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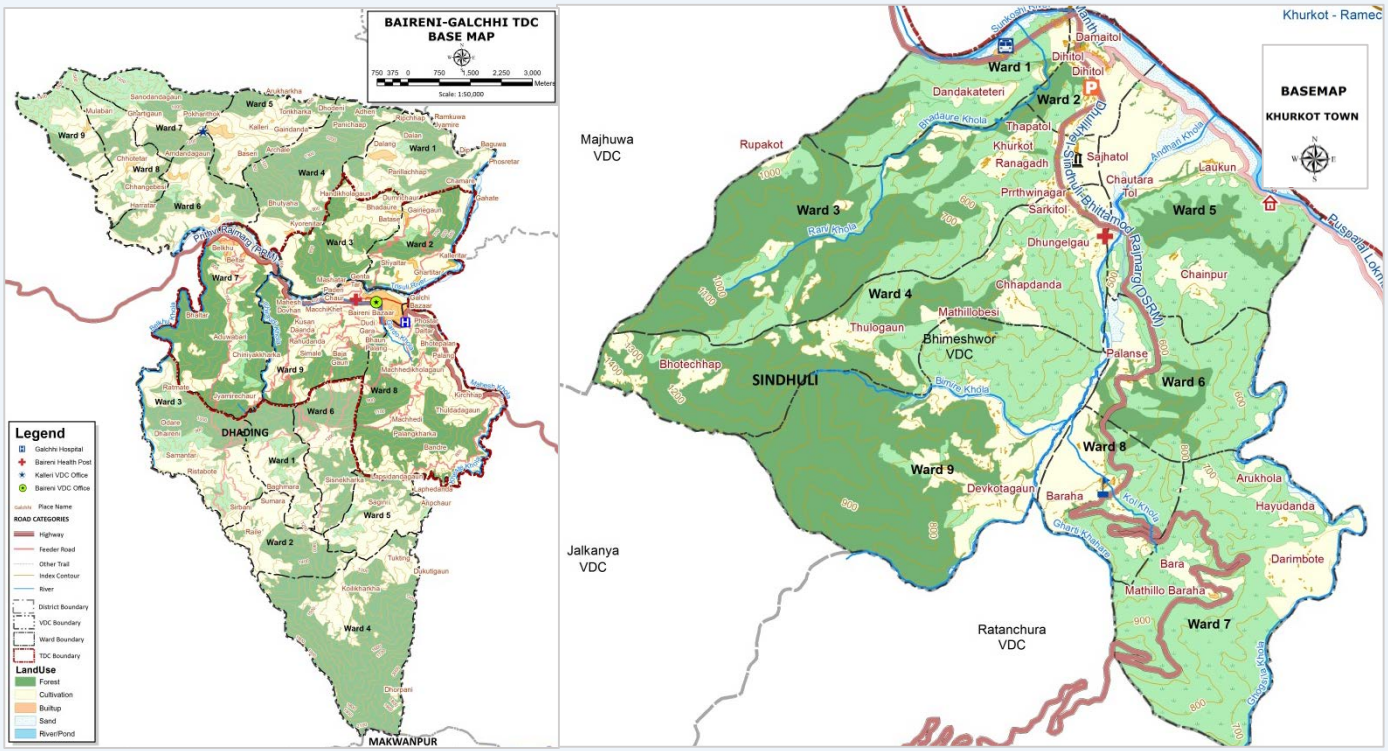
Babar Mahal, Kathmandu

Preparation of Integrated Development Plan of Khurkot and Baireni-Galchhi New Town

Volume I: Main Report,
Section A: Integrated Development Plan (Khurkot)



Final Report

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Contents

Contents ..... a
Acknowledgement ..... d
Acronyms ..... e
List of Tables ..... f
List of Figures ..... g
1 Introduction 1
1.1 Background 1
1.2 Rationale of the study 2
1.3 Objectives of the work 2
1.4 Scope of Works 3
2 Methodology 5
2.1 General Approach 5
2.2 Study Method 6
2.2.1 Preliminary Preparedness 6
2.2.2 Data Collection and Interpretation 6
2.2.3 Data Analysis - Potentials identification and prioritization 7
2.2.4 Plan, Program and Project Formulation 8
2.2.5 Project screening and TDC budget 8
2.2.6 Formulation of Building Byelaws 8
2.2.7 Preparation of Implementation Strategy 8
3 Review of Policies & Planning Practices 10
3.1 Modern Urban Planning Practices – International Context 10
3.2 Modern Urban Planning Practices – National Context 12
3.3 Review of Acts and Policies 16
4 Study Area 24
4.1 Administrative and Geographic Status 24
4.1.1 Administrative Division 24
4.1.2 Topography 24
4.1.3 Climate 25
4.1.4 Water Shade and Water Bodies 25
4.2 Demography 25
4.2.1 Population Distribution 25
4.2.2 Age-sex Composition 26
4.2.3 Population by ethnicity 27
4.2.4 Population by mother tongue 27
4.2.5 Literacy 28
4.3 Regional Context 28
4.4 Physical Infrastructure 28

4.4.1 Road and Transportation 28
4.4.2 Water Supply 28
4.4.3 Sanitation / Sewerage *System* 30
4.4.4 Electricity Supply System 30
4.4.5 Information and Communication 30
4.5 Social Infrastructure 30
4.5.1 Education 30
4.5.2 Health Institution 31
4.5.3 Open Space 31
4.5.4 Community Buildings (Library, community halls etc.) 32
4.5.5 Fire Stations 32
4.5.6 Religious Institutions 32
4.5.7 Recreational Buildings (Cinema Hall, Museum, Art Gallery) 32
4.5.8 Social welfare (Old age home / Orphanage/Centre for Differently able Person) 32
4.5.9 Security 32
4.6 Economic Services & Infrastructure 32
4.6.1 Agriculture 32
4.6.2 Industry 33
4.6.3 Trade & Services 34
4.6.4 Banking & Finance 34
4.6.5 Tourism 34
4.6.6 Culture & Religion 35
4.7 Environmental and Ecological Status 35
4.7.1 Forest 35
4.7.2 Air Pollution 35
4.7.3 Water Pollution 36
4.7.4 Noise Pollution 36
4.7.5 Integrated Solid Waste Management System 36
4.8 Disaster Status 36
4.8.1 Landslide 36
4.8.2 Flood 36
4.8.3 Earthquake 36
4.8.4 Man made Disaster – Road Accident, Fire Hazards etc. 36
4.9 Land use 37
4.10 Urbanization 37
5 ANALYSIS 38
5.1 Trend Analysis 38
5.1.1 Migration 38
5.1.2 Population Projection 38
5.2 Gap Analysis 39

5.2.1 Infrastructure Development 39
5.3 SWOT ANALYSIS 41
5.4 Spatial Analysis 42
5.4.1 Land suitability Analysis 42
6 LONG TERM DEVELOPMENT PLAN OF TOWN 43
6.1 Vision of the Town 43
6.2 Goals & Objectives 43
6.3 Lead Sectors 43
6.4 Plans & Programs 43
6.4.1 Long – term Physical Development Plan 43
6.4.2 Social Development Plan 46
6.4.3 Cultural and Tourism Development Plan 51
6.4.4 Economic Development Plan 53
6.4.5 Environment Management Plan 56
6.4.6 Disaster Management Plan 57
6.4.7 Climate Change Adaptation Plan 57
7 Major Strategic Projects 58
7.1.1 Prioritized Projects 58

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Study Team

Acronyms

ADB Asian Development Bank
BDP Bhaktapur Development Project
CBO Community Based Organization
CBS Central Bureau of Statistics
DER Detail Engineering Report
DPR Detail Project Report
DTMP District Transport Master Plan
DUDBC Department of Urban Development and Building Construction
EIA Environment Impact Assessment
GIS Geographic Information System
GLD Guided Land Development
IAP Integrated Action Plan
IDP Integrated Development Plan
IEE Initial Environment Examination
JICA Japan International Cooperation Agency
KVMP Kathmandu Valley Mapping Project
KVTDC Kathmandu Valley Town Development Committee
LFA Logical Framework Approach
MoFALDMinistry of Federal Affairs and Local Development
MoUD Ministry of Urban Development
NGO Non-Government Office
NPC National Planning Commission
NT New Town
NTPCO New Town Project Coordination Office
NTPO New Town Project Office
NUP National Urban Policy
PDDP Periodic District Development Plan
PDP Physical Development Plan
SDF Spatial Development Framework
TDC Town Development Committee
TLO Tole Lane Organization
ToR Terms of Reference
UNDP United Nation Development Programme
VDC Village Development Committee

List of Tables

Table 1: Available land area with respect to the slope 25
Table 2: Khurkot – Ward wise Population 26
Table 3 : Khurkot- Age and Sex Composition 26
Table 4: Khurkot- Population by Age Groups 26
Table 5: Khurkot – Population by Ethnicity 27
Table 6: Khurkot- Population by Mother Tongue 27
Table 7: Literacy Rate – Bhimeswor -Khurkot 28
Table 8: Khurkot- Households by Main Source of Drinking Water 29
Table 9: Available water sources for new town Khurkot 29
Table 10: Wardwise distribution of Educational Institution in Bhimeswor-Khurkot 31
Table 11: Major health institutions in Baireni-Galchhi New town 31
Table 12: Main Crops Production in Khurkot 32
Table 13: Economic Enterprises of Khurkot 34
Table 14: Description of Community Forest Group of Khurkot 35
Table 15: Area of Landcover in Bhimeswor-Khurkot 37
Table 16: Population Projection- Bhimeswor - Khurkot 38
Table 17: Gap Analysis of Educational Institutions 39
Table 18: Water Demand Analysis of Bhimeswor-Khurkot 40
Table 19: Available Developable Land & Carrying Capacity (Bhimeswor-Khurkot) 42
Table 20: Phasewise Settlement Development & Carrying Capacity 44
Table 21: Proposed Zoning (Bhimeswor-Khurkot) 44
Table 22: Proposed Road Category in Bhimeswor-Khurkot 45
Table 23 : Logical plan for educational progress and development 46
Table 24 : Health reforms and development plan 48
Table 25 : Security Development Plan 49
Table 26 : Social Inclusion Plan and Program 50
Table 27 : Development plan of Open Space: (Playground) 51
Table 28 : Cultural development plan 52
Table 29 : Tourism development plan 52
Table 30 : Logical plan for economical progress and development 53
Table 31 : Logical plan for agricultural development and marketing 54
Table 32 : Logical plan for industrial progress and development 55
Table 33: Projects priotized by subjective committes in Bhimeswor Khurkot 58

List of Figures

Figure 1: New Towns along the Mid-Hill Highway 24
Figure 2: Age-Sex Pyramid 27
Figure 3: Levels of Schools and Colleges 30
Figure 4: Land use Composition-Bhimeswor, Khurkot 37
Figure 5: Household level Migration Trend-Bhimeswor, Khurkot 38
Figure 6: Gap Analysis Educational Institutions, Bhimeswor-Khurkot 39

1 Introduction

1.1 BACKGROUND

Nepal has been undergoing the process of rapid urbanization since the last two decades. However, the growth trend has become increasingly an unbalanced one; it is concentrated mostly either on the Kathmandu Valley or on other larger cities of terai or on the fertile Valley of country. The unbalance growth is visible, either ecological region wise or development region wise. Instead of an industrial or economic growth induced urbanization, much of the urbanization in the country is rather induced by migration with limited economic base created by the community services and improved facilities in these urban areas and conversely caused by the lagging facilities of the rural areas.

Consequently, out-migration of the people from rural to urban areas or from small towns and municipalities to larger municipalities remains unabated causing a wider ramification for the economic development of the country. The problem is further compounding as haphazard urbanization is taking a toll on the fertile agricultural land of terai or the Valley, leaving behind most hinterlands of hills and terai in short supply of agricultural labor force. These areas show dwindled productivity and remain underdeveloped or undeveloped, while urban areas due to an increasing influx of new migrants are failing to cope up with the demand of infrastructure service and employment. The growing inability of urban centers to create new jobs is further accelerating out-migration of youths, especially abroad.

As a result, most urban centers still exhibit a rural ambience largely; large cities are increasingly reeling under the externalities of the haphazard urbanization. Environmental degradation, urban poverty, congestion, squatter settlements, unemployment and lagging provisions of infrastructure service have become increasingly visible phenomenon in these large cities. Hence, much of the economic gains acquired from urbanization have been eroded from its negative externalities. Despite non-agricultural sector being a major contributor to gross domestic product (GDP), urban centers in the country are yet to emerge as the engines of economic growth and contribute to reduction of urban or rural poverty alike.

