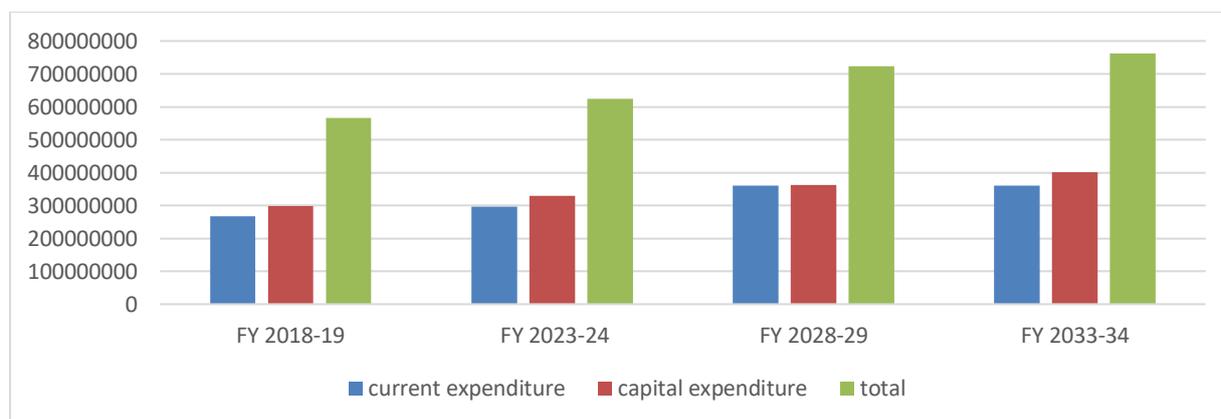
(Source: Banshgadhi Municipality Budget, 2018/19)

4.5.2 Expenditure of Municipality

The table shows the projected budget expenditure for 15 years. It shows the current expenditure of FY 2018/19 is Rs. 267700000 and the projected current expenditure for next five years, ten years and fifteen years is projected as Rs. 295562431, Rs.360288954.2 and Rs. 360288954.2 respectively. It shows the capital expenditure of FY 2018/19 is Rs.297928000 and the projected current expenditure for next five years, ten years and fifteen years is projected as Rs. 328936585.5, Rs.363172569.6 and Rs.400971862.3 respectively. Thus, the total expenditure for the FY 2018/19 is Rs.565628000 for next five years, ten years and 15 years is Rs.624499016.6, Rs.723461523.7 and Rs.761260816.5 respectively.

Projected Budget Expenditure(in 000)	FY 2018-19	FY 2023-24	FY 2028-29	FY 2033-34
Current expenditure	267700000	295562431	360288954.2	360288954.2
Capital expenditure	297928000	328936585.5	363172569.6	400971862.3
Total	565628000	624499016.6	723461523.7	761260816.5

(Source: Bansgadhi Municipality Budget, 2018/19)



(Source: Bansgadhi 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

4.6 Institutional Analysis

The opportunity and challenges of the municipality is presented below:

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
- Wider road connectivity in and out
- 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.

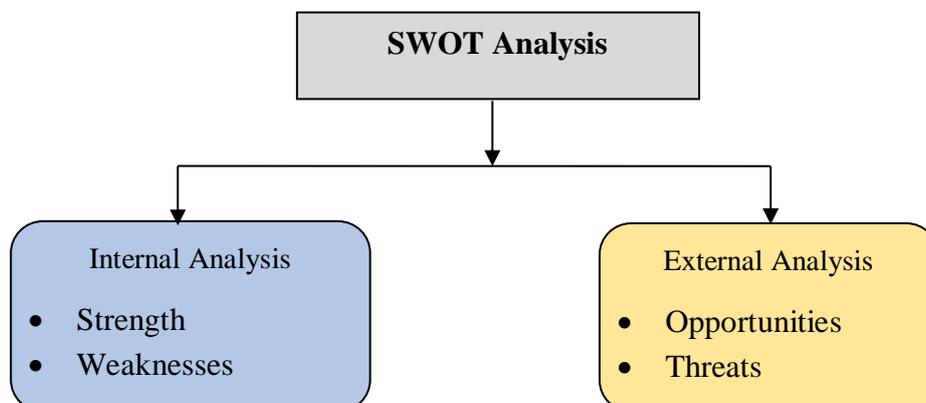
Challenges:

- 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.

4.7 SWOT Analysis

SWOT analysis is the part of situational analysis. Basically it is divided into two parts i.e. internal factors (strength, weakness) and external factors (opportunity, threats)

SWOT Analysis Framework:



Internal forces

Internal factors of SWOT analysis consists two factors i.e. strength and weakness. Strength is its positive factors while weakness is negative.

4.7.1 Strengths

The strength of the municipality is listed in the table below:

Table 16: Strength Analysis of the municipality

Indicator	Strength
Physical Infrastructure	<ul style="list-style-type: none"> • East – West Highway passes through the municipality • Having 3 black topped roads • Existence of ring road • Access of roads to all wards • Geographical topography is good for development • Land allocated for playground • Biological diversity (Vegetation and Wild Animals) • Access to communication facility • Large no. of population 24667 served by Lok Rajmarga
Social	<ul style="list-style-type: none"> • Social harmony • Majority of people 96.86% follows Hindu religion • Elaka Prahari Karyalaya and Police Posts present for security • Literacy rate of municipality is 88.02% • Announcement of total Immunised municipality • Availability of 1 hospital (S.O.S.), 5 government health posts, 1 Community health unit, 30 small health institutes (medical halls, clinics etc.) • Availability of schools in all wards • Existing 55 schools and 2 colleges • Out of 55 schools, 1 is providing inclusive education for blind students • Existing 2 overhead water tanks and other 7 under construction for drinking purpose
Economic	<ul style="list-style-type: none"> • Availability of 7 major market areas (Babai Chepang, Puspanagar, Lakhana, Gaudi, Bansgadhi, Laxman Saptahik & Machagadh) • Existing 3 local markets (Haat Bazaar) Mahadev Saptahik, Laxman, Kakaura • Presence of financial institutions commendable (25 cooperatives, 11 banks, 3 money transfers, 1 microfinance, 2 others) • Existing 54 small, medium & cottage industries (32 rice mills, 3 furnitures, 3 grill udhyogs, 16 others)
Environment	<ul style="list-style-type: none"> • Fully cleaned areas announced • Open defecation free municipality announced • Concept of green city adopted -- trees plantation in Bansgadhi and Machagadh areas • Public open spaces and playground present • Solid Waste Management by pit, bucket and ring system
Agriculture & Livestock	<ul style="list-style-type: none"> • Availability of 41.04 % cultivated land in municipality • Agriculture is the main occupation of this municipality • Major crops produced in this municipality are paddy, wheat, mustard and Red lintels • Growing business trend of fish farming, poultry farm, cow farming, pig farming, buffalo farming

Indicator	Strength
	<ul style="list-style-type: none"> Existing 9 major irrigation projects in the municipality
Natural Resources	<ul style="list-style-type: none"> Presence of abundant forests (having 49.85 % forest area) Existing 40 no. of community forests Availability of Bardiya National Park Existing numerous water resources: major rivers like Babai, Dunduwa & Gyang, Karnali River, Bheri River etc. and also having more than 20 kholas (Khote Khola, Sabang Khola, Bhagaha Khola, Dondre Khola, Chyama Nadikhola, Ghahare Khola, Lauwa Khola etc.) Municipality consists construction materials i.e. metamorphic rocks such as slate, phyllite, quartzite etc. in the Mahabharata range
Human Resources	<ul style="list-style-type: none"> New formulated municipality enhances the manpower strength of existing demography
Tourism	<ul style="list-style-type: none"> Existing natural environment, Bardiya national park and available other resources could be part of ecological tourism. Religious sites and temples Availability of 44 hindu temples (Deuti Bajai, Kalika, Ban Devi, Bhagawati, Shiva, Taal Barahi Temple etc.), Bouddha Sadan Gumba, Banbagiya Church, Madina Mosque Existing 9 no. of taals (Motipur, Bansgadhi, Laxman, Riyali, Barhabigaha, Rampur, Haupur, Nimaha, Banasapti)
Governance System	<ul style="list-style-type: none"> New federal systems and new municipality boundary provides development potential by linking central and local government Rising awareness of grass root democracy Woman right has been enhanced by providing the essential post as chairperson or vice chairperson

Source: Induction workshop (municipal level) and PRA/FGD (Ward levels)

4.7.2 Weaknesses

The weakness of the municipality is listed in the table below:

Table 17: Weakness Analysis of the municipality

Indicator	Weakness
Physical Infrastructure	<ul style="list-style-type: none"> Having large no. of earthen roads & then gravel Lack of municipal building and ward building Lack of bus park, proper public & commercial buildings within municipality Lack of area for cremation Improper and haphazard settlement Lack of rainwater harvesting Lack of fire station Lack of conference hall Lack of sport centres Lack of Implementation of Building byelaws
Social	<ul style="list-style-type: none"> Health service not sufficient for the total population Lack of government health posts at wards 1, 3, 4, 8 Hospital for Emergency Service facility not available Trained teaching staffs insufficient for quality education Difficulty of volunteering in laborious works

Indicator	Weakness
	<ul style="list-style-type: none"> •Lack of management and proper infrastructures in schools •Lack of suitable technical and vocational schools/colleges •Lack of public library (Community) •Lack of Central Library •Lack of old age home •Lack of sufficient drinking water •Lack of treatment plant for drinking purpose •Lack of proper public taps facility
Economic	<ul style="list-style-type: none"> •Finance for development is insufficient • Weak market management system • Lacking of adequate data and weak analytical system • Tax leakage • Less entire income of municipality •Unemployment
Environment	<ul style="list-style-type: none"> •Weak Implementation of Open Defecation Free area •Lack of public awareness in terms of solid waste management •Lack of waste water treatment plant •Unmanaged playground •No proper drain facility •Lack of sewerage system •No dumping site •Absence of landfill site •Lack of proper public toilets
Agriculture & Livestock	<ul style="list-style-type: none"> •Agriculture system is subsistence and traditional •Lack of cold store •Irrigation facility not sufficient • Existing 7.75 % barren land •Shortage of trainings for farmers
Natural Resources	<ul style="list-style-type: none"> •Lack of preservation and management of natural resources •Presence of members in community forest not satisfactory •Contamination of water resources •Collection of fuelwood through forests •Lack of proper fire equipment facility to prevent from forest fire •Deforestation
Human Resources	<ul style="list-style-type: none"> • Lack of technical manpower • Management problem
Tourism	<ul style="list-style-type: none"> •Problem in advertisement, publicity and maintenance of touristic sites •Problem in road accessibility to link with such touristic sites, temples...etc. •Lack of financing for tourism development •Lack of proper buffer zone of national park and nearer settlements •Lack of museum
Governance System	<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.

Source: Induction workshop (municipal level) and PRA/FGD (Ward levels)

External forces

External factors of SWOT analysis consists two factors i.e. opportunity and threats. Opportunity is its positive factors while threat is negative.

4.7.3 Opportunities

The opportunities of the municipality are listed in the table below:

Table 18: Opportunities Analysis of the municipality

Indicator	Opportunity
Physical Infrastructure	<ul style="list-style-type: none"> • Upgradation of roads (earthen, gravel, ring road etc.) • Pedestrians roads and cycle footpaths should be constructed • Development of Information and computer technology • Promote solar streetlights and digital boards
Social	<ul style="list-style-type: none"> • Management and strengthening of existing health services • Construction of well-equipped government hospital (25-50 beds) • Encouraging education to the backward community people and economically deprived people • Ensure yoga and meditation centre
Economic	<ul style="list-style-type: none"> • Providing loan facilities for the locals • Increment of job employment through industries establishment • Formation of Medicinal herbal centre • Export of wood products, herbals, rivers products etc.
Environment	<ul style="list-style-type: none"> • Promotion of 3Rs concept for solid waste management at all HHs levels • Installation of Reed Bed Treatment plant • Protecting natural species and tree plantation in open areas • Promoting environment cleanliness in sufficient way
Agriculture & Livestock	<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.
Natural Resources	<ul style="list-style-type: none"> • Effective investment on existing natural resources like forests, rivers etc. for sustainable development • Regularised markets of natural resources • Enhancement of irrigation facility for high productivity
Human Resources	<ul style="list-style-type: none"> • Trainings and awareness campaigns, investment on skilled technology driven manpower.
Tourism	<ul style="list-style-type: none"> • Opportunity for adventurous and natural tourism. • Opportunity of ecotourism flourishment.
Governance System	<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.

Source: Induction workshop (municipal level) and PRA/FGD (Ward levels)

4.7.4 Threats

The threats of the municipality are listed in the table below:

Table 19: Threats Analysis of the municipality

Indicator	Threats
Physical Infrastructure	<ul style="list-style-type: none"> • Chances of accident is high on earthen roads and such roads are vulnerable during rainy season • Degradation of green areas due to haphazard construction
Social	<ul style="list-style-type: none"> • Fear of wild animal's attack • Testing of arsenic in totality not been possible • Child Marriage and Multiple Marriage culture deeply rooted • Social differences not eradicated totally • Reduction of drug addiction not been possible
Economic	<ul style="list-style-type: none"> • Ex migration of youth for foreign employment • Local products affected by imported products • Illegal export
Environment	<ul style="list-style-type: none"> • Pollution from urbanization, solid waste refusals and climate change; • Soil erosion, wind & storm, flooding, firing, lightning and earthquake occurrence
Agriculture & Livestock	<ul style="list-style-type: none"> • Loss of cultivated land, grass grazing due to river encroachment • Increasing trend of agriculture land plotting • Decreasing soil fertility due to soil erosion
Natural Resources	<ul style="list-style-type: none"> • Illegal transactions of forest materials • Poaching • Wetlands biodiversity is in extinct due to continuous forest encroachment • Forest-fire
Human Resources	<ul style="list-style-type: none"> • Youths migrating to the city areas and abroad for job and education challenging the human resource of municipality
Tourism	<ul style="list-style-type: none"> • Creeping urbanisation, leads to negative tourism
Governance System	<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 (municipal level) and PRA/FGD (Ward levels)

4.8 Demand Analysis of Infrastructure

Infrastructure and Necessity

According to the planning norms and standards, table below shows the numbers of infrastructures needed in Bansgadhi 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 20: Infrastructure and necessity analysis

Types, Norms & Standards	2017	2018	2023	2028	2033
	Pop ⁿ . (63287)	Pop ⁿ . (64686)	Pop ⁿ . (72156)	Pop ⁿ . (80490)	Pop ⁿ . (89786)
TELE-COMMUNICATION					
NUMBER					
Public Telephone Booth (TB) (1 TB in 5,000 Pop. ⁿ)	12.6 ~ 13	12.9 ~ 13	14.4 ~ 14	16.09 ~ 16	17.9 ~ 18
EDUCATION					
Primary (1 in 3000 Pop ⁿ .)	21	21.5 ~ 22	24	26.8 ~ 27	29.9 ~ 30
Higher secondary (1 in 7500 Pop ⁿ .)	8.4 ~ 8	8.6 ~ 9	9.6 ~ 10	10.7 ~ 11	11.9 ~ 12
Graduate/ Post graduate (1 in 25,000 Pop ⁿ .)	2.53 ~ 3	2.58 ~ 3	2.88 ~ 3	3.2 ~ 3	3.59 ~ 4
University (1 in 40,000 Pop ⁿ .)	1.58 ~ 1	1.6 ~ 1	1.8 ~ 2	2	2
HEALTH					
Primary health care centre (1 in 20,000 Pop ⁿ .)	3.1 ~ 3	3.2 ~ 3	3.6 ~ 4	4	4.48 ~ 4
District hospital (1 in 50,000 Pop ⁿ .)	1.26 ~ 1	1.29 ~ 1	1.44 ~ 1	1.6 ~ 2	1.79 ~ 2
OPEN SPACE					
Neighbourhood park (1 in 800 Pop ⁿ .)	79	80.85 ~ 81	90	101	112
Local park (1 in 10,000 Pop ⁿ .)	6.3 ~ 6	6.4 ~ 6	7.2 ~ 7	8	8.9 ~ 9
Community park (1 in 20,000 Pop ⁿ .)	3	3.2 ~ 3	3.6 ~ 4	4	4.4 ~ 4
Parade ground	1	1	1	1	1
LIBRARY					
Community park (1 in 10,000 Pop ⁿ .)	6.3 ~ 6	6.4 ~ 6	7	8	8.9 ~ 9
Central level	1	1	1	1	1
OLD AGE HOME, ORPHANGE, CENTER FOR DIFFERENTLY ABLE PEOPLE					
City and Community Level (1 in 20,000 Pop ⁿ .)	3	3	3.6 ~ 4	4	4.4 ~ 4
SECURITY					
Police Post (1 in 10,000 Pop ⁿ .)	6	6.4 ~ 6	7.2 ~ 7	8	8.9 ~ 9
Police Station (1 in 40,000 Pop ⁿ .)	1.58 ~ 1	1.6 ~ 1	1.8 ~ 2	2	2
EXHIBITION CENTRE					

Types, Norms & Standards	2017	2018	2023	2028	2033
	Pop ⁿ . (63287)	Pop ⁿ . (64686)	Pop ⁿ . (72156)	Pop ⁿ . (80490)	Pop ⁿ . (89786)
City level (1 in 50,000 Pop ⁿ .)	1	1	1.4 ~ 1	1.6 ~ 2	1.79 ~ 2
CITY HALL					
Multipurpose Hall (1 in 10,000 Pop ⁿ .)	6	6.4 ~ 6	7.2 ~ 7	8	8.9 ~ 9
SPORTS COMPLEX					
City level (1 in 50,000 Pop ⁿ .)	1	1	1.4 ~ 1	1.6 ~ 2	1.79 ~ 2
District sports center (1 in 1,00,000 Pop ⁿ .)	0.63~ 1	0.64 ~ 1	0.72 ~ 1	0.8 ~ 1	0.89 ~ 1
MOVIE HALL					
City and local level (5 seats per 1000 Pop ⁿ .)	316	323	361	402	449
VEGETABLE MARKET					
Neighbourhood level (1 in 6,000 Pop ⁿ .)	10.56 ~ 11	10.78 ~ 11	12	13.4 ~ 13	14.96 ~ 15
PARKING SPACE					
Parking space (1 in 3,000 Pop ⁿ .)	21	21.56 ~ 22	24	26.8 ~ 27	29.9 ~ 30

(Source: Planning Norms & Standards, 2013)

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 Bansgadhi municipality is presented below:

Table 21: Gap Analysis of the municipality

S.N.	Infrastructure	Norms	Standards				Existing Scenario				Gap	
			Row (M)	Setback (M)	Foot path (M)	Cycle Track (M)	Row (M)	Set Back (M)	Foot path (M)	Cycle Track (M)		
1	Road	Expressway, Arterial, Sub Arterial, Collector Street And Local Street	Expressway				Expressway					Arterial – 16m Sub Arterial – 12m Collector – 6m Local – 6m
			Arterial	30	1	2	2	Arterial	14(Carriage Way)			
		All Or 90% Of Household Are Within 1km From Motorable Road	Sub Arterial	22	1	2	1.2	Sub Arterial	10(Carriage Way)			
		Collector	14	1	2	1.5	Collector	8 (Carriage Way)				
		Local	10	1	2	-	Local	4 C				

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
2	Water Supply System	<ul style="list-style-type: none"> 80% household have metered house connection and distribution Treatment Plant (lab, dosing and guardhouse) with storage facility: Reservoir (24hrs requirement) Provision of Rain Water Harvesting in Public Buildings (Catchment area, Storage and Treatment Facility) 	<p>Quantity: 80-100 lpcd Minimum diameter of distribution pipe: 80mm 10 X 10⁶ l = 10 MLD (capacity)</p> <p>Storage Capacity: 25% of the total treatment capacity</p>	<ul style="list-style-type: none"> Tube well/ hand pump water is the main source of drinking water Tap water facility at ward 1, 4, 5, 6 No tap water facility for each households No rain water harvesting system 	<ul style="list-style-type: none"> Tap water facility in each household Provision of treatment plant Rain water harvesting system

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
3	Sanitation/Sewerage system Storm Water Drainage system	<ul style="list-style-type: none"> Public sewer system (septic tanks) Sewage Pumping Station Treatment plant Provision of public latrines 	Min diameter of trunk line: 200mm 0.2 hectare/MLD – 0.75 Hectare/MLD 1/2000 passerby at a distance of 500m	<ul style="list-style-type: none"> Poor Sanitation No drain facility at all wards No any future plan for waste water management No sewerage system 	<ul style="list-style-type: none"> Drain system Sewerage system Future plan for waste water management

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
4	Integrated Solid Waste Management System	<ul style="list-style-type: none"> Collection Point (0.3 kg/person/day) Total waste = Around 33 tons/day Transfer Station Sanitary Landfill Site 	<ul style="list-style-type: none"> Separation of waste at household level Community collection/ Door to Door collection. 1 collection point/container/ roadside pickup point serves a radius of 200m 1 Transfer Station for 1 city if the final disposal is at distance of more than 10 km Only 30% of the total waste generated should go to landfill site. 70% = reduce, reuse, recycle Sanitary Landfill Site: Medium (> 25 and < 500 tons per day)	<ul style="list-style-type: none"> Production of waste 1.98 kg per household Management by pit, bucket and ring system Compost system in all wards Ward 3, 5, 8 and 9 have municipal solid waste collection Available of dumping site No landfill site 	<ul style="list-style-type: none"> Landfill site Solid waste collection at ward 1, 2, 4, 6, 7

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
5	Electricity Supply System	<ul style="list-style-type: none"> National grid supply line and Alternative energy (panels, battery 400 AH) 	<ul style="list-style-type: none"> Power access to 100% coverage. Electric substation 66/33 KV Transmission Tower Distribution Tower 150 – 200 Watt Solar Home System 	<ul style="list-style-type: none"> 87.1% Household with electricity (11560/13272*100) Use of solar energy 	<ul style="list-style-type: none"> 12.9% household needs electricity

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
6	Tele-communication	<ul style="list-style-type: none"> Landline/mobile Public telephone booth (TB) 	<ul style="list-style-type: none"> 100 % coverage Telephone Exchange Office (1 Exchange with a capacity of 6500-line capacity) Telephone transmission tower 1 TB per 5000 population 	<ul style="list-style-type: none"> Access to communication facility 	<ul style="list-style-type: none"> Access to internet (Mobile data and fibre net/wi-fi) Existing Gap: 13 public TB & Projected Gap: 18 public TB

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
7	Educational Institution	<ul style="list-style-type: none"> Primary Higher Secondary Graduate/Post Graduate University 	<ul style="list-style-type: none"> 1 per 3000 populations at a distance of 0.4–0.8 km 1 per 7500 populations at a distance of 30min in public transportation 1 per 25,000 populations at a distance of 45min in public transportation 1 per 40,000 population at a distance of 1hr in public transportation 	<ul style="list-style-type: none"> Max. no. of schools 9, 9 & 8 at ward 2, 3 & 8 No. of higher secondary school (i.e. academy) 1, 2 & 1 at ward 5, 8 & 9 	<ul style="list-style-type: none"> Existing gap: 5 higher secondary, 3 graduate/post graduate, 1 university Projected gap: 8 higher secondary, 4 graduate/post graduate, 2 university

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
8	Health Institution	<ul style="list-style-type: none"> Primary Health Care Center District Hospital 	<ul style="list-style-type: none"> 1 per 20000 populations (5-15 beds) 1 per 50000 population (25 – 50 beds) 	<ul style="list-style-type: none"> Health post (Governmental) in ward 2,5,6,7 &9 SOS Hospital at ward 5 	<ul style="list-style-type: none"> Existing Gap: health post (at ward no. 1, 3, 4 ,8), 3 Health care centre and 1 District Hospital (25-50 beds) Projected Gap: 4 Health care centre and 2 District Hospital (25-50 beds)

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
9	Open Space: Parks Parade Ground (Tundikhel)	<ul style="list-style-type: none"> 5% of total city area Neighbourhood Park (with play equipment) Local Park Community Park Parade Ground 	<ul style="list-style-type: none"> 1 @ 800 population 1 @ 10000 population 1 @ 20000 population 1 @ each city 	<ul style="list-style-type: none"> No facility of open space and parade ground 	<ul style="list-style-type: none"> Existing Gap: (Neighbourhood Park 81, Local Park 6, Community Park 3, Parade Ground 1) Projected Gap: (Neighbourhood Park 112, Local Park 9, Community Park 4, Parade Ground 1)

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
10	Library	<ul style="list-style-type: none"> Community level Central Level 	<ul style="list-style-type: none"> 1 per 10000 populations (Community level) 1 Central level 	<ul style="list-style-type: none"> Lack of public library (Community) Lack of Central Library 	<ul style="list-style-type: none"> Existing Gap: 6 Public, 1 Central Projected Gap: 9 Public, 1 Central

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
11	Fire Stations	<ul style="list-style-type: none"> City level service 	<ul style="list-style-type: none"> 1 fire station for 5 to 7 km radius 	<ul style="list-style-type: none"> Lack of fire station 	

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
12	Religious Institutions	<ul style="list-style-type: none"> Incineration /Cremation areas Cemetery/ Burial Ground 	<ul style="list-style-type: none"> 1 (Incineration/Cremation areas Cemetery/Burial Ground) 	<ul style="list-style-type: none"> At least 1 is available but area is not equal to 0.5 ha. 	

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
13	Museum/Art Gallery	<ul style="list-style-type: none"> City Level 	<ul style="list-style-type: none"> 1/1 (City level) 	<ul style="list-style-type: none"> Lack of museum 	

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
14	Old age home, orphanage, centre for differently able people	<ul style="list-style-type: none"> City and community level 	<ul style="list-style-type: none"> 1 per 20,000 population (City & Community level) 	<ul style="list-style-type: none"> No provision for old age home 	<ul style="list-style-type: none"> Existing Gap: 3 & Projected Gap: 4

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
15	Security	<ul style="list-style-type: none"> Police Post Police Station 	<ul style="list-style-type: none"> 1 per 10,000 populations (Police Post) 1 per 40,000 population (Police Station) 	<ul style="list-style-type: none"> Temporary Police Post at Laxmana, Kakaura and Chepang Ilaka Police Station at ward 5 	<ul style="list-style-type: none"> Existing Gap: 3 police post Projected Gap: 6 police post & 2 Police station

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
16	Exhibition Centers	<ul style="list-style-type: none"> City level 	<ul style="list-style-type: none"> 1 per 50000 population (City level) 		<ul style="list-style-type: none"> Existing Gap: 1 & Projected Gap: 2

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
17	Conference Hall	<ul style="list-style-type: none"> City hall (Multipurpose) 	<ul style="list-style-type: none"> 1 per 10000 population (City hall, Multipurpose) 	<ul style="list-style-type: none"> Lack of conference hall 	<ul style="list-style-type: none"> Existing Gap: 6 & Projected Gap: 9

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
18	Sport complex	<ul style="list-style-type: none"> City level (football ground, volley ball, swimming pool etc) District Sports Centre 	<ul style="list-style-type: none"> 1 per 50000 populations (City level) 1 per 100000 populations (District Sport Centre) 	<ul style="list-style-type: none"> Lack of sport centres 	<ul style="list-style-type: none"> Existing Gap: 1 city level sports centre and 1 district sport center Projected Gap: 2 city level sports centre and 1 district sport center

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
19	Movie Hall	<ul style="list-style-type: none"> City and local level 	<ul style="list-style-type: none"> 5 seats per 1000 population (City & local level) 		<ul style="list-style-type: none"> Existing Gap: 2 Movie Hall (150 seats/Hall) Projected Gap: 3 Movie Hall (150 seats/Hall)

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
20	Vegetable Market	<ul style="list-style-type: none"> Neighbourhood Level 	<ul style="list-style-type: none"> 1 in 6000 population (NBH level) 	<ul style="list-style-type: none"> 10 major markets having mixed type products 	<ul style="list-style-type: none"> Existing Gap: 11 & Projected Gap: 15

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
21	Parking Space	<ul style="list-style-type: none"> Parking (Two/ three/ four wheeler) Taxi park 	<ul style="list-style-type: none"> 1 parking lot for 3000 population 		<ul style="list-style-type: none"> Existing Gap: 22 & Projected Gap: 30

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
22	Transportation system	<ul style="list-style-type: none"> Intra City Bus Terminal (Linking with other cities) Inter City Bus Terminal (within the city) 	<ul style="list-style-type: none"> 1 parking lot for 100 buses & 100 trucks (Intra City Bus Terminal) 1 parking lot for 100 buses (Inter City Bus Terminal) 		

S.N.	Infrastructure	Norms	Standards	Existing Scenario	Gap
23	Airport	<ul style="list-style-type: none"> National Airport 	<ul style="list-style-type: none"> National Airport 		

(Source: Planning norms and standard 2013, FGD)

4.9 Potential Lead Sector Identification

Lead sectors of the municipality are:

1. Agriculture
2. Health, Sanitation and Education
3. Industry
4. Forestry

Health, education, sanitation, agriculture, industry and forestry 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.