Keeping in view of this context, the Government of Nepal has already enacted and implemented National Urban Policy in the year 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. The government prioritization of the development of Mid-Hill Highway (MHH) and the recent policy intention through its budget speech for the development of new towns along the MHH comprising of significant economic base must be seen from this perspective.

Hence, the Government of Nepal, Ministry of Urban Development, Department of Urban Development and Building Construction (DUDBC) initiated a mega project in the history of Urban Planning in Nepal. The project is termed as New Towns, developing along Pushpalal Mid-Hill Highways across the intersecting nodal point of North-South Corridor. The 10 selected new town project sites is a result of detailed study, screened from 54 pre-selected towns/market centers. The screening project is an outcome of extensive study over pre-defined criterion like availability of land, water supply, vicinity to nearest towns, hinterland zone of influence, and so. The New Town project have grafted several stages like pre-feasibility study, feasibility study, preparation of urban base map, appraisal of land pooling, establishment of New Town project site, site development works and so. Government have recently restricted on land subdivision to regulate and control land speculation.

Therefore as a long-term policy initiative, GON is providing technical and financial support to facilitate the Integrated Development Plan preparation, urban base map and profile of base information, building bye-laws and to promote their planned development and improvement in the quality of life of the people of new towns located along mid hill highway (MHH).

In this stage, this report is an outcome of the project continuation and referred as the Draft Report for the Integrated Development Plan preparation for proposed New Towns namely, **Bhimeswor-Khurkot, Sindhuli and Baireni Galchhi, Dhading.**

1.2 RATIONALE OF THE STUDY

The Project is focusing on forming urban centers, appropriate urban density to live, work and recreate with an aim of preserving the local environment. The attempt in a way will reduce the urban primacy and to certain extent will bring the regional urban balance as per NUP, 2007.

- Effective use of scarce resources
- The IDP will help the town to focus on the most important needs of local communities taking into account the resources available at local level.
- The town must find the most cost-effective ways of providing services and money will be spent on the causes of problems in local areas.
- It helps to speed up delivery
- The IDP will identify the least serviced and most impoverished areas so as to do investment in a rational way. Implementation is made easier because the relevant stakeholders have been part of the process.
- The IDP will provide deadlock-breaking mechanisms to ensure that projects and programmes are efficiently implemented. The IDP helps to develop realistic project proposals based on the availability of resources.
- It helps to attract additional funds

Also donor agencies and the private investors are feel safe to invest where GoN have clear development plans. It also strengthens democracy through the active participation of all the important stakeholders, decisions are made in a democratic and transparent manner which will help to integrate rural and urban areas and to extend services to the poor and will promote co-ordination between local and central government.

1.3 OBJECTIVES OF THE WORK

The main objective of the proposed assignment is to prepare Integrated Development Plan and Building Bye-Laws of all proposed ten new towns. However, the specific objectives are:

- To set out Long-term Vision and overall Goal, Objective and Strategies for new town development.
- To prepare Physical development plan, Land Use Plan, Social, Cultural, Economic, Financial, and Institutional Development Plan; Environmental and Risk Sensitive Land use Plan, Climate Change Perspective Plan, Multi-Sectoral Investment Plan (MSIP) etc on the basis of Sectoral Goal, Objectives, Output and Programs.
- To prepare building bye-laws to regulate development in the town integrating Land Use and road network plan and long-term vision of the town.

1.4 SCOPE OF WORKS

The scopes of work for the preparation of Integrated Development Plan & Building Bye-Laws are as follows:

1. The Vision of the town has been set. The Vision articulates the desires of Town and its citizens, and provides the guiding principles and priorities for the Plan's implementation.
2. Integrated Development plan of entire area including existing and future (5, 10 and 20 years) land use plan has been prepared. This is based on land use plan and followed by narrative description, analysis, facts and figures.
3. Additional study on local economy has been conducted and its activities based on the study completed by NTPCO that may also change in demographics and migration trend for 5, 10 and 20 years period.
4. Potential areas for urban development, based on land suitability and other factors, are identified. Present and future (5, 10, 20 years) housing needs/market, stock, conditions has been analysed and strategies for land acquisition, distribution of land and housing in future has been recommended.
5. Studies on present and future (5, 10 and 20 years) demand in infrastructures (such as transportation, communication, electricity, water supply and sewerage system) and their supply are coducted. Demand analysis are for different scenarios with facts and figures. The recommended complete street pattern, major and minor roads, highways, arterial roads, traffic circulation, truck yard, bus bays and bus parks has been worked out in details. Based on land use and other factors, road network plan prepared by NTPCO has been revised. The network plan of infrastructures, both existing and proposed has been shown in cadastral maps with other detailed drawings and unit rate cost estimates. Landfill site, treatment plant location has been identified and their detail drawings and cost estimate has been prepared. A management scheme of both water supplies, solid waste management system and landfill site has also been worked out.
6. Existing social infrastructure such as health/ education/ sports/ communication/ security centers and other community facilities have been carried out by addressing present deficiencies and future (5, 10 and 20 years) demands. The location and area of land required for all these infrastructures has been identified in cadastral maps.
7. Critical, sensitive and other natural resources including parks, green belts, and recreational areas are identified and assessed along with strategies for their protection, preservation and community ship against the adverse impact of future development and land use changes. The cost estimate on unit rate basis has been calculated for their preservation and protection. Locations and future requirements of such resources have been calculated.
8. Government, Guthi and Public Land identified by NTPCO are verified and the area required for future development and expansion of the town has been assessed including land required for government and public purposes. Appropriate plan and policy has been produced to protect such land from private/public encroachment and others.
9. Natural hazards, including how significant weather events have and will impact these assessments, which may cause a threat to the Vision of the Integrated Development Plan, has been identified and assessed , along with, strategies for avoidance/mitigation of such hazards in the course of future development and the cost estimate on unit rate basis has been calculated.
10. Proposed Land Use Plan for 5, 10 and 20 years have been prepared based on the existing cadastral maps (plans). The plans are based on: i) The policies enunciated for different urban

activities, ii) Population to accommodate minimum one hundred thousand; iii) Requirement of additional social and physical infrastructure, iv) Transportation and work centres, v) Parks, green belts, recreational areas, vi) Cultural and historic resources, vii) Others.

11. A detail study of following Land Use Zone has been provided and byelaws for the construction of building and other infrastructures has been recommended.The land use zones are i. Residential zone, ii. Institutional zone, iii. Industrial zone, IV Preserved zone, v. Airport zone, vi. Sport zone, vii. Urban expansion zone, viii. Stream/river banks zone, ix. Green zone, x. Apartment housing, xi. Petrol pump/ Electric line/Cinema theatres and xii. Others.
12. Building bye-laws that clearly spells minimum in the following areas regarding the construction of building has been prepared : (a) Minimum land area (b) maximum ground coverage (c) maximum floor area ratio (FAR) (d) maximum building height (e) maximum no. of floors (f) right of way of roads (g) set back in four sides of the building (h) minimum parking area (i) lift (j) minimum distance to be left in both sides of stream/river.
13. The building bye-laws of the towns has been prepared in accordance with "Bye-laws 2064, of Kathmandu valley" prepared by Kathmandu Valley Town Development Committee, model building bye-laws prepared by MoUD, NBC, Building Act and Apartment Act of Nepal.
14. An implementation strategy (including a suggested action program that generally describes the actions, costs, time frames, responsibilities, procedures and the Town's capacity to use them) necessary for implementing the Integrated Development Plan of the town has been recommended. Separate report by volume each Integrated Development Plan, Building bye-laws, infrastructures etc for each town, also investment and cost recovery Plan have been prepared.

2 Methodology

2.1 General Approach

The participatory approach has been adopted to identify the potential and problem in the existing scenario and accordingly the plans and projects has been identified to address the existing policies and city level plans.

Data gathering and analysis

Both primary and secondary data collection method have been used for the identification of the existing condition. Field survey, workshops, meetings and key informant surveys are used for the primary data collection. Similarly, all the relevant latest and updated published and unpublished data, information, maps and satellite images have been used for the thematic overlay of the existing scenario. Primary data especially related to land use pattern, extent of newly opened roads, their standards and quality, land values and environment problems are gathered through *physical mapping using digital base map*, *on the site observation, and interview.* Community-level problems and needs have been ascertained through *participatory rapid appraisal* by holding citizens gathering at the convenient location of the TDC.

Town level problems and development issues are identified through *opinion survey* of the prominent citizens, VDC and TDC officials, and officials of the government agencies and through the TDC/ City level meetings which include meetings of the sectoral (sub) committees. Data on physical, environmental, climate change, social, cultural, economic, financial, and institutional are gathered from sources such as office records or archives, TDC reports, VDC profile, published academic or professional reports, and data published by CBS. Analysis includes SWOT, trend, spatial and financial analysis using GIS and interpretation of aerial photographs, SPSS and other relevant tools.

Latest GIS (Geographic Information System) techniques and modern Statistical tools are used for the geographical, economical, socio-cultural, physical and other analysis.

Planning process

Planning process is based on a participatory approach. TDC acts as a local level Steering Committee, guiding the whole planning process. Steering Committee needs to be ensured for the active participation of local bodies, community offices, government agencies, and political parties/leaders, civil societies such as NGOs, CBOs, TLOs, intellectuals, prominent citizens, professional bodies, marginalized groups, children, elders, physically disabled, women, business groups and planning team during workshops and meetings. Steering Committee will be the key body to formulate policies and guidelines related to plan preparation. This will meet to advise on various aspects of plan preparation including identifying problems and issues of the town, formulating and reviewing of vision, goals, objectives, and programs of the town. Steering Committee is the key especially to set the vision of the town.

The Steering Committee has formed a coordination committee, comprising political representatives of Town Development Committee, so as to expedite the planning proceedings. Such co-ordination committee works as a bridge between steering committee and sectoral (sub)-committees.

Planning team is responsible to present all necessary analysis in all stages of planning process and to facilitate necessary meeting and workshops. Planning team comprises of technical personnel from DUDBC, and the TDC/VDC, besides experts from the consultant firm. Community level meetings comprised of community office, citizens, NGOs, CBOs, and TLOs are held in all communities to determine the community level problems and needs. Accordingly, community-level issues are identified. To ensure adequate participation in the planning process of deprived groups

such as *Dalit*, *Janjati* and special groups such as women, children, (IDPs) and squatters also need to be duly included in the planning process.

Steering Committee has also formed a Sectoral Sub-Committee to facilitate the focus group discussion and enable the specialized input of the experts so as to prepare sector-wise plans and programs. The Sectoral Sub-Committee with the support of planning team formulates TDC sectoral plans and programs, using Logical Framework Approach (LFA). The planning team will also make elaborate consultation with the concerned Sub-Committee to formulate the development principles and guidelines for the preparation of the integrated development plan.

2.2 STUDY METHOD

The study method of the project has been described in the following phases. The method has been described in flow chart.

A. INTEGRATED DEVELOPMENT PLAN (LONG TERM PHYSICAL DEVELOPMENT PLAN)

2.2.1 Preliminary Preparedness

Preliminary preparedness includes one day workshop for orientation, election and nomination of several different committees in each town.

A. WORKSHOP (1st Plenary)

The workshop has conducted an orientation program for citizens on the Integrated Development Plan Preparation.It mainly focuses on process, output of IDP and role of the various committees to be involved in IDP). The workshop is being participated by the Representatives of local political parties, key stakeholders including civil society, private sector, Dalit, Janajati, women, poor communities /slum and squatters areas, children, elders, physically disabled, business groups, TLO, district line agencies, education, health, tourism, environment sectors, user groups, journalist and other interested citizens who can contribute in city development activities, etc. It was conducted and facilitated by the planning team.

B. LITERATURE REVIEW

Plan Preparation starts with the collection of different literatures related to development plans for developing methodology for the planning process. The past experiences on plan preparation had been reviewed to revise methodology. Besides, discussions with DUDBC/NTPCO will also be held. In addition to the literature relevant to the past periodic planning experiences, physical development plan, local area action plan, regional development plan; IAP, other documents already available in DUDBC, TDC, VDC and other line agencies of similar socio-economical and geographical regions are studied in detail throughout the study period.

2.2.2 Data Collection and Interpretation

Both primary and secondary data collection method has been used for the identification of the existing condition of the town. Reconnaissance survey, mapping, interviews, meetings, and several discussions with locals and line agencies etc. have been conducted for primary data collection. The potentials, problems and development issues at town as well as community level have been thoroughly identified from the several workshops and meetings that are organized on local level. Secondary data are collected from different line agencies and institutions. Checklist and questionnaire are used for data collection. Different specific communities, which need to have separate consultation, are identified in this phase.