CHAPTER V: DEVELOPMENT FRAMEWORK FOR MUNICIPALITY

5.1 Vision of the Municipality

Slogan of Vision:

**æ;'Gb/ xl/ofnL / ;kmf zx/
;d[4 / ;d'Ggt afF;u9L gu/Æ**

With the above selected vision slogan, it truly clarifies the people of Bansgadhi are confident that their municipality will only prosper through proper and strategic development plans oriented towards clean and beautiful Bansgadhi municipality.

5.2 Goal

The long-term goal of this municipality is to promote greenery and sanitation to make it a livable and prosperous urban center in the long run.

5.3 Objectives

Bansgadhi Municipality for-see their municipality to flourish under major sectors i.e. Agriculture, Industry, Health and education. People of Bansgadhi wishes to visualize their city as beautiful and picturesque, which clearly suggest their intentions of clean and healthy city environment. Though, the word beautiful itself is an abstract terminology and could mean different to different people but to citizen of Bansgadhi, beauty of their city is guided with its cleaner, and healthier natural 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. Hence, in order to foresee the prosperous Bansgadhi, the plans and programmes must safeguard wellbeing and education of its citizens.

5.4 Strategies

- Infrastructure development
- Tourism development
- Participatory planning
- Well-being of deprived and vulnerable sections of society
- Disaster risk management
- Market center development
- Local governance and service delivery

5.5 Plans for Implementing Development Framework

To meet the above stated vision, goals and objective of the municipality, various plans are prepared for subsequent 5-10-15 years. Every single plan has been an unavoidable part of the the integrated

urban development plan. The sectoral development plans to constitute IUDP in the municipality has been listed below (see **Chapter VI**):

- ❖ Physical development plan
- ❖ Road network and transportation plan
- ❖ Water supply plan
- ❖ Drainage and sewerage network plan
- ❖ Solid waste management plan
- ❖ Electricity and communication plan
- ❖ Social development plan:
- ❖ Cultural and tourism development plan
- ❖ Economic development plan
- ❖ Financial plan
- ❖ Institutional development plan
- ❖ Environment management plan
- ❖ Disaster risk management plan
- ❖ Climate change adaptation plan
- ❖ Multi-sector investment plan (MSIP)

5.6 DED Selection

In case of Bansgadhi, from considering and calculating numbers of indicators mentioned **Annex-2**, both the project of construction of road has obtained the highest number in comparison to other projects. Since, the vision focuses on infrastructural development, the project which suits the vision and are feasible for the local people and helps in development are selected as **DED1** and **DED2**.

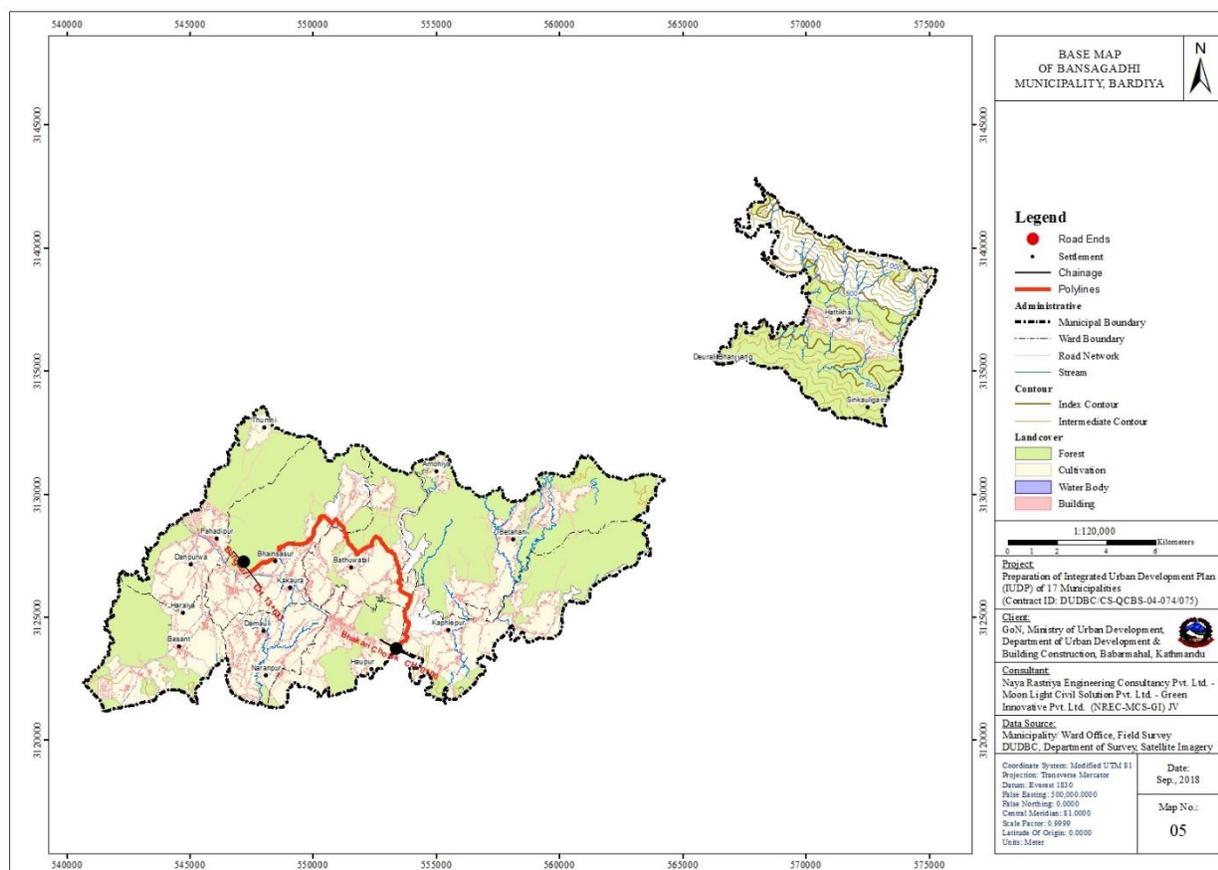
Table 22: DED Selection Result of Bansgadhi Municipality

Total Weightage Gained					
Project	Congruence	Overall Viability	Capacity	Benefits and Positive Impacts	Total
Road connecting Badki Deuda, Shiva Mandir, Damauli, Motipur, Hasnapur, Barhabigha, Haupur, Mahendra Highway	25	18	16.5	15.7	75.2
25 bed hospital	10	11.8	12	25	58.8
Road connecting Mahendra highway, Uttar Bhakarichowk, Chamakpur, Madaha, Newada, Bathuwa, Belauli, Bangaudi and Laxmana Sadak	25	18	16.5	17.7	77.2

500 capacity Convention hall	15	18.8	20	15.75	69.55
Tourism development with View Tower	17.5	20.8	10.5	25	73.8
Information center building in each ward	15	15.8	5	8.1	43.9
Land fill site	7.5	7.8	0	5.65	20.95
Multicultural Museum	5	18.8	20	23.4	67.2
Develop Cow Farming Pocket Area	5	15.8	5	12.15	37.95
Construction of temples	15	17.7	5	8.5	46.2

DPR-1: Road

Construction of road connecting Mahendra highway, Uttar Bhakarichowk, Chamakpur, Madaha, Newada, Bathuwa, Belauli, Bangaudi and Laxmana Sadak is selected as DPR1. (For detail please refer Volume III, Section A, B, C, D).



Map 41: DPR1 – Road

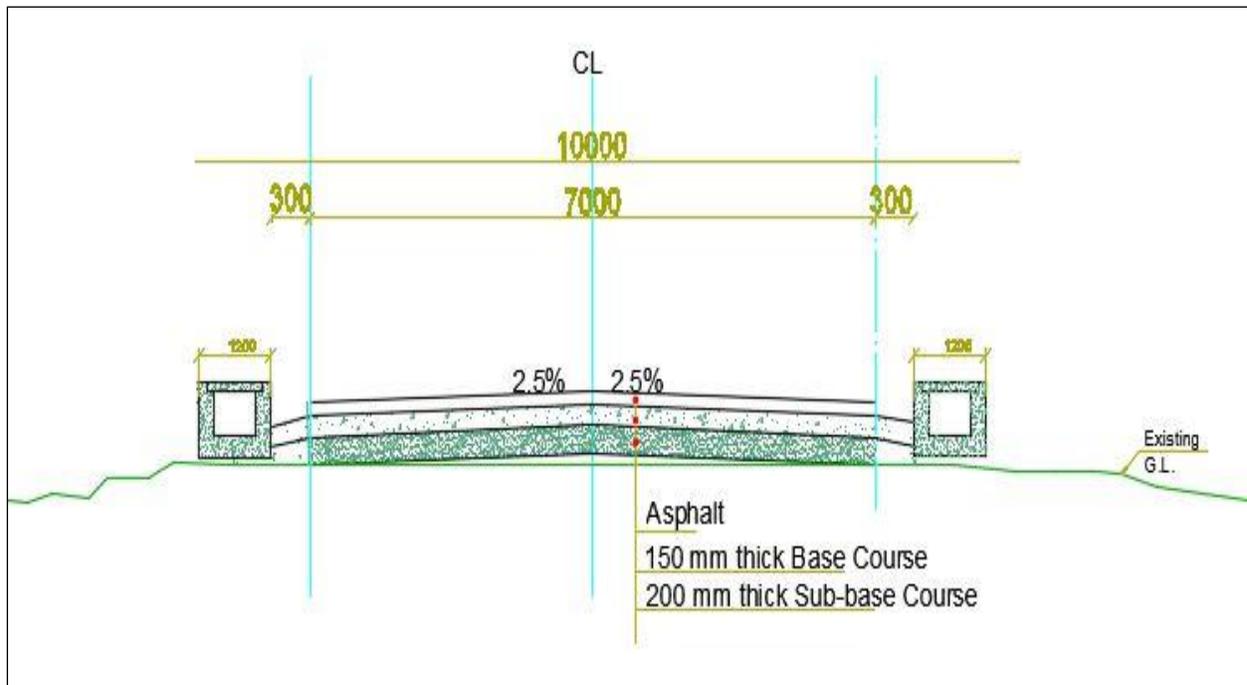


Figure 6: Road Cross Section of Settlement Terai Area

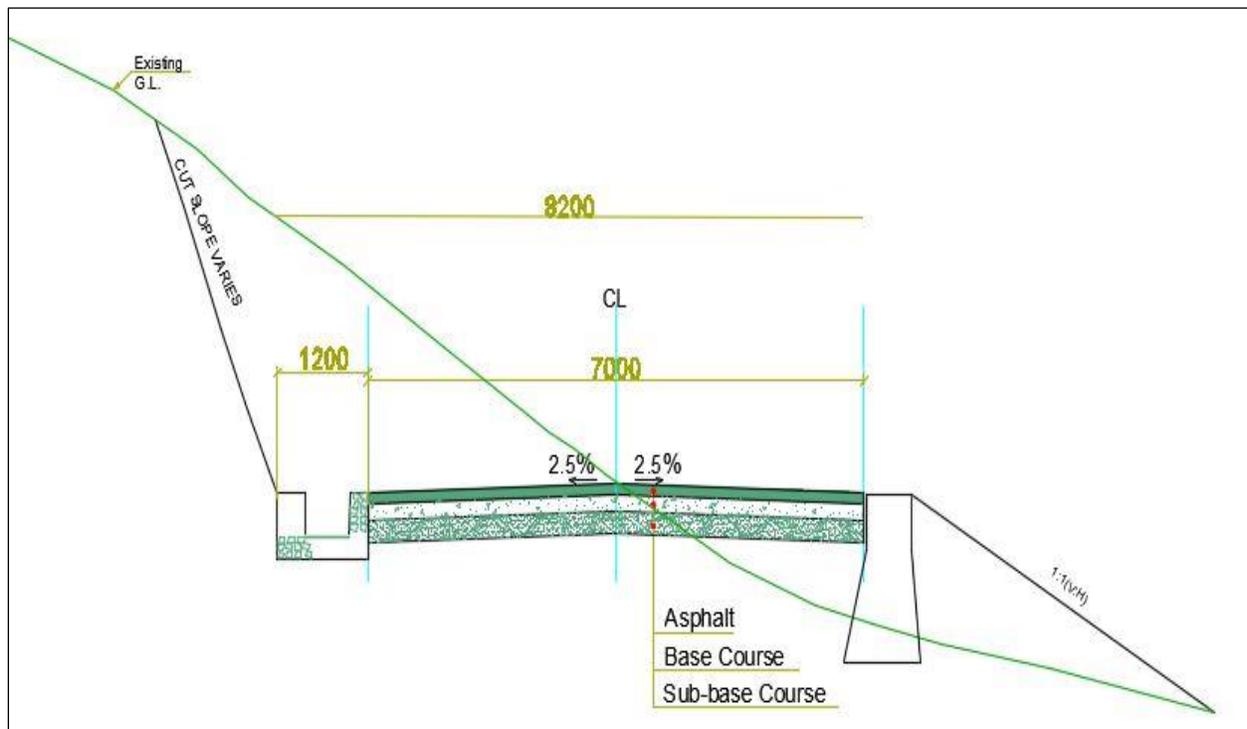


Figure 7: Road Cross Section for Non-Settlement Terai Area

Table 23: Features of DPR1

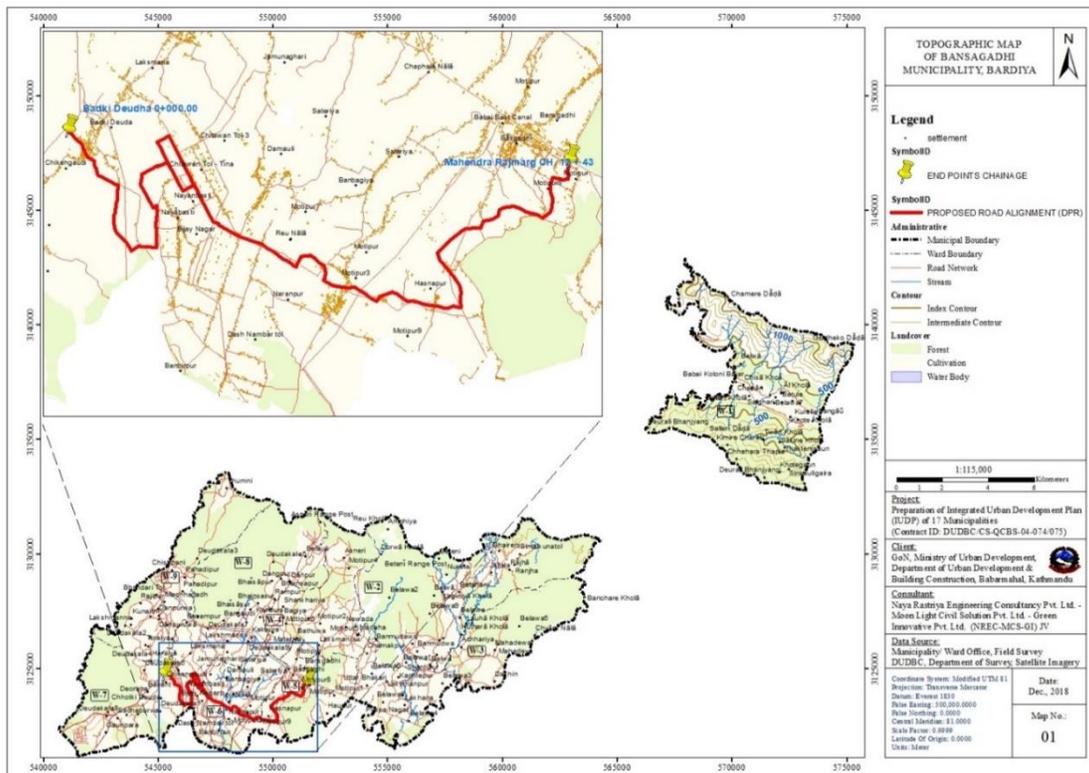
Features	Description
Name of the Road	Bhakari Chowk – Chamakpur – Madaha – Newada – Batuwa – Belauli Bangaurdi – Laxmana Urban Road), , Bardiya, (CH: 0+000-13+633.73) KM, Bansghadi municipality
Location	
Region:	Mid-Western Development Region
Province:	05
District:	Bardiya
Municipality / Rural Municipality	Bansagadhi
Major Settlements	Khaireni chowk, Buddhachowk, Narayanpur and Pragatinagar.
Length	13.633 km
Starting Point	Bhakari Chowk
End Point:	Bangauri Chowk
Geographical Features	
Terrain	Plain
Altitudinal Range	162 m to 172 m
Climate:	Sub-tropical
Geology:	Boulders, gravel, sand, silt and clay
Meteorology:	Unevenly Distributed Precipitation Controlled by Monsoon
Design Standard	
Standard	NRS 2070
Existing Surface:	Mostly Earthen surface, Partly metallic and gravel surface
Proposed Pavement:	Asphalt type pavement
Geometrics	
Right of Way:	15 m on either sides (Center line)
Formation Width:	10

Features	Description
Carriage Way Width:	7 m
Shoulder Width:	1.5 m on either side
Maximum Gradient	5.01%
Minimum Gradient	0.22%
Lane	Double
Structures (Qty/No.)	
Drainage Structures	
a) Side Drain	Side Drain 1
b) Pipe Culvert	24 nos. (900 mm dia) and 8 nos.(1200 mm dia)
c) Slab Culvert	2m span (1 Nos), 4m span (1No's), 6m span (3 No's)
d) Causeway	
Earth Work	
• Excavation / Cutting	3887.40m ³
• Embankment / Filling	36,690.47 m ³
Pavement	
Sub-Base	200 mm
Base	150 mm
Pavement Surface	
Asphalt	50 mm
Cost Estimate (NRs)	
Base Cost (A+B+C+D+E+F+G+H)	786,012,622.06
Contingency @ 4% of Base Cost	31,440,504.88
VAT @ 13 % of Base Cost	102,181,640.87
Total	919,634,767.80
Price adjustment Contingency @ 10% of Base Cost	78,601,262.20

Features	Description
Physical Contingency @ 10% of Base cost	78,601,262.20
Grand Total Cost	1,076,837,292.20
Cost Per Km of the road	78,983,322.41

DPR-2: Road

Construction of road connecting Badki Deuda, Shiva Mandir, Damauli, Motipur, Hasnapur, Barhabigha, Haupur, Mahendra Highway is selected as DPR2. (For detail please refer Volume IV, Section A, B, C, D).



Map 42: DPR2 – Road

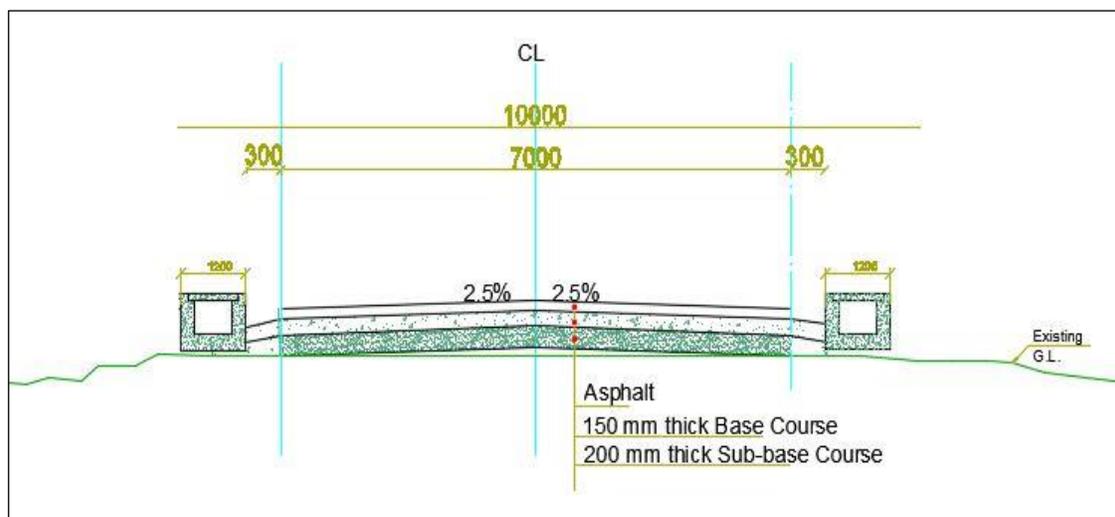


Figure 8: Road Cross Section of Settlement Terai Area

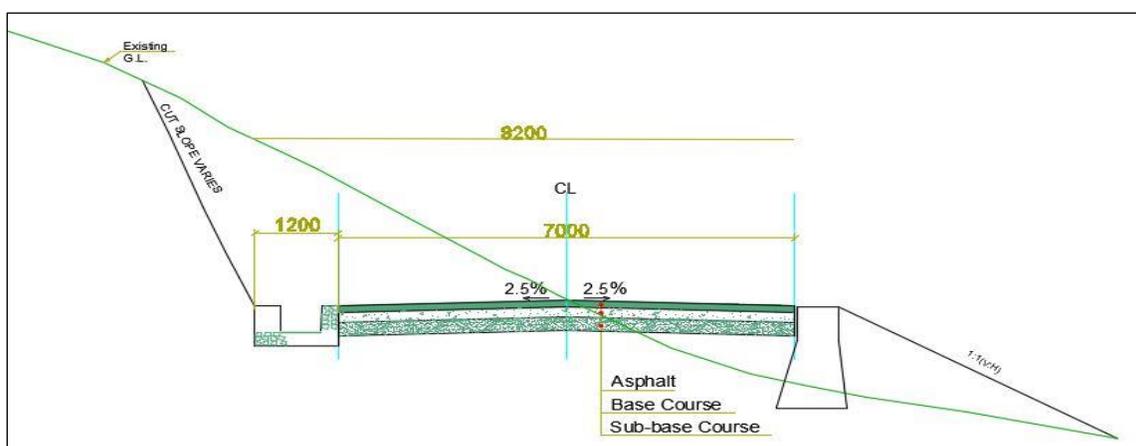


Figure 9: Road Cross Section for Non-Settlement Terai Area

Table 24: Features of DPR2 - Road

Features	Description
Name of the Road	(Badki Deudha – Shiv Mandir – Damauli – Motipur – Hasnapur – Barhabigha – Haupur – Mahendra Highway Urban Road, (CH: 0+000-12+.34.53) KM, Bansgadhi municipality
Location	
Region:	Mid-Western Development Region
Province:	05

Features	Description
District:	Bardiya
Municipality / Rural Municipality	Bansagadhi
Major Settlements	Badki Deudha – Shiv Mandir – Damauli – Motipur – Hasnapur – Barhabigha – Hauptur
Length	12.582 km
Starting Point	Badki Deudha
End Point:	Rampur
Geographical Features	
Terrain	Plain
Altitudinal Range	163 m to 158 m
Climate:	Sub-tropical
Geology:	Boulders, gravel, sand, silt and clay
Meteorology:	Unevenly Distributed Precipitation Controlled by Monsoon
Design Standard	
Standard	NRS 2070
Existing Surface:	Mostly Earthen surface, Partly metallic and gravel surface
Proposed Pavement:	Asphalt type pavement
Geometrics	
Right of Way:	15 m on either sides (Center line)
Formation Width:	10 m
Carriage Way Width:	7 m
Shoulder Width:	1.5 m on either side
Maximum Gradient	4.6%
Minimum Gradient	0.2%
Lane	Double
Structures (Qty/No.)	
Drainage Structures	

Features	Description
e) Side Drain	Rectangular
f) Pipe Culvert	23 nos.(1200 mm dia)
g) Slab Culvert	6m span (3 No's)
h) Causeway	
Earth Work	
• Excavation / Cutting	10,539.07 m ³
• Embankment / Filling	28,520.70 m ³
Retaining structure	
• Gabbion masonry wall	1280.00 m ³
• Stone masonry wall	9458.00 m ³
Pavement	
Sub-Base	200 mm
Base	150 mm
Pavement Surface	
Asphalt	50 mm
Cost Estimate (NRs)	
Base Cost (A+B+C+D+E+F+G+H)	832,400,306.00
Contingency @ 4% of Base Cost	33,296,012.23
VAT @ 13 % of Base Cost	108,212,039.78
Total	973,908,358.01
Price adjustment Contingency @ 10% of Base Cost	83,240,030.59
Physical Contingency @ 10% of Base cost	83,240,030.59
Grand Total Cost	1,140,388,419.19
Cost Per Km of the road	90,632,680.33

CHAPTER VI: SECTORAL DEVELOPMENT PLANS

6.1 Introduction

The Sectoral Development Plans provide strategic directions of the sectors over their plan period. They are consistent with the long term national development goals and objectives. These plans help for the overall development of the municipality for short and long term.

6.2 Physical Development Plan

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

6.2.1 Land Use Zoning

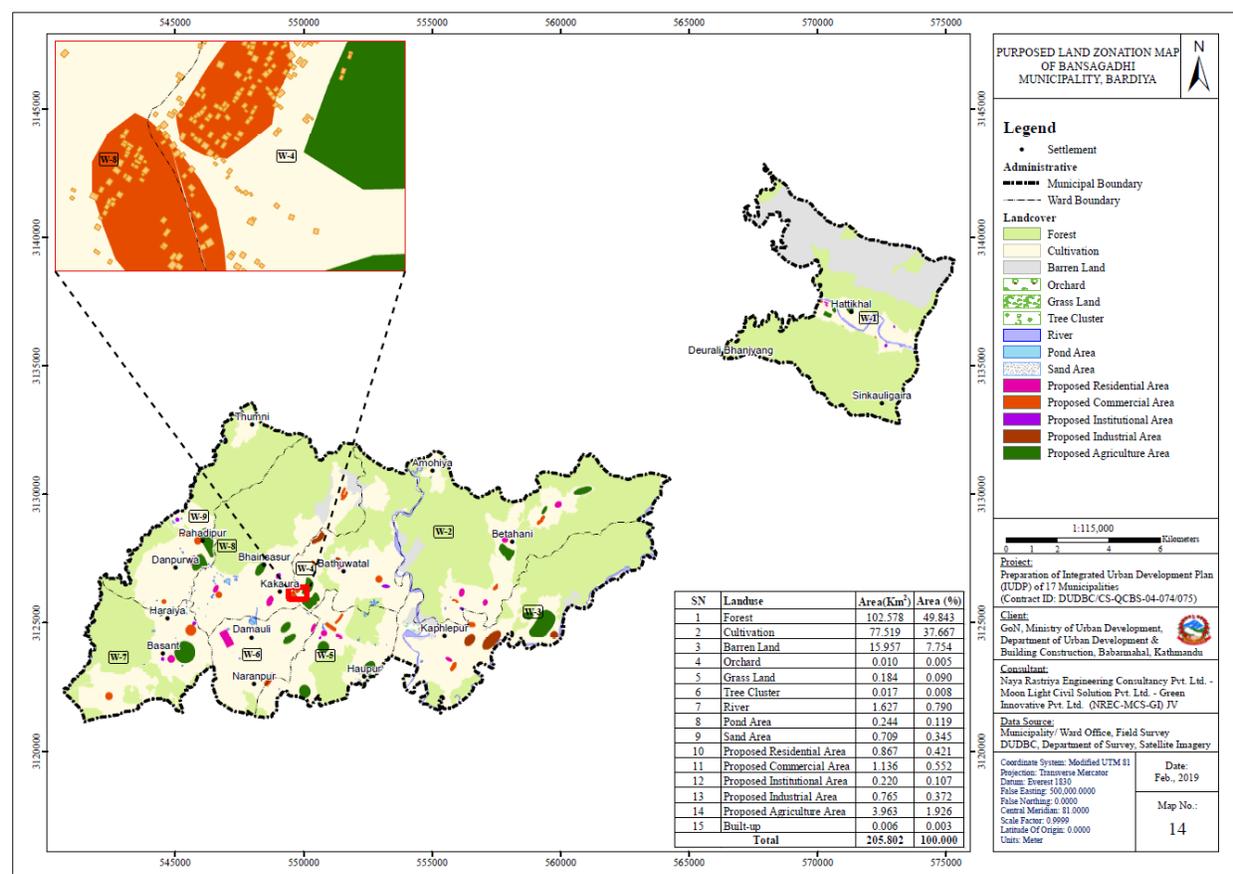
From the land use map of Bansgadhi municipality, we can see most of the area is covered by forest i.e. 49.85% of the total area. As it lies in the Terai area, cultivation land also covers second large area i.e. 41.04

For the proposing of land use, site suitability analysis should be considered. Indicators such as slope, flood, landslide, environment sensitive area, forest, river and elevation of the municipality were studied for the proper selection of settlement and commercial area. Selection criteria is shown in the table below:

Table 25: Criteria for site selection of settlement zone

New Settlement Site Selection of Bansgadhi Municipality, Bardiya		
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	<2000m

By considering the above criteria, commercial, residential, institutional and tourism area of Bansgadhi is proposed. Forest and cultivation area of the municipality are preserved as existing.