Secondary Data Collection

Data & information related to the socio-economic, revenue and expenditure, development budgets are extracted from the secondary sources like office records or archives, and published reports including CBS data. Similarly informations regarding physical, economic and social infrastructures of the town level data are collected from different line agencies and partner organizations. Similaryt the respective plans, programs, fieldlevel work and their annual budget allocation in the TDC, VDC of each line agencies and organizations are also collected from the publications / bulletins. The information about number of organizations, NGO's and other agencies working in the project area are also collected. Base map is used to prepare the existing land use of the town. Land transaction and land value information are collected from different related institutions.

Primary Data Collection

Data mainly related to physical infrastructure and environmental sensitive/ disaster prone areas are gathered from field observation. Existing land use is verified through field observation. Key informant Survey with the concerned experts in the National level area done from the beginning of the data collection till the end Primary data especially related to land use pattern/ value, extent and status of physical and social infrastructures, their standards and quality, environment conditions are gathered through physical mapping using, field observation/ survey and interview. Community-level problems and needs are ascertained through Participatory Rapid Appraisal (PRA) by holding citizens gathering/ community level meeting at each of the community of the Municipality/ VDC.

2.2.3 Data Analysis - Potentials identification and prioritization

The integrated development plan preparation is designed to be a hybrid process constituting both participatory as well as data collection method. Participatory approach constitutes consultation from town level to community level. Potentials in the town and community level are identified through different level of consultation. These consultations are also used for collecting data and information in local level.

Focus Group Discussions with different partner organizations working in the TDC and VDC will be organized for the identification of potentials of the project area. Community level meetings are organized in each community .Depending upon the nature and size of the community, theremay be a single meeting for number of communities or number of meetings in a single community .these meetings are organized based on PRA method. Community level informations and potentials are spatially located in the map. Potentials are identified in a sector wise basis and a contact group in each community is formed in order to update the information after the meeting.

Beside, community consultation for the special groups like indigenous, disadvantaged groups, squatters, physically disabled, women, children etc. are also organized to identify communal level issues.

1. Two days' workshop (2nd) on defining vision, role of town, development strategies and indicators

Two days workshop has been organized to identify the role of the town in the regional context and the vision of the town. A brief presentation about the existing condition of the town is given by the planning team. Similarly, the local leaders as well as intellectuals also present their respective vision for the town. All the participants, during the first workshop, are invited and the program is facilitated by the planning team. The vision of the town is finalized through organizing the group work consultations among the participants. Potential strategic projects having town level potentials and development issues are identified on the second day.

2.2.4 Plan, Program and Project Formulation

Several meetings with sectoral committee members has been organized in different phases for the plan preparation. One day workshop has been organized for the finalization of the plans and programs. Each committee has worked out for the plan preparation, which was facilitated by the co-coordinator and member secretary of each committee. The plan of each sector was presented by the coordinator and get comments from each committee. Logical Framework Approach has been used for plan formulation. Different subjective plans has been prepared with separate plan, policies, projects and programs so to form a master plan and MSIP for each proposed project. The plan and programs are located in the map with the help of GIS.

A seminar was organized to finalize the plan and programs. Comments and suggestions has been received and incorporated in the preparation of draft final report.

Integrated Plan with Land use plan, phase wise urban development plan, physical infrastructure plan, social infrastructure plan, cultural and tourism development plan, economic infrastructure plan, environment management plan, disaster management plan, climate change adaptation plan, financial development plan, institutional development plan are the standing outputs of this phase.

2.2.5 Project screening and TDC budget

Through the workshop, working sub-committee & the planning team will conduct the discussion on the town level programs, projects, TDC development budget, screening of identified projects. Similarly, projects are prioritized for Detail Feasibility Study of Prioritized Major Sub-Projects which may be limited to three in each town.

2.2.6 Formulation of Building Byelaws

As per the Zoning, Land-use Plan and Urban Development Plan for 5/ 10/ 20 years, Building Byelaws has been prepared for the delineated town area. The building byelaws includes the built control area viz. Forest, River, High Fertility Area, Environment Sensitive Area, Disaster Prone Area; buildable area, land-use for different uses viz. Residential, Commercial, Institutional, Industrial, Recreation, Transportation, Open Spaces, Special Conservation Area etc.; Future Urban Extension Area. Simultaneously, the building byelaws spell out the height restriction, Floor Area Ratio, Ground Coverage for the different building use.

2.2.7 Preparation of Implementation Strategy

For the master plan, programs and projects within the plan and the implementation Strategy will be recommended including a suggested action program that describes the actions, costs, time frames, responsibilities, procedures and the Town's capacity to use them. Moreover, the strategy will spell out the role of private, public and people.

B. DETAIL FEASIBILITY STUDY OF PRIORITIZED MAJOR SUB-PROJECTS

Detail feasibility study of 6 (3 in each NT) different sectoral sub-projects has been prepared. The ToR with detailed scope and deliverables of such sub projects probably including the followings are submitted to NTPCO for immediate approval after finalization of the list or before conducting the study. Necessary drawings, maps, economic and financial analysis, preliminary costing and other document have been submitted in different annexes.

A site visit have been done before proceeding the detail feasibility study consisting of the Team Leader, Engineers, architect with a view of enabling team members to observe and document firsthand information regarding the existing condition of Proposed Site and the area around as well as the local community of the proposed site. This has further helped the team to assess the data

obtained and in planning the details of the tasks to be undertaken. The observations are supplemented by photographs or sketches to show the functional and spatial planning of Town area, existing transportation network, the built environment (man-made and natural) around the site, the existing situation within the specified zone, geology of the site, environmental condition, different facilities area including state of the site and other infrastructure facilities.

3 Review of Policies & Planning Practices

3.1 Modern Urban Planning Practices – International Context

Modern town planning movement evolves bdecause of nineteenth century industrial revolution in Britain. It drastically changed the concept of city and city emerged as engine of economic growth where people flooded inside in search of economic opportunity.

The innovation of steam engine and introduction of mode of transportation changed entire paradigm of urban/ city. The people of medieval town had agro-based occupation, which later converted into processing based or what we call industrial. The innovation of automobile led expansion of urban area because of which, rapid urbanization occurred.

The invention of electric light, electricity and telecommunication was a major breakthrough in modern city planning. Consequently, in 1985 first electric railway and in 1897, underground railway started their movement. In 1885, first automobile yet another component came into existence, evolving the concept of transport planning in urban sector. Various experiments then after has been carried in planning sector so far. Today we stand in modern era, often cited as postmodern era or the hi-tech era, where urban sector is taken as engine of economic growth and tangle of opportunities.

Cities of Industrial Revolution

The industrial revolution started in British era later spread all Europe and even to America. This caused massive population growth and urbanization. The Industrial Revolution witnessed a huge growth in the size of British cities. In 1695, the population of Britain was estimated to be 5.5 million, by 1801, the year of the first census, it was 9.3 million and by 1841, 15.9 million. This represents a 60% growth rate in just 40 years. City of Manchester, as an example, experienced a six-time increase in its population between 1771 and 1831. Similarly, Bradford grew by 50% every ten years between 1811 and 1851 and by 1851 only 50% of the population of Bradford was actually born there. The increase in population was mainly due to augmented opportunities in urban area created by none other than industrial revolution.

The industrial cities consisted of dense dwelling units, often in unhygienic state. The increasing demand of housing in industrial sites generated congested township with shortage of minimum standard of living. Lack of proper pavements, drainage, sewerage, and water supply etc, a chaotic environment remained there. The depleting public health condition and poor living standard posed serious threat in public life, whereas in other side, the merchants and builder were more concerned on making money. The houses build were back-to-back and concern to open and recreational space were nearly zero.

The congested and offensive urban environment leads people in search for the ideal city in architectural terms and the social vision of the ideal communities. This led the creation of community buildings by Robert Owens, a philanthropist who planned a city which accommodates population of 800 to 1200. Later, a legislation on public health and housing enacted in Britain in 1840s, which set legal background and guided living standard for healthy living. The effect of this was seen in Ebenezir Howard's Garden City movement. He planned to create a well-integrated, socially balanced community (6000 acres of land 32000 persons) with town and country features. These townships were successful to create distinct impact on creation of new towns in Britain mostly after the Second World War. Ebenezir Howard proposed his garden city concept in his book "A peaceful path to social reform" where he elaborated the composition of garden city. Two garden cities built in United Kingdom using Howard's ideas were Letchworth Garden City and Welwyn

Garden City. The idea of the garden city was influential in the United States. Residence Park in New Rochelle, New York; Woodbourne in Boston; Newport News, Virginia's Hilton Village; Pittsburgh's Chatham Village; Garden City, New York; Sunnyside, Queens; Jackson Heights, Queens; Forest Hills Gardens, also in the borough of Queens, New York; Radburn, New Jersey; Greenbelt, Maryland; Buckingham in Arlington County, Virginia; the Lake Vista neighborhood in New Orleans etc. were some of the notable examples.

Cities after Industrial Revolution

Industrialization and population growth strongly encouraged migration and urbanization. Within industrial societies, migrants flocked from the countryside to urban centers in search of work. Industrial Britain led the world in urbanization. In 1800, about $1/5^{th}$ of the British population lived in towns and cities of 10,000 or more inhabitants. During the following century, a largely rural society became predominantly urban, with $3/4^{th}$ of the population working and living in cities. This pattern repeated itself in continental Europe, the US, Japan, and the rest of the world. The increasing size of cities reflected this internal migration. By the end of 1850, more than half of the population were urban based and there were numerous towns. The effect of industrial revolution was felt all over the world with some degree of inequality.

The positive aspect of industrial revolution was that, it created urban explosion and lead people live in urban areas. Although, urban at that time was merely filthy, later on the society created a livable township as a result of their intense need of healthy living. The garden city of tomorrow by Ebenzer Howard was an outcome of the same. People were aggressively searching livable environment, as a result, the core area started decaying and people started moving periphery. By the end of 1950, cities destroyed by World War II were rigorously reconstructed and regenerated. The advancement of automobiles, innovation of airplanes, transformation of rail ways and achievements in hi-tech knowledge, cities were more attractive place to live. The modern town planning process was gradually progressive after the garden city concept.

The academic course was also started in Urban Planning and the first academic program began in England, in the University of Liverpool, in 1909, and the first North American program was established in Harvard University, in 1924. Managed township was the primary concern until the beginning of World War II. The necessity of open space and recreational space was felt at high level. The recognition of recreation and areas that were set aside for recreational purposes became a standard part of modern urban planning in the later half of the nineteenth century. Architects Calvert Vaux and Frederick Law Olmsted designed New York's Central Park, which was conceived in the 1850s. This quickly became a model for other cities to follow, like providing lungs for a whole city to breathe, an area of wonderful greenery and open space in the midst of an unending urban sprawl.

After World War ll, lots of European countries began re-constructing new towns as government enterprises; those cities were Germany, The Netherlands, The Soviet Union, and especially France. The government had several concerns such high density within urban areas, so they constructed towns with planned developments in spill out areas from those dense cities. In Sweden, the government successfully constructed new towns with mixed-income occupancy. In Asia, after the World War ll the Chinese government constructed Pudong New Area which is a planned central commercial business district along with houses and factories.

Thus, it can be well understood that industrial revolution was a milestone of urban planning and development. The issue of planned urbanization and urban development is now in central foci. The migration and over population in city/urban area is no more taken as a problem. Rather, the core intention is handling the expanding population and managing the town as the people's objective is

progressive who flood inside the town in search of opportunities Thus, urban planning is a tool that manages cities undergoing change in population growth creating opportunities so as to make the the city safe in all context.

Contemporary Cities

By late 1960s and early 1970s, it was felt that modernism's cleanliness and lack of human scale sapped vitality from the community, blaming them for high crime rates and social problems. Modernist planning fell into decline in the 1970s when the construction of cheap, uniform tower blocks ended in most countries, such as Britain and France. Since then, many have been demolished and replaced by other housing types. Rather than attempting to eliminate all disorder, planning now concentrates on individualism and diversity in society and the economy and this is what we call the post-modernist era.

The contemporary planning practices incline to create inclusive and just cities. Unlike huge economic segregation of early modern cities, it is much more oriented in building livable environment to its dwellers. The basic issue of contemporary cities are enlisted here as,

- Sustainability
- Inclusivity and Justice
- Economic Opportunities
- Environment Friendly
- Good Urban Governance
- Recreational and Entertainment facilities
- Availability of Urban Infrastructures

And so.

Today, the concept of Smart City, IT city, Metro City, Green City and so are in practice. Recently, Government of India declared to create 100 metro cities, similar in Nepal, recent budget speech (072/073) of Finance Minister affirmed to create 3 smart and 3 green cities.