Map 43: Land use map of Bansgadhi municipality

Considering the road, settlement and market areas, new residential, commercial and tourism area is proposed. Bansgadhi is familiar for tourism area where it includes national park. Residential area is proposed at Basant, Damauli, Betahani, commercial area is proposed at Haraiya, Pahadipur, Kakaura, Kaphlepur. These areas are proposed according to the infrastructures facilities and settlement percentage. Following map shows the proposed land zoning of Bansgadhi municipality, Further, proposed land use map of the municipality has been presented below:

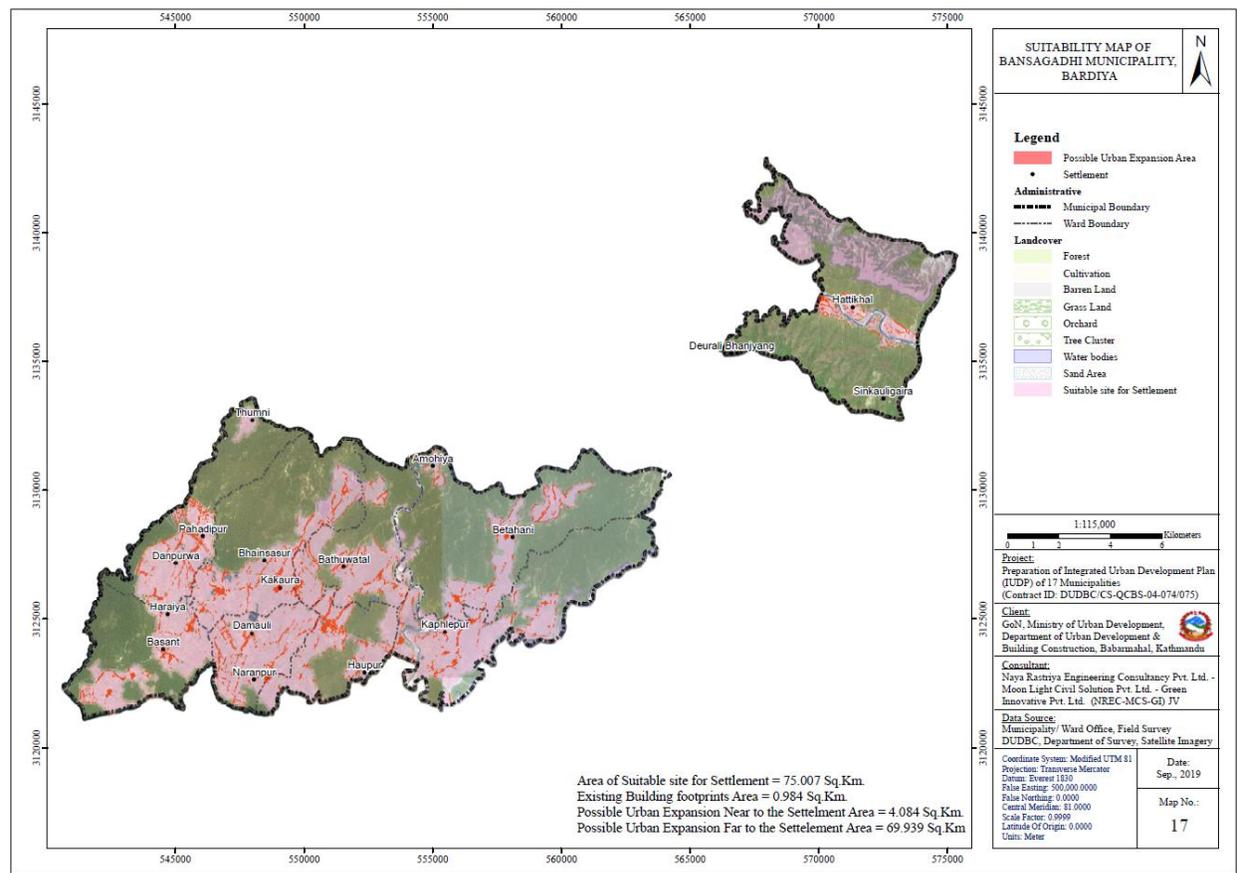
Following table shows the percentage of land use in the municipality,

Table 26: Land Use of Bansgadhi municipality

SN	LANDUSE	AREA (KM SQ)	AREA %
1	Proposed Residential Area	0.867	0.421
2	Proposed Commercial Area	1.136	0.552
3	Proposed Institutional Area	0.220	0.107
4	Proposed Industrial Area	0.765	0.372
5	Proposed Agriculture Area	3.963	1.926

6.2.2 Urban Expansion

The area of suitable site for the settlement is 75.007 sq.km in the municipality. For safety, buildings should be planned among this area. The existing area of building footprints in the municipality is 0.984 sq.km. The trend of increasing population and urbanization has led to the increase in settlement in the municipality. The present and projected population of the municipality is 63287 and 89786 respectively in coming 15 years and the present and projected density is 307 per sq.km and 436 per sq.km. The area covered by building footprint is 0.984 sq.km which will be increased according to the increasing density. From calculation, for the projected density, 0.412 sq.km settlement area is needed. According to the map, 4.084 sq.km area can be used near the settlement area. So for the municipality, expansion can be done near the settlement area.



Map 44: Site feasibility map for selection of settlement zone

6.2.3 Physical Development Issues and Problems

The physical development issues and problems of the municipality are presented below:

- The municipality lacks the land fill site and dumping site.
- Solid waste collection points are lacking in 1, 2, 4, 6 and 7
- There is lack of tap water facility in each household
- Rain water harvesting system is not practiced.

- Drainage and Sewerage system is not available
- There is lack of health post at ward no. 1, 3, 4 and 8 and there is lack of health care center and district hospital
- There is lack of Composting system.
- 12.9% household have no access to electricity.

6.3 Urban Infrastructure Plan

For the sustainable and prosperous development of the municipality, urban infrastructure plan is important. It discusses about water supply plan, drainage network, solid waste, electricity and telecommunication plan.

Major guiding principle for urban infrastructure plan are presented below:

- Improvement in management of infrastructure investment, to achieve sustainable outcomes
- Enhance synergy among the actors in sanitation development, including municipal government agencies, the private sector, NGOs, and others.
- Participatory approach in SWM, so that people take it as asset to their personal level rather than the liability.
- 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.

6.3.1 Water Supply

Availability of water resources makes Bansgadhi good location with sufficient attributes of water supply resources. The water supply facility is also promoted by the community approach. Tube well, tap and well are the major source of water supply for drinking purpose. 94.31% household use tubewell as the major source due to the flat land of the municipality. 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:

- Continuous water supply system installed in each household by regular monitoring of its quality

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.

- Provision for water tank in ward 1 and 3
- Facility for water purification method in the municipality

Table 27: Logical framework Approach (LFA) of Water Supply

	Descriptions	Indicators Of Achievement	Means Of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> • To provide clean and safe water in adequate quantities 	<ul style="list-style-type: none"> • Safe, reliable and affordable water supply • Water supply facility to all HH 	<ul style="list-style-type: none"> • Report from DCC/Municipal office, DWSS, DWSSO and CBO's 	<ul style="list-style-type: none"> • Approval and implementation of IUDP • Availability of water supply in nearby areas
Objectives	<ul style="list-style-type: none"> • Increase water availability and access by 80 percent • Reduce frequencies of water borne diseases by 60% 	<ul style="list-style-type: none"> • 24 hours' access to clean hygienic water supply for every households • Participation of individual HH and community in rain water harvesting 	<ul style="list-style-type: none"> • Report from DCC/Municipal office, DWSS, DWSSO and CBO's, Self-help group, HDI, I/NGO 	<ul style="list-style-type: none"> • Prioritizing projects and budget allocation • Availability of open space and extensive public participation in rainwater harvesting
Output	<ul style="list-style-type: none"> • Adequate safe, reliable and affordable water supply facility • Rain water harvesting provision in HH and community level • Water supply for private, institutional and industrial purpose • Public taps for drinking water and washing 	<ul style="list-style-type: none"> • Each household will have rain water harvesting system and community will have water storage for community purpose • Water supply for cleaning roads, greeneries and fire fighting • Public taps installed on major junctions and important locations 	<ul style="list-style-type: none"> • Report from DCC/Municipal office, DWSS, DWSSO and CBO's, Self-help group, HDI, I/NGO, PRA, FGD, HH survey 	<ul style="list-style-type: none"> • Extensive public contribution and participation • Budget allocation and project prioritizations • Connections of water supply from nearby source
Activities	<ul style="list-style-type: none"> • Installation of public taps along necessary junctions of the municipality • Provision for water tank in ward 1 and 3 • Facility for water purification method in the municipality 			

6.3.2 Waste Water

Waste water of the municipality includes grey water and black water that is generated from every household. Most of the household in the municipality have access to toilet. With the goal of clean, safe and sustainable sanitation program within the reach of every citizen, some of the focus sectors have been identified.

Objectives:

- To provide proper sanitation facilities in each household and institutions

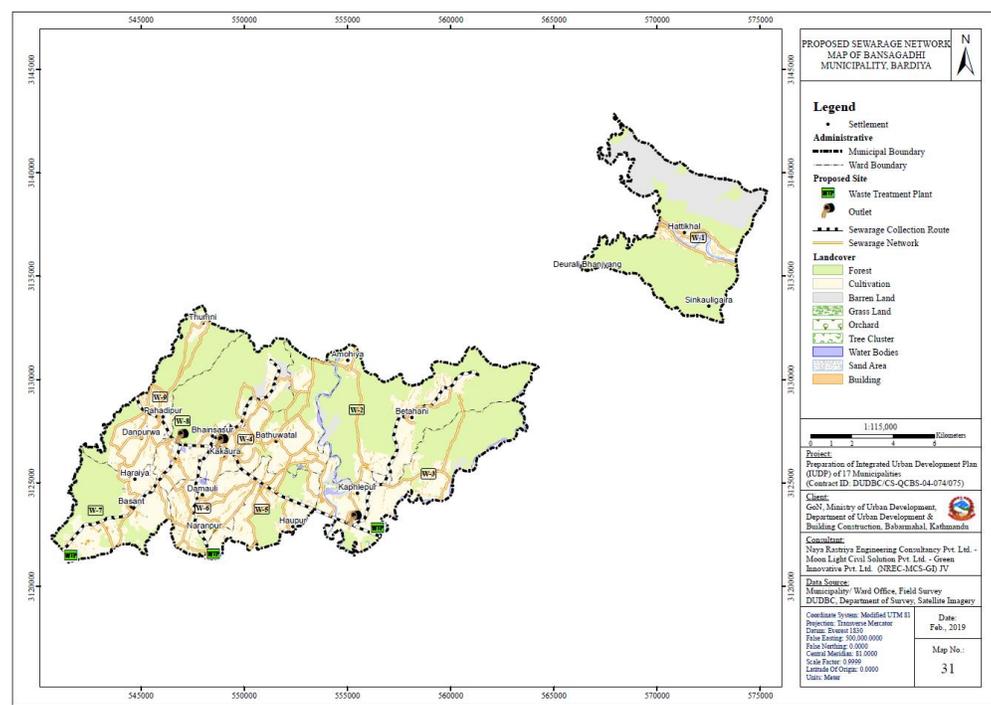
Strategy:

Management of waste water and sanitation in every household

Strategic Projects:

- Installation of waste water treatment plant in ward 3, 5 and 7
- Installations of sewerage network along the road

The flow of waste water (grey water and black water) is along the gradient of the municipality. It flows along the road network and road networks are connected to the river. Various outlets are proposed in the municipality for the easy flow of waste water. The water is collected to the river side and transferred to the waste water treatment plant. In the municipality, outlets are proposed near Bhainsasur, Kakaura and Kaphlepur. Map below shows the flow of waste water and proposed sewerage network in Bansgadhi.



Map 45: Proposed Sewerage network map of Bansgadhi

6.3.3 Drainage

Sustainable sanitation for healthy, green and clean city is the goal of Bansgadhi municipality. As demanded by the people of Bansgadhi 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. With the goal of clean, safe and sustainable sanitation program within the reach of every citizen, some of the focus sectors have been identified.

Objective:

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

Strategy:

Provision of drainage in every side of the road and its treatment for proper reuse

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 Bansgadhi.
- Reed Bed Treatment plant in some identified location

Table 28: Logical framework Approach (LFA) of Drainage and Sewerage Network

	Descriptions	Indicators Of Achievement	Means Of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> • Clean, safe and affordable, sustainable sanitation and terrain friendly drainage system • Sanitation facilities in each household and institutions. 	<ul style="list-style-type: none"> • Provision of sustainable sanitation and drainage system for all HH 	<ul style="list-style-type: none"> • Report from DCC, Municipal office, DWSS, RWSSP, NWSC, STWSSSP 	<ul style="list-style-type: none"> • Implementation of IUDP • Budget allocation
Objectives	<ul style="list-style-type: none"> • Efficient and effective sewer and drainage networks in the city • Toilet facility in every households and institution equipped with septic tank • Make the city “Open Defecation Free Zone” 	<ul style="list-style-type: none"> • All houses and institution with toilet and septic tank • Clean, green and healthy city • People motivated 	<ul style="list-style-type: none"> • Report from DCC, Municipal office, DWSS, RWSSP, NWSC, STWSSSP 	<ul style="list-style-type: none"> • Availability of technology and skilled manpower • Monitoring by concerned authority

	Descriptions	Indicators Of Achievement	Means Of Verifications	Assumptions
	<ul style="list-style-type: none"> To aware people about healthy sanitation and drainage system 	toward cleaning their own city		<ul style="list-style-type: none"> Use of public toilets by people Budget allocation
Output	<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 Drain water treatment plant installed at the exit of drainage Easily accessible public toilets in public spaces 	<ul style="list-style-type: none"> 100% HH with proper toilet and septic tank Integrated sewerage system Use of drain water in various purpose Open defecation free city No collection of rainwater on road 	<ul style="list-style-type: none"> Report from DCC, Municipal office, DWSS, RWSSP, NWSC, STWSSSP, PRA, FGD, HH survey 	<ul style="list-style-type: none"> Monitoring by concerned authority Budget allocation Availability of technology and skilled technicians Maintenance issue Maintenance issue
Activities	<ul style="list-style-type: none"> Installation of waste water treatment plant in ward 3, 5 and 7 Upgrade existing sewerage systems including drainage and sewerage pipe along the roads Establishment of public toilet in public zone Programs on public awareness through radio/TV broadcasting/Publicity Use moderns technology and adopt the 3Rs (reducing, recycling and reuse of waste) 			

6.3.4 Solid Waste

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 Bansgadhi 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

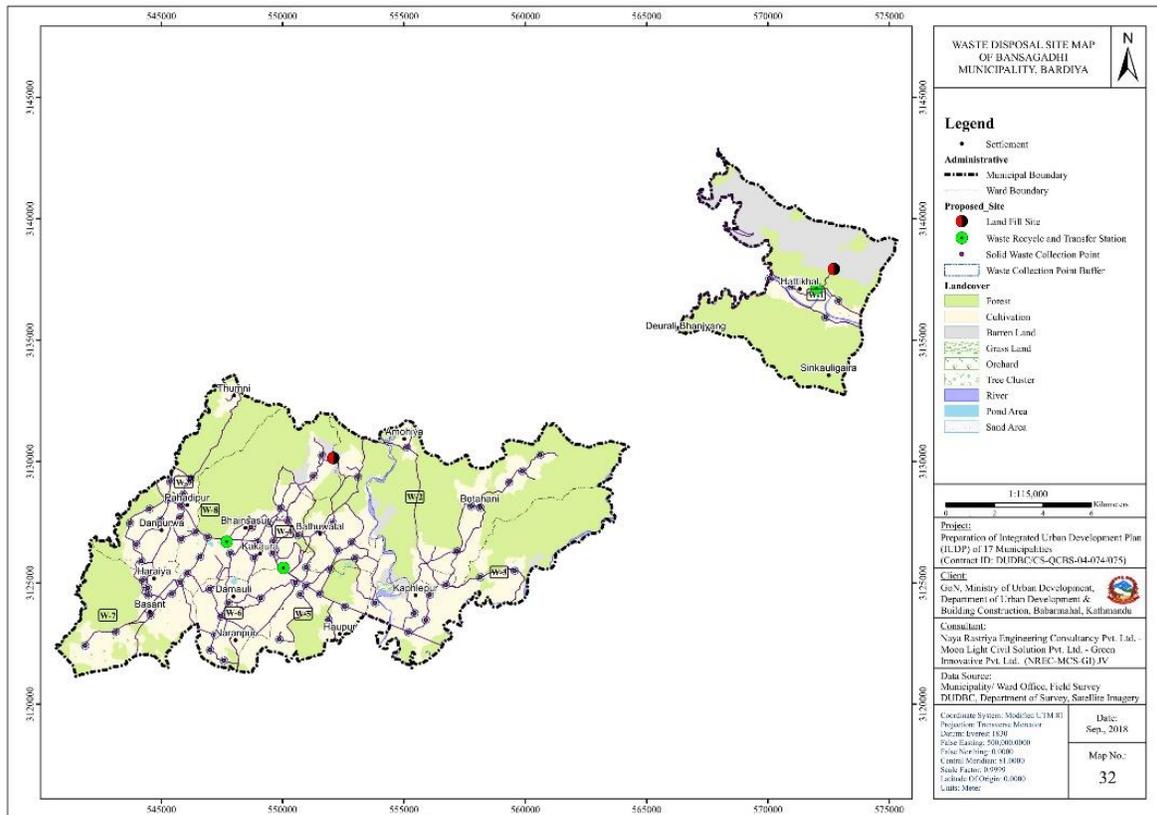
Strategies:

- Implementation of 3R (Reduce, Reuse and Recycle) system in the municipality and integration of solid waste management system in 15 years

Strategic Projects:

- Installment of waste transfer station at Bhainsasur, Kakaura and Hattikhali
- Construction of land fill site at wards 2 and 3 located south of Amohiya and South east of Bethahani respectively
- Awareness campaign for solid waste management.
- Solid waste collection point and separation of those waste
- Construction of land fill site for the proper sanitation in the municipality

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 flat land, so it is comparatively easy for selection of land fill site.



Map 46: Proposed solid waste collection point and land fill site

Table 29: Logical framework Approach (LFA) of Solid Waste Management

	Descriptions	Indicators Of Achievement	Means Of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> • Systematic, effective and sustainable management of solid waste 	<ul style="list-style-type: none"> • Clean and healthy city with sustainable solid waste management • Participatory approach of SWM with Refine, Recycle and Reuse (3R) concept 	<ul style="list-style-type: none"> • Report from DCC, Municipal office, DWSS, RWSSP, NWSC, 	<ul style="list-style-type: none"> • Approval and implementation of IUDP • Availability of landfill site
Objectives	<ul style="list-style-type: none"> • Extensive reduce, reuse and recycle of solid waste (3R) • Maintaining clean and healthy environment by minimizing adverse effect of the solid waste in public health and environment • Effective management of sanitary land fill site and organic 	<ul style="list-style-type: none"> • Production of energy from solid waste • 100% houses to be provided with dustbin to separate degradable and non-degradable waste • Clean city without dumping of solid waste on road side 	<ul style="list-style-type: none"> • Report from DCC, Municipal office, DWSS, RWSSP, NWSC, STWSSSP 	<ul style="list-style-type: none"> • Efficiency of bio gas on winter season • Use of separate dustbin for separate waste • Project prioritization and budget allocation
Output	<ul style="list-style-type: none"> • Sanitary land fill site • Bio gas installed • Clean city with property laid out dustbin on road side • Community participation extended, waste collection activities coordinated 	<ul style="list-style-type: none"> • Landfill site • Functional SWM units in Bansgadhi Municipality and nearby rural municipalities • 100% of HH waste collected in Bansgadhi Municipality 	<ul style="list-style-type: none"> • Report from DCC, Municipal office, DWSS, RWSSP, NWSC, STWSSSP, PRA, FGD, HH survey 	<ul style="list-style-type: none"> • Budget allocation and project prioritization • Operation of bio gas on winter season • People participation
Activities	<ul style="list-style-type: none"> • Instalment of waste transfer station at Bhainsasur, Kakaura and Hattikhal • Establishment of sanitary land fill site at wards 2 and 3 located south of Amohiya and South east of Bethahani respectively • Segregation of waste in household level • Installation of solid waste bins along the road side and in public spaces. • Provision of separate dustbin for HH for degradable and non-degradable waste 			

6.3.5 Electricity

With the primary goal of providing electricity and communication service to each individual in the town, the electricity plan is basically focused on optimization of resources in distribution of electricity services. Every household in Bansgadhi have access to electricity facility. 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:

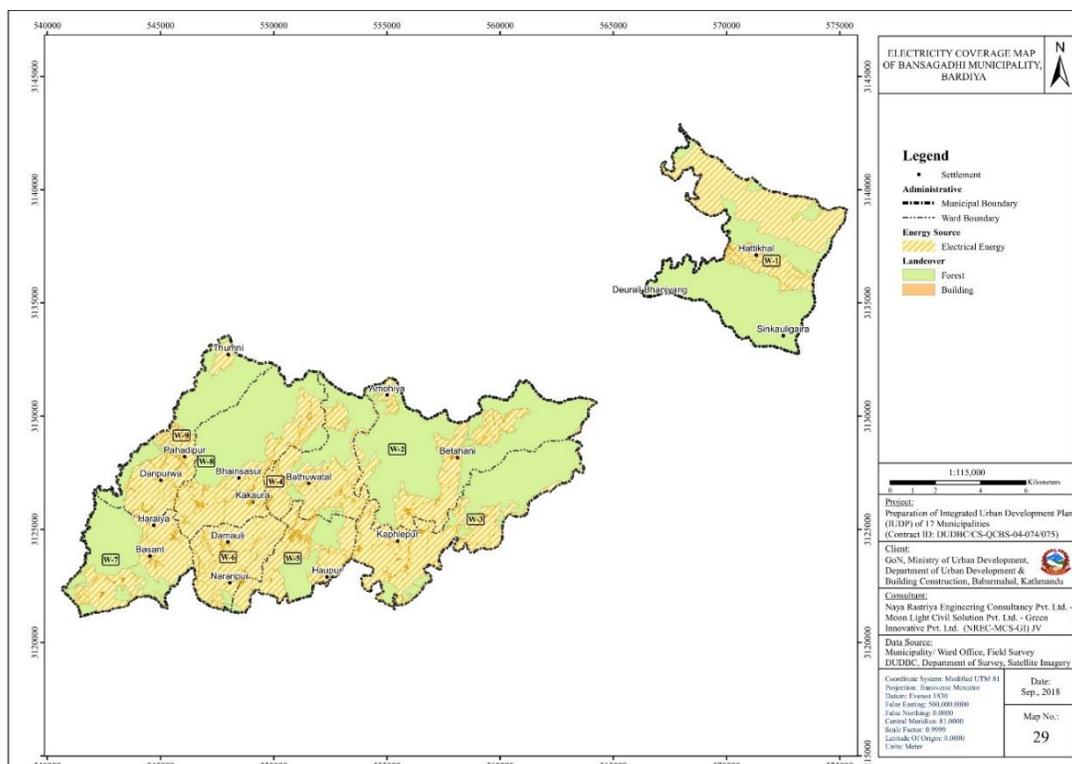
- Connecting power line with national grid
- Provision of smart electricity grid in each settlement for exchange of surplus energy among alternative energy and national grid

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 in Bansgadhi municipality. Almost every wards of the municipality have access to electricity facility. Those areas which are not in reach of electricity should be provided with the access to those during planning phase.



Map 47: Electricity facility in Bansgadhi municipality

Table 30: Logical framework Approach (LFA) of Electricity and Communication

	Descriptions	Indicators Of Achievement	Means Of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> • Develop quality, reliable and resilient electricity connecting with the national grid 	<ul style="list-style-type: none"> • Universally available electricity facility and promotion of renewable source of energy in household and institutional level 	<ul style="list-style-type: none"> • Reports from MoIF, Nepal electricity authority (NEA), Municipal office, etc. 	<ul style="list-style-type: none"> • Implementation of IUDP • Budget allocation
Objectives	<ul style="list-style-type: none"> • Connecting national electricity grid with the micro hydro development of Bansgadhi municipality and nearby rural municipalities • Access of universal and affordable electricity services. 	<ul style="list-style-type: none"> • Exchange of electricity with national and local grids 	<ul style="list-style-type: none"> • Reports from MoIF, Nepal electricity authority (NEA), Municipal office, etc. 	<ul style="list-style-type: none"> • Availability of technology and skilled technicians • Effectiveness of renewable sources
Output	<ul style="list-style-type: none"> • Solar lighting on roads and public spaces • Smart grid infrastructure • Incentives for renewable energy usage • Involvement of private sector 	<ul style="list-style-type: none"> • Quality, affordable and reliable internet and communication facility • Sustainable energy source for public use • Encouragement for public in sharing extra generated electricity 	<ul style="list-style-type: none"> • Annual report from Nepal electricity authority (NEA), Municipal office profile, DCC profile, PRA, FGD, HH survey 	<ul style="list-style-type: none"> • Surveillance from concerned authority • Operation on adverse weather • Budget allocation • Availability of technology and skilled technicians
Activities	<ul style="list-style-type: none"> • Formulating energy policy for promoting renewable energy sources in public and private usage • Investing and planning for smart grid electricity infrastructure • Installation of solar lights on roads and other public spaces • Upgrading electricity infrastructure 			

6.3.6 Telecommunication

With the primary goal of providing communication service to each individual in the town target of affordable and accessible communication are to be backed up by some objectives as follows.

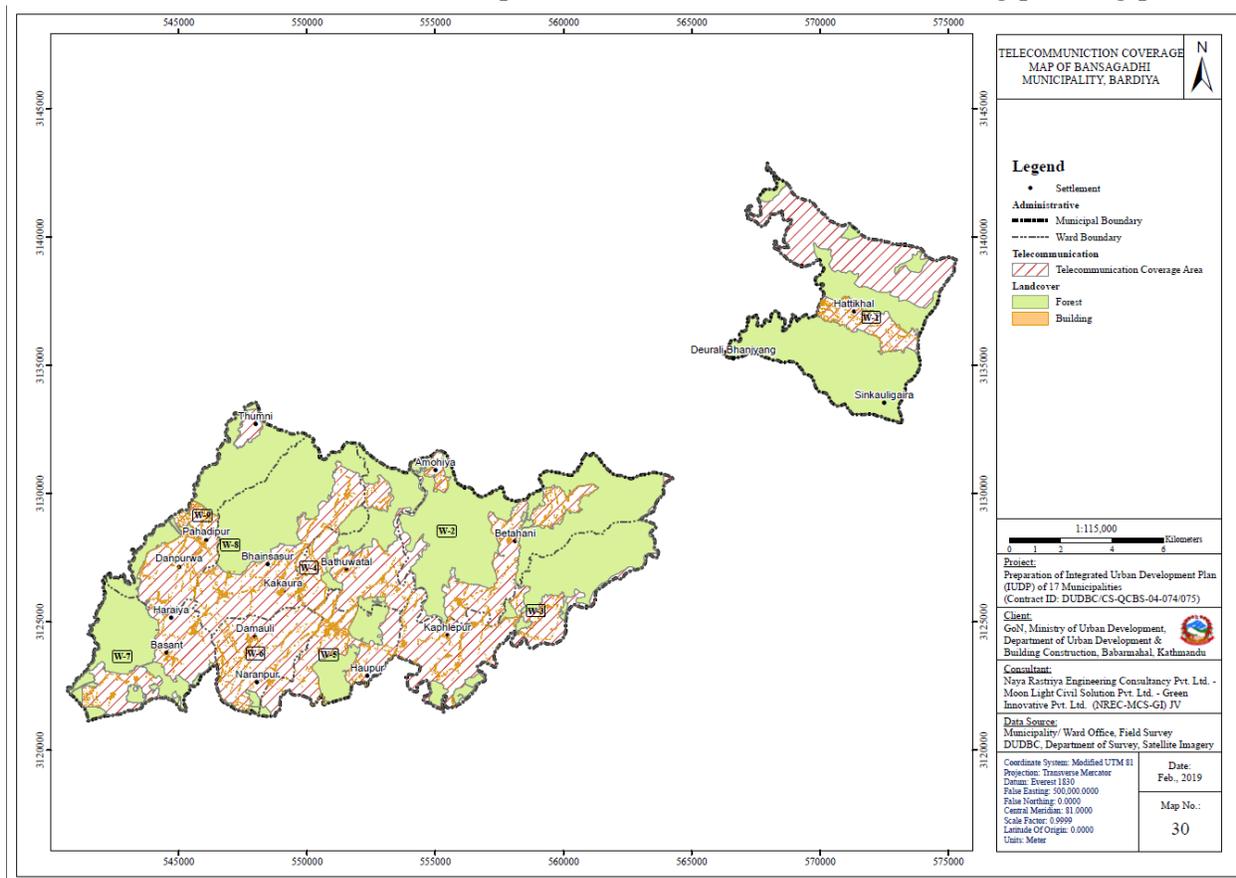
Objective:

- Access of universal and affordable communication services.
- Techno friendly environment.

Strategies:

- Encouraging private and public sector to provide and upgrade the quality of internet and communication services.

Map below shows the accessibility of telecommunication in Bansgadhi municipality. Almost every wards of the municipality have access to telecommunication facility. Those areas which are not in reach of telecommunication should be provided with the access to those during planning phase.