The improvement of internet and communication have relieved from excess time consumption. Modern transportation services and traffic system have increased mobility. Besides this, culture and heritage conservation is also central issue. With advance technologies and modern amenities, the concept of postmodern towns gently back to incorporate past heritage and culture.

3.2 Modern Urban Planning Practices – National Context

Whatsoever, Nepal has experienced some settlement planning attempts since 1944; the first city Rajbiraj was planned to resettle people from Hanuman Nagar. In 1956; first National Periodic Plan (Economic Development Plan) was originated. At present, 13th Plan is in implementation. During 1960s, many people from hill and mountain (especially displaced from natural disaster, national parks etc.) were resettled in Terai plains. In 1969, Preparation of Physical Development Plan of Kathmandu Valley was a turning point in urban planning sector of Nepal. After this, so many development plans of Kathmandu Valley were prepared but never implemented due lack of institutional/ legal mechanism and financial resources. In 70s, Regional Development concept was initiated in Nepal; master plan of four regional headquarters (Dhankuta, Pokhara, Surkhet and Dipayal) was prepared and implemented in some extent. In the late 80s, structure plan of all designated urban centres was prepared. Similarly, IAP was popular in 1990s before the self-governance act enacted by government of Nepal. In 2000, long-term concept of Kathmandu valley (vision 2020) was prepared. Currently, Periodic planning of urban centres (municipalities) is in practice. Despite these attempts were made, it provided neither approved land use plan nor

concrete physical plan implementation mechanism regarding the major urban centers in the country. Municipal plans prepared in the past employing integrated action planning technique or structure planning is found to focus mainly on physical aspects. Besides, IAP's overwhelming concentration on community level problems has also led to neglect of municipal level vision and desires. As a result, though several municipalities show some improvement in physical aspects, progress is still found lagging in several critical urban areas such as education and health. Issues such as social exclusion or deprivation, urban poverty, environmental conservation, economic development, financial mobilization and municipal capacity building have remained largely unattended in the previous planning efforts.

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 of reducing migration to capital and other larger cities, encouragement of planned development of potential hill cities and building infrastructure is necessary that can facilitate about one hundred thousand population in hilly cities.So, the Government of Nepal has initiated to develop ten new towns in the junctions of Mid-hill Highway and North-South road Corridors. Hence, the government prioritization in the development of Mid-Hill Highway (MHH) and the recent policy intention through its budget speech for the development of these new towns (NTs) comprises significant economic base of the nation development.

Urban Planning Attempts in Kathmandu Valley

The first attempt of urban planning comes after the Kathmandu Valley was complemented with a Physical Development Plan in 1969. The plan was designed by foreign team led by Karl Pursha but was not materialized due to lack of political commitment. In the succeeding year, around 1970's land use plan for all the five regional centers were prepared and detailed physical development plan of government's institutional area were made and implemented. Similarly, around same time, few towns were established in Tarai by clearing some forest lands.

After enactment of Kathmandu Valley Town Development Committee, it started planned development around Kathmandu valley. The work of KVDA was confined to Guided Land Development (Urban Development Implementation Act 1977 framed legal basis for road expansion through GLD), Land Pooling and Site and Services. As a product of its land development activities, more than 350 km of roads have been widened, 12 land pooling projects are already completed and 11 land pooling projects are in running phase. , Two no. of site and services schemes have been accomplished. Besides this, KVDA has been working in preparing and enforcing building regulations and byelaws. Recently, KVTDC has been transformed into Kathmandu Valley Development Authority under Ministry of Urban Development.

In 1988, Town Development Act came into force. It provides the legal basis for implementing town development plans. The Act has empowered both the central and local government agencies to carry out the land pooling projects. On the basis of GLD implemented in 1976, recently Kathmandu Valley Road widening program has undergone.

After revolution of 1990, the foreign expert Halcrow Fox under technical support form UN, drafted Kathmandu Valley Urban Development Plans and Programs. The plan was expected to control urban growth through planned infrastructure. It came up with containment and densification policies and performed comprehensive studies on infrastructural needs and its direction.

Planning Attempts outside Kathmandu Valley

First land pooling project implemented was the Chiple Dhunga land pooling project in Pokhara. Pokhara was the potential site for the urban development as its development begun centuries back before unification of Nepal. After, being linked with Kathmandu and India through Prithvi Highway (1971) and Siddhartha Highway (1969), the urbanization pace hiked. By census 1991, Pokhara was the 4th largest city, which is now second largest whose growth rate is nearly 7.4%.

Current Planning Trends

Nepal adopted various planning tools to institute balanced urban growth and planned towns. Basically, Nepal adopted problem oriented planning and came up with projects responding such problems. In this section, we have tried to mention various planning trends adopted so far in urban sector.

- Master Plan
- Strategic Planning
- Integrated Action Plan
- Physical Development Plan
- Periodic Plan
- Land Use Plan and Building Bye Laws

Beside this, Periodic District Development Plan (PDDP) and District Transport Master Plan (DTMP) is practiced in district level, whereas, Municipal Transport Master Plan is also being practiced in municipal level. The aim of these plans is to regulate balanced urban and regional growth. The planning effort in Nepal is shown chronologically in the table below,

Chronology of planning efforts in Nepal

Timeline	**Urban Planning Efforts in Nepal**
1944	Rajbiraj as first planned administrative town
1956	National level periodic planning started
1962	Kathmandu Beautification Program : Visual Beautification of Kathmandu valley on the occasion of Royal Visit of Queen Elizabeth under UN technical Assistance
1963	Town Development Committee Act, 1963
1965	Third National Plan (1965-70) divided country into 3 watershed, namely, Koshi, Gandaki and Karnali River
1969	Physical Development Plan of Kathmandu Valley prepared under technical assistance from UNDP, led by Karl Pursha
1973	1969 PDP of Kathmandu Valley revised by national professionals and land use plan for Kathmandu valley prepared
	Town Development Implementation Act
1975	Construction of Ring Road in Kathmandu Valley without prior study and planning
1974-1984	Bhaktapur Development Project (Successfully Implemented) with German assistance
	Conservation and economic generation was the main goal of BDP
1976	Comprehensive General Plan for Kathmandu 1969/73 revised again, provided minimum zoning proposal
1987-88	Structural plan for major urban centers including greater Kathmandu (20 years

	plan) was prepared with the support of GTZ/MSUD)
1990	Integrated Action Plan (IAP) preparation initiated
1991	Kathmandu Valley Urban Development plans and programs – Hal Crow Fox/ DHUD/ADB
1993	The study of Kathmandu Valley Urban Road Development –JICA
1999	Kathmandu Valley Mapping Program (KVMP)
2002	Long Term vision for Kathmandu Valley development, widely known as Vision 2020, Approved by Government of Nepal
2005 Till date	Periodic Planning of Municipalities in Practice

Integrated Development Plan (IDP)

Emergence of IDP

The IDP is a medium-term town development plan linked to a five-year political cycle, although aspects of the plan, including the vision and the spatial development framework (SDF), have a longer-term horizon, normally 20-25 years. It was morphologically derived from South African post-apartheid period as a product of continued planning approach. The racially divided South African municipal towns had differential service delivery for the rich and the poor and clear demarcation prevailing between two racial groups. To end this unequal and biased situation, the post-apartheid period planning came up with comprehensive participatory planning approach best known as Integrated Development Planning. IDP is undertaken asthe best planning approach that involves the entire local institutions and its citizens in finding the best solutions to achieve long-term developmentof the area.

An Integrated Development Plan is a plan for an area that gives an overall framework for the development. It aims to co-ordinate the work of local and other spheres of government in a coherent plan to improve the quality of life for all the people living in an area. It should take into account the existing conditions and problems and resources available for development. The plan should look at economic and social aspects for the overall development of the area. It must set a framework for the development viz; how land should be used, what infrastructure and services are needed and how the environment should be protected.

Once the IDP is drawn up, all town planning and projects should happen in terms of the IDP. The annual council budget should be based on the IDP. Other government agencies working in the area should take the IDP into account when making their own plans.

Rationale of New Town (NT) project Initiation

As a result of high rural – urban and Hill- Terai migration, the regional population balance is agitated. The difficult terrain and poor serviced rural towns is less attractive to the people to live in. If the migration continues, hill population shall drain out and overwhelming population in Terai might create congestion and urban chaos. Thus, to maintain inter and intra-regional balance, (development region and ecological region), Department of Urban Development and Building Construction under Ministry of Urban Development appraised a multi sectoral, high aimed project of creating 10 new towns along the stretch of Pushpalal Mid-hill Highway across the nodal junction of N-S corridor. Two towns are being developed at every development region.

The selection of sites was based on criteria such as availability of drinking water sources, land and possibility of future socio-economic development. The locations were chosen after three steps of filtration i.e., considering the current population, economic importance, and the road alignments

approved by the government and future expansion. In the first phase, 58 locations were selected, these were shortlisted into 20 numberes, and finally selected into 10 locations which is recognized by the Ministry of Physical Planning and Works, the Ministry of Finance and the NPC.

The selected NT project will create an overall urban environment with impressive economic opportunities. The strategic loci of project towns are its strength and the urban rural linkage of goods and services shall be taken as opportunities.

Since the site will develop as an urban center which attract goods and products from nearby hinterland, the selected NT project is expected to halt Hill-Terai migration and retain population of hills. The population threshold of the town is nearly 100 thousand.

The selected NT project is an exemplary attempt of creating designed and planned town to cater need of expected future population. It shall influence development of nodal towns along the mid-hill highway.

The selected NT project is an urban experiment, probably a new attempt in planning horizon of Nepal. The success of this NT project is expected to bring breakthrough in entire planning fraternity.

3.3 Review of Acts and Policies

1. Local Self Governance Act

The Interim Constitution of 2007 is the first Constitution of Nepal to include a separate section on local self-government (Part 17). Article 139 stipulates the election of local government and authorizing the power so as to practice devolution of power and devolution of authority. In its article 140, it talks about sharing of accountabilities and revenues between the Government of Nepal and local self-governance bodies. It is therefore a milestone in institutionalizing local governance in Nepal. In this pre-scene, the restoration of democracy in 1990 came up with a policy of strengthening decentralization. Eight years later in 1999 (2055 B.S), Local Governance Act was formulated which empowers local bodies. Basically, there are three hierarchies of local government, i.e, District Development Committee, municipality and Village Development Committee.

The act has given local level authority to plan and implement local level planning and mobilize its resources. It is authorized to prepare periodic plan and other development plans like water supply and sanitation plan, agriculture development plan, transportation plan and so. The local bodies are authorized to collect and levy taxes, penalize and set-up policies for the implementation of local level plans and programs.

LSGA in the context of proposed new towns, Khurkot and Baireni Galchi, implicate in VDC level. The criteria for declaration of Municipality, Sub-Metropolitan city and Metropolitan city correspond these town attain municipal character. The projected population of these towns is below one lakh. Baireni, combined with Kalleri has total population more than 10,000 which is enough for municipal declaration although there are inadequate urban services. Both the town (VDC's) can fully utilize the authority provided by LSGA to prepare necessary plans and programs in consonance with Integrated Development Projects and formulate strategies and policies to implement IDP.

Limitations of LSGA:

The LSGA talks about the formation of local level bodies, area of authority, working area, power but the key issue is the dependence of local bodies to central government for resources and financial sources. The act talks about the formulation of municipalities but there is no clear-cut criterion of urban services and infrastructures besides revenue generation and population. The silent mention about the availability of urban services is inadequate. In addition, the local government is dependent on central government for approval of the project and its budgetary support. It is also

silent regarding the declaration of municipality of those VDC's whose population is more than 10,000/20,000 and, for this, only central government is empowered for the declaration. The clear cut regulation is necessary to regulate LSGA properly and criterion should be set for the self-declaration i.e. to declare itself as municipality/Sub-Metropolitan and Metropolitan city.

2. Town Development Act:

Town Development Act creates a legal basis for preparing and implementing urban development projects in any urban area. The act was introduced in 1988 in order to corporate and manages increasing population and urbanization. It is established for reconstruction, expansion, development and development of new towns with basic infrastructures like water supply, sanitation, telephone, academic institutions, hospitals, administrative institutions etc.

As per the act, Government of Nepal can form Town Development Committee in any area, city, rural area, town area or regional development center as per necessity for the implementation of Town plans. The committee comprises of Chairperson, designated by the Government of Nepal, C.D.O. or representative 5 members (max.) from the district level offices of GoN, members from district level committee of each nationally recognized political parties, 5 members (max.) nominated by GoN among socially recognized local social workers, chief of the local body and a member-secretary as an office staff designated by GoN.