Map 48: Access to telecommunication facility in Bansgadhi municipality

Table 31: Logical Framework Approach (LFA) of communication

	Descriptions	Indicators Of Achievement	Means Of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> • Develop quality, reliable and resilient communication infrastructure 	<ul style="list-style-type: none"> • Increase universal and affordable accessibility of internet and communication 	<ul style="list-style-type: none"> • Reports from MoIF, Nepal Telecom, DCC, Municipal office, etc 	<ul style="list-style-type: none"> • Implementation of IUDP • Budget allocation
Objectives	<ul style="list-style-type: none"> • Access of affordable and internet and 	<ul style="list-style-type: none"> • Each and every locality facilitated 	<ul style="list-style-type: none"> • Reports from MoIF, Nepal Telecom, 	<ul style="list-style-type: none"> • Availability of technology and

	Descriptions	Indicators Of Achievement	Means Of Verifications	Assumptions
	communication facility • Qualitative and reliable street lights and Wi-Fi in major public locations	with internet and telecommunication • Mandatory and incentivized renewable energy policy	DCC, Municipal office, etc	skilled technicians • Maintenance issue
Output	• Public and private ISPs • Incentives for renewable energy usage • Involvement of private sector • Promotion of radio stations • Wi-Fi hotspots in public spaces	• Quality, affordable and reliable internet and communication facility • Sustainable energy source for public use • Public motivated for renewable energy • FM station as the source of entertainment and awareness • Easily accessibility for public	• Alternative energy and promotion center (AEPC), Municipal office profile, DCC profile, Nepal telecom, FM stations, PRA, FGD, HH survey	• Surveillance from concerned authority • Operation on adverse weather • Budget allocation • Availability of technology and skilled technicians
Activities	• Promoting and monitoring FM stations • 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.			

6.4 Urban Transport Plan

In flat roads like Bansgadhi, they are associated with easy ground access and availability of related infrastructures. The design measures should include designing of off-site drainage, erosion protection measures and identification of best locally available materials.

Objective:

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

Strategy:

Easy linkage of Bansgadhi with nearby districts like Banke and Surkhet, etc. with proper provision of pedestrian's pathways

6.4.1 Road Classification with ROW

According to the population served, market area and the settlements, new roads are proposed. Also from the sectoral discussion and views from the villagers, these 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)
- Arterial Road (14m)
- Sub Arterial Road (10m)
- Collector Road (6m)
- Foot trail

The following table shows the proposed roads and its classification,

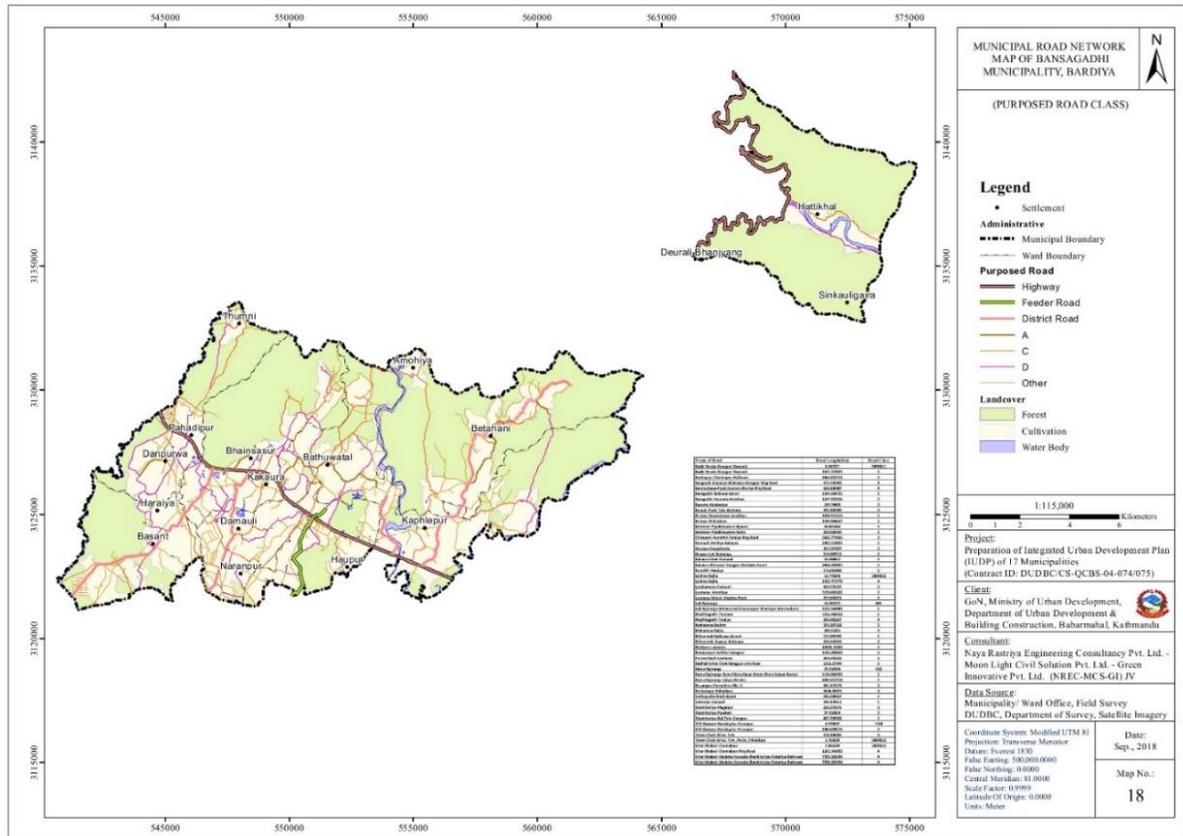
Table 32: Proposed road class in Bansgadhi municipality

S.N	Road Joining Settlements	Road Length (Km)	Existing Width (m)	Proposed Road Class	Proposed Road Width (m)
1	Pahadpur – Belawa	14.083	8	Highway	50
2	Motipur – Bansgadhi	4.422	6	Feeder Road	30
3	Gauripaira – Resampur	8.423	6	District Road	22
4	Bangaudi – Naranpur	5.763	4	District Road	22
5	Uttar Bhaka Road	2.387	4	District Road	22
6	Lakhana – Ghaireni	11.812	6	District Road	22
7	Ratna Rajmarga – Salyan Border	4.897	8	A	14
8	Lakhna – Rajha	10.493	8	A	14
9	Belawa – Banmudawa – Amohiya	5.353	8	A	14
10	Laxmana – Amohiya	8.124	8	A	14
11	Betahani – Pipal Chautara – Bijaura	2.880	8	A	14
12	Betahani – Pipalchautara – Rajha	3.538	8	A	14
13	Lok Rajmarga – Lakshamanpur – Banmudawa	3.688	7	A	14
14	Belawa – Mahadeva	3.070	8	A	14
15	Uttar Bhakari – Madaha – Matariya – Bathuwa	5.866	10	A	14
16	Milanchowk – Bathuwa – Asneri	2.037	8	A	14

S.N	Road Joining Settlements	Road Length (Km)	Existing Width (m)	Proposed Road Class	Proposed Road Width (m)
17	Uttar Bhakari – Chamakpur Ring Road	5.313	14	A	14
18	Kakaura – Riharpur – Dangpur – Koldanda – Asneri	6.344	8	A	14
19	Shankhariya – Raji Tole -Dangpur	1.775	8	A	14
20	Haupur – Lok Rajmarga	1.749	8	A	14
21	Motipur – Laxmana	7.894	8	A	14
22	Sattariya – Damauli	2.305	12	A	14
23	Damauli – Amiliya – Kakaura	3.976	12	A	14
24	Badki Deuda – Dangpur – Damauli	3.564	10	A	14
25	Sadhapurba – Badhaiyatal	1.325	8	A	14
26	Bangaudi – Bhaisasur – Dangpur Ring Road	1.978	8	A	14
27	Machhagadh – Thumani	8.763	12	A	14
28	Machhagadh – Toraiya	2.015	10	A	14
29	Ratna Rajmarga – Babai Bajar – Salyan Border	4.715	6	B	10
30	Mahadeva – Rajha	4.296	7	B	10
31	Mahadeva - Dakhin	2.108	7	B	10
32	Banbagiya – Manikapur – Bathuwa	4.374	6	B	10
33	Radhakrishna Chowk – Dangpur – Link road	3.211	8	B	10
34	Laxmana School – Madaha Road	2.549	8	B	10
35	Newada – Motipur	2.184	6	B	10
36	Bansgadhi – Lakshmanpur	2.016	6	B	10
37	Milanchowk – Jharpur – Bathuwa	1.546	6	B	10
38	Shankhariya – Pipaltari	0.475	8	B	10
39	SOS – Rampur – Barabigaha – Hasnapur	2.102	6	B	10
40	SOS – Rampur – Barabigaha – Hasnapur	4.406	6	B	10
41	Narayanpur – Soltitol – Dangpur	2.512	8	B	10
42	Tower chowk – 10 no. Tole	2.843	8	B	10

S.N	Road Joining Settlements	Road Length (Km)	Existing Width (m)	Proposed Road Class	Proposed Road Width (m)
43	Lakshamana – Damauli	1.860	8	B	10
44	Purano Basti – Laxmana	1.785	6	B	10
45	Basanta – Kalabanjar	2.357	8	B	10
46	Haraiya – Khayarbutta	1.967	8	B	10
47	Kunaithi – Haraiya	1.544	8	B	10
48	Narayanpur – Soltitole – Dangpur	4.680	8	B	10
49	Narayanpur – Soltitole – Dangpur	1.807	8	B	10
50	Belauli – Purbi Tole – Koldada	1.406	8	B	10
51	Resampur – Purnahiras Ma. V	1.268	8	B	10
52	Chisapani – Kunaithi – Toraiya Ring Road	6.382	8	B	10
53	Reshampur – Pahadipur	3.761	8 </td <td>B</td> <td>10</td>	B	10
54	Thumni Gaun – Ring Road	3.010	8	B	10

Source: DoR, field visit and municipality

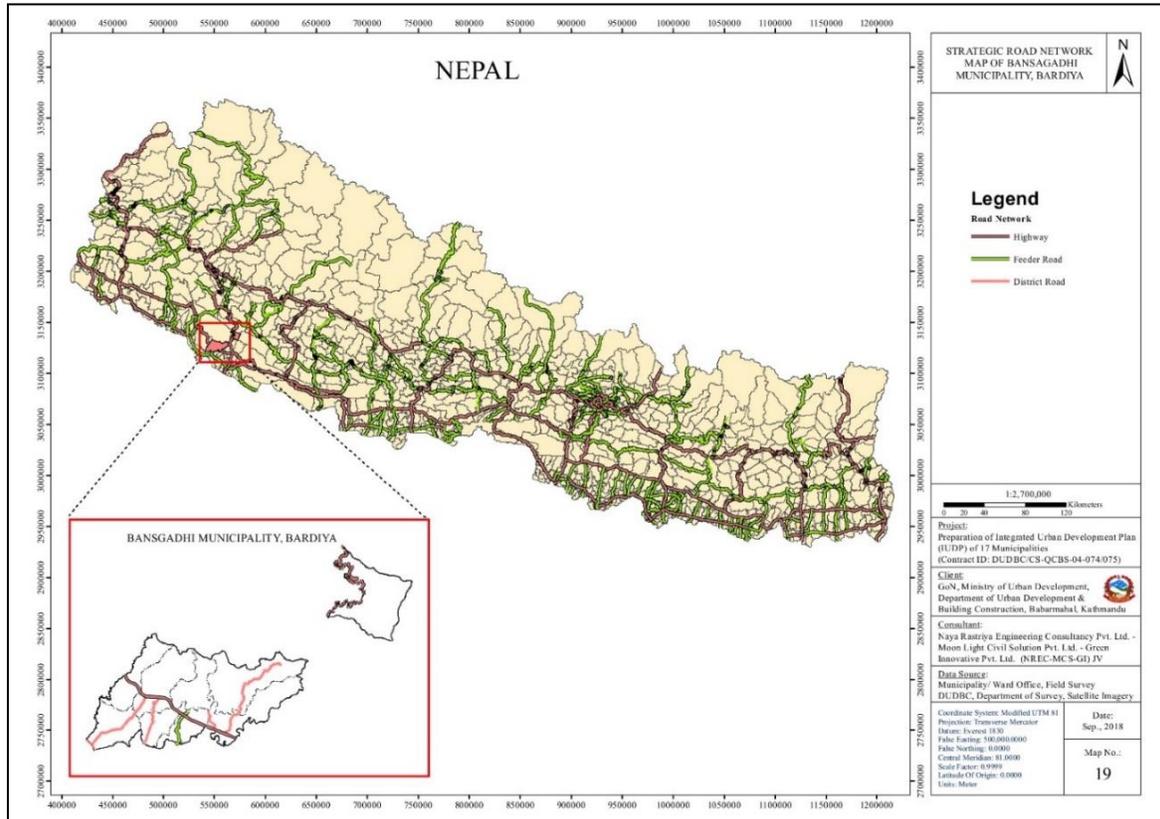


Map 49: Proposed road network and its class of Bansgadhi municipality

6.4.2 Road Network

Strategic Road Network

Bansgadhi municipality lying in Terai area has connection with highway, feeder road and district road along with the overall road network of Nepal. East – West Highway is connected through the municipality. Feeder road and district road is connected towards North and South direction. The map below shows the strategic road network of Bansgadhi municipality connecting national highways and other roads.



Map 50: Strategic road network map of Bansgadhi municipality

Accessibility Situation

The accessibility seems to be easy in Bansgadhi due to the presence of major roads. There is main highway passing through the municipality. Most of the road in the municipality are gravel roads, two roads are black topped and others are earthen roads. Width of the road in the municipality ranges from 2m to 14m and the width of highway is 30m. 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 nearby settlements. Table below shows the types of roads and width in Bansgadhi municipality and it shows the linkage within the settlements. The name of roads, its width and types are shown in the table below:

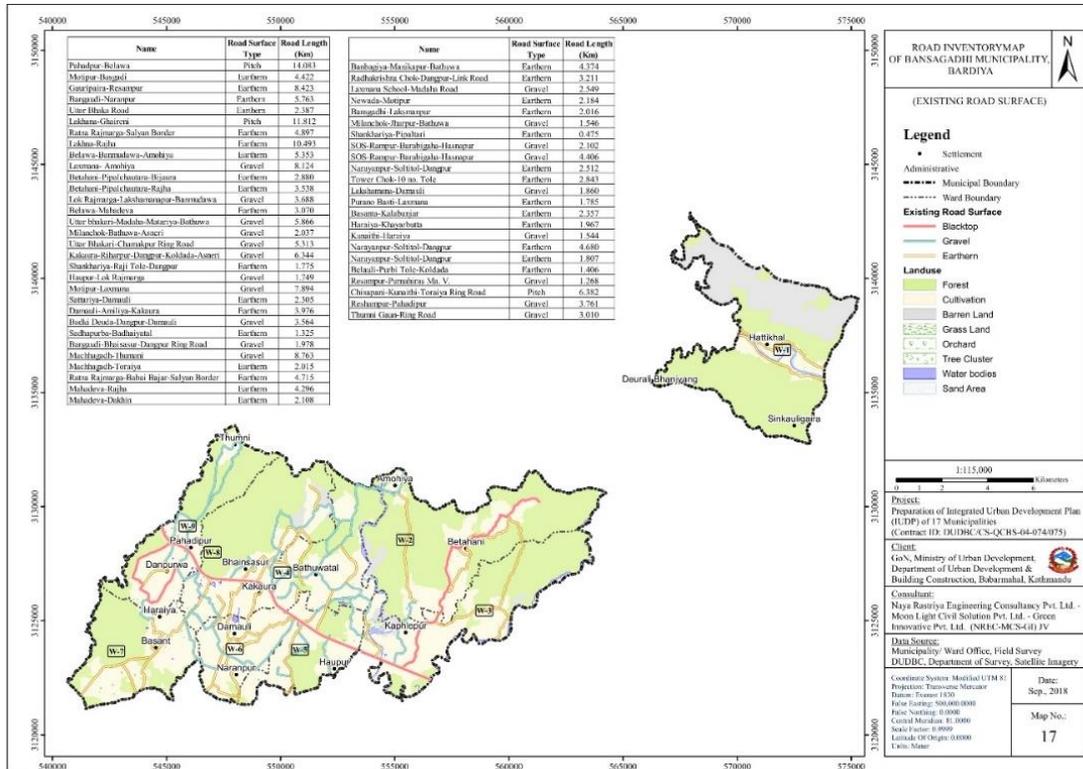
Table 33: Road surface type of Bansgadhi municipality

S.N	Road Joining Settlements	Road Length (Km)	Existing Width (m)	Existing Road Surface
1	Pahadpur – Belawa	14.083	8	Black Topped
2	Motipur – Bansgadhi	4.422	6	Earthen
3	Gauripaira – Resampur	8.423	6	Earthen
4	Bangaudi – Naranpur	5.763	4	Earthen
5	Uttar Bhaka Road	2.387	4	Earthen
6	Lakhana – Ghaireni	11.812	6	Black Topped
7	Ratna Rajmarga – Salyan Border	4.897	8	Earthen
8	Lakhna – Rajha	10.493	8	Earthen
9	Belawa – Banmudawa – Amohiya	5.353	8	Earthen
10	Laxmana – Amohiya	8.124	8	Gravel
11	Betahani – Pipal Chautara – Bijaura	2.880	8	Earthen
12	Betahani – Pipalchautara – Rajha	3.538	8	Earthen
13	Lok Rajmarga – Lakshamanpur – Banmudawa	3.688	7	Gravel
14	Belawa – Mahadeva	3.070	8	Earthen
15	Uttar Bhakari – Madaha – Matariya – Bathuwa	5.866	10	Gravel
16	Milanchowk – Bathuwa – Asneri	2.037	8	Gravel
17	Uttar Bhakari – Chamakpur Ring Road	5.313	14	Gravel
18	Kakaura – Riharpur – Dangpur – Koldanda – Asneri	6.344	8	Gravel
19	Shankhariya – Raji Tole - Dangpur	1.775	8	Earthen
20	Haupur – Lok Rajmarga	1.749	8	Gravel
21	Motipur – Laxmana	7.894	8	Gravel
22	Sattariya – Damauli	2.305	12	Earthen
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24	Badki Deuda – Dangpur – Damauli	3.564	10	Gravel
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27	Machhagadh – Thumani	8.763	12	Gravel
28	Machhagadh – Toraiya	2.015	10	Earthen

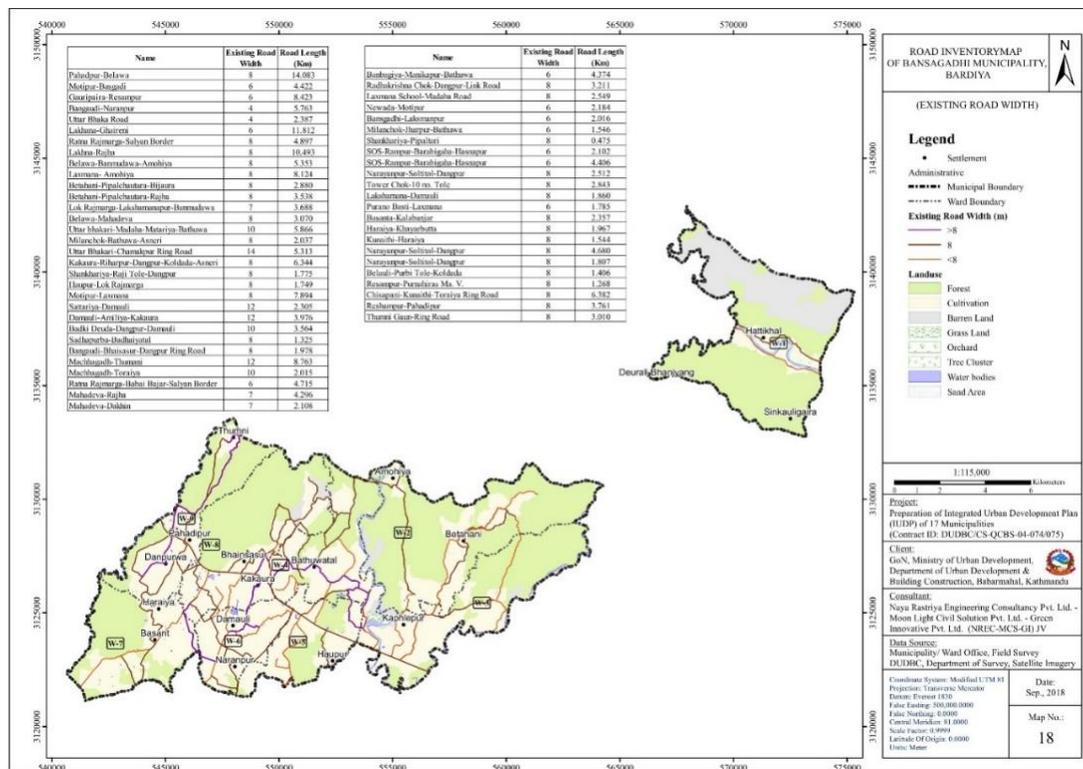
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30	Mahadeva – Rajha	4.296	7	Earthen
31	Mahadeva - Dakhin	2.108	7	Earthen
32	Banbagiya – Manikapur – Bathuwa	4.374	6	Earthen
33	Radhakrishna Chowk – Dangpur – Link road	3.211	8	Earthen
34	Laxmana School – Madaha Road	2.549	8	Gravel
35	Newada – Motipur	2.184	6	Earthen
36	Bansgadhi – Lakshmanpur	2.016	6	Earthen
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42	Tower chowk – 10 no. Tole	2.843	8	Earthen
43	Lakshamana – Damauli	1.860	8	Gravel
44	Purano Basti – Laxmana	1.785	6	Earthen
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49	Narayanpur – Soltitole – Dangpur	1.807	8	Earthen
50	Belauli – Purbi Tole – Koldada	1.406	8	Earthen
51	Resampur – Purnahiras Ma. V	1.268	8	Gravel
52	Chisapani – Kunaithi – Toraiya Ring Road	6.382	8	Black Topped
53	Reshampur – Pahadipur	3.761	8	Gravel
54	Thumni Gaun – Ring Road	3.010	8	Gravel

(Source: DoR, field visit and municipality)

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality



Map 51: Road classification on the basis of existing surface type



Map 52: Road classification on the basis of existing road width

6.4.3 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
- 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

6.4.4 Issues and Problems

The major problem of the municipality related to transportation is that, most of the roads are earthen and graveled. As a result, it is very hard to travel during rainy season. There is no proper bus stand, signal and bus stop in the municipality.

Table 34: Logical Framework Approach (LFA) of Urban Transportation

	Descriptions	Indicators Of Achievement	Means Of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> • Safe and convenient movement of goods, services and people in the municipality and periphery 	<ul style="list-style-type: none"> • Ease on modes of transportation in the municipality and its periphery • Interlinkage of Bansgadhi Municipality with nearby cities 	<ul style="list-style-type: none"> • City profile, DCC/Municipal office report, DoR/DTMP report, Traffic report, I/NGO's reports/ HDI 	<ul style="list-style-type: none"> • Approval and Implementation of IUDP • Prioritization of IUDP

	Descriptions	Indicators Of Achievement	Means Of Verifications	Assumptions
			reports, Self-help groups	
Objectives	<ul style="list-style-type: none"> • Enhancement of Public transportation • Road accessibility to every households • Enhanced interlinkage of Bansgadhi with nearby cities • Prioritize on pedestrian friendly inclusive road networks 	<ul style="list-style-type: none"> • Affordable, easy accessible and reasonable travel time • Maximum households are within 200m distance of motor able roads • Increased interconnectivity of the city and flow of goods, service and people • People friendly walking 	<ul style="list-style-type: none"> • City profile, DCC/Municipal office report, DoR/DTMP report, Traffic report, I/NGO's reports/ HDI reports, Self-help groups 	<ul style="list-style-type: none"> • Effective local governance • People's willingness • Approval and implementation of IUDP • Awareness level of people and willingness
Output	<ul style="list-style-type: none"> • Planned road network within city in different hierarchy • Public transportation within and among cities • Bus stops and bus parks along different localities without disturbing the old market area 	<ul style="list-style-type: none"> • Defined hierarchical road pattern / road laid as per GLD and Land pooling • Preparation of MTMP • Road connections including footpaths and cycling tracks for flat terrains and walking trails on difficult terrain 	<ul style="list-style-type: none"> • City profile, DCC/Municipal office report, DoR/DTMP report, Traffic report, I/NGO's reports/ HDI reports, Self-help groups, PRA, FGD, HH survey 	<ul style="list-style-type: none"> • Strong local governance and prioritization of project • Efficiency and effectiveness of implementing institutions • Awareness level of people and willingness
Activities	<ul style="list-style-type: none"> • Upgrading road network from Bhakari chowk to Bangauri • Upgrading road network from Motipur to Badki Deudha • Construction and expansion of road system by land pooling and GLD roads • Urgent construction of road structures and road furniture including bicycle lanes and foot paths • Maintain and synchronize traffic lights through government and private sectors • Construction of road connecting Bansgadhi municipality and to all nearby RMs 			

6.5 Social Development Plan

Social development plan of Bansgadhi 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.

6.5.1 Education

There are altogether 57 schools out of which two of them are providing technical subjects and one is providing inclusive education for students with disability. There is the availability of school and higher education facilities, but numbers of students are gradually increasing and do not consistent till higher level because of lack of the technical education and higher educational institutions in Bansgadhi. The areas like Sawikal Belwa, Motipur and Daudadakala are more accessible for educational services. Moreover, educational dependency has been increasing to Gulariya (Bardiya), Tikapur (Kailali) and Nepalgunj and Kohalpur (Banke). The literary status is between male and female of 5 years and above age groups does seem more varies greatly in this. As per the municipal profile statistics, the literacy rate remains 88.02% in 2017 has been an average rate of literacy, which accounts for 90.75% for the male and 85.49% for the female. So, increment in literacy rate seems not a big problem. However, promotion of quality higher education has been the major challenge for this municipality, which has been now only accessed through Bansgadhi Multiple Campus and Bardiya Multiple Campus.

By analyzing this situational gap, the following LFA has been prepared for the educational development of Bansgadhi municipality.

Table 35: Logical Framework Approach (LFA) of Education

Logical Framework Approach (LFA) of Education	
Goals	<ul style="list-style-type: none"> • Provide equity-based opportunities in education with quality services • Expand employment-based vocational education
Objectives	<ul style="list-style-type: none"> • Achieve 100% literacy in the municipality. • Specific guidelines for non-formal education and formal education (pre-elementary, elementary, secondary and higher) • 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
Means of verification	<ul style="list-style-type: none"> • Municipality plans and programs, DoE report
Assumption	<ul style="list-style-type: none"> • Government prioritization and budget allocation in education sector • Provincial support from province 5 • Inclusive education for all

Logical Framework Approach (LFA) of Education		
S.N	Output/Activities	Target indicators
1.1	Promotion of Multimedia in Education	No. of Schools/ college having digital instruments for scientific teaching method
1.2	Establishment of technical school and college at municipal level	No. of Technical institutions increased
1.3	Establishment of at least 1 governmental/community school in each ward	Number of model schools increased
1.4	Establishment of Public library	Increased no. of libraries and readers
1.5	Cross – subsidies education for poor Tharus and Dalit	100% children attending school which helps for their development
1.6	Conduction of Adult Education in each wards	Adult literacy rate increased to 100%

6.5.2 Health

There are three health posts (Bansgadhi, Belwa and Deudakala), twenty private clinics, and a number of pharmacies in Bansgadhi. This municipality is adjacent to Kohalpur medical college, Bheri zonal hospital and Bardiya district hospital. Most of health centers are concentrated near main road. The regions of Belwa, Motipur and Daudadakala have easy access to health facilities. People used to visit Nepalgunj in the extreme condition of treatment, and even to Lukhnow. The population growth trend suggests that there is less pressure in the increase in the number of health services, but there is critical challenge to upgrade the health services.

Table 36: Logical Framework Approach (LFA) of Health

Logical Framework Approach (LFA) of Health	
Goals	<ul style="list-style-type: none"> 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
Objectives	<ul style="list-style-type: none"> 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.

Logical Framework Approach (LFA) of Health		
	<ul style="list-style-type: none"> • 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 	
Means of Verification	<ul style="list-style-type: none"> • Health survey, DHS • Municipal Profile, Progress Report etc. 	
Assumption	<ul style="list-style-type: none"> • Budget allocation; support from federal and provincial govt. • Proper health service for mother and child • Availability of land and priority of national government 	
S.N	Output/Activities	Target indicators
1	Construction of well – equipped hospital, health post, birthing centre	
1.1	Construction of 50 bedded hospital with specific OPD and consultants system with emergency services (as a part of Kohalpur Medical College)	<ul style="list-style-type: none"> • % Increase in number of patient • Reduction in the distance and time for the out of the service delivery
1.2	Construction of Birthing Centre	% reduction in MMR and CMR
1.3	Construction of additional health post with lab services in each wards	% of health cases addressed at local levels
1.4	Establishment of Khop Clinic and Gaughar Clinic in each wards	% reduction in TFR, MMR and CMR
1.5	Establishment of Blood Bank	Increased access to emergency service
1.6	Establishment of Medical College for paramedical course	Increased enrolment of students in medical science
2	Promoting health standards	
2.1	Provision of drinking water and sanitation in health posts	% increase in clean health provision
2.2	Conduction of program for 100% vaccination in each ward	Decrease of epidemics and communicable disease
2.3	Informative and awareness programs initiated for women in wards	% women participants increased
2.4	Declaration of the municipality as an ODA	Observed Safe and clean city
2.5	Health awareness program and free health camp	% increased to health access health for every citizens
3	Provision of facilities and infrastructures related to health	

Logical Framework Approach (LFA) of Health		
3.1	Provision of vehicles to carry death bodies	Increased access to emergency services
3.2	Facility of at least one Ambulance in each wards	Increased access to emergency services

6.5.3 Social Security

Only a secure Bansgadhi municipal region can promote social security services of universal trust, care and harmony to each and every citizens of the municipality. Therefore, it is planned (as presented in LFA) which would provide equity-based opportunities in community services along with safety measures and we-feeling in Bansgadhi.

Table 37: Logical Framework Approach (LFA) of Security

Logical Framework Approach (LFA) of Security		
Goals	<ul style="list-style-type: none"> • 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 	
Objectives	<ul style="list-style-type: none"> • Ensure tourist safety and security during stay and travel • 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 • Promote basic services such as food, clothing, housing, education, money and medical care 	
Means of Verification	<ul style="list-style-type: none"> • Municipal Progress Report • Plans and Policies • Provincial report 	
Assumption	<ul style="list-style-type: none"> • Implementation of IUDP • Budget allocation • Monitoring by concerned authority • PPP and mobilization of local people along with the municipal budget 	
S.N	Output/Activities	Target indicators
1	Provision of security services	
1.1	Solar lights on roads and other public spaces	<ul style="list-style-type: none"> • Increased road safety

Logical Framework Approach (LFA) of Security		
1.2	Constructing separate lanes for pedestrians and vehicular mobility and community participation	<ul style="list-style-type: none"> • % of safe travelling statistics • Reduction in road accidents
1.3	CCTV surveillance to be installed in the city and provision of firefighting facility	<ul style="list-style-type: none"> • Increased safety perceptions • % of use of CCTV in crime investigation
1.4	Establishing police station/ booths and establish crime prevention strategy and emergency response team	<ul style="list-style-type: none"> • Reduction in criminal activities • Promoted DRR
1.5	Social awareness program related to domestic violence and discrimination	<ul style="list-style-type: none"> • Reduction in crime cases reporting
2	Facility for elderly and differently able people	
2.1	Establishment of care centres for PDs in the municipality	% of increased inclusive and respectful social life as housing status for the needy persons of the community
2.2	Establishment of Orphans home	
2.3	Establishment of Old age home in the municipality	

6.5.4 Culture and Sports

Culture and sports seems important part of social development in Bansgadhi municipality. It is culturally rich with an indigenous identity of the Tharus. Moreover, there is certain possibility to develop this region as a hub of sports in complement with its tourism-based sport activities. In this context, the following LFA has been proposed:

Table 38: Logical Framework Approach (LFA) of Culture and Sports

Logical Framework Approach (LFA) of Culture and Sports	
Goals	<ul style="list-style-type: none"> • Make an inclusive municipality to all cultures and heritages and celebrate the diversity
Objectives	<ul style="list-style-type: none"> • Create the leisure time of people fruitful, creative and productive with pleasant environment for the citizen and participate in community development activities • Celebrate the spirit of heritage and the multiculturalism of community • Increase awareness of the arts, culture and sports • Provide basic recreational services irrespective of the age, sex, physical condition and other socio-economic attribute

Logical Framework Approach (LFA) of Culture and Sports		
	<ul style="list-style-type: none"> • Mobilize the youth and develop sports to prepare able, strong and disciplined human resource required in the municipality • Develop a linkage of recreation, sports and tourism for the economic and multi-sectoral development of the municipality in long-term 	
Means of Verification	<ul style="list-style-type: none"> • Municipal Progress Report & Municipality Profile • Community devt. policy of the municipality • Provincial report 	
Assumption	<ul style="list-style-type: none"> • Implementation of IUDP • Budget allocation • Monitoring by concerned authority • Mobilization of local people along with the municipal budget 	
S.N	Output/Activities	Target indicators
1	Development of culture and arts	
1.1	Formation of cultural-indigenous groups (including self-help groups)	Increased number of social groups and CSOs
1.2	Protection of marginalized community (Dalit in priority)	% of protected people and IGs for the particular group
2	Development for sports	
2.1	Establishment of one youth and Sports development centre in each wards	<ul style="list-style-type: none"> • % of increased trained players • % of increase players and spectators, including stakeholders
2.2	Develop a ward wise team for specific games	
2.3	Construction of Play Ground in each wards	

6.5.5 Park and open spaces

The recreational development of Bansgadhi municipality can be ensured along with the parks and open spaces. Being a buffer area of BNP, the municipality could take this as an economic opportunity as well as social recreation. In the planning context, thus, the following LFA is proposed.

Table 39: Logical Framework Approach (LFA) of Parks and Open Space

Logical Framework Approach (LFA) of Parks and Open Spaces	
Goals	<ul style="list-style-type: none"> • Recreational facilities for all
Objectives	<ul style="list-style-type: none"> • Provide access to all people • Green parks, play grounds and open space around the city

Logical Framework Approach (LFA) of Parks and Open Spaces		
	<ul style="list-style-type: none"> • Promote sports and recreation facility • Promote movie theatre and other modern entertainment centers 	
Means of Verification	<ul style="list-style-type: none"> • Municipal Progress Report & Municipality Profile • Community devt. policy of the municipality • Provincial report 	
Assumption	<ul style="list-style-type: none"> • Implementation of IUDP • Budget allocation • Monitoring by concerned authority • PPP and mobilization of local people along with the municipal budget 	
S.N	Output/Activities	Target indicators
1	Development of Parks and open spaces at every neighbourhoods of the municipality	
1.1	Land acquisition for open spaces and green parks (in need)	Accessed green parks and open spaces to all
1.2	Construction of Children/adult parks in each wards	Accessed green parks and open spaces to all
1.3..	Formation of community groups for managing parks and spaces	Increase number and proportion of active public participation
2	Facilitated the municipality having the structures design about amusement & recreational activities	
2.1	Establishment of municipal level museum/Art Gallery	Flourishing the traditional art and cultures
2.2	Establishment of Municipal level exhibition center	Increased status of local market and entrepreneurship
2.3	Establishment of City hall (Multipurpose hall)	Increased status of local market and entrepreneurship
3	Development of sports and yoga facilities	
3.1	Formulation and management of ward-wise team for games (Volleyball, Football, Cricket etc.)	% of increase players and spectators, including stakeholders
3.2	Establishment of youth and sports development center in each wards of the municipality	% of increased trained players
3.3	Establishment of City level Sport Complex	Promoted sport tourism

Logical Framework Approach (LFA) of Parks and Open Spaces		
3.4	Construction of Play Ground in each wards	Promoted sport
3.5	Establishment of yoga and meditation centre with registered doctor	Enhanced the spiritual growth of the municipality

6.5.6 Urban Social Service Centre

Development of urban infrastructure is essential for the sustainable cities. The infrastructural development will only be ensured by different kinds of social service/ centers in the municipality. As parts of social development, the following components of these services should be integrated with spatial and urban development on the regional and local level of Bansgadhi:

Table 40: Proposed Service Centers for The Promotion of Social Development Through IUDP

Services	Specific needs for long-run development	Prioritized locations
Open and civic space	<ul style="list-style-type: none"> Public space including streets, pathways, parks, publicly accessible open spaces and any public/civic building and facilities; Public meeting places, concerts, markets or public rallies; Public parks, playing fields, old age homes, children homes and parks, and places of shelter in emergency 	<ul style="list-style-type: none"> Sawikal Belwa, Motipur Daudadakala Hasanapur,
Community centers and cultural and sports facilities	<ul style="list-style-type: none"> Exhibition centers for cultural, social or recreational activities Sports facilities and arenas or stadia, museums, theatres, concert venues or cinemas. 	<ul style="list-style-type: none"> Motipur, Belauli, Kakara, Machagadhi
Religious or cultural	Places of worship, religious education, and associated administration spaces (e.g. Bhuithan of the Tharus).	<ul style="list-style-type: none"> Ranjha, Bethani, Asrewa, Mahadeva

6.5.7 Social Development Issues and Problems

- Touristic identity, Tharu indigenous culture, linkage to E-W national highway and biodiversity existing in the municipality are critical factors that could catalyze overall development of the Bansgadhi
- 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 in the changing context
- Tourism linkages through Bardiya National Park—a source of revenue plus touristic identity
- Special focus on education, health and social sector; growing concerns and issues of children, women, youth, elderly people and marginalized communities/ groups
- Lack of urban scale health institutions with basic facilities including maternity services and other emergency services.
- Institutional problems related to capacity building and offices infrastructures

6.6 Economic Development Plan

6.6.1 Industrial Development and Trade Promotion

Rice Mill, Furniture, Grill Mill, Noodles, Chowmein, Herbs Company, Masala etc are the major small and medium scale industries inside the municipality with inter domestic markets like Lakhna, Uttarbhakhari, Bansghadi, Tharugaun, Motipur, Hasnapur and intra domestic markets like Banke, Gulariya, Nepalgunj and Kathmandu. Therefore, they are generating some employment opportunities for local people.

With easy availability of local manpower and local, the number of micro-enterprises can be increased. With only a few products being focused by the available industries, there's opportunity to explore further especially with products of livestock especially as this is gaining popularity. With road facilities (graveled and pitch) that joins the municipality to major market centers and even other cities of the country. Output of the enterprises can be well traded to those areas. A good food storage center can aid to the agriculture as well as industry sector of the municipality. There's no difficulty of importing raw materials as per the necessity nor is trading of the output. If the products aren't traded in market outside the municipality, the municipality may not be able to absorb all the products of the industries and thus the output may be underutilized. Making a spot for the products in the bigger market will be a huge challenge.

6.6.2 Employment Generation, Poverty Reduction

According to Small Area Estimates of Poverty, during 7 years (2003/04 to 2010/11), poverty was reduced from 41% to 22% with a rate of 47%. It is assumed that during current past 7 years (2011/12 to 2018/19) it is reduced by 28% due to earthquake and trade disturbance between India and Nepal. Therefore, poverty incidence in this municipality for fiscal year 2018/19 becomes 16%. With the economic activities continuing accordingly, the rate is assumed to reach 13% in 2023, 8% in 2028 and 4% in 2033. But this assumption has not considered the fact that remittance has slowly started to show voluntary unemployment in the country as a whole and this municipality will not be an exception.

This will be a reality assumed that the activities mentioned in the LFA are run smoothly along with the assumptions put forward for each indicator are not hindered in any form throughout the years.

6.6.3 Regional Competiveness of Municipality

Bansgadhi is slowly becoming popular in commercialized banana and poultry farming. It however doesn't have an advantage against other municipalities of province 5 due to the people more focusing upon earning from the natural visiting sites available. The municipality has flourished in terms of tourism. A huge population is benefitted by the Bardiya National Park available as a neighbor both directly (accommodation for tourists) and indirectly (raw materials from the park).

6.6.4 Agriculture Development

Paddy, wheat, Red Lintels, and mustard are the major crops produced in the municipality. In Bansgadhi municipality wide range of agricultural products are produced and marketed in Lakhna, Uttarbakhari, Bansghadi, Tharugaun, Motipurand Hasnapur markets.

Opportunities

The municipality being engaged in both seasonal and non-seasonal cropping pattern produces more crops and vegetables. It has a good road network to Kathmandu, Nepalgunj, Gulariya and even neighboring country India which can be used for giving the production its due value. Reu Irrigation Project and Babai Irrigation Project in this municipality promote the agricultural products.

Challenges

Agricultural status of Nepal is in poor condition and Bansgadhi is no exception. With the population there being lesser interested towards agriculture with years passing by, the situation will worse off. Similarly lack of modern technologies and skilled manpower are considered as major challenges for agriculture in this municipality.

Livestock

Commercialization of livestock farming is the recent trend of this municipality. It is considered that people have been earning better and living a good life. With Kathmandu, Nepalgunj, Gulariya being its other markets along with the internal markets more people have been attracted towards livestock.

Opportunities

With commercialization of livestock attracting the present people, further financial help in the field can aid for attracting more youth towards livestock. India being a close international market and easy access to the city areas of Kathmandu, Nepalgunj, Banke and Gulariya can make the livestock products get the price it deserves.

Challenges

Being a traditional job, retaining the people in this field will be a challenge if there's no sustainability.

6.6.5 Strategic Location of Different Market Centre/Product Collect Centres

In Bansgadhi municipality, there are ten market centers including Mahadiwa, laxmana, Chepang bazar and Kakaura. The market areas are connected with good road networks and therefore feasible for the municipality.

6.6.6 Possible Economic Zones Based on Local Economic Growth Potentials

Looking at the potentiality and investment commitment made by the municipality, the municipality could be developed and established as a cheaper tharu homestay. The available natural sites are well equipped to attract huge tourists with just a few smart advertisement techniques especially through the social media.

6.6.7 Potential and Problems of Economic Development Plan

As planned if budget is successfully spent upon agriculture, one cold store and products collection center will be successfully established in the municipality. The government must focus a bit more towards micro-enterprises. The natural sites have free raw materials to develop the municipality as a model herbal industrial estate.

But the fact that the municipality isn't accessed with proper road network the economic plan has focused upon infrastructural development, but specification has not been made. As per the mobility of tourists, the road networks need to be chosen. Likewise, the area as has huge advantage of tourism proper attention towards communication and internet has not been focused by the municipality.

Table 41: Logical Framework Approach (LFA) of Economic Plan

	Descriptions	Indicators of Achievement	Means of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> To develop Bansgadhi municipality as cheaper tharu homestay 	<ul style="list-style-type: none"> Establishment of small and quality hotels and lodges 	<ul style="list-style-type: none"> Report from DCC/ municipal office, ministry of tourism, 	<ul style="list-style-type: none"> Private and government partnership for establishing the quality hotels and lodges
Objectives	<ul style="list-style-type: none"> To identify the place as cheaper Tharu ethnic community in an international market. 	<ul style="list-style-type: none"> Identification of Tharu culture in international market Increase in number of small hotels and lodges 	<ul style="list-style-type: none"> Report from DCC/ municipal office, ministry of finance, IRO 	<ul style="list-style-type: none"> Skilled Youth retained in the municipality Foreign Return get government help to start new ventures as per their skill Capital Budget fully utilized
Output	<ul style="list-style-type: none"> Establishment of small food courts all over the tourist sites. 	<ul style="list-style-type: none"> Reduction in out-migrants Increase of internal tourism 	<ul style="list-style-type: none"> Report from DCC/ municipal office, 	<ul style="list-style-type: none"> Proper local budget control

	Descriptions	Indicators of Achievement	Means of Verifications	Assumptions
	<ul style="list-style-type: none"> Road connection with nearby cities Promotion for agricultural and livestock industries 	<ul style="list-style-type: none"> Increase in small investors Increase in number of small and medium scaled tax payers. 	ministry of finance, CBS, road department of Nepal	<ul style="list-style-type: none"> Involvement of local manpower for local level activities
Activities	<ul style="list-style-type: none"> Proposal and research on the possibilities of Tharu homestays Programs to control Zoonotic disease (from livestock). Subsidy to small dairy industry for chilling vat. Subsidy in production of milk, meat and eggs. Emphasis upon goat farming in cluster. Cow, buffalo, goat, pig, bee and fish farming oriented towards involving youth. Fertility centre establishment for artificial breeding and vaccination. Lift irrigation, deep boring, and solar irrigation for modernization of agriculture technology. Provision of insurance on agriculture. Establishment of a model Hat bazaar, seed procession and storage centre for the entire municipality. 			

6.7 Tourism and Cultural Development Plan

6.7.1 Potentiality of Cultural and Tourism Development

Bansgadhi municipality has shared boundary with Bardiya National park. 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 majority of the people are Brahmin, Chhetris, and Tharus and minorities like Dalits and Muslims. The Tharu ethnic groups are living in 2, 3, 4,5,6,7 and 8 wards in large numbers. People use Nepali, Tharu, Avadhi, Magar, Urdu and Hindi languages. There are different social institutions in every wards ranging from at least one to seven numbers, which work for women empowerment, agriculture, saving, sports, religious and cultural works etc. Kedareshwar Dham, located in ward number 5, is the cultural heritage of this municipality. Here are 17 such potential tourism sites including 50 religious and cultural sites.

- b) **Agro-tourism and Local Products:** Here, most of the households having agricultural production particularly vegetables and horticulture are found benefited from local market. The main crops on irrigated land are paddy, *Masuro*, mustard and wheat, and on un-irrigated land, maize and other cereals and lentils. Moreover, wheat, masuro, and mustard are the major crops produced in the municipality. Likewise, people have gradually started to rear fish, cow, buffalo, and poultry and do vegetable farming commercially.

c) **Ecology, Flora and Fauna:** Bansgadhi is at an altitude 174 m from mean sea level. The municipality covers northern slope Chure Range and Terai in southern. It lies in the physiographic range of the Mahabharat foot hill. It has 61 numbers of community forests. The temperature ranging from 7.5 °C to 43 °C has provided favorable climatic conditions for the survival of different forest tree species like Sal Jamun Saj Tejpat Khasna, Karma, Khair, Dhauti, Harro Barro Pipali, Amala Sisau, Sagun, Simal, Liptis, Baas, Khayar, Baspote, Dabdabe, Katili, Kurilo and so on. The animals such as Pig, Tiger, Rabbit, Leopard, Blue Cow, Elephant, Chittal, Monkey, Jackal, Dumsi, Bear, and Deer are the wildlife found in Bansgadhi municipality. The majority of total land area in Bansgadhi is covered by forest (i.e. 57.64%).

d) **Public Services Delivery and Economy:** 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 main market areas of the municipality are Hattikhal and Bansgadhi. Bansgadhi has different kinds of financial organizations, which mainly include saving groups, co-operatives, remittance exchange firms, and banks of different categories. Rice mill, furniture and grill are major industries which have created local employment opportunities. Regarding water services, people use tube-well/hand pump water is the main source of drinking water. Also, there are 66.35 % literacy rate as per CBS 2011 in here with 40 educational institutions. Similarly, there are 37 private and government health institutions. Farmers in ward no. 4 and 5, have got benefitted from Reu irrigation project and Babai irrigation project.

6.7.2 Conservation of both Material and Non-Material Cultures

To develop Bansgadhi municipality as a medium-scale tourist destination in the district, it should respect and conserve both material and non-material cultural assets. It has to be done with collaboration of district master plan along.

Table 42: Components of Tourism of Bansgadhi Municipality

Components	Categories
Accessibilities	-Availability of air and road transportation -Lies Bardiya National Park in the northern boarder
Accommodations	-Small hotel, restaurant and tea stall in few numbers
Attractions	-Greenery forest land, agriculture and pasture land having altitude of 174 m from mean sea level -River streams, ponds, temples -Diverse ethnic cultural norms and values especially of Tharu community

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 -Local Tharu culture, indigenous technologies food products and festivals
Activities	-Babai River (Babai Valley) bank beach sports, organic local food, 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

For the conservation of material and non-material cultures, following policy options are presented below:

- 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.
- Establishment of cultural museum, fun parks, view towers and learning resource centers.

Table 43: Logical Framework Approach (LFA) of Tourism Development Plan

Logical framework Approach (LFA) of Tourism Development	
Goals	<ul style="list-style-type: none"> • Develop tourism sector for economic progress and creating employment opportunities. • Promote sustainable growth through the conservation of natural and cultural resources.
Objectives	<ul style="list-style-type: none"> • To coordinate with public, private, cooperative and community sector to promote and develop tourism. • To develop easy accessibility/connectivity with nearby touristic destination.

Logical framework Approach (LFA) of Tourism Development		
	<ul style="list-style-type: none"> To offer the training regarding homestay for hospitality and other tourism related activities. 	
	<ul style="list-style-type: none"> To provide good facility for resorts, hotels, paying guest houses, homestays and other sorts of accommodations. 	
	<ul style="list-style-type: none"> To offer economic benefits to the local people through tourism entrepreneurship. 	
Means of verification	<ul style="list-style-type: none"> Reports from Ministry of culture, tourism and civil aviation (MoCTCA), Municipality Report 	
Assumption	<ul style="list-style-type: none"> Budget allocation 	
	<ul style="list-style-type: none"> Availability and identification of touristic spot 	
S.N	Output/Activities	Target indicators
1	Programs for the increase in tourism in the city	
1.1	Formation of Tourism Development & Management Committee (TDMC) in every wards	Increase in number of tourist
1.2	Preparation of implementation guidelines & monitoring framework	Enhancing tourism development
1.3	Establishment of Tourism board	Enhancing tourism development
1.4	Establishment of roster of local youths highlighting their academic and professional expertise in tourism sector	Enhancing tourism development
1.5	Promoting tourist sites within the municipality via social media	Enhancement of tourism development
1.6	Formation of the national & international “ <i>Youth Samparka Manch</i> ”	Increase in cultural tourism
1.7	Assessing the disaster prone sites in the tourist places	Safe and secured environment for tourists
1.8	Organizing hospitality management, handicraft making and awareness raising on natural and cultural conservation trainings to the local people	Standard development of the city for tourism
1.9	Preparation of the visual documentary of the touristic sites & uploading it in websites & social sites	Increase in cultural tourism
2	Identification of hiking trails, touristic spots, religious sites ,adventurous sports in tourism and other promote strategies	

Logical framework Approach (LFA) of Tourism Development		
2.1	Construction of Multicultural Museum	Increase in number of tourist
2.2	Construction of View Tower	Strong monitoring and evaluation mechanism for promoting tourism and culture
2.3	Training for construction of environmental friendly house	Quality assurance for services provided to tourists
2.4	Formation of multicultural association in the municipality	Increase in touristic destinations
2.5	Renovation of <i>Chaskiya Baba Mandir, Mandir Danda and promotion of Hatti khola</i>	Increase in cultural tourism

6.8 Financial Development Plan

6.8.1 Municipality Revenue Improvement Plan (MRIP)

MRIP is a tool for designing and mobilizing financial resources linked with the city development strategy (Mahat, 2010). It will help to improve local revenues, ease debt servicing obligations and leverage the borrowing capacity of municipalities for project financing. The MRIP should incorporate strategies and action plans for implementing taxes, fees and other alternative avenues for accessing municipal revenue sources.

There are various of the ways to improve revenue performance. Some of the action that should be taken by local authorities in order to improve the revenue mobilization of Bansgadhi Municipality are:

1. Identifying potential taxpayers and other areas of tax sources such as fees, service tax on tourism, rental fees, parking fees, octroi duty etc. in order to increase the tax bases.
2. Improving administrative efficiency to reduce collection cost of taxes.
3. Progressive tax system to reduce revenue leakage and making taxpayer tax compliant
4. Efforts to enforce a strict and heavy penalty for non-compliance
5. Strick action and penalty against the defaulters or tax evaders should be the part of tax administration.
6. Building local infrastructures on PPP (Public Private Partnership) and thereby promoting to generate more income and employment so that tax base of local government increases.
7. E- Taxation for increasing tax transparency and avoidance of tax evasion as possible.
8. The debt management strategy should ensure that local governments can maintain a prudent and sustainable capital investment and financing plan to manage its level of debt at appropriate levels.
9. Transforming the TDF into a Strong Financial Intermediary to finance long term loans for infrastructure needs of the municipality.

6.8.2 Assessment of Possible Financial Resources

Financial resources provide energy for the smooth operation of local government institution and stimulate their activities. In fact, financial resource is critical base without which even the viability existence of the LGs would be questionable. Therefore, it important to identify possible financial resources of the Bansgadhi municipality.

The local governments in Nepal have a weak revenue base relative to their expenditure responsibilities. There are three major categories of revenue sources of the local government (a) four types of grants to be provided from the federal government comprising fiscal equalization, conditional, special, and complementary; (b) internally generated revenue; and (c) revenue sharing obtained from VAT, in country excise duty, and royalty obtained from the natural resources.

Schedule 8 of the Constitution of Nepal elaborates the sole jurisdiction, powers and functions of the local government. As per this Schedule, the local government are assigned to collect wealth tax, house rent tax, land and building registration fee, motor vehicle tax, service charge, tourism fee, advertisement tax, business tax, land tax (land revenue), penalty, and entertainment tax. Similarly, the Schedule has also provided 21 expenditure responsibilities of the local government.

Schedule 9 outlines the concurrent jurisdictions/powers of all three levels of government comprising federal, provincial and local. As per this Schedule; service fee, charge, penalty and royalty from natural resources, and tourism fee are assigned to be collected by all three levels of government concurrently. Similarly, the Schedule has also provided 14 concurrent expenditure responsibilities.

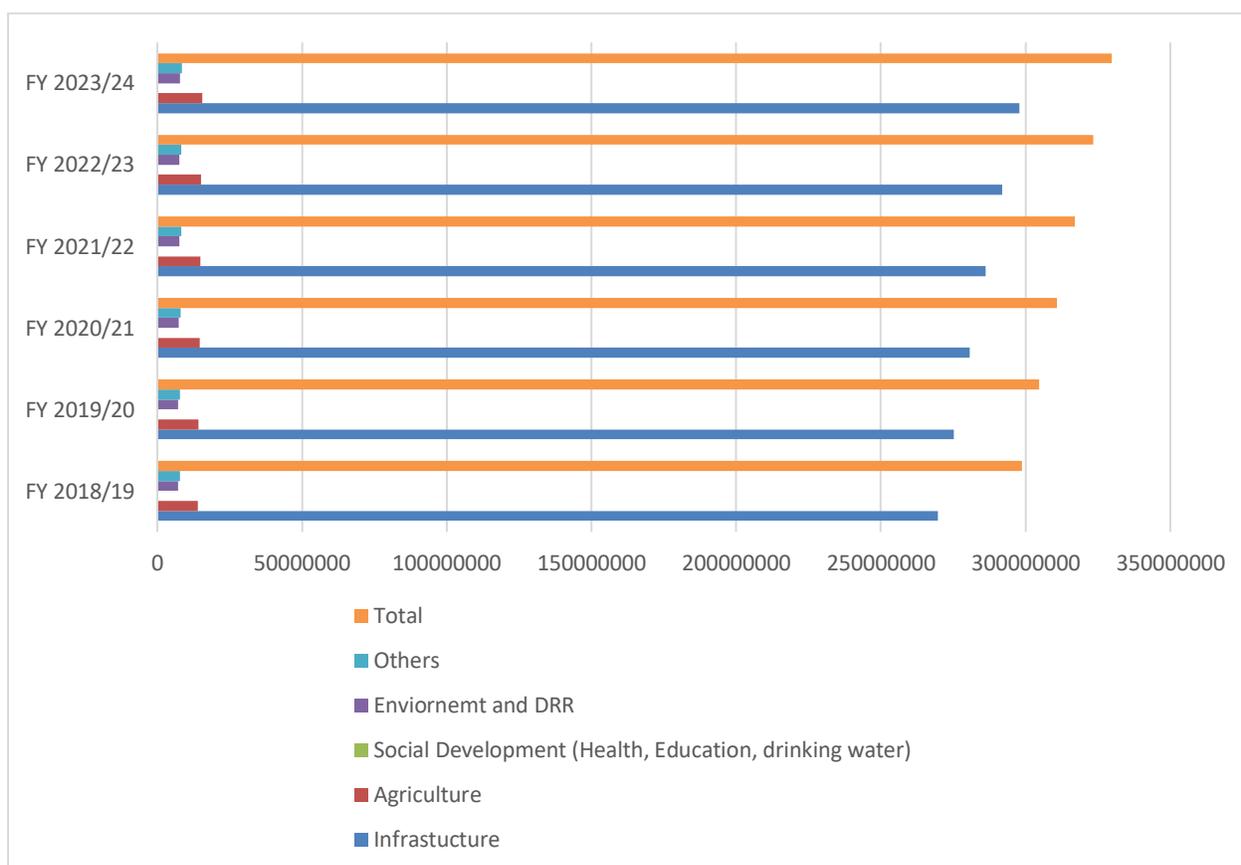
6.8.3 Allocation of Development Budget

The table shows the coming five years' sectorial budget allocation of Bansgadhi 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 44: Five Year Sectoral Plan of Bansgadhi Municipality

Five Year Sectoral Allocation of Budget	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24
Infrastructure	269739000	275133780	28063645 5.6	286249184. 7	29197416 8.4	297813652
Agriculture	14000000	14280000	14565600	14856912	15154050. 24	15457131
Social Development	108622	110794.44	113010.32 88	115270.535 4	117575.94 61	119927.47

Five Year Sectoral Allocation of Budget	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24
Environment and DRR	7100000	7242000	7386840	7534576.8	7685268.36	7838973.7
Others (Sports, Trade, Tourism, Cooperatives Governance etc.)	7752000	7907040	8065180.8	8226484.416	8391014.104	8558834.4
Total	298699622	304673614.4	310767086.7	316982428.5	323322077	329788519



(Source: Bansgadhi Municipality Budget, 2018/19)

Infrastructure:

The above table shows the five-year sectorial budget allocation of Bansgadhi municipality. It is estimated that the total budget allocation for Infrastructure sector in FY2018/19 is Rs.269739000. 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.275133780, Rs.280636455.6, Rs.286249184.7, Rs.291974168.4 and Rs.297813652 respectively.

Agriculture:

It is estimated that the total budget allocation for agriculture sector in FY2018/19 is Rs.14000000. 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.14280000, Rs.14565600, Rs.14856912, Rs.15154050.24 and Rs.15457131 respectively.