The TDC has provision for the formulation of sub-committees if smooth operation and facilitation of act and activities of the committee is needed. The project constituting subcommittee shall include local bodies, community offices, government agencies and political parties/ leaders, civil societies such as NGOs, CBOs, TLOs, intellectuals, prominent citizens, professional bodies and planning team. In the context of IDP, the TDC act at the point of departure shall be a guiding document. The sub-steering committee has been formed soas to guide the overall planning process. The plan preparation process may require formation of core advisory committee, comprising members of TDC, but small in size to expedite the planning proceedings. The core advisory committee will include its members among the members of TDC mentioned above. Similarly, the core advisory committee will be formed under section 7 and sub section 7.1 of TDA 2045. The core advisory committee is expected to work in lieu of TDC and work as a bridge between the TDC and sectorial sub- committees. Different sectorial sub-committees shall be formed to comply and speed the work.

Sub-Steering committee has been formulated in both the towns, Khurkot and Baireni Galchi, and delegate power to formulate sub-committees. The IDP planning team shall be working with formulated committees. So far, the TDC is concerned with the urban issues rather than VDC. The role of TDC in the present context of preparing IDP is realized to be vital but at the same time, it is unclear about the roles and responsibilities of TDC after declaration of Municipality. Baireni, Galchi has already crossed the threshold population for municipal declaration. The jurisdiction of TDC and municipality will be entangled if the municipality covers the VDC's beyond the TDC boundary. A clear cut framework is felt necessary to implement the IDP in this situation. LSGA and TDC may not complement each other and a situation may rise regarding the ownership and implementation of plan once the towns are declared as municipalities.

Limitations of TDA

TDA mainly focuses on the establishment of TDC and the roles and responsibilities of the committee personals. Besides, it talks about three planning tools; land pooling, guided land development and site & services. The latter two are no more in practice and was socially difficult to imply. Besides, the act doesn't talk about urban planning issues like providing services, infrastructures, social issues

like inclusion & equity, environmental aspects and so on. Thus, this act itself is not sufficient to address urban issues.

3. Land Acquisition Act (1977)

Land Acquisition Act introduced in 1977 is an important act for the effective and efficient urban development project implementation. This Act empowers the government, by notifying publicly in the specified places, to acquire private land for the well-being of the general public. This legally provides the right to use police power if anyone goes against the government's stand for acquiring land to be used for large public good. The acquisition of land provisioned under emergency situation empowers government to acquire land with a notice when required. This act has described the process of acquisition in detail however the general practice is that, CDO chairs the committee of acquiring land and providing compensations.

This act is sought to be vital during implementation of IPD in proposed new towns. The project proposed for the new towns shall have various private and public services including land pooling projects. For the implementation of IDP, Land Acquisition Act is guiding act to acquire needed chunk of the land for intended purpose. But at the time, it shall be taken in mind that the right of public to be in their land shall be protected and resettlement and readjustment has to be considered at the core. The planning tool such as land banking and land pooling can be easily implemented using this act, thus, it is expected to create more organized and planned new towns with abundance of government owned land to control price speculation.

Limitations:

The amount of compensation that need to be paid are less and the guidelines about paying compensation do not consider the value of improvement and displacement which create disputes and delays. It fails to require that land should be acquired in conformance with a clear site development plan. It does not contain any criteria that compensation paid should be within a certain time. Inadequacy of cadastral surveys and records are hindering the acquisition process.

4. Land Survey and Measurement Act

The Land Survey and Measurement Act came in force from 1963 A. D (2019 B.S) when the cadastral survey of whole Nepal was carried out. The act gives a legal basis for conduction of land survey, its measurement, and its classification according to different categories *(Ailani, Parti, Bhir, Pahara etc)*. The land taxes have been assigned according to different land categories. It describes land position and defines public land, government land, land owner and tenant and sets provision for surveying and measuring all or any section of land throughout the country. The Ministry of Land Reform and Management is made responsible for land use planning.

Under the section 11C the Government of Nepal may make, or cause to be made, survey and measurement for the plotting or integrated development of any private, governmental or public lands. Thus, survey and measurement of the required land plots for the proposed new towns shall be the identified projects of IDP.

5. Environment Protection Act (2055 B.S)

This Act is proponent to conduct Environmental Assessment of the prescribed plans and programs before implementation and prohibits implementation of the proposal without approval. The Act empowers the government to give approval to the environmental assessment report without which project cannot be implemented. This act is concerned about the protection of the environment which restricts pollutions and authorizes government to declare Environmental Protection Area, where industrial development is restricted. It also has legal power to penalize the polluter or to raise compensation from the pollution caused.

This act is crucial to conduct EIA/ IEE for the dumping and landfill sites which shall be proposed during IDP formulation. Both the project sites is located at the bank of the river, thus the protection of river is crucial at this point and this act is supposed to guide planning team to plan a project environment friendly.

6. Solid Waste Management Act 2011

The Solid Waste Management Act -2011 regulates collection, recycling and disposal of solid waste generated in municipalities. This act has provision of construction of public conveniences, bath house, mobile public toilets and slaughter houses at appropriate places. This act empowers private sector involvement to collect and transport solid waste to the dumping site. It has penal provision, fine from 50 to 5,000 rupees for offense such as dumping solid waste in public places, throwing pieces of paper or cigarette butts, urination and excretion on public places, soiling roads or slaughtering animals.

In the context of proposed new towns, this act sets a legal basis for the management of solid waste NT's which are recently under new municipality. But, the act is not clearly defined for the towns which are not municipality but the issue of the SWM is crucial. The proposed towns of Baireni Galchi and Khurkot shall be planned accordingly with compliance to this act.

7. Guthi Corporation Act-1976

The act classifies Guthi into three categories: Private Guthi, State guthi and Exempted guthi. It legally provides continuity to the trusteeship corporation established under the Trusteeship Corporation of Guthi Sansthan. It supports to perform religious rites and festivals, preserves cultural heritage and monuments and other religious buildings, preserves ancient ornaments and articles of religious of and cultural importance. The act prohibits registration of land belonging to temples or spaces for public festivals and worships, thus it is necessary to identify the land belonging to Guthi to prevent planning and allocation of services in those land belonging under Guthi.

8. Ancient Monument Preservation Act (1956)

It empowers the government to declare any area where any ancient monument is located as protected monument Zone. It prohibits any development work without a prior approval from the department of Archaeology. This Acts states that findings of any archaeological excavation belong to the government property. The act will provide a clear legal framework during preparing IDP in the proposed towns if any ancient monumental or archeological sites are located within the boundary of project area.

9. Motor Vehicle and Transport management Act (1993)

For a city or an urban area, managing and regulating the traffic and providing convenient and effective transportation facilities to the public is important aspect. The urbanizing towns with shortage of land may face severe problem of congestion and traffic pollution thus it act has legal provision to prohibit driving of certain vehicles & in certain places for public security and welfare. The act has a provision for a Transport Management Committee headed by Chief District Officer and helps to regulate registration of vehicles, manage routes, fix the bus fares and perform other necessary works provisioned in the act.

In proposed NTs, the act supposed to guide us to locate the public vehicle route and inter connectivity of transport services (regional and sub-regional). When the town attain the projected population of one lakh, it is certain that the vehicular number and public vehicular route will rise. The regulation of vehicle and vehicular permit will be based on this act.

10. Public Road Act (1974)

The act prescribes rules for planned road construction; regulating road width and its boundaries within which no houses can be built. That means, it helps to determine the Right of Ways of the road to be constructed, proposed or existing road. The act has a legal provision to assign the road boundary and carry out road construction work with the approval from department of roads. The public road act has categorized road into National Highway, Arterial Road, District Road and Urban Road.

Basically in preparation of IDP, assigning the RoW and DPR work of road shall be guided by this act. The compensation of the land falling under the proposed road alignment during the preparation of IDP shall be made accordingly, as per the provision made by this act.

11. National Road Standard (2070)

The road standard was recently prepared by Department of Roads to guide the preparation of road with designated standard of designated use. This helps to design a road based on the vehicular occupancy, frequency, vehicular speed, type etc. This will help to prepare a road DPR during preparation of IDP of the proposed towns. It gives the design criteria for different types of road. Basically it will guide an urban road category and the design component has to be used accordingly.

12. Nepal Urban Road Standard prepared by DUDBC (2071)

It includes the conceptual diagram of urban structure and urban road network including hierarchy, which will serve as a guideline for planning and design of urban roads as well as land development projects, the systematic classification and standardization of urban road and its elements applicable to Nepal. The standard provided shall be used to plan and design the road network in the proposed new towns but at the mean time it shall be in compliance with National Road standard.

13. Nepal Urban Drain Standard prepared by DUDBC

It includes the systematic classification, standardization and planning of urban drainage and its elements applicable to Nepal, Serving as guide and reference in the planning for waste water collection, treatment and disposal system including designing and estimating, providing useful guide and reference for preparing drainage and sewerage network plan.

14. Town Development Fund Act 2053

The town development act was formulated in 2053 B.S to meet the following objectives,

- To provide necessary economic and technical support to the body related with the development of town.
- To carry out or cause to carry out necessary functions to make the town neat and clean.
- To operate or cause to operate social service and income oriented project of various types.
- To carry out or cause to carry out functional research in order to identify the way of solution for the problems seen in respect of possible reforms to be made for the development of town.

Thus to meet the following objectives, projects identified by IDP can be implemented through the financial and technical support from TDF.

15. Industrial Enterprise Act (1992)

It regulates the establishment, expansion and modernization of industries through licensing and registration systems. It has a provision of economic incentives to enterprises installing equipment to mitigate industrial pollution. It does not specify pollution control measures in industries as mandatory provision. This act is supposed to help to identify the industrial area in proposed NT's. It

also established a base for the industrial area determination and type of industries to be established.

16. Labor Act (1992)

The act came into force after the restoration of democracy as an outcome of protecting the right of the labors. It creates a healthy, safe and secure environment for workers and directs industries or any enterprise to arrange residence for workers. It also prohibits employment of non Nepali Citizens without permission from the Department of labor.

The labor act holds an importance in any urban area as the development process and urbanization course requires numbers of labors. IDP shall come up with a strong provision of protecting labors right provisioned in this act.

17. National Transport Policy 2001

The national transport policy is a guiding document which encourages local as well as central level government to prepare the transportation master plan and its implementation. The main objective of this policy is to ensure regional dispersion of road network and equitable distribution of road density. It also inspires the local as well as central level authority to manage organizational structure, to develop the self-reliance capacity for the arrangement of source of investment in the construction, repairing, maintenance and strengthening of the transport infrastructures and operate the same by providing required service. Its main objective is to provide equitable transport service to all citizens ensuring the access within 4 hours in Hills and 2 hours in Terai. The policy clearly states that the priority shall be given to connect all districts with national road system and north-south connectivity. The central level prioritization to N-S Connectivity has added importance in Baireni – Galchi new town. Thus, it can be assumed that the investment priority will be concentrated in the corridor passing through Baireni - Galchi.

The policy also states that the planning should be done to respond air and sound pollution in city level. The inner city transportation is another key factor that has to be considered in the proposed new-towns. The policy also directs to maintain the road safety, standards, quality, and involvement of private sectors. It has also categorized the road into central road system, local road system and urban road system. The urban road system are under the TDC and VDC.

18. National Urban Policy (2064)

The national Urban Policy is a guiding document to respond the uncontrolled urbanization and urban problem. The issues of urban sectors like development of infrastructures, generation of employment, management of environment and balanced urban regional growth has been pointed in National Urban policy. The policy basically has three main objectives,

- To develop infrastructure services and direct investment to achieve balanced urban form
- To improve the livelihood of urban population through the creation of clean, secure and prosperous urban environment
- To make the local bodies capable of managing urban issues effectively through delegation of power, institutional strengthening and cooperation between agencies working in urban issues.

The policy has pointed our several strategies and working policies to achieve targeted objectives. The proposed NTs is an outcome of this policy and it is expected to create balanced regional development. The IDP of NT's shall be based on the national urban policy where plans and programs shall be formulated as per the strategies mentioned in National Urban Policy.

19. National Industrial Policy 2011

The Industrial Policy 2011 is a rationalized modification of the 1993 version, with mandatory changes. The drafting of Industrial Enterprise Act 1993 was an impulsion of this policy, which came up with several liberal policies to encourage industrial establishment. The main objective of this policy is to strengthen the economic development through industrial development. It also tends to encourage the investment in this sector so that it could generate scaled employment. In the context of New towns, the policy encourages promotion of the industries that use local resources, raw materials, skills, labor and technology. The town can be benefitted from the establishment of small scale and cottage industries, which shall be sustainable economic base for the future. The policy also talks about providing incentives, financial and technical assistance to those industries which uses green (pollution free and less carbon emission) technologies and are environment friendly.