Social Development (Health, Education, Drinking Water):

It is estimated that the total budget allocation for social development sector in FY2018/19 is Rs.108622. 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.110794.44, Rs.113010.3288, Rs.115270.5354, Rs.117575.9461 and Rs.119927.47 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.7100000. 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.7242000, Rs.7386840, Rs.7534576.8, Rs.7685268.336 and Rs.7838973.7 respectively.

Other Sector (Sports, Trade, Tourism, Cooperatives Governance etc.):

It is estimated that the total budget allocation for other sector (Sports, Trade, Tourism, Cooperatives Governance etc.) in FY2018/19 is Rs.7752000. 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.7907040, Rs.8065180.8, Rs.8226484.416, Rs.8391014.104 and 8558834.4 respectively.

6.8.4 Promotional Strategy for Private Sector and Civil Society

Civil society and private leadership tend to be micro in governance and development approach focusing on implementation and acting as interlocutors of the people at community levels. Their proximity to communities makes them excellent animators, good at the identification of local needs and solutions. Therefore, there is need to promote the private and civil society by following ways:

- Developing honest partnerships with local governments. In order to increase transparency in each and every aspects of local government
- Engaging Private Sector and Civil Society in policy development, identification of issues and acting as opinion makers as they are good at identifying local needs and solutions.
- Engaging local government in local analysis, planning and implementation of governance and development projects and programme, and sharing comparative advantages of private and civil society in leadership, resources and capacities.
- Building social capital by mobilizing citizen's full participation in determining local priorities and,

- Capacity development through human resource development, other resources and institutional capacitation in most of the basic social services areas, such as education, health, water etc.

6.8.5 Economic and Financial Analysis

Agriculture is the main occupation and major source of livelihood in this municipality. The development of market can provide aid in the commercialization of agricultural products, which can help the agricultural products to identify its place, major agricultural products and pocket areas inside and outside the municipality. In Bansgadhi municipality wide range of agricultural products are produced and marketed in Lakhna, Uttarbhakhari, Bansghadi, Tharugaun, Motipur and Hasnapur markets.

With commercialization of livestock attracting the present people, further financial help in the field can aid for attracting more youth towards livestock farming. Provision of insurance may be a good opportunity for new entrepreneur. It has a good road network to Kathmandu, Nepalgunj, Gulariya and even neighboring country India which can be used for giving the production its due value. Reu Irrigation Project and Babai Irrigation Project in this municipality promote the agricultural products.

With easy availability of local manpower and local, the number of micro-enterprises can be increased. With only a few products being focused by the available industries, there's opportunity to explore further especially with products of livestock especially as this is gaining popularity. With road facilities (graveled and pitch) that joins the municipality to major market centers and even other cities of the country, output of the enterprises can be well traded to those areas

The Bansgadhi municipality is rich in ecological and cultural diversity. Existing natural environment, Bardiya national park and available other resources could be part of ecological tourism. The opportunity for adventurous and natural tourism is high in this area.

Due to the good provision of roads and highway inside the municipality, there will be easy transport of goods from the market. We can find cheap labor within the municipality attracting large scale industries to be established along with FDI.

The projected revenue and expenditure of Banganga municipality suggests that there will always be always fiscal deficit for next 15 years as per the projection. Banganga municipality requires that each year's budget be balanced. Balancing the budgets will require a combination of expenditure reduction and/or increment in revenues.

6.8.6 Issues and Problems

- Threat of wild animals due to lack of proper fencing.
- Illegal transaction of forest materials.
- Forest fire and damage of corps by wild animals.

- Flooding due to irrigation canal.
- Full employment of allocated capital budget of 2018/19 as per the plan.
- As the Bansgadhi region itself is backward with low income earning people, higher profits are not possible. With most of the youth migrating to the city areas and abroad for job, manpower is lagging in the municipality.
- The financial analysis projected for 15 years shows little budget surplus trend. Moreover, Thus the municipality requires that each year’s budget be balanced. Balancing the budgets will require a combination of expenditure increment and/or reduction in revenues.

Table 45: Logical Framework Approach (LFA) of Financial Plan

	Descriptions	Indicators of Achievement	Means of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> • To develop the financial framework of the municipality to address the financial sustainability 	<ul style="list-style-type: none"> • Efficient and Effective tax structure • Wider the tax base 	<ul style="list-style-type: none"> • Annual Budget and financial statement of municipality/ municipality 	<ul style="list-style-type: none"> • Maintaining fiscal discipline • Role of federal government and provisional government to design such financial framework which enhance the fiscal health of the municipality
Objectives	<ul style="list-style-type: none"> • To reduce the fiscal gap • To increase the amount of internal revenue from tax and non- tax revenue. • Participation of all stakeholders in financial planning 	<ul style="list-style-type: none"> • Improved internal tax and non-tax revenue. • Investment climate-oriented tax rate • Identifying potential taxpayers and other areas of tax sources. • Innovative tax collection system so as to make equitable participation in taxation. • Participatory taxation 	<ul style="list-style-type: none"> • Annual Budget and financial statement of municipality/ municipality 	<ul style="list-style-type: none"> • Good governance, effective implementation of taxation. • Support from central government • Experts involvement in tax reforms and support from local and national government • Good governance, strong institutional capacity
Output	<ul style="list-style-type: none"> • Introducing modern/scientific land and property taxation 	<ul style="list-style-type: none"> • Integration of larger property under value-based taxation • Increase in tax collection 	<ul style="list-style-type: none"> • Reports from TDC/ municipality, budget spent on infrastructure 	<ul style="list-style-type: none"> • Good governance, effective implementation of taxation, • support from central government, expert’s team in integrating

	Descriptions	Indicators of Achievement	Means of Verifications	Assumptions
	<ul style="list-style-type: none"> • Increase scope of taxation of local government • Collection of impact free from polluting industries • Provision of E-Taxation • Effective monitoring and implementation of financial plan to meet target • Private sector friendly financing model 	<ul style="list-style-type: none"> • Discouraging the polluting industries • Efficient and effective financing • Effective collection of taxation • Increase in investment and business 	(DUDBC / MoFAGA), TAX and land revenue, land reforms and survey department, report from FNCCI, NGOs working in the economic / financial sector, PRA, FGD, HH survey	innovative taxation in city development, strong institutional capacity
Activities	<ul style="list-style-type: none"> • E- Taxation for increasing transparency • Implementation of combined property tax • GIS mapping within the city • Provision of Impact free (Pollution Tax) • Increasing Integrated Property tax base • Borrowing, grants and funds for different stakeholders • Provision of tax relief/exemptions to promote investment • Extending territory of local taxation • Effective tax administration. 			

6.9 Environmental Management Plan

6.9.1 Present Status

Bansgadhi Municipality has great diversity of forest types with plenty of water resources. It consists of more than 25 types of forest and 3 major rivers flowing through it, but the rural poor in the municipality have over harvested natural resources and have worsened the ecological conditions of the municipality. The forest resource has been depleting continuously since the last five decades and has created a dynamically unstable vicious circle amongst population, poverty and environmental resource degradation. Environmental sensitive areas and the air pollution area were considered as a basic element for understanding the environmental incident of the municipality.

I. Environment Sensitivity Areas

Among 9 wards have 5 wards environmentally sensitive areas constituting a total of 24.8 sq. km. Ward 1 has problems of flood, landslide and drought while some part of ward 2, 4, 8 and 9 falls under Bardiya National Park and includes some ecologically important areas.

II. Potential Air Pollution Areas

In Bansgadhi municipality, potential air pollution was mapped out using different criteria that are responsible for pollution. Approximately, 8 sq. km area of ward no. 5 and 6 are most likely to be effected from air pollution. To mitigate the air pollution, it is important to make the local people of those wards aware about the concept of Reduce, Reuse and Recycle. Also, it is necessary to motivate them to carry-out plantation in collaboration with the relevant stakeholders.

6.9.2 Issue and Problems

Housing and Urbanization

Like many other municipalities the development and urbanization is happening around the city centers and along the major roads in a dispersed pattern creating unmanaged urban areas. 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.

Sanitation and Solid waste

There is lack of waste water management and solid waste management in the municipality. People are not aware about the concept of reduce, reuse and recycle, also there is lack of proper and sufficient no. of toilets in the area. 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 factors for water borne diseases.

Agricultural Practices

Agriculture is the main occupation and major source of livelihood in the municipality but the agriculture system is subsistence and traditional. Commercialization in agriculture is essential. Vegetable farming and fish farming has been gradually increasing in the municipality but lack of modern technology is major obstacle for agricultural commercialization. Irrigation is a primary source for the agriculture to promote its productivity and commercialization. It is however partly developed in Bansgadhi municipality of Bardiya.

Water Resources

The major rivers contributing the watershed area in the municipality are Babai River, Dunduwa River and Gyang River. Drinking water supply and poor sanitation is one of the main environmental issues in the municipality. Many wards in the municipality do not have good water

supply system. There are different sources of drinking water in Bansgadhi municipality out of which tube well/hand pump water is the main source of drinking water. There is necessity of tap in all households in the municipality.

Natural Resources and Biodiversity

The rural poor in the municipality have over harvested natural resources and have worsen the ecological conditions of the municipality. The municipality is rich in natural resources and the forest resource has been depleting continuously since the last five decades. This has created a dynamically unstable vicious circle amongst population, poverty and environmental resource degradation.

Education and Awareness

There is lack of higher secondary school and college near municipality so many students leave study after SLC. Also there is 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

There are few health posts in different wards but there is lack of urban scale health institutions with good facilities.

6.9.3 Strategy for Environment Management Plan

1. Provision of decision making to keep a proper environment
2. Use minimum resources with maximum efficiency
3. Use of renewable resources
4. Enhancement of natural areas along with ecosystem health
5. Sustainable development in urban and rural areas
6. Promotion of environment friendly materials
7. Disposal of treated effluent
8. Promotion of 3R (Reduce, Reuse and Recycle) concept for solid waste management
9. Development of proper drainage system

Table 46: Logical Framework Approach (LFA) of Environmental Management Plan

	Descriptions	Indicators of Achievement	Means of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> • To build green, clean and healthy city 	<ul style="list-style-type: none"> • Eco friendly and sustainable infrastructure development 	<ul style="list-style-type: none"> • Reports from Department of Environment, Department of Forests, City Profile 	<ul style="list-style-type: none"> • Approval and implementation of IUDP budget allocation
Objectives	<ul style="list-style-type: none"> • To prevent and solve environmental problems • To develop monitoring systems • To warn threats and identify opportunities • To suggest measures for resource conservation • To develop a strategy for the improvement of quality of life • To suggest long-term and short-term policies for sustainable development • To raise awareness among locals 	<ul style="list-style-type: none"> • Use of renewable resources • Use of non-waste technology • Proper drainage and waste management system • Less pollution • Conserved water bodies, forest and agricultural land • Improvement in quality of life • Sustainable development of resources • Knowledge of environmental benefits and problems to the locals 	<ul style="list-style-type: none"> • Reports from Department of Environment, Department of Forests, City Profile, Department of Hydrology and Meteorology, DCC/municipal office, DoR and I/NGOs 	<ul style="list-style-type: none"> • Approval and implementation of IUDP • Availability of alternatives • Implementation of land use plan • Maintenance of open spaces •

	Descriptions	Indicators of Achievement	Means of Verifications	Assumptions
Output	<ul style="list-style-type: none"> • Less use of non-renewable resources • Less use of chemical fertilizers and pesticides • Better provision for waste management and sewerage system • Suitable site for landfill • Conservation of water and natural resources • Aware local people about environmental issues and solutions as well 	<ul style="list-style-type: none"> • Promotion of renewable resources and farm yard manure and compost fertilizers • Sewerage and waste management system • Control of pollution • Conserved water sources, forest areas and disturbed areas 	<ul style="list-style-type: none"> • Reports from Department of Environment, Department of Forests, City Profile, Department of Hydrology and Meteorology, DCC/municipal office, DoR and I/NGOs, PRA, FGD, HH survey 	<ul style="list-style-type: none"> • Maintenance and care of plants • Public preference • Surveillance by concerned authority • Availability of space
Activities	<ul style="list-style-type: none"> • Formulating policies, plans related to environmental conservation and their implementation • Plantation on barren lands • Conservation of natural resources • Improving waste management system and developing proper sewerage system • Forming awareness programs • Promoting use of farm yard manure and compost fertilizers 			

6.10 Disaster Risk Management Plan

6.10.1 Present Status

Bansgadhi municipality faces many natural hazards due to absence of effective disaster management plan. Babai River cutting and flooding are the major environmental problems of Bansgadhi municipality. Babai River cuts in its bank occasionally. According to intuitional survey, 2018, during the year (2015-2017) 7 People died from flood in the municipality. Major portion of the municipality is covered with forests so there is significant risk of forest fire as well. Bansgadhi municipality is located in proximity with Bardiya National Park and thus faces many animal attacks. There are also major risks from hazards like landslides. Disaster management plan therefore needs to be specific addressing all the issues and causative agents of disasters in Bansgadhi municipality. 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 of Bansgadhi municipality. 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 every year.

6.10.2 Issues and Problems

Landslide Risk

Landslide risk analysis was done through GIS by analyzing various driving factors of landslide, various data including Normalized Difference Vegetation Index (NDVI), Precipitation data, Slope and elevation data were used to carry-out geo-spatial analysis to identify the areas prone to landslide.

Flood Risk

Flood risk analysis was done through GIS by analyzing various driving factors of flood, various data including Normalized Difference Vegetation Index (NDVI), stream order, Slope and elevation data were used to carry-out geo-spatial analysis to identify the areas prone to flood. 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. Ward no. 5 and 8 are not much effected by the flood while remaining ward are affected by flood among which ward no 3 is in high risk of flood. Overall, 2583.76 Ha of total area is in the risk of flood, where 1.57 ha area in ward no. 3 is in high risk of flood.

Fire Risk

The municipality consists of 40 community forests areas and thus also has risk of forest fire. 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. Forest fire is likely to occur during the windy and the dry season e.g. Chaitra & Baisakh. Ward number 1, 2, 3, 7, 8 and 9 are more susceptible to forest fire. The lack of equipment and skilled human resources such as trained fire fighters pose serious challenges in the 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. 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. Drought risk analysis was done through GIS by analyzing various driving factors of drought; data including Normalized Difference Vegetation Index (NDVI) and Normalized Difference Water Index (NDWI) were used to carry-out geo-spatial analysis to identify the areas prone to drought. In Bansgadhi municipality, 34.1 sq. km of total area is likely to be affected from the drought. Ward no. 3, 5, 6, 7 and 9 seems to be highly susceptible to drought.

6.10.3 Adaptation Strategy for Disaster Management

- ❖ Ensure that disaster risk reduction is a priority with a strong basis for implementation
- ❖ Identify, assess and monitor disaster risks and enhance early warning
- ❖ Use education and innovation to build a culture of safety and resilience at all levels
- ❖ Reduce the underlying risk factors
- ❖ Strengthen disaster preparedness for effective response.
- ❖ Promote awareness campaign regarding pre-disaster and post-disaster events.

Table 47: Logical Framework Approach (LFA) of Disaster Risk Management Plan

	Descriptions	Indicators of Achievement	Means of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> Resilient and happy lives, safe livelihoods and infrastructure for sustainable development 	<ul style="list-style-type: none"> The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of municipality 	<ul style="list-style-type: none"> Report from MoUD, MoHA, DWIDP (Water induced disaster), Daibi Prakop Uddar Samiti, District Administration Office, Department of Soil Conservation (DoSC), Department of Hydrology and Meteorology (DoHM) and Reports of I/NGOs 	<ul style="list-style-type: none"> Approval and implementation of IUDP Effectiveness of local government and active community participation
Objectives	<ul style="list-style-type: none"> To identify, assess and monitor disaster risks To formulate policies, rules, regulations for disaster risk management To prepare risk sensitive land use plans and implement effectively To implement early warning system To promote defense and safety against disasters To develop preparedness activities for disaster risk reduction To develop and conduct public information and awareness programs 	<ul style="list-style-type: none"> Identification of disaster risks and preparation plans accordingly Establishment of defense and safety mechanism against disaster Preparation of open spaces and disaster evacuation zones Sensitized locals about disasters and mitigation measures 	<ul style="list-style-type: none"> Report from MoUD, MoHA, DWIDP (Water induced disaster), Daibi Prakop Uddar Samiti, District Administration Office, Department of Soil Conservation (DoSC), Department of Hydrology and Meteorology (DoHM) and Reports of I/NGOs 	<ul style="list-style-type: none"> Evidence based planning with information regarding disaster history and possibilities Availability of skilled manpower to train others Availability of evacuation areas, safe shelters and water source for fire station

	Descriptions	Indicators of Achievement	Means of Verifications	Assumptions
Output	<ul style="list-style-type: none"> • Hazard map and plans of hazard prone areas • Disaster evacuation zone • Plans and programs for raising awareness • Use of early warning systems at the local level for pertinent hazards 	<ul style="list-style-type: none"> • Prepared hazard maps • Established disaster evacuation zone • Conduction of awareness raising programs • Knowledge about early warning system by locals 	<ul style="list-style-type: none"> • Report from MoUD, MoHA, DWIDP (Water induced disaster), Daibi Prakop Uddar Samiti, District Administration Office, Department of Soil Conservation (DoSC), Department of Hydrology and Meteorology (DoHM) and Reports of I/NGOs, PRA, FGD, HH survey 	<ul style="list-style-type: none"> • Budget allocation and project prioritizations • Effectiveness of local government • Community involvement and local government • Willingness and participation of public
Activities	<ul style="list-style-type: none"> • Identify and measure disaster risk • Establish mechanism of EWS (Early Warning System) in major hazards • Promotion of effective irrigation technologies and strategies • Construct fire lines in forest areas and fire prone areas • Encourage farmers to implement integrated farming system • Promote use of organic fertilizer and organic farming system • Construction of conservation ponds • Relocate exposed people and assets away from a hazard area • Construct flood defenses, plant trees to stabilize slopes and implement strict land use and building construction codes 			

6.11 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”.

6.11.1 Present Status

Bansgadhi Municipality is particularly vulnerable to climate change impacts for a variety of environmental, social, and economic reasons. In addition, Bansgadhi experiences heavy monsoon events which contribute to natural disasters such as food, river cutting and landslides. Last but unfortunately not least, Bansgadhi municipality experiences high flood activity each year. Natural disasters such as those described are anticipated to increase in frequency and intensity if not planned earlier.

Based on priority risks (and eventually opportunities), adaptation goals, objectives and targets will vary from one community to another one as a consequence of various factors, such as types and magnitude of projected climatic changes and impacts, availability of financial resources, areas on which the community has direct responsibilities and influence. This means that it is not possible to prescribe them in general, but they will have to be selected case by case, community by community. Hence, this climate change adaptation plan will guide all the stakeholders with upcoming possible actions that can be taken to cope with the consequences of the climate change.

Poverty and a lack of individual and institutional capacity are the primary reasons that the population of Bansgadhi is particularly vulnerable to climactic changes. In addition, about 15% of the population relies directly 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 of Bansgadhi are the much vulnerable to climate change, largely due to high reliance on subsistence agriculture.

6.11.2 Issues and Problems of Disaster

Agriculture and Food Security

The productivity and the quality of agricultural products is decreasing due to the change in precipitation, temperature, occurrence of drought, new plant diseases and pathogens etc. Therefore, people have started to use chemical fertilizers, pesticides and insecticides in excessive amount to enhance the productivity. Chemical fertilizers increase the productivity in short term but do not increase the quality of soil in long term, also they have different harmful effects on the land and health of people who use or consume the products. The chemicals are absorbed in the soil and are transported with rain water to various water bodies in the watershed, also they are associated with other problems such as chemical burn to crops, increased air pollution, acidification of the soil and mineral depletion of the soil, salinization etc. Similarly, the credits of pesticides include enhanced economic potential in terms of increased production of food and fiber,

and amelioration of vector-borne diseases, and then their debits have resulted in serious health implications to people and 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 diseases. 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 common phenomenon in the Terai belt of Nepal. Because of the heavy rainfall, high wind speed and river cutting in the municipality soil erosion is a common problem which gradually decreases the productivity of land. In the lower belt, there is problem of waterlogging and clean drinking water due to poor drain system of urban areas as well as the use of chemicals in the agricultural land. 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 diseases are associated with the local climate combined with the sanitation status of the area; diseases such as diarrhea are most common in summer when the temperature and precipitation is high. New borne diseases are seen which were not common in previous time. Climate change is bringing new and emerging health issues which will lead to increased risk of cardiovascular, respiratory and renal diseases in the municipality.

6.11.3 Adaptation Strategy for Climate Change Mitigation

- Create awareness on climate change and its adaptation strategies
- Increase the use of efficient domestic appliances
- Improve environmental sanitation by strengthening institutions and enforcement of laws and bye laws

- Promote the development of modern information management system
- Identify gaps in existing land-use regulations and review policies to deal with land management issues
- Preserve/conserves water resources
- Build and strengthen capacity of local farmers to increase agricultural productivity and awareness of climate issues.

Table 48: Logical Framework Approach (LFA) Climate Change Adaptation Plan

	Descriptions	Indicators of Achievement	Means of Verifications	Assumptions
Goals	<ul style="list-style-type: none"> • To strengthen resilience, adaptive capacity and reduce vulnerability to the adverse impacts of climate change 	<ul style="list-style-type: none"> • Climate responsive built environment 	<ul style="list-style-type: none"> • Report from Meteorological Forecasting Division, DOE, city profile, Department of Hydrology 	<ul style="list-style-type: none"> • Approval and implementation of IUDP budget allocation
Objectives	<ul style="list-style-type: none"> • To improve awareness and preparedness for future climate change • To mitigate climate change impact and promote adaptation strategies • To increase the robustness of infrastructure development • To conserve and enhance the health of natural system 	<ul style="list-style-type: none"> • Increase in level of awareness and preparedness of locals • Use of effective technology • Mitigation of impacts of climate change • Good condition of infrastructure • Healthy natural system 	<ul style="list-style-type: none"> • Report from Meteorological Forecasting Division, DOE, city profile, Department of Hydrology and Meteorology, Analysis of climate change data over period of time and reports from I/NGOs 	<ul style="list-style-type: none"> • Budget allocation for campaign • Impact of global warming • Availability of land for industrial zone
Output	<ul style="list-style-type: none"> • Locals aware about impacts of climate change • Development of mitigation and adaptation strategies of climate change • Infrastructure robustness increased • Sufficient ground water recharge and rain on time 	<ul style="list-style-type: none"> • Sensitized locals about climate change • Mitigation and adaptation strategy development • Sustainable development of infrastructure 	<ul style="list-style-type: none"> • Report from Meteorological Forecasting Division, DOE, city profile, Department of Hydrology and Meteorology, Analysis of climate change data over period of time and reports from 	<ul style="list-style-type: none"> • Budget for program and campaign • Availability of climate responsive material • Implementation of IDP • Impact of global warming • Implementation of IDP bye laws

	Descriptions	Indicators of Achievement	Means of Verifications	Assumptions
		<ul style="list-style-type: none"> Increase in ground water table 	I/NGOs, PRA, FGD, HH survey	<ul style="list-style-type: none"> Material used in roads and pavements Availability of land for industrial zone
Activities	<ul style="list-style-type: none"> Formation of climate change adaptation specific policies, programmes and plans and their effective implementation Replacing traditional and fossil fuels by clean energy alternatives Promoting diversified agricultural production to reduce climate risk Encouraging agroforestry in private land Promoting water conservation and rainwater harvesting in areas where there is stress due to climate change Promotion of sustainable forest management Training to local farmers on growing off-season vegetables Promoting use of farm yard manure and compost fertilizers Developing systems for monitoring drinking water, food and air quality in affected areas 			

6.12 Institutional Development Plan

Institutional development plan for Bansgadhi municipality has been prepared in order to support and execute the IUDP in long run. The present status of the HR management shows that there are 75 persons employed in this municipality which also includes the people working in ward offices. The municipality has following sections in its service delivery:

- Administration
- Education
- Revenue
- Account
- Technical
- Agricultural
- Veterinary
- Women and children welfare

The service delivery and good governance system in the municipality could be promoted along with the increment of this number along with the widening of sectoral services and workforces. It would thus contribute the proper execution of Local Government Operation Act, 2017 in the changing context of federalism.

Table 49: LFA for Institutional Development

Logical Framework Approach (LFA) of Institutional Development		
Goals	<ul style="list-style-type: none"> Promote good governance along with transparency, accountability, right to information, and responsibility 	
Objectives	<ul style="list-style-type: none"> Strengthen the organizational capacity and scientific human resource and leadership development Promote sensitization and we-feeling of local heritage, resource, skills, indigenous practices and appropriate technologies Enhance alternatives of development for the benefit of the local community and its identity in the long-run Legislation and implementation of IUDP 	
Means of verification	<ul style="list-style-type: none"> Reports from Ministry of Federal Affairs and General Administration (MoFAGA), Municipality Report 	
Assumption	<ul style="list-style-type: none"> IUDP as a municipal plan and availability of skilled HR 	
S.N	Output/Activities	Target indicators
1	Putting in place a fair and effective property taxation system.	% increase in tax/ revenue collection
2	Action Plan for a New Local Governance System in the municipality	Increased implementation of IUDP and linkage to the Provincial government
3	Establishment and restructuring of service deliveries	Reduced rate of service delivery delay
4	Devolution of resources along with the authority	% increased sectoral performances
5	Increasing performance and capacity building of the government employees with regular training and exchange of knowledge within the department	<ul style="list-style-type: none"> Increased number of training and capability formation activities Increment in performed services
6	Integrated service through single window system	Formation of integrated service center (City Center)
7	Separate authority for monitoring and evaluation of public services and projects	<ul style="list-style-type: none"> Increased People's participation Rate of project completion increased
Proposed Additional sections for IUDP (along with continuation of existing)		

Logical Framework Approach (LFA) of Institutional Development
<ul style="list-style-type: none"> • GIS and database section • Child and women welfare section • Youth and sport section • Indigenous knowledge and technology section • Tourism development and hospitality section • Research and development section • Monitoring and evaluation section • Social and cultural development section • Land use and management section • Agriculture development section • Banking and co-operative section • Human resource section • Good governance and leadership section • IUDP steering section

6.12.1 Issues and Challenges

- Current local governance legislation is prescriptive in nature. A balanced approach will be required going forward
- Lack of sufficient appointment of technical manpower and up-gradation of existing infrastructure of services
- Local government and leadership incepted since 2017 in the federal context along with the 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
- Institutional problems related to capacity building and offices infrastructures
- Special focus on education, health and social sector; Public hearing, participatory planning, and platform of grassroots democracy
-

The long-term vision of Bansgadhi municipality has two dimensions: beautiful, green and clean city (;'Gb/ xl/ofnL / ;kmf zx/) and prosperous and developed city (;d[4 / ;d'Ggt afF;u9L gu/). With the above selected vision slogan, it truly clarifies the people of Bansgadhi are confident that their municipality will only prosper through proper and strategic development plans oriented towards clean and beautiful Bansgadhi municipality. Sectoral policies, strategies and institutional set-up should be accordingly devised. For this, an institutional development plan seems to be a vital one in achieving the municipal vision and mission at large by involving different sections of service delivery and components of good governance.

CHAPTER VII: 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 VDC 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 50: Major projects of line agencies in the Municipality

Line Agencies (Water, Health, forest, irrigation etc.) Current Year's Implementation Projects (Nrs. 000)				
S.N	Programs and activities	Ward	Source	
			Projected(RS.)	Nepal Govt.(RS.)
1	Physical Development			
1.1	Building			
1.1.1	Construction of public toilet at chepang bazar	1	1,000.00	1,000.00
1.1.2	Construction of khop centre building	3	150.00	150.00
1.1.3	Construction of motipur community building	6	350.00	350.00
1.1.4	Construction of elder citizen <i>Vishram Sthal Building</i>	6	600.00	600.00
1.1.5	Construction of skilled development building	9	300.00	300.00
1.1.6	Construction of mohanpur deuthan building	9	120.00	120.00
1.1.7	Construction of municipal building		15,000.00	15,000.00
	Total		17,520.00	17,520.00
1.2	Road			
1.2.1	Picthing lakhana raja road	3	9,000.00	9,000.00
1.2.2	Pitching ringroad uttarbakari	3	4,000.00	4,000.00
1.2.3	Graveling the road way to puspanagar playground	3	300.00	300.00
1.2.4	Graveling road from materiya khalla gaun to north road	4	200.00	200.00
1.2.5	Pitching khanepani chowk baduwa road	4	3,000.00	3,000.00
1.2.6	Gravelling baidane tole road	5	500.00	500.00
1.2.7	Pitching howpur road	5	5,000.00	5,000.00
1.2.8	Gravelling narayanpur road	6	250.00	250.00
1.2.9	Construction of damauli amaliya via kakaro border joining road	6	1,100.00	1,100.00
1.2.10	Pitching road from kakaura to koldada road	8	8,000.00	8,000.00
	Total		31,350.00	31,350.00
1.3	Drinking Water and Irrigation			
1.3.1	Construction of south rampur irrigation canal	5	300.00	300.00
1.3.2	Construction of bhaisapur irrigation tanki		200.00	200.00

Line Agencies (Water, Health, forest, irrigation etc.) Current Year's Implementation Projects (Nrs. 000)				
S.N	Programs and activities	Ward	Source	
			Projected(RS.)	Nepal Govt.(RS.)
1.3.3	Construction of drinking water tanki	4	200.00	200.00
	Total		700.00	700.00
1.4	Electricity			
1.4.1	Using alternative source of energy & installing street light		1,500.00	1,500.00
	Total		1,500.00	1,500.00
	Grand Total Physical Development Plan		51,070.00	51,070.00
2	Social Development			
2.1	Education			
2.1.1	Education development program		4,000.00	4,000.00
2.1.2	Skill development training for children		650.00	650.00
	Total		4,650.00	4,650.00
2.2	Health & Sports			
2.2.1	Free health checkup camp for elder citizen		150.00	150.00
2.2.2	Public health program		3,690.00	3,690.00
2.2.3	Nutrition Program		400.00	400.00
	Total		4,240.00	4,240.00
	Grand Total Social Development Plan		8,890.00	8,890.00
3	Economic Development			
3.1	Women skill development program		1,000.00	1,000.00
3.2	Various income generating training for youth & women		2,000.00	2,000.00
3.3	Aakal mahila income generating program		150.00	150.00
	Total Economic Development Plan		3,150.00	3,150.00
4	Environment Development			
4.1	Organizing afforestation program	9	240.00	240.00
4.2	Solid waste management		1,500.00	1,500.00

Line Agencies (Water, Health, forest, irrigation etc.) Current Year's Implementation Projects (Nrs. 000)				
S.N	Programs and activities	Ward	Source	
			Projected(RS.)	Nepal Govt.(RS.)
4.3	Construction of park & garden		500.00	500.00
	Total Environment Development Plan		2,240.00	2,240.00
5	Culture and Tourism			
5.1	Construction of picnic park	1	800.00	800.00
5.2	Construction of lakhana temple	3	400.00	400.00
5.3	Construction of mahadeva shiva temple	3	150.00	150.00
5.4	Construction of newada temple	4	200.00	200.00
5.5	Damauli taal conservation & park construction	6	600.00	600.00
5.6	Maintenance of gauripara taal	7	300.00	300.00
5.7	Construction of khairapur kalika temple	8	100.00	100.00
5.8	Establishment of namuna tharu village		500.00	500.00
	Total Culture and Tourism Plan		3,050.00	3,050.00
6	Disaster Management			
6.1	River embankment	2	1,000.00	1,000.00
6.2	River embankment in murgiya nala	6	600.00	600.00
	Total disaster management plan		1,600.00	1,600.00
	Grand total		70,000.00	70,000.00

Table 51: 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	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)			
1	Physical Development Plan	54.05%	11.18%	11.00%	10.96%	10.94%	9.00%	26.93%	19.98%	100.00%		
		13326.34	1490.267	1465.917	1460.92	1458.417	1199.957	3588.3333	2662.053		13325.86	
2	Social Development Plan	31.75%	14.04%	12.20%	11.36%	10.23%	10.19%	22.84%	19.14%	100.00%		
		7827.10	1099.20	955.10	889.10	800.35	797.35	1788.00	1498.00		7827.10	
3	Economic Development Plan	6.33%	22.47%	18.95%	18.95%	12.54%	12.54%	7.27%	7.27%	100.00%		
		1560.50	350.70	295.70	295.70	195.70	195.70	113.50	113.50		1560.50	
4	Financial Development Plan	0.03%	46.88%	9.38%	6.25%	6.25%	6.25%	12.50%	12.50%	100.00%		
		8.00	3.75	0.75	0.50	0.50	0.50	1.00	1.00		8.00	
5	Conservation, Culture and Tourism Development plan	2.88%	36.15%	19.13%	3.66%	3.66%	3.66%	16.88%	16.88%	100.00%		
		711.00	257.00	136.00	26.00	26.00	26.00	120.00	120.00		711.00	
6	Institutional Development Plan	0.86%	29.11%	19.48%	19.48%	14.79%	10.09%	3.52%	3.52%	100.00%		
		213.00	62.00	41.50	41.50	31.50	21.50	7.50	7.50		213.00	
7	Environment Management Plan	1.59%	12.02%	11.76%	11.76%	11.76%	11.76%	33.25%	7.67%	100.00%		
		391.00	47.00	46.00	46.00	46.00	46.00	130.00	30.00		391.00	
8	Disaster Risk Management Plan	2.23%	12.73%	12.73%	12.73%	12.73%	12.73%	18.18%	18.18%	100.00%		
		550.00	70.00	70.00	70.00	70.00	70.00	100.00	100.00		550.00	
9	Climatic Change Adaptation Plan	0.27%	12.59%	12.59%	12.59%	12.59%	12.59%	18.52%	18.52%	100.00%		
		67.50	8.50	8.50	8.50	8.50	8.50	12.50	12.50		67.50	
Total Budget		24654.44	3388.42	3019.47	2838.22	2636.97	2365.51	5860.83	4544.55		24653.96	

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	Community	Remarks
1	Physical Development Plan	13326.34	6663.78	3330.99	1332.63	1332.63	666.32	
1.1	Road	9828.35	4914.18	2457.09	982.84	982.84	491.42	
1.2	Water Supply	293.35	146.67	73.34	29.34	29.34	14.67	
1.3	Drainage and Sanitation	2591.35	1295.68	647.84	259.13	259.13	129.57	
1.4	Solid Waste Management	324.00	162.00	81.00	32.40	32.40	16.20	
1.5	Electrical and Communication	289.29	144.65	72.32	28.93	28.93	14.46	
2	Social Development Plan	7827.10	4304.90	1956.78	782.71	782.71	0.00	
2.1	Education	376.60	207.13	94.15	37.66	37.66	0.00	
2.2	Health	758.00	416.90	189.50	75.80	75.80	0.00	
2.3	Security and Safety	1877.50	1032.62	469.38	187.75	187.75	0.00	
2.4	Recreation	4815.00	2648.25	1203.75	481.50	481.50	0.00	
3	Economic Development Plan	1560.50	858.28	390.13	156.05	156.05	0.00	
4	Financial Development Plan	8.00	4.40	2.00	0.80	0.80	0.00	
5	Conservation, Culture and Tourism	711.00	391.05	177.75	71.10	71.10	0.00	
6	Institutional Development Plan	213.00	117.15	53.25	21.30	21.30	0.00	
7	Environment Development Plan	391.00	215.05	97.75	39.10	39.10	0.00	
8	Disaster Risk Management Plan	550.00	302.50	137.50	55.00	55.00	0.00	
9	Climatic Change Adaptation Plan	67.50	37.12	16.88	6.75	6.75	0.00	
	Total	24654.44	12894.23	6163.01	2465.44	2465.44	666.32	

7.1 MSIP Program/ Project for Short Term

Detail Budget of Multi Sectoral Investment Plan (MSIP) 5 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	Time (Year)	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	Total
1.Physical Development Plan													
1.1 Road and Bridges													
Road													
1.1.1	Improvement of road networks and preparation of MTMP	Lump sum				2.00	1 year	2.00					2.00
1.1.2	Urgent construction of road structures and road furniture including bicycle lanes and foot paths	Lump sum				1000.00	5 year	200.00	200.00	200.00	200.00	200.00	1000.00
1.1.3	Improving parking facility design and operations	Lump sum				10.00	5 years	2.00	2.00	2.00	2.00	2.00	10.00
1.1.4	Establishing of maximum parking standards	Lump sum				10.00	5 years	2.00	2.00	2.00	2.00	2.00	10.00
Bridges													
1.1.1 1	Construction of 12 Bridges	Number	1.00	12.00	20.00	240.00	5 years	48.00	48.00	48.00	48.00	48.00	240.00
1.1.1 2	Construction of 1 Culvert	Number	1.00	1.00	2.00	2.00	1 year	2.00					2.00
						Total		256.00	252.00	252.00	252.00	252.00	1264.00
1.2 Water Supply													
1.2.1	Water tank in ward no 1 and 3	Number		2.00	0.03	0.05	1 year	0.05					0.05
1.2.2	Public toilets in required place	Number		9.00	0.50	4.50	5 years	1.00	1.00	1.00	1.00	0.50	4.50
1.2.3	Informative boards	Number		18.00	0.10	1.80	1 year	1.80					1.80

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 5 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	Time (Year)	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	Total
1.2.4	Management and continuation of programmes	Number		2.00		0.50	1 year	0.50					0.50
1.2.5	Adopt water recycling at a large scale through water treatment plant	Number		1.00	50.00	50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
1.2.6	Installation of public taps along necessary junctions	Number		10.00	0.50	5.00	5 years	1.00	1.00	1.00	1.00	1.00	5.00
						Total		14.35	12.00	12.00	12.00	11.50	61.85
1.3 Drainage and Sanitation													
1.3.1	Public Toilets in required place	Number		9.00	0.50	4.50	2 Years	3.00	1.50				4.50
1.3.2	Construction of land fill site	Number		2.00	1.00	2.00	1 year	2.00					2.00
1.3.3	Mandatory toilets with septic tank in every land	Number		7488.00	0.30	2246.40	5 years	500.00	500.00	500.00	500.00	246.40	2246.40
1.3.4	Set up public toilets in public zones	number		5.00	1.00	5.00	5 years	1.00	1.00	1.00	1.00	1.00	5.00
1.3.5	Installation of water treatment plant before discharging from the outlets	Lump sum				3.00	1 year	3.00					3.00
1.3.6	Promotion of organic treatment plants in institutional level for drainage treatment	Lump sum				3.00	1 year	3.00					3.00
1.3.7	Construction of waste water treatment plant in wards 3, 5 and 7	Number		3.00	2.50	7.50	5 years	2.00	2.00	1.50	1.00	1.00	7.50
						Total		514.00	504.50	502.50	502.00	248.40	2271.40
1.4 Solid Waste Management													

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 5 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	Time (Year)	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	Total
1.4.1	Establishment of three WTP in wards 3,5 and 7	Number		3.00	1.00	3.00	2 Years	2.00	1.00				3.00
1.4.2	Construction of three waste transfer and recycle station in wards 8,4 and 1	Number		3.00	1.00	3.00	2 Years	2.00	1.00				3.00
1.4.3	Construction of land fill site in wards 2 and 3 located south of Amohiya and South east of Bethahani respectively	Number		2.00	1.00	2.00	2 Years	1.00	1.00				2.00
1.4.4	Establishment of 3 waste transfer and recycle station in Wards: 8,4 and 1	Number		3.00	2.00	6.00	3 years	2.00	2.00	2.00			6.00
					Total	14.00		7.00	5.00	2.00			14.00
1.5 Electrical and Communication													
1.5.1	Extension of electricity and telecommunication network in all wards	Sq. Km		102.58	0.50	51.29	5Years	15.00	10.00	10.00	10.00	6.29	51.29
1.5.2	Installation of solar lights along roads and public places	Lump sum				25.00	5 years	5.00	5.00	5.00	5.00	5.00	25.00
1.5.3	Upgrading electricity infrastructures	Lump sum				10.00	5 years	2.00	2.00	2.00	2.00	2.00	10.00
1.5.4	Promoting and monitoring FM stations	Lump sum				0.50	1 years	0.50					0.50
1.5.5	Connecting power line with national grid	Lump sum				10.00	5 years	2.00	2.00	2.00	2.00	2.00	10.00
1.5.6	Laying underground wires for electricity and communication purpose	Lump sum				10.00	5 years	2.00	2.00	2.00	2.00	2.00	10.00
1.5.7	Subsidizing on alternative source of energy	Lump sum				5.00	5 years	1.00	1.00	1.00	1.00	1.00	5.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 5 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	Time (Year)	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	Total
1.5.8	Promotion of FM, radio stations and other communicating services through private and community participation	Lump sum				1.00	1 years	1.00					1.00
1.5.9	Extension of electricity and telecommunication network in all wards	Lump sum				10.00	5 years	2.00	2.00	2.00	2.00	2.00	10.00
``					Total	122.79		30.50	24.00	24.00	24.00	20.29	122.79
Grand Total Physical Development Plan						3734.04		821.85	797.50	792.50	790.00	532.19	3734.04
2. Social Development Plan													
2.1 Education													
2.1.1	Governmental support to open primary, secondary and higher secondary schools	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
2.1.2	Establishment of primary, secondary and higher secondary schools	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
2.1.3	Cross- subsidies education for poor and Dalit with established VDC fund.	number		11.00	0.10	1.10	1 year	1.10					1.10
2.1.4	Establishment of agriculture and livestock resource center	number		1.00	0.50	0.50	1 year	0.50					0.50
2.1.5	Establishment of 3 technical schools	number		3.00	20.00	60.00	2 Years	30.00	30.00				60.00
2.1.6	Establishment of 1 governmental school in each wards	number		11.00	5.00	55.00	5 years	15.00	10.00	10.00	10.00	10.00	55.00
2.1.7	Establishment of 1 technical college	number		1	80	80.00	3 years	50.00	15.00	15.00			80.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 5 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	Time (Year)	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	Total
					Total	296.60		116.60	75.00	45.00	30.00	30.00	296.60
2.2 Health													
2.2.1	Construction of 25 bed hospital	Number		1.00	200.00	200.00	3 years	100.00	50.00	50.00			200.00
2.2.2	Upgrading Deudharala Health Post	Number		1.00	1.00	1.00	1 year	1.00					1.00
2.2.3	Establishment of Health post in each ward	Number		11.00	2.50	27.50	5 years	6.00	6.00	6.00	5.00	4.50	27.50
2.2.4	Establishment of health post with maternity facilities in Babai Chepang	Number		1.00	2.50	2.50	5 years	1.00	0.50	0.50	0.25	0.25	2.50
2.2.5	Establishment of health post and pathology lab in Babai	Number		1.00	2.50	2.50	5 years	1.00	0.50	0.50	0.25	0.25	2.50
2.2.6	Establishment of Pathology lab with free test	Number		1.00	2.50	2.50	5 years	1.00	0.50	0.50	0.25	0.25	2.50
2.2.7	Providing well facilitated Khop clinic and Gaughar clinic	Number		15.00	2.50	37.50	5 years	10.00	7.00	7.00	7.00	6.50	37.50
2.2.8	Provision of providing Blood Bank and Ambulance Services	Lump sum		1.00		50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
2.2.9	Establishment of Medicinal Stores	Lump sum			1.00	1.00	1 year	1.00					1.00
2.2.10	Managing specialist doctors for operation services in Motipur Health Post	Lump sum		1.00		150.00	5 years	30.00	30.00	30.00	30.00	30.00	150.00
2.2.11	Construction of 15 bedded community hospitals with all emergency services	number		1.00	75.00	75.00	2 years	50.00	25.00				75.00
					Total	549.50		211.00	129.50	104.50	52.75	51.75	549.50
2.3 Security and Safety													

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 5 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	Time (Year)	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	Total
2.3.1	Create employment for the youth and establish registration centres for the jobless youth- cottage industries	Lump sum				10.00	5 years	2.00	2.00	2.00	2.00	2.00	10.00
2.3.2	Residential and day care center in all wards for elderly people	number		11.00	5.00	55.00	5 years	15.00	10.00	10.00	10.00	10.00	55.00
2.3.3	Constructions of 3 old age homes for elderly people	number		3.00	10.00	30.00	5 years	10.00	10.00	10.00			30.00
					Total	95.00		27.00	22.00	22.00	12.00	12.00	95.00
2.4 Recreation													
2.4.1	Construction of parks in each wards	Number		11.00	3.00	33.00	5 years	10.00	10.00	5.00	5.00	3.00	33.00
2.4.2	Preparation of master plan for park and reserves	Number		1.00	0.50	0.50	1 year	0.50					0.50
2.4.3	Establishment of resort and hotels for tourist	Number		2.00	50.00	100.00	5 years	20.00	20.00	20.00	20.00	20.00	100.00
2.4.4	Develop proper trekking route	Lump sum				20.00	3 years	10.00	5.00	5.00			20.00
2.4.5	Construction of community halls on each ward and one in municipal office	number		11.00	2.00	22.00	3 years	10.00	6.00	6.00			22.00
2.4.6	Establishment of youth and sports development center in each ward of the municipality	number		11.00	0.50	5.50	1 year	5.50					5.50
					Total	181.00		56.00	41.00	36.00	25.00	23.00	181.00
Grand Total Social Development Plan						1122.10		410.60	267.50	207.50	119.75	116.75	1122.10
3. Economic Development Plan													

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 5 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	Time (Year)	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	Total
3.1	Construction of Shopping Complexes	Lump sum		1.00	350.00	350.00	3 Years	150.00	100.00	100.00			350.00
3.2	Food crop production area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.3	Vegetable crops production area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.4	Fruit production area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.5	Organic Agricultural area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.3	Potato Production area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.4	Bee farming area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.5	Spice crops production area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.6	Mushroom production area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.7	Irrigation expansion area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.5	Cow farming pocket area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.6	Buffalo pocket farming area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.7	Goat farming pocket area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.8	Poultry farming pocket area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.9	Dairy refineries	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00

Detail Budget of Multi Sectoral Investment Plan (MSIP) 5 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	Time (Year)	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	Total
3.7	Construction of Slaughter house	number		5.00		50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.8	Production of fresh meat and Marketing	Lump sum				5.00	5 years	1.00	1.00	1.00	1.00	1.00	5.00
3.9	Pig farm pocket area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.10	Creation of designated business premise for garbage and stalls.	Lump sum				5.00	1 year	5.00					5.00
3.11	Providing necessary access to markets for businessmen and clients	Lump sum				5.00	5 year	1.00	1.00	1.00	1.00	1.00	5.00
3.12	Spice crops production area	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
3.13	Upgrading existing market and build open market	Lump sum				5.00	5 year	1.00	1.00	1.00	1.00	1.00	5.00
						Total		328.00	273.00	273.00	173.00	173.00	1220.00
4. Financial Development Plan													
4.1	Promotion of tourism industries and tax allowance												
4.2	E-taxation for increasing transparence	Lump sum				2.00	5 years	0.75	0.50	0.25	0.25	0.25	2.00
4.3	GIS mapping within the city	Lump sum				2.00	1 year	2.00					2.00
						Total		2.75	0.50	0.25	0.25	0.25	4.00
5. Conservation, Culture and Tourism													
5.1	Construction of Multicultural Museum	Number		1.00		300.00	2 years	200.00	100.00				300.00
5.2	Construction of View Tower	Number		1.00		30.00	2 Years	20.00	10.00				30.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 5 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	Time (Year)	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	Total
5.3	Formation of multicultural association in the municipality	Lump sum				0.50	1 year	0.50					0.50
5.4	Preparation of tourism development plan along with its implementation guidelines and monitoring framework	Lump sum				10.00	1 year	10.00					10.00
5.5	Formation of tourism development and management committee	Lump sum				0.50	1 year	0.50					0.50
5.6	Renovation of Chaskiya Baba Mandir, Mandir Danda and Hatti khola	Lump sum				10.00	5 year	2.00	2.00	2.00	2.00	2.00	10.00
						Total		233.00	112.00	2.00	2.00	2.00	351.00
6. Institutional Development Plan													
6.1	Establishment of Information Centre Building of all department in all wards	Number		9.00	20.00	180.00	5 years	50.00	40.00	40.00	30.00	20.00	180.00
6.2	Establishment of communication centers for common information sharing platform	number		1.00	10.00	10.00	1 year	10.00					10.00
6.3	Creation of interactive website to minimize paper work and single window system	number		1.00	0.50	0.50	1 year	0.50					0.50
						Total		60.50	40.00	40.00	30.00	20.00	190.50
7. Environment Development Plan													
7.1	Fire Path Construction	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
7.2	Preparation of multi hazard map and RSLUP	number		1.00	0.50	0.50	1 year	0.50					0.50

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 5 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	Time (Year)	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	Total
7.3	Preparation of its bye laws and implementation	Lump sum			0.50	0.50	1 year	0.50					0.50
7.4	Identification of high risk area in all urban area and relocating disaster prone settlement	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
					Total	101.00		21.00	20.00	20.00	20.00	20.00	101.00
8. Disaster Risk Management Plan													
8.1	Preparation of Risk Sensitive Land Use Plan and strict implementation	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
8.2	Identification of high risk area with hazard mapping and resettlement	Lump sum				100.00	5 years	20.00	20.00	20.00	20.00	20.00	100.00
8.3	Identification and delineation of disaster evacuation zone	Lump sum				50.00	5 years	10.00	10.00	10.00	10.00	10.00	50.00
					Total	200.00		40.00	40.00	40.00	40.00	40.00	200.00
9. Climatic Change Adaptation Plan													
9.1	Develop pedestrian friendly roads	Lump sum				10.00	5 years	2.00	2.00	2.00	2.00	2.00	10.00
9.2	Paving water recharge pavements	Lump sum				10.00	5 years	2.00	2.00	2.00	2.00	2.00	10.00
9.3	Land use zoning and buffer around the industrial zones	Lump sum				10.00	5 years	2.00	2.00	2.00	2.00	2.00	10.00
					Total	30.00		6.00	6.00	6.00	6.00	6.00	30.00
Grand Total						6952.64		1923.70	1556.50	1381.25	1181.00	910.19	6952.64

7.2 MSIP Program/ Project for Mid Term

Detail Budget of Multi Sectoral Investment Plan (MSIP) 10 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	Total
1.Physical Development Plan													
1.1 Road and Bridges													
Road													
1.1.1	Construction and expansion of road system by land pooling and GLD roads	Lump sum				1000.00	100.00	100.00	100.00	100.00	100.00	500.00	1000.00
1.1.2	Maintain and synchronize traffic lights through government and private sectors	Lump sum				100.00	8.00	8.00	8.00	8.00	8.00	60.00	100.00
1.1.3	Construction of road connecting Bansgadhi municipality and to all nearby RMs	Lump sum				500.00	30.00	30.00	30.00	30.00	30.00	350.00	500.00
1.1.4	Programs on public awareness regarding road safety	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
1.1.5	Plantation of trees along the road to provide shading for foot travelers	Lump sum				25.00	2.00	2.00	2.00	2.00	2.00	15.00	25.00
1.1.6	Monitoring and evaluation on privately owned or managed public transportation	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
Bridges													
1.1.1 1	Upgrading trail bridges to Sustainable Bridges	Lump sum				100.00	10.00	10.00	10.00	10.00	10.00	50.00	100.00
1.1.1 2	Construction of RC, suspension and suspended bridge for quick accessibility	Lump sum				100.00	10.00	10.00	10.00	10.00	10.00	50.00	100.00

Detail Budget of Multi Sectoral Investment Plan (MSIP) 10 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	Total
Total						1840.00	161.00	161.00	161.00	161.00	161.00	1035.00	1840.00
1.2 Water Supply													
1.2.1	Upgrading infrastructure for Babai Irrigation Projects	Lump sum				50.00	4.00	4.00	4.00	4.00	4.00	30.00	50.00
1.2.2	Informative programmes	Number		18.00	0.50	9.00	0.60	0.60	0.60	0.60	0.60	6.00	9.00
1.2.3	Water purification method	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
1.2.4	Application of water purification method	Lump sum				5.00	0.40	0.40	0.40	0.40	0.40	3.00	5.00
Total						71.50	5.50	5.50	5.50	5.50	5.50	44.00	71.50
1.3 Drainage and Sanitation													
1.3.1	Programmes on public awareness through radio, TV, broadcasting priority	Lump sum				1.50	0.10	0.10	0.10	0.10	0.10	1.00	1.50
1.3.2	Use of modern technology and adopt 3R's (Reduce, Reuse and Recycle.	Lump sum				1.50	0.10	0.10	0.10	0.10	0.10	1.00	1.50
1.3.3	Construction of sewerage network	Km		142.63	0.50	71.32	5.00	5.00	5.00	5.00	5.00	46.32	71.32
Total						74.32	5.20	5.20	5.20	5.20	5.20	48.32	74.32
1.4 Solid Waste Management													
1.4.1	Construction of Landfill Site and Providing Drainage Facilities	Number		1.00	100.00	100.00	10.00	10.00	10.00	10.00	10.00	50.00	100.00
1.4.2	Installation of bio gas	Number		10.00	7.50	75.00	5.00	5.00	5.00	5.00	5.00	50.00	75.00

Detail Budget of Multi Sectoral Investment Plan (MSIP) 10 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	Total
1.4.3	Provision of separate dustbin for degradable and non-degradable waste	Lump sum				25.00	2.00	2.00	2.00	2.00	2.00	15.00	25.00
1.4.4	Awareness campaign and programme related to 3R's	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
1.4.5	Formation of capable SWM committee	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
Total						215.00	18.00	18.00	18.00	18.00	18.00	125.00	215.00
1.5 Electrical and Communication													0.00
1.5.1	Provision of Optical Internet Facilities in all wards	Lump sum				50.00	4.00	4.00	4.00	4.00	4.00	30.00	50.00
1.5.2	Encouraging streets lights and other digital boards and device connected with solar	Lump sum				1.50	0.10	0.10	0.10	0.10	0.10	1.00	1.50
..	Total					51.50	4.10	4.10	4.10	4.10	4.10	31.00	51.50
Grand Total Physical Development Plan						2252.32	193.80	193.80	193.80	193.80	193.80	1283.32	2252.32
2. Social Development Plan													0.00
2.1 Education													0.00
2.1.1	Awareness campaign program	Number		15.00	0.50	7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
2.1.2	Promotion of technical education from private and governmental sectors	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
2.1.3	Provision of primary schools within travel distance of 15 minutes and secondary schools	Lump sum				50.00	5.00	5.00	5.00	5.00	5.00	25.00	50.00

Detail Budget of Multi Sectoral Investment Plan (MSIP) 10 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	Total
	with travel distance of 30 minutes.												
Total						65.00	6.00	6.00	6.00	6.00	6.00	35.00	65.00
2.2 Health													0.00
2.2.1	Provision of drinking water and sanitation facilities in all houses	Lump sum				100.00	10.00	10.00	10.00	10.00	10.00	50.00	100.00
2.2.2	Provision of vaccination stores and facilities	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
2.2.3	Distribution of Medicine for BP and Sugar Patients	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
2.2.4	Providing vaccinations for Animal Bites.	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
2.2.5	Improving accessibility of Fundamental checkups	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
2.2.6	Public toilets in all ward	number		11.00	1.00	11.00	2.00	1.00	1.00	1.00	1.00	5.00	11.00
Total						141.00	14.00	13.00	13.00	13.00	13.00	75.00	141.00
2.3 Security and Safety													0.00
2.3.1	Improvement of surveillance by strengthen and broaden safer cities program and local security management mechanism	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
2.3.2	Solar lights on roads and other public places	Lump sum				150.00	10.00	10.00	10.00	10.00	10.00	100.00	150.00
Total						157.5	10.50	10.50	10.50	10.50	10.50	105.00	157.5
2.4 Recreation													0.00

Detail Budget of Multi Sectoral Investment Plan (MSIP) 10 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	Total
2.4.1	Construction of 500 capacity Auditorium Hall in each ward	Number		11.00	400.00	4400.00	500.00	500.00	500.00	500.00	500.00	1900.00	4400.00
2.4.2	Promotion of water based adventure tourism	Lump sum				60.00	10.00	10.00	5.00	5.00	5.00	25.00	60.00
2.4.3	Management of children parks, gardens and recreational parks	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
	Total					4467.50	510.50	510.50	505.50	505.50	505.50	1930.00	4467.50
	Grand Total Social Development Plan					4831.00	541.00	540.00	535.00	535.00	535.00	2145.00	4831.00
3. Economic Development Plan													0.00
3.1	Promoting exporting local goods and services	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
3.2	Introducing modern urban farming, green house and poultry.	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
3.3	Monitoring for control for illegal market	Lump sum				1.50	0.10	0.10	0.10	0.10	0.10	1.00	1.50
3.4	Provision of open air and closed modern markets	Lump sum				1.50	0.10	0.10	0.10	0.10	0.10	1.00	1.50
	Total					18.00	1.20	1.20	1.20	1.20	1.20	12.00	18.00
4. Financial Development Plan													0.00
4.1	Promotion of tourism industries and tax allowance												0.00
4.2	Implementation of combined property tax	Lump sum				4.00	1.00	0.25	0.25	0.25	0.25	2.00	4.00
	Total					4.00	1.00	0.25	0.25	0.25	0.25	2.00	4.00
5. Conservation, Culture and Tourism													0.00

Detail Budget of Multi Sectoral Investment Plan (MSIP) 10 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	Total
5.1	Training for organic agriculture	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
5.2	Training for cultural conservation	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
5.3	Establishment of tourism board	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
5.4	Water transport system training	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
5.5	Assessing disaster prone sites in the tourist place	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
Total						37.50	2.50	2.50	2.50	2.50	2.50	25.00	37.50
6. Institutional Development Plan													0.00
6.1	Establishment of information and intelligence gathering system for regular trainings and knowledge exchange workshops.	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
Total						7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
7. Environment Development Plan													0.00
7.1	Nursery for Herbs and Fruits	Lump sum				100.00	10.00	10.00	10.00	10.00	10.00	50.00	100.00
7.2	Community Agriculture for Livelihood	Lump sum				100.00	10.00	10.00	10.00	10.00	10.00	50.00	100.00
7.3	Wildlife conservation	Lump sum				15.00	1.00	1.00	1.00	1.00	1.00	10.00	15.00
7.4	Conducting awareness campaign	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
7.5	Enforcement of land use regulation, by-laws, and building code in urban areas.	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50