The agro-economic base of the current towns could be taken as the basis for the establishment of agro-production industries. The National Industrial Policy has clearly mentioned under its section 9, the promotion of micro enterprise, small scaled and cottage industries shall be done through providing infrastructures and institutional organization. The local level plan for the industrial development shall be in consonance with district industrial development policy and in this context, the new towns are liable to have some sort of mechanism for the industrial development. For this, a separate industrial area may be identified in a project area.

20. Land Use Policy (2069)

The policy was drafted in 2069 to regulate and direct the use of land. The broader objective of this policy is to direct the use of land according to its classification. The policy is expected to protect, manage and use the land according to its use. The Policy is also expected to manage and guide the land subdivision to encourage planned urbanization. The policy also directs to prepare land use plan and states to conserve the environment sensitive, religious, cultural, tourism and other important sites.

The preparation if IDP of proposed NT's encounters with a proposal of Land Use plan and Zoning regulations. This shall be guided by land use policy to an optimum level. The Policy shall be referred to prepare a planned township.

21. National Urban Development Strategy 2015

The strategy formulated by the Ministry of Urban Development was published in 2015 and has been endorsed in ministry. Although it doesn't have any legal backing and institutional implementation mechanism, it is a guiding document for the urban development of Nepal. The growing urbanization and transformation of land use in non-rural has risen an issue of management in urban. The global population at present crossed 50% and Nepal's urbanization is also in a rapid pace, which accounts nearly 50% of total country's GDP. In this backdrop, the urban areas are the engines of growth and required strategic management of services and assurance of good urban governance. The strategy has been developed to promote different theme in the urban sector like urban infrastructures, system, transportation, housing, environment, energy, water supply and sanitation, economy, solid waste management, urban governance, urban finance, urban land management and so. NUDS suggests the promotion and effectiveness of these themes through urban investments.

The time horizon set for achieving desired urban scenario is 15 years and strategies have been conceived to achieve desirable condition in each major theme – infrastructure, environment, economy and finance. The strategies have been conceived to achieve desirable condition in each major theme – infrastructure, environment, economy and finance – also indicate the social, economic and cultural vision of urban areas reflecting the highest values of society. Each strategy is backed by a number of activities recommended for each lead and supportive agencies within the

different levels of the government, NGOs and the private sector The NT's shall also be guided by the strategies formulated and IDP should tend to correspond the activities and program to achieve the specific objective of NUDS.

22. Building Bye-Laws

The scope of work under IDP covers preparing building bye-laws proposal for the proposed towns. The review of the bye-laws shall provide the clear vision to set the criteria for building bye-laws proposal and help to prepare bye laws for the study towns. This review has covered study of Model Bye-Laws prepared by DUDBC, Bye laws of some cities like Kathmandu, Pokhara and so on.

23. Model Building Bye Laws (2070)

DUDBC has published a model building bye laws in 2070 to guide and regulate building construction process in those municipalities which does not have its own building bye-laws. It is not mandatory for them to implement and adopt the proposed building bye-laws but if any municipality or town intend to adopt the model bye-laws, they can use it. The criteria set in the model building bye-laws can also be useful in preparing bye-laws for the proposed NT's. Unlike bye-laws of other cities like Kathmandu, Pokhara, Dharan etc, this has set-up building criteria in more detail with a section explaining the process of municipal approval.

24. Bye-laws of other cities

The bye-laws of Pokhara and Madhyapur Thimi have provision of setting building height as per the use whereas, Kathmandu uses the concept of FAR. The basic use of the bye-laws is to ensure development control and implement building code. However, it also ensures the right of the neighbor by provisioning light and ventilation standards. Bye-Laws of the Kirtipur Municipality has clearly mentioned the RoW of each road whereas in Pokhara, bye-laws states the setbacks of building in different locations.

The study of different bye-laws will help to draft better and integrated bye-laws for the proposed towns.

25. Planning Norms and Standards

The planning norms and standards prepared by DUDBC was released in its website in 2013 whereas published recently in 2015. It has set the planning guideline for the urban area of different population size. The norms has set the urban area with population size 40000 to 1 lakh as a city, thus the proposed NT's fall under the category of city. There are several criterias mentioned in the standards varying from the size of road, water supply and sanitary measures, electric supply, waste management, educational institutions, health institutions, stadiums, university, public library and so on. The provision of all the services and infrastructures has to be made during preparing the IDP for new towns.

4 Study Area

Among the ten towns selected for the new town development along the mid - hill highway, the study covers the preparation of integrated development plan of New Towns namely Baireni Galchi and Bhimeswor-Khurkot.

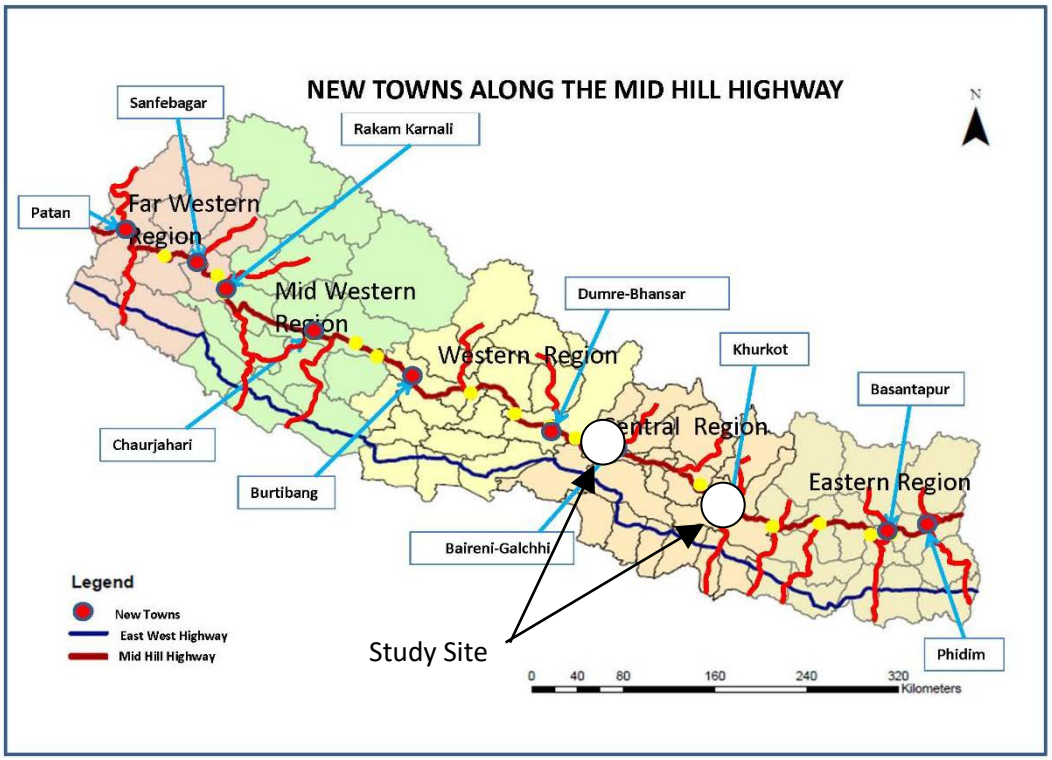

Figure 1: New Towns along the Mid-Hill Highway

4.1 ADMINISTRATIVE AND GEOGRAPHIC STATUS

4.1.1 Administrative Division

Khurkot New Town lies in Bhimeshowr VDC of Sindhuli district of Janakpur zone in the Central Development Region of Nepal. The total area of the New Town is 18.40 sq. km which includes all the wards of Bhimeshowr VDC. Khurkot New Town is bordered by Baseshowr VDC in the East, Jalkanya and Majhuwa VDC in the West, Ratanchura VDC in the South and Bhaluwajor VDC of Ramechhap district in the North. As per the political division, it lies in election constituency 2 and Ilaka 6 of Sindhuli District. The New Town is located on the bank of Sunkoshi River and is enriched with various geographical diversities. *(Refer Map- 1)*

4.1.2 Topography

The spatial extent of Khurkot New Town is between 27°18'45" N and 85°59'30" E. It has diverse geographical plane which varies from altitude 435 m to 1525 m above mean sea level. The topography of the New Town includes varied landscape with high hills, flat lands, and rivers. Flat lands in the New Town such as Chainpur, Mathillobesi, Ratatar have gentle slope and are appropriate for settlement development. Although the varied landscape is one of the obstacle for developing infrastructures, it can be developed as major tourism attraction which can promote tourism.

Table 1: Available land area with respect to the slope

Slope (%)	Area (Ha)	Percentage
<2	13.05	0.77%
2 -5	53.89	3.19%
5 - 10	107.34	6.35%
10 - 15	89.06	5.27%
15 - 30	209.26	12.39%
30- 45	216.52	12.82%
>45	1000.35	59.21%

Source: NTPCO, 2014

The deposits of Sunkoshi River has made the lower area of the New Town very fertile and arable while debris of Bhadaure Khola has deposited large stones in hundreds acres of arable land.

4.1.3 Climate

Similarly, Sub-tropical climate is found in Khurkot New Town. Due to high altitude difference within the New Town, the temperature variation is found to be diverse. During summer season, the areas near Sunkoshi River experience higher temperature than the areas on the southern belt, Mathillo Baraha.

4.1.4 Water Shade and Water Bodies

Sunkoshi River is the major river of the Khurkot New Town. Sunkoshi River borders the New Town in North from Ramechhap District. Other existing small rivers are Andheri Khola, Bhadaure Khola, Ghogsila Khola, Kol Khola, Rani Khola, Bhalu Khola and Jagire Khola. These rivers have origins in the neighbouring VDC's of the New Town. Andheri Khola flows through the middle of the New Town area originating from Jalkanya VDC and meets Sunkoshi River. Andheri Khola collects water from other small streams such as Bimire Khola, Kol Khola and Gharti Khahare. Jagire Khola, Bhalu Khola, Bhadaure Khola are seasonal river having high discharge during rainy season and are almost dry in other seasons. *(Refer Map-)*

Andheri Khola and Bhadaure Khola are the important source of drinking water and irrigation. At present, most of the households depend on Andheri and Bhadaure Khola for drinking water. An irrigation canal also runs from Andheri Khola which serves the arable land in the lower belt of the New Town.

4.2 DEMOGRAPHY

4.2.1 Population Distribution

Bhimeshwor VDC covers the area of 18.40 sq. km. The growth rate of the population in the VDC from 2001 to 2011 in a decade is 1.28 % per annum. The male population in the year 2011 is 1149 and the female population is 1149 such that the sex ratio is 1000 i.e. the number of male in 1000 female. The density of population in the Bhimeshwor VDC is 2 persons per hectare. The ward wide population distribution shows highest population concentration in 2, 3, 4 and 9.

Table 2: Khurkot – Ward wise Population

Ward	Area	Households	Total population	Male	Female	Population Density
1	100.14	46	245	131	114	2.45
2	53.11	88	378	191	187	7.12
3	302.30	68	339	158	181	1.12
4	259.10	71	374	185	189	1.44
5	214.63	34	166	81	85	0.77
6	120.68	29	140	71	69	1.16
7	238.27	45	236	118	118	0.99
8	86.04	23	118	57	61	1.37
9	313.97	55	302	157	145	0.98
Total	1688.24	459	2298	1149	1149	

CBS-2011

4.2.2 Age-sex Composition

The age sex composition shows equal distribution of male and female population in Khurkot area.

Table 3 : Khurkot- Age and Sex Composition

Households	Population			HHs size	Sex ratio
	Total	Male	Female		
459	2298	1149	1149	5.01	100

CBS- 2011

Age group 15-59 has largest population share in Khurkot. This implies the abundance of working age population in the area.