Detail Budget of Multi Sectoral Investment Plan (MSIP) 10 Years (NRPS: Million)													
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	Total
Total						230.0	22.00	22.00	22.00	22.00	22.00	120.00	230.0
8. Disaster Risk Management Plan													0.00
8.1	Predicate Preparation	Lump sum				100.00	10.00	10.00	10.00	10.00	10.00	50.00	100.00
Total						100	10.00	10.00	10.00	10.00	10.00	50.00	100.00
9. Climatic Change Adaptation Plan													0.00
9.1	Promotion of energy efficient architecture	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
9.2	Promotion of alternative energy	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
9.3	Promotion of organic development with respect to terrain	Lump sum				7.50	0.50	0.50	0.50	0.50	0.50	5.00	7.50
Total						22.50	1.50	1.50	1.50	1.50	1.50	15.00	22.50
Grand Total						7502.82	773.50	771.75	766.75	766.75	766.75	3657.32	7502.82

7.3 MSIP Program/ Project for Long Term

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRPS: Million)														
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	2028-33 (5 Years)	Total
1.Physical Development Plan														
1.1 Road and Bridges														
Road														
1.1.1	Upgrading of earthen road to gravel road	Km		85.83	18.00	1544.89	100.00	100.00	100.00	100.00	100.00	545.00	500.00	1545.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRPS: Million)														
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	2028-33 (5 Years)	Total
1.1.2	Upgrading of gravel road to black top	Km		73.01	27.00	1971.22	140.00	140.00	140.00	140.00	140.00	671.00	600.00	1971.00
1.1.3	Construction of Ring road and Black topped C grade roads in each wards.	Number				2500.00	166.67	166.67	166.67	166.67	166.67	833.33	833.33	2500.00
1.1.4	Studying the cause of road accidents and implementing its precaution method	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
1.1.5	Provision of third party insurance	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
1.1.6	Upgrading road network from Bhakari chowk to Bangauri	Km	1.00	13.63	27.00	368.09	25.00	25.00	25.00	25.00	25.00	125.00	118.10	368.10
1.1.7	Upgrading road network from Motipur to Badki Deudha	Km	1.00	12.04	27.00	325.16	25.00	25.00	25.00	25.00	25.00	100.00	100.20	325.20
Total						6724.35	457.67	457.67	457.67	457.67	457.67	2279.33	2156.63	6724.30
1.2 Water Supply														
1.2.1	Provision of water storage for rain water harvesting and its promotion	Lum psum				5.00	0.40	0.40	0.40	0.40	0.40	2.00	1.00	5.00
1.2.2	Monitoring of quality of water	Lum psum				5.00	0.40	0.40	0.40	0.40	0.40	2.00	1.00	5.00
1.2.3	Provision of public water supply in crowded area	Lum psum				50.00	4.00	4.00	4.00	4.00	4.00	20.00	10.00	50.00

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRPS: Million)														
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	2028-33 (5 Years)	Total
1.2.4	Provision of public drinking water in public areas	Lum psum				50.00	4.00	4.00	4.00	4.00	4.00	20.00	10.00	50.00
1.2.5	Proper network development for effective distribution of water	Lum psum				50.00	4.00	4.00	4.00	4.00	4.00	20.00	10.00	50.00
	Total					160.00	12.80	12.80	12.80	12.80	12.80	64.00	32.00	160.00
1.3 Drainage and Sanitation														
1.3.1	Provision of solid waste collection	Number		600.00	0.01	3.00	0.20	0.20	0.20	0.20	0.20	1.00	1.00	3.00
1.3.2	Upgrading existing sewerage system including drainage and sewerage pipe along roads	km		142.63	1.00	142.63	10.00	10.00	10.00	10.00	10.00	50.00	42.60	142.60
1.3.3	Installation of sewer pipeline network and localize sewer treatment units	Lum psum				100.00	10.00	10.00	10.00	10.00	10.00	25.00	25.00	100.00
	Total					245.63	20.20	20.20	20.20	20.20	20.20	76.00	68.60	245.60
1.4 Solid Waste Management														
1.4.1	Annual and long term strategy for SWM	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
1.4.2	Privatization of SWM	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
1.4.3	Promotion of bio-gas installation to convert	Lum psum				5.00	0.40	0.40	0.40	0.40	0.40	2.00	1.00	5.00

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRPS: Million)														
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	2028-33 (5 Years)	Total
	degradable waste to energy													
1.4.4	Installation of solid waste bins along the road side and public places	Lum psum				5.00	0.40	0.40	0.40	0.40	0.40	2.00	1.00	5.00
1.4.5	Establishment of Solid Waste Collection Points	Num ber		70.00	1.00	70.00	5.00	5.00	5.00	5.00	5.00	25.00	20.00	70.00
	Total					95.00	6.80	6.80	6.80	6.80	6.80	34.00	27.00	95.00
1.5 Electrical and Communication														
1.5.1	ST and LT programme for promoting values and government sector for qualitative internet and communication facilities	Num ber		10.00	1.00	10.00	1.00	1.00	1.00	1.00	1.00	3.00	2.00	10.00
1.5.2	Formulating energy policies for promoting renewable energy source	Lum psum				5.00	0.75	0.75	0.75	0.75	0.50	1.00	0.50	5.00
1.5.3	Investing and planning for smart grid electricity infrastructure	Lum psum				100.00	10.00	10.00	10.00	10.00	10.00	25.00	25.00	100.00
^^	Total					115.00	11.75	11.75	11.75	11.75	11.50	29.00	27.50	115.00
	Grand Total Physical Development Plan Plan					7339.98	509.22	509.22	509.22	509.22	508.97	2482.33	2311.73	7339.90
2. Social Development Plan														

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRPS: Million)														
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	2028-33 (5 Years)	Total
2.1 Education														
2.1.1	Promotion of digital teaching methodology	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
2.1.2	Emphasis the public participation from local unites for overall management of school education	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
Total						15.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00	15.00
2.2 Health														
2.2.1	Increasing household services by health activist	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
2.2.2	Improving accessibility of Treatment Equipment	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
2.2.3	Providing health education and information on each health post	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
2.2.4	Establishment of 3 yoga and meditation center with registered doctor	number		3.00	5.00	15.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00	15.00
2.2.5	Construction of 3 wastage disposal area with specific planning of treatment	number		3.00	5.00	15.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00	15.00

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRPS: Million)														
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	2028-33 (5 Years)	Total
2.2.6	Ensuring tourist safety and security during stay and travel	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
2.2.7	Response team for community level and from the city level in case of disaster incidents	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
	Total					67.50	4.50	4.50	4.50	4.50	4.50	22.50	22.50	67.50
2.3 Security and Safety														
2.3.1	Construction separate lanes for pedestrians and vehicular mobility and community participation on neighbourhood safety.	Lum psum				1500.00	150.00	150.00	150.00	150.00	150.00	450.00	300.00	1500.00
2.3.2	CCTV surveillance to be installed in the city and fire fighting	Lum psum				50.00	6.00	6.00	5.00	4.00	4.00	15.00	10.00	50.00
2.3.3	Establishment of police station in the city pockets and response team for disaster	number		5.00	15.00	75.00	5.00	5.00	5.00	5.00	5.00	25.00	25.00	75.00
	Total					1625.00	161.00	161.00	160.00	159.00	159.00	490.00	335.00	1625.00
2.4 Recreation														
2.4.1	Improvement of Playground and Covered Halls.	Lum psum			7.50	7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRPS: Million)														
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	2028-33 (5 Years)	Total
2.4.2	Acquisition of land for open space and green parks	Number		3.00	50.00	150.00	10.00	10.00	10.00	10.00	10.00	50.00	50.00	150.00
2.4.3	Formation of community groups for managing parks and spaces	Lumpsum				1.50	0.10	0.10	0.10	0.10	0.10	0.50	0.50	1.50
2.4.4	Proper friendly city design with vegetation around streets	Lumpsum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
	Total					166.50	11.10	11.10	11.10	11.10	11.10	55.50	55.50	166.50
	Grand Total Social Development Plan					1874.00	177.60	177.60	176.60	175.60	175.60	573.00	418.00	1874.00
3. Economic Development Plan														
3.1	Development of industrial area	Lumpsum		1.00	150.00	150.00	10.00	10.00	10.00	10.00	10.00	50.00	50.00	150.00
3.2	Promotion of agriculture industries	Lumpsum			15.00	15.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00	15.00
3.3	Development of environmental friendly industries	Lumpsum			150.00	150.00	10.00	10.00	10.00	10.00	10.00	50.00	50.00	150.00
3.4	Promotion of local goods production	Lumpsum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
	Total					322.50	21.50	21.50	21.50	21.50	21.50	107.50	107.50	322.50
4. Conservation, Culture and Tourism														
4.1	Conservation of Land and Ponds	Lumpsum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
4.2	Training for construction of	Lumpsum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRPS: Million)														
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	2028-33 (5 Years)	Total
	environmental friendly house													
4.3	Construction of temples	Lum psum				150.00	10.00	10.00	10.00	10.00	10.00	50.00	50.00	150.00
4.4	Construction of Museums	Lum psum				150.00	10.00	10.00	10.00	10.00	10.00	50.00	50.00	150.00
4.5	Conservation and development of wetland area	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
	Total					322.50	21.50	21.50	21.50	21.50	21.50	107.50	107.50	322.50
5. Institutional Development Plan														
5.1	Provide education and capacity building for participatory integrated development plan	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
5.2	Separate authority for monitoring and evaluation of government works for quality and timely completion	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
	Total					15.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00	15.00
6. Environment Development Plan														
6.1	Development of alternative energy	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
6.2	Conducting forest conservation Programmes	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

Detail Budget of Multi Sectoral Investment Plan (MSIP) 15 Years (NRPS: Million)														
SN	Activities	Unit	Nos.	Qty.	Rate	Total Cost	2018-19 (1Year)	2019-20 (1 Year)	2020-21 (1 Year)	2021-22 (1Year)	2022-23 (1 Year)	2023-28 (5Year)	2028-33 (5 Years)	Total
6.3	Training for community forest consumers	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
6.4	Training for livelihood	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
6.5	River training works (Afforestation)	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
6.6	Forest Conservation and Utilization	Lum psum				15.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00	15.00
6.7	Enhancing human resource and institutional capacity	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
Total						60.00	4.00	4.00	4.00	4.00	4.00	20.00	20.00	60.00
7. Disaster Risk Management Plan														
7.1	Provision of Disaster Management Fund	Lum psum				150.00	10.00	10.00	10.00	10.00	10.00	50.00	50.00	150.00
7.2	Post- Disaster Management	Lum psum				100.00	10.00	10.00	10.00	10.00	10.00	25.00	25.00	100.00
Total						250.00	20.00	20.00	20.00	20.00	20.00	75.00	75.00	250.00
8. Climatic Change Adaptation Plan														
8.1	Conducting public awareness campaign	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
8.2	Updating climate data	Lum psum				7.50	0.50	0.50	0.50	0.50	0.50	2.50	2.50	7.50
Total						15.00	1.00	1.00	1.00	1.00	1.00	5.00	5.00	15.00
Grand Total						10198.98	755.82	755.82	754.82	753.82	753.57	3375.33	3049.73	10198.90

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ANNEXES

Annex 1: DED Selection Matrix

Step I: All the projects guided by Development Plans were prioritized. These projects were municipality level projects.

Step II: The prioritized projects were evaluated on following four criteria proposed by DUDBC:

- Congruence with prevalent policies & strategies (NUP 2007, NUDS 2017 etc.)
- 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 criterion 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.

Evaluation criteria

(i) Congruence (Weightage = 25)

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		

Indicators and ratings:

1. Fit with core value of corridor strategy

- fits with core value of corridor strategy: complementarity², sharing³, and collaboration⁴= 1

² complementarity: an action which also contributes to another to form synergy or a greater whole

³ sharing: cost and benefit of infrastructure provisions and services are shared equitably among participating actors

⁴ collaboration: cooperation between actors to achieve intended objectives and goal

- Doesn't fit with core value of corridor strategy = 0
2. Consistent with activities outlined in NUDS
 - Links with activities identified by NUDS = 1
 - Doesn't link with activities identified by NUDS = 0
 3. Consistent with policy and program for 2018-2019
 - Fits with catalytic investment areas (agriculture, Energy, Transport, Physical infrastructure, information technology, tourism, and urban development) = 1
 - Does not fit with the catalytic investment areas = 0
 4. Consistent with prioritized economic sectors of Graduation Plan
 - In line with prioritized economic sectors (service, industry, and agriculture) of the Graduation Plan (2015-2021) = 1
 - Not in line with prioritized economic sectors of the Graduation Plan = 0
 5. Consistent with SDGs
 - In line with multiple goals outlined in the SDGs = 1
 - Not in line with any of the goals outlined in the SDGs = 0

(ii) Overall viability (Weightage = 25)

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		

Indicators and rating:

1) Technical:

Project which has already been assessed and has some degree of readiness (max rating 0.4), for which land is available (max rating 0.2), proposed in safer location (max rating 0.2), and project of this kind is already tested/worked out elsewhere in other municipalities (max rating 0.2) = 1

Project which lacks preliminary assessment and readiness (rating 0), for which land is not available (rating 0), proposed in unsafe location (rating 0), and project of this kind is not tested/worked out in any other municipalities (rating 0) = 0

2) Financial:

- Commitment for financial contribution from municipality = 1
- No commitment for financial contribution from municipality = 0

3) Social:

- Unlikely displacement of households (max rating 0.5), and households of peripheral areas are also served by the project (max rating 0.5) = 1
- Potential displacement of households (rating = 0), and households of peripheral areas also not served by the project (rating = 0) = 0

4) Environmental:

- Unlikely detrimental effect on natural resources and wildlife habitat = 1
- Potential effect on natural resources and wildlife habitat = 0

5) Economic:

- Potentiality to add to income from taxation, user’s fees-- leading to widening and increase in revenue base of municipality = 1
- Lacks potentiality to add to income from taxation, user’s fees-- leading to widening and increase in revenue base of municipality = 0

(iii) Capacity (Weightage = 25)

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		

Indicators and rating:

- 1) Project Municipality is overall competitive (competitiveness score⁵ > 75) = 1
Project Municipality is not overall competitive (competitiveness score < 25) = 0
- 2) Project Municipality has IFI experience = 1
Project Municipality has no IFI experience = 0
- 3) Project Municipality has experience of collaborative project (with national agencies) = 1

⁵ Competitiveness score of the municipalities used for the purpose is the measure of four variables: physical, economic, social, and institutional. Physical is measured by indicators: connectivity, and basic urban infrastructure condition. Economic is measured by indicators: market potential, and industrial activities. Social is measured by indicators: human development, and ethnic/cultural diversity. Institutional capacity is measured by indicators: pass or fail in Minimum Conditions evaluated by then Local Body Fiscal Commission.

Project Municipality has no experience of collaborative project (with national agencies) = 0

(iv) Benefits and Positive Impact (Weightage = 25)

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		

Indicators:

1) Geographical Extent

- Project is likely to include two or more than two municipalities = 1
- Project is likely to include one ward only = 0

2) Population Extent

- Project is likely to benefit more than 100,000 people = 1
- Project is likely to benefit less than 1,000 people = 0

3) Accumulation of Productive Assets

- Project has substantive potential for accumulating or forming productive assets in the corridor (project cost > USD 10 million) = 1
- Project has no substantive potential for accumulating or forming productive assets in the corridor (project cost < USD 1 million) = 0

4) Benefits and impacts

- Likely to create jobs (rating 0.25), increase productivity (rating 0.25), increase opportunities for youth and disadvantaged groups (rating 0.25), and become catalytic medium to cluster and expand additional investment in the area (rating 0.25) = 1
- Unlikely to create jobs (rating 0.25), increase productivity (rating 0.25), increase opportunities for youth and disadvantaged groups (rating 0.25), and become catalytic medium to cluster and expand additional investment in the area (rating 0.25) = 0

From the above criteria, those two projects which gained the highest marks were selected as the DED.

Annex 2: DED Selection matrix of Bansgadhi Municipality

Detail Engineering Design (DED) 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 DED. 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 is 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, both the construction of road 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,

Table 52: DED Selection Criteria

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	Road connecting Badki Deuda, Shiva Mandir, Damauli, Motipur, Hasnapur, Barhabigha, Haupur, Mahendra Highway	1	15	1	2.5	1	2.5	1	2.5	1	2.5	25
2	25 bed hospital	0	15	1	2.5	1	2.5	1	2.5	1	2.5	10
3	Road connecting Mahendra highway, Uttar Bhakarichowk, Chamakpur, Madaha, Newada, Bathuwa, Belauli, Bangaudi and Laxmana Sadak	1	15	1	2.5	1	2.5	1	2.5	1	2.5	25
4	500 capacity Convention hall	1	15	0	2.5	0	2.5	0	2.5	0	2.5	15
5	Tourism development with View Tower	1	15	0	2.5	1	2.5	0	2.5	0	2.5	17.5
6	Information center building in each ward	0.5	15	1	2.5	1	2.5	1	2.5	0	2.5	15
7	Land fill site	0	15	1	2.5	1	2.5	0	2.5	1	2.5	7.5
8	Multicultural Museum	0	15	1	2.5	1	2.5	0	2.5	0	2.5	5
9	Develop Cow Farming Pocket Area	0	15	0	2.5	0	2.5	1	2.5	1	2.5	5
10	Construction of temples	0.5	15	1	2.5	1	2.5	1	2.5	0	2.5	15

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	Road connecting Badki Deuda, Shiva Mandir, Damauli, Motipur, Hasnapur, Barhabigha, Haupur, Mahendra Highway	1	7	0	5	0.5	4	1	4	1	5	18
2	25 bed hospital	0.4	7	1	5	0.5	4	0.5	4	0	5	11.8
3	Road connecting Mahendra highway, Uttar Bhakarichowk, Chamakpur, Madaha, Newada, Bathuwa, Belauli, Bangaudi and Laxmana Sadak	1	7	0	5	0.5	4	1	4	1	5	18
4	500 capacity Convention hall	0.4	7	1	5	1	4	0.5	4	1	5	18.8
5	Tourism development with View Tower	0.4	7	1	5	1	4	1	4	1	5	20.8
6	Information center building in each ward	0.4	7	1	5	1	4	1	4	0	5	15.8
7	Land fill site	0.4	7	1	5	0		0	4	0	5	7.8
8	Multicultural Museum	0.4	7	1	5	0.5	4	1	4	1	5	18.8
9	Develop Cow Farming Pocket Area	0.4	7	1	5	1	4	1	4	0	5	15.8
10	Construction of temples	0.6	7	1	5	0.5	4	1	4	0.5	5	17.7

Final Report: Preparation of Integrated Urban Development Plan (IUDP) of Bansgadhi Municipality

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	Road connecting Badki Deuda, Shiva Mandir, Damauli, Motipur, Hasnapur, Barhabigha, Haupur, Mahendra Highway	0.5	12	1	8	0.5	5	16.5
2	25 bed hospital	1	12	0	8	0	5	12
3	Road connecting Mahendra highway, Uttar Bhakarichowk, Chamakpur, Madaha, Newada, Bathuwa, Belauli, Bangaudi and Laxmana Sadak	0.5	12	1	8	0.5	5	16.5
4	500 capacity Convention hall	1	12	1	8	0	5	20
5	Tourism development with View Tower	0	12	1	8	0.5	5	10.5
6	Information center building in each ward	0	12	0	8	1	5	5
7	Land fill site	0	12	0	8	0	5	0
8	Multicultural Museum	1	12	1	8	0	5	20
9	Develop Cow Farming Pocket Area	0	12	0	8	1	5	5
10	Construction of temples	0	12	0	8	1	5	5

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	Road connecting Badki Deuda, Shiva Mandir, Damauli, Motipur, Hasnapur, Barhabigha, Haupur, Mahendra Highway	0.5	4	0.8	4	1	4	0.5	13	15.7
2	25 bed hospital	1	4	1	4	1	4	1	13	25
3	Road connecting Mahendra highway, Uttar Bhakarichowk, Chamakpur, Madaha, Newada, Bathuwa, Belauli, Bangaudi and Laxmana Sadak	1	4	0.8	4	1	4	0.5	13	17.7
4	500 capacity Convention hall	0.5	4	0.5	4	0.5	4	0.75	13	15.75
5	Tourism development with View Tower	1	4	1	4	1	4	1	13	25
6	Information center building in each ward	0	4	0.4	4	0	4	0.5	13	8.1
7	Land fill site	0	4	0.6	4	0	4	0.25	13	5.65
8	Multicultural Museum	1	4	0.6	4	1	4	1	13	23.4
9	Develop Cow Farming Pocket Area	0	4	0.6	4	0	4	0.75	13	12.15
10	Construction of temples	0	4	0.5	4	0	4	0.5	13	8.5

Total Weightage Gained					
Project	Congruence	Overall Viability	Capacity	Benefits and Positive Impacts	Total
Road connecting Badki Deuda, Shiva Mandir, Damauli, Motipur, Hasnapur, Barhabigha, Haupur, Mahendra Highway	25	18	16.5	15.7	75.2
25 bed hospital	10	11.8	12	25	58.8
Road connecting Mahendra highway, Uttar Bhakarichowk, Chamakpur, Madaha, Newada, Bathuwa, Belauli, Bangaudi and Laxmana Sadak	25	18	16.5	17.7	77.2
500 capacity Convention hall	15	18.8	20	15.75	69.55
Tourism development with View Tower	17.5	20.8	10.5	25	73.8
Information center building in each ward	15	15.8	5	8.1	43.9
Land fill site	7.5	7.8	0	5.65	20.95
Multicultural Museum	5	18.8	20	23.4	67.2
Develop Cow Farming Pocket Area	5	15.8	5	12.15	37.95
Construction of temples	15	17.7	5	8.5	46.2

List of Tables

Table 1: Transformation Parameter from WGS84 Datum to Everest 1830 Datum.....	18
Table 2: Population Projection of Bansgadhi Municipality	27
Table 3: Land cover of Bansgadhi municipality.....	28
Table 4: Status of disaster in Bansgadhi municipality	35
Table 5: Criteria for Suitable Site Selection.....	44
Table 6: Landfill Site Selection Criteria In GIS	45
Table 7: Suitability Analysis for Landfill Site.....	46
Table 8: Parameters Used for Determining the Flood Risk zones.....	49
Table 9: Ward-wise Flood Risk zone of Bansgadhi Municipality.....	50
Table 10: Parameters that are Used to Determine the Drought Susceptibility zone.....	51
Table 11: Ward-wise Flood Risk zone of Bansgadhi Municipality.....	51
Table 12: Environment Sensitive Area	55
Table 13: Road classification on the basis of population service	56
Table 14: List of the elected representatives in Bansgadhi Municipality	60
Table 15: Major market Areas of Bansgadhi Municipality.....	62
Table 16: Strength Analysis of the municipality	65
Table 17: Weakness Analysis of the municipality.....	66
Table 18: Opportunities Analysis of the municipality	68
Table 19: Threats Analysis of the municipality.....	69
Table 20: Infrastructure and necessity analysis	70
Table 21: Gap Analysis of the municipality	72
Table 22: DED Selection Result of Bansgadhi Municipality.....	79
Table 23: Features of DPR1	82
Table 24: Features of DPR2 - Road.....	85
Table 25: Criteria for site selection of settlement zone.....	88
Table 26: Land Use of Bansgadhi municipality	89
Table 27: Logical framework Approach (LFA) of Water Supply	92

Table 28: Logical framework Approach (LFA) of Drainage and Sewerage Network	94
Table 29: Logical framework Approach (LFA) of Solid Waste Management.....	97
Table 30: Logical framework Approach (LFA) of Electricity and Communication	99
Table 31: Logical Framework Approach (LFA) of communication	100
Table 32: Proposed road class in Bansgadhi municipality	102
Table 33: Road surface type of Bansgadhi municipality	106
Table 34: Logical Framework Approach (LFA) of Urban Transportation	109
Table 35: Logical Framework Approach (LFA) of Education.....	111
Table 36: Logical Framework Approach (LFA) of Health	112
Table 37: Logical Framework Approach (LFA) of Security.....	114
Table 38: Logical Framework Approach (LFA) of Culture and Sports.....	115
Table 39: Logical Framework Approach (LFA) of Parks and Open Space	116
Table 40: Proposed Service Centers for The Promotion of Social Development Through IUDP	118
Table 41: Logical Framework Approach (LFA) of Economic Plan	121
Table 42: Components of Tourism of Bansgadhi Municipality	123
Table 43: Logical Framework Approach (LFA) of Tourism Development Plan	124
Table 44: Five Year Sectoral Plan of Bansgadhi Municipality	127
Table 45: Logical Framework Approach (LFA) of Financial Plan	131
Table 46: Logical Framework Approach (LFA) of Environmental Management Plan.....	135
Table 47: Logical Framework Approach (LFA) of Disaster Risk Management Plan	139
Table 48: Logical Framework Approach (LFA) Climate Change Adaptation Plan.....	143
Table 49: LFA for Institutional Development	145
Table 50: Major projects of line agencies in the Municipality	148
Table 51: Multi Sectoral Investment Plan for 15 years.....	151
Table 52: DED Selection Criteria	188
List of Figures	
Figure 1: Flow chart of Structure of the report.....	9

Figure 2: Methodological flow chart during IUDP Project of Bansgadhi Municipality.....	10
Figure 3: Flow Chart of Base Map Preparation Stage	15
Figure 4: Spatial data of municipality	17
Figure 5: Changing area for forest and water bodies in three different years	30
Figure 6: Road Cross Section of Settlement Terai Area	81
Figure 7: Road Cross Section for Non-Settlement Terai Area	81
Figure 8: Road Cross Section of Settlement Tarai Area	85
Figure 9: Road Cross Section for Non-Settlement Terai Area	85

List of Photos

Photo 1: Consultation with Municipal Authorities at Bansgadhi Municipality	12
Photo 2: FGD at Ward Level of Bansgadhi Municipality.....	13
Photo 3: Vision Setting workshop conducted at Bansgadhi Municipality	21

List of Maps

Map 1: Modified Universal Transverse Project system of Nepal.....	18
Map 2: High Resolution Satellite Image of Bansgadhi Municipality	19
Map 3: Digitization of Satellite Image of Bansgadhi Municipality	19
Map 4: Land Use Map of Bansgadhi Municipality	28
Map 5: Settlement pattern in Bansgadhi Municipality	29
Map 6: Settlement pattern of Motipur.....	31
Map 7: Settlement pattern of Babai	31
Map 8: Settlement pattern of Pahadipur.....	31
Map 9: Cultivation Land pattern of Deudakala	31
Map 10: Cultivation Land pattern of Ambhiya	32
Map 11: Cultivation Land pattern of Belawa	32
Map 12: Forest pattern of Belawa.....	32
Map 13: Forest pattern of hasnapur	32
Map 14: Forest pattern of Bansgadhi.....	33
Map 15: Water body pattern of Chamakpur	33

Map 16: Water body pattern of Lauha khola.....	33
Map 17: Water body pattern of Babai.....	33
Map 18: Landslides prone zone of Bansgadhi Municipality.....	34
Map 19: Flood prone zone of Bansgadhi Municipality.....	35
Map 20: Forest Fire Risk Zone of Bansgadhi Municipality.....	36
Map 21: Drought Risk Zone of Bansgadhi Municipality.....	37
Map 22: Map showing open spaces in Bansgadhi Municipality.....	38
Map 23: Easy Accessibility Analysis result for health Service.....	40
Map 24: Easy Accessibility Analysis result for Education.....	41
Map 25: Map showing road network of Bansgadhi.....	42
Map 26: Map showing linkage of goods.....	43
Map 27: Map showing flow of people.....	43
Map 28: Suitable site for settlement.....	45
Map 29: Drainage Map of Bansgadhi Municipality.....	47
Map 30: Watershed Map of Bansgadhi Municipality.....	48
Map 31: Suitable Layout for Sewerage Network.....	49
Map 32: Flood Susceptibility Map of Bansgadhi Municipality.....	50
Map 33: Drought Susceptibility Map of Bansgadhi Municipality.....	51
Map 34: Forest Fire Analysis.....	52
Map 35: Stream Order Map of Bansgadhi Municipality.....	53
Map 36: Total Number and Length of Different Stream Order.....	53
Map 37: Environment Sensitive Area.....	54
Map 38: River Buffer Map of Bansgadhi Municipality.....	55
Map 39: Population served by Road Network.....	58
Map 40: Shown Proposed Economic Infrastructure.....	59
Map 41: DPR1 – Road.....	80
Map 42: DPR2 – Road.....	84
Map 43: Land use map of Bansgadhi municipality.....	89

Map 44: Site feasibility map for selection of settlement zone	90
Map 45: Proposed Sewerage network map of Bansgadhi	93
Map 46: Proposed solid waste collection point and land fill site	96
Map 47: Electricity facility in Bansgadhi municipality	98
Map 48: Access to telecommunication facility in Bansgadhi municipality	100
Map 49: Proposed road network and its class of Bansgadhi municipality.....	104
Map 50: Strategic road network map of Bansgadhi municipality	105
Map 51: Road classification on the basis of existing surface type	108
Map 52: Road classification on the basis of existing road width	108