Table 4: Khurkot- Population by Age Groups

Sex	0 to 14 yrs	15 to 59 yrs	+ 60 yrs
Male	421	615	113
Female	367	651	131
Total	788	1266	244

CBS-2011

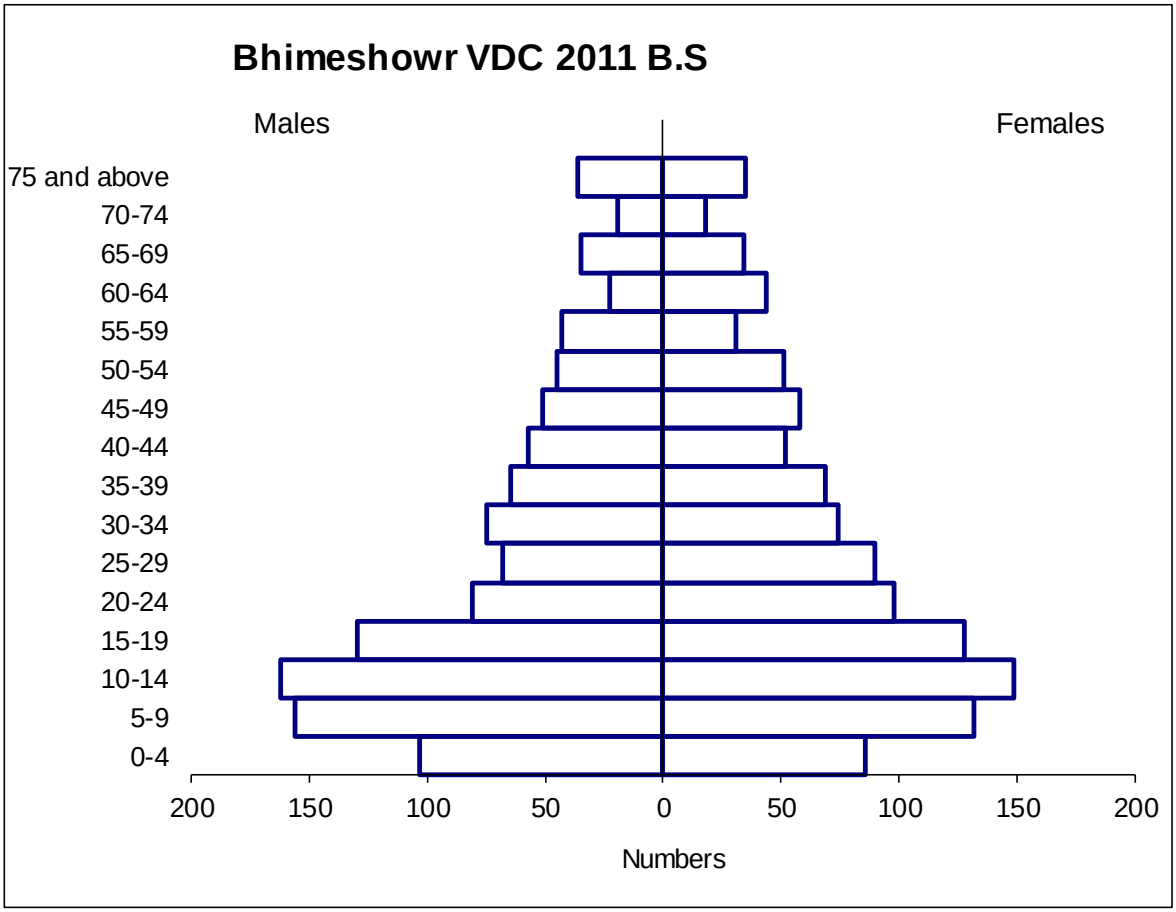

Figure 2: Age-Sex Pyramid

4.2.3 Population by ethnicity

The dominant population in Khurkot is Chhetri and Brahmin followed by Newars. The occupational caste of Kami, Damai and Sharki also accounts major population share. The ethnic composition of Khurkot area shows mix composition, heterogeneous mix of the residents.

Table 5: Khurkot – Population by Ethnicity

Chhetri	Brahmin	Magar	Newar	Tamang	Kami	Damai	Sarki	Bhujel	Other
562	424	90	419	47	30	115	217	47	347

CBS-2011

4.2.4 Population by mother tongue

Majority of people are using Nepali as their mother tongue. Very few people use Tamang and Newari as their mother tongue.

Table 6: Khurkot- Population by Mother Tongue

Nepali	Tamang	Newari	Other
2006	37	42	113

CBS-2011

4.2.5 Literacy

The education status of the New Town shows that 69.18 % of the people are literate which an improvement for the New town is as the literacy rate was 59 % in the year 2001. In comparison to females, the literacy rate of males is 24.35 % greater.

Table 7: Literacy Rate – Bhimeswor -Khurkot

Literate Population % (2058 BS)			**Literate Population % (2068 BS)**		
Male	**Female**	**Total (%)**	**Male**	**Female**	**Total (%)**
73.4	45.2	59	81.45	57.10	69.18

CBS-2011

4.3 REGIONAL CONTEXT

B.P Highway connects Khurkot New Town with Kathmandu, Sindhuli Madi and Bardibas. It is located at 85 km distance from the capital. The New Town is 39 km far from Sindhuli district headquarter, Sindhuli Madi and 17 km far from Ramechhap district headquarter, Manthali. It can be a good prospect for the New Town as it is nearer to two district headquarters.

4.4 PHYSICAL INFRASTRUCTURE

4.4.1 Road and Transportation

After the construction of B.P Highway, road service has reached Khurkot New town. Khurkot is also a nodal point for Khurkot-Manthali Road and Khurkot Thari Ghurmi Road. 11.78 Km of B.P Highway, 0.44 Km of Khurkot-Manthali Road and 1.88 Km of Pushpalal Highway passes through Khurkot New Town. Majority of roads (47.01 Km) in Khurkot New Town are trails. All the wards of Bhimeshowr VDC in the New Town are not connected with motorable roads.

The total length of road is 75.32 Km including major trails *(Source: Road Inventory Survey).* B.P highway, Khurkot-Manthali Road and Pushpalal highway roads in Khurkot New Town are metalled while the others i.e 61.2 Km are earthen. Most of the roads require immediate attention for maintenance. New tracks need to be opened in wards 4 and 5. Earthen roads need to be upgraded to graveled or bituminous based on present need and traffic volume. Further, the road infrastructures lack proper furniture such as separate footpaths, shoulder, zebra crossings and so on in the highway.

4.4.2 Water Supply

Andheri Khola and Bhadaure Khola are the major source of water for new town Khurkot. Settlements of wards 6, 8 and 9 depend on Andheri Khola for drinlking water while Sisim khola provides drinking water for the settlements of ward 5. A tank is constructed in Bhadaure Khola, at about 1 Km distance from the market to collect water and is distributed to the market and settlements. There are about 10 taps with a tap serving 15 to 20 households. Water is distributed to wards 1 and 2 from the water tank constructed at Bhadaure khola via pipelines.

Similarly, water is distributed from water tank at Ratatar, Ward 3 to households of ward 3. However, water is scarce here during the dry season. For water supply system, the minimum quantity of water demand is taken as 80-100 lpcd.

Table 8: Khurkot- Households by Main Source of Drinking Water

Pipeline	Hand pump	Well	Mul	River/Stream	others	Unknown	Total
442	0	3	0	9	0	5	459

(District Population Profile 2071)

Table 9: Available water sources for new town Khurkot

Source	Andheri khola	Ghogsila Khola	Bhadaure Khola	Sunkoshi River
Location	Andheri	Sisim Khola (Ratanchura VDC)	Bhadaure	Sunkoshi
Altitude	595.82 m	1040.14 m	563.5, 551.74 m	455 m
Latitude	27.304145	27.291253	27.329532, 27.330483	27.326908
Longitude	85.991588	85.99543	85.986577, 85.985635	86.005411
Existing situation	Irrigation purpose	Irrigation purpose	Water supply for some HHs	Some HH are pumping water
Population (future designed)	NA	NA	10000	50,000, 50000 second phase
Future option	Short term	Short term	Short term	Long term
Intake location	Existing	Kholsi, Darimbote	Two places	Nearby suspension bridge
Intake structure	Stream fed	Stream fed	Stream fed	River fed
Nature of structure	Weir	Collection tank	Weir	Two Sump-wells with connection with river providing approx. 1m dia Hume pipes length …..
Reservoir tanks	One	one	Three	Uplift one
Probable Treatment processes	Sedimentation, filtration and disinfection		Sedimentation, filtration and disinfection	Sedimentation, sedimentation with coagulation, filtration and disinfection
Treatment location	One place	One place	Two places	Two places
Balancing reservoir	Yes	Yes	Yes	Yes
Capacity			Probably 12,00,000 L/day	Probably 30,00,000 L/day

Source	Andheri khola	Ghogsila Khola	Bhadaure Khola	Sunkoshi River
			in rainy season 50,000 l/day in dry season expected	for whole year

Source: Field Visit, 2016

4.4.3 Sanitation /Sewerage *System*

Though there is not any provision of sewerage management, it is not a factor of threat at present in Khurkot new town. As per CBS 2011, 34.86% of total HHs do not have toilet facilities, 61.22% of total HHs have toilet with flush, 2.83% have normal toilet and 1.09% have not stated toilet facilities. All the households with toilet facilities have septic tank. But waste water from households and hotels are drained into the agricultural field. Management of waste water from hotels in the market area of the New Town has been difficult.

4.4.4 Electricity Supply System

Electricity is provided by Nepal Electricity Authority in Khurkot New town. About 70% of the New Town is electrified. Both 2 phase and 3 phase lines are provided. High tension towers of Khimti Dhalkebar Electricity Transmission Line lie in the New Town. 4 of which lies in the land pooling area. According to NEA official Sindhuli, a sub-station (33KV/11KV) is also proposed at Khurkot.

4.4.5 Information and Communication

Landline service is not available In Khukot new town. But mobile networks (NCELL, NT) have almost full coverage. As landline service is not available, ADSL internet is also unavailable. Web surfer provides internet services in the New Town. Internet service is only limited in the market area. Only some financial institutions and hotels use internet services.

4.5 SOCIAL INFRASTRUCTURE

4.5.1 Education

About 70% of people in Khurkot New Town are literate as per CBS 2011, which is an improvement for the New town as the literacy rate was 60% in the year 2001. The literacy rate of people residing on the market area is more. There are four primary schools, two lower secondary schools and a secondary school within the New Town under Nepal Government and a private Secondary School. Shree Gyanjyoti Higher Secondary School provides higher secondary education in Education faculty.

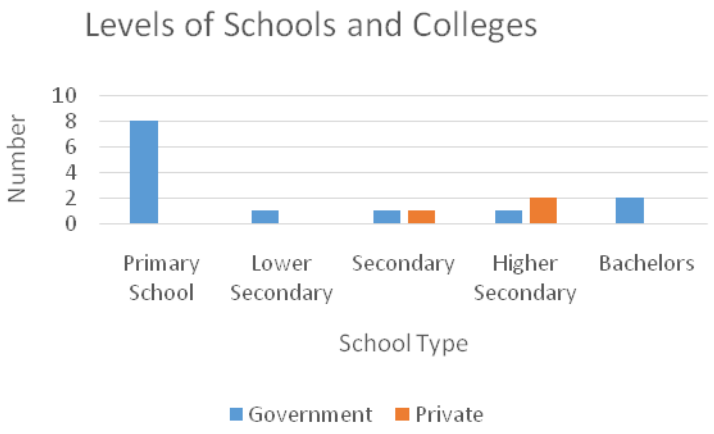

Figure 3: Levels of Schools and Colleges

For higher studies, Bhimjyoti Multiple Campus is established by the community. Apart from some *Silai Bunai Trainning* Centres, institutions which provide technical are absent. The students who seek to study Science, Management or other faculties apart from education in the higher secondary level go to Kamalamai Municipality, Dhulikhel or Kathmandu.

Most of the school buildings are damaged by the recent earthquake. In 6 schools there is no facility of drinking water and remaining two schools also do not have proper arrangements for purification. All the schools have separate toilet facilities for males and females. But due to the earthquake, toilets are damaged and no maintenance works have been carried out yet.

Table 10: Wardwise distribution of Educational Institution in Bhimeswor-Khurkot

Ward	Primary Level	Secondary Level	Higher Secondary	College	Ward Population
1					245
2			1	1	378
3	1	1			339
4	1				374
5	1				166
6	1				140
7		1			236
8					118
9		1			302

Source: Field Survey, 2015

4.5.2 Health Institution

Altogether there are four health service centres which include a Health Post established by Nepal Government, 2 pharmacies and a private hospital. A community hospital is under construction at Bhimeshowr ward 1. For general health checkup, people go to the health post and in case of serious illness, they have to go to Ramechhap and Sindhuli District Hospitals and even to Dhulikhel hospital. Mountainous topography is the major obstacle for providing any health services easily within the New Town. Not all the population has easy access to health services. Only the people, residing in the market area is benefitted by the existing health service centers.

Table 11: Major health institutions in Baireni-Galchhi New town

Name of Health Institution	Location	No.	Service	Ownership
Bhimeshowr Sub Health Post	Bhimeshowr-4	1	Simple Treatment	Government
Bhimeshowr Hospital	Bhimeshowr -2	1	OPD, ENT, ECG, Ultra Sound, X-Ray, Patho lab	Private
Sunkoshi Medical Hall	Bhimeshowr-1	1	Medicine	Private

Source: Field Survey, 2015

4.5.3 Open Space

In Khurkot, apart from small playgrounds in ward 1 and 2, no open spaces can be found. Though present population does not feel the need of open spaces, provision of open spaces must be made

for future population. As per norms, 5 % of total city area should be separated for open spaces such as neighborhood parks (with play instruments), Local Park, Community Park, Playground, etc.

4.5.4 Community Buildings (Library, community halls etc.)

In context of Khurkot New Town, Bhimeshowr, Sajha Sanstha (established in 1937 AD) has built a community building, where meetings and gatherings were organized. A community library is included inside the building. But, the recent earthquake has caused several damages in the building and is not in usable condition at present.

4.5.5 Fire Stations

There are no fire brigade facilities in the new town.

4.5.6 Religious Institutions

Afre Mandir, Bhimsensthan Mandir, Krishna Mandir, Ganesthan Mandir, Bhimeshowr Mandir are the major religious places in the New Town. The recent April 25, 2015 earthquake affects these temples and several Patis. Such religious places can be developed as the major attraction centres for internal tourists from neighboring VDCs to promote internal tourism.

For the crematorium purpose, the areas near the banks of Sunkoshi and Andheri Khola are in use. Different places are being used by different castes and cultures for incineration/cremation. But managed and fixed cremation area has not been identified.

4.5.7 Recreational Buildings (Cinema Hall, Museum, Art Gallery)

No recreational buildings like cinema halls, museums, art galleries are present in the New Town.

4.5.8 Social welfare (Old age home / Orphanage/Centre for Differently able Person)

According to CBS 2011, 46 persons residing within the New Town bear different types of disabilities. VDC provides some amount of money as disability allowance. However, there are no social welfare centers such as elderly homes, orphanage or centers for differently able persons.

4.5.9 Security

There is an Ilaka Police Office in bus park area. It provides security in the New Town. Except general conflicts, not any serious crimes are yet recorded. Most of the conflicts are solved within the community.

4.6 ECONOMIC SERVICES & INFRASTRUCTURE

4.6.1 Agriculture

Out of total area of 18.40 sq. km.of Khurkot new town, 20.92% area is used for agriculture. Mostly food crops such as paddy, wheat, maize, millet etc. are cultivated in the arable land. Within the New Town, cash crops are cultivated in few areas only. Vegetables, fruits and spices are the major cash crops cultivated.

Table 12: Main Crops Production in Khurkot

Crops		**Total**
Paddy	Area (Ha)	94
	Production (MT)	297
Maize	Area (Ha)	279
	Production (MT)	687

Crops		Total
Millet	Area (Ha)	65
	Production (MT)	50
Wheat	Area (Ha)	50
	Production (MT)	125
Cereals and Pulses	Area (Ha)	24
	Production (MT)	33
Oil seeds	Area (Ha)	23
	Production (MT)	24
Vegetables	Area (Ha)	65
	Production (MT)	470
Spices	Area (Ha)	4
	Production (MT)	43
Fruits	Area (Ha)	18
	Production (MT)	163
Source: District Agriculture Development Office, Sindhuli		

63.13% of total population is engaged in agriculture. However, the method of agriculture is traditional. Agriculture cannot provide employment throughout the year as seasonal agriculture is being practiced in the study area. Of total population engaged in agriculture, about 61 percent are females.

20% of total arable land is irrigated. Andheri Khola provides irrigation to the agricultural land lying in the lower belt of BP Highway. In addition, agriculture fields in Tallo Baraha, Mathillobesi is irrigated by Andheri Khola. Annually Irrigation Division provides one lakhs for the maintenance of irrigation canals in the New Town.

Organized and managed vegetable markets are unavailable in the New Town. Local market (*Haat*) opens twice a week to buy/sell locally produced vegetables. Similarly, commercial poultry farming is done and livestock farming supports economy of the people.

There are different farmer's group registerd in District Agriculture Development Office whose main objectives are vegetables, food crops and some are integrated and some are mixed type. Due to hilly topography irrigation cannot be provided. Hence, crops with high water requirement cannot be produced significantly.

4.6.2 Industry

Large scale industries and factories are not yet established in Khurkot. Only few cottage based industries and small-scale business enterprises are under operation. There are two saw mills, a rice mill and a crusher in the New Town. Similarly, a mineral water industry is also established which supplies its product to Khurkot market area.

Major source for local raw material is nature. Mainly forest products as well as construction materials are the major natural source of raw materials. Major forest products include pinewood and pine resin. Two saw mills are in operation in the New Town. Similarly, Resin collection center can be established. Similarly, there is good market for the construction materials such as stone, sand, gravel, etc. Due to increased rate of urbanization and competitive construction of structures, business of construction materials is mounting. The neighboring VDC's like Jalkanya, Ratanchura produce large amount of Junar which are being transported to Sindhuli Madi and even Kathmandu

for juice production. Hence, medium scale juice industry may be established in Khurkot so that produced Junar can be collected and processed.

4.6.3 Trade & Services

Khurkot is gradually developing as a market center. Even if economic and commercial activities are no satisfactory at present, there is high potential for its development. The local market (Haat Bazar) which opens twice a week has great importance at present. People from neighboring VDC's Shitalpati, Majhuwa, Jalkanya, Ratanchura, Baseshowr, Bhuwaneshowr of Sindhuli district and Bhaluwajar of Ramechhap district gather in the market for trade. Mainly clothes, utensils, vegetables and domestic tools are transacted. Hotel business is also on the rise within the market area along the highway. At present there are 15 hotels and 5 lodges under operation.

Table 13: Economic Enterprises of Khurkot

S.N	List of Enterprise	Count	S.N	List of Enterprise	Count
1	Retail Shops	**14**	13	Furniture	**4**
2	Vegetable and Fruits Shops	**2**	14	Saw Mill	**1**
3	Hardware Shops	**2**	15	Tailor	**3**
4	Electronics	**4**	16	Building Material Depot	**2**
5	Meat Shop	**3**	17	Bike/Bus Work Shop	**2**
6	Pharmacy/ Clinic	**2**	18	Clothing Shops	**13**
7	Utensils Shops	**3**	19	Poultry	**5**
8	Agro-Vet	**2**	20	Banks	**2**
9	Hotel/ Restaurant	**18**	21	Cooperatives	**5**
10	Lodges	**4**	22	Petrol Pump	**1**
11	Cosmetics/ Parlor	**1**	23	Stationery	**3**
12	Barber	**2**	24	Insurance	**1**

Source: CBS-2011

4.6.4 Banking & Finance

There are two development banks and five co-operatives in Khurkot. The Gramin Bikash Bank and Kalinchowk Development Bank are providing banking facilities to the people of Khurkot. Sirjansil community organization assisted by Poverty Alleviation Fund is also working on the community welfare through providing loans to socially marginalized community. Among six active cooperatives in Khurkot, Janajagaran Women's saving and Credit Cooperative, Nexus Savings and Credits Cooperatives and Namastey Khurkot Savings and Credits Cooperatives are prominent.

4.6.5 Tourism

There is no massive flow of tourist in Khurkot at present but there is a potential of increasing tourism in future. As the settlement is located on the bank of Sunkoshi River, possibility of development of rafting and other adventure tourism is high. Banepa Bardibas Highway itself can be an attraction for tourists. Well-furnished highway in the hilly terrain is eye catching.The geographical diversity of Khurkot also can be the attraction for internal and external tourists. In addition, settlement at Ratatar can be developed as potential home stay for the outsiders. The high hills of the New Town can be developed as the viewpoint of the varied landscapes. Bank of Sunkoshi can be developed as picnic spot and resorts. Development of Beach Volleyball is also a good prospect on the bank of Sunkoshi. Khurkot New Town lies on the way to Sindhuli Gadi, a historical place and in between the proposed religious route from Janaki Temple to Dolakha Bhimsen. So

tourists travelling to these destinations can be accommodated in Khurkot to take a rest where they can enjoy the scenic beauty and landscape of the New Town.

4.6.6 Culture & Religion

Festivals

The major festivals of people in Khurkot are Dashain, Tihar, Chath, Janaipurnima, Maghe Sankranti, and Buddha Jayanti.

Rituals

There are not any major changes perceived in the celebration of festivals and rituals in past and present times in the New Town.

Neither any investment nor works are made for strengthening the natural and culture heritage, nor there local skills of people at Baireni- Galchhi New town.

Religious Institutions

There are few Guthis established for the conservation of religious institutions. They have farmland as their financial resource. However, all of them are inactive in the present context.

4.7 Environmental and Ecological Status

4.7.1 Forest

About 72% of total land is covered by forest in Khurkot New Town. The herbs such as Chiraito, Amala, Ghodtapre, Bojho, Kurmure, Koiralo, Sallo, Sal, Harro, Barro, Jyamuno, Timur, Bhalayo and Kurillo are found in the forest of the New Town. Pine trees are in abundance within the forest. Wild animals such as fox, porcupine, deer, monkey, leopard and tiger are also found in the forest. The forest has been handed over to different communities which regulate the use of forest products within the community.

Table 14: Description of Community Forest Group of Khurkot

Community Forest Group Name	Location	Area(Ha)	Households
Parijat	Bhimeshowr-5	141.25	31
Sayapatri	Bhimeshowr-9	48	48
Panchakanya	Bhimeshowr-7	246	79
Barahidevi jogidaanda	Bhimeshowr-8	75.75	25
Lalupate	Bhimeshowr-3	111.82	75
Tarebhir	Bhimeshowr 9	207.67	126
Janahit	Bhimeshowr-4		

Source: District Forest Office, Sindhuli

4.7.2 Air Pollution

At present, air pollution is not a huge threat for the New Town as the flow of traffic is not huge and big industries are not established. The crusher industries on the bank of Andheri Khola cause air pollution. Air pollution is comparatively more along the highway due to vehicular movements. Burning of household wastes also enhance air pollution within the New Town.

4.7.3 Water Pollution

As proper site for disposal of wastes is absent, wastes from households and hotels are disposed on the river banks. It has been the major cause of water pollution within the New Town. Also, during the monsoon the water sources are polluted as the sources are not covered. There is no arrangement for proper drainage of surface water i.e. waste water from the hotels.

4.7.4 Noise Pollution

Complaint of noise pollution is mainly among the dwellers along the highway. Vehicular movements cause noise pollution. Also some saw mills and rice mills enhance noise pollution in the New Town. Though noise pollution is not a big problem at present, increasing urbanization creates more noise in future. Hence, provisions of greenery along the roads, open spaces and segregation of industries from the residential space should be done to reduce noise pollution.

4.7.5 Integrated Solid Waste Management System

It is found that 47.2 % of household dump their waste in the river whereas rest do composting. 61.1% of inorganic wastes are burnt and remaining is thrown in the river.

4.8 DISASTER STATUS

4.8.1 Landslide

About 72% of total land of Khurkot New Town lies on the slope greater than 30%. Such areas with slope greater than 30% are vulnerable to landslides. After the recent earthquake threats of landslides in some parts of the New Town has increased. A settlement of ward 8 moved into Jogidaanda due to possibility of landslide. Some areas in Chainpur, ward 5 are also prone to landslides. There are no any active landslides within the New Town. But due to massive rainfall in 2051 B.S., landslides occurred in several areas of the New Town and caused floods in the streams washing most of the arable land of the New Town.

4.8.2 Flood

The areas near the banks of Sunkoshi River, Andheri Khola and Bhadaure Khola are susceptible to flood during the monsoon. The New Town experienced heavy floods in Bhadaure and Andheri Khola in the past. Cultivable lands along Andheri and Bhadaure Khola was washed away by the floods and huge acers of arable land was destroyed. Large stones and boulders are deposited in the arable lands. Also threat of flood due to GLOF is notable in the New Town.

4.8.3 Earthquake

The recent earthquake of April, 2015 as well as previous earthquakes dated 1990 B.S., 2045 B.S., has affected all the wards of Bhimeswor VDC, especially, Ratatar, Ward no. 3, Dudendanda , Daregaunda, Chhapgaun, Baraha Gaun Besi, Mathillo Besi and Dihi Gaun are the most affected.

4.8.4 Man made Disaster – Road Accident, Fire Hazards etc.

Besides natural disasters and geological hazards, man made disasters such as forest fire, road accidents are also prominent. Incidents of fire hazards have occurred in the past in some areas. Lack of proper road furnitures such as footpaths, zebra crossings, street lighting, traffic signs and signals have been the cause of road accidents. Haphazardly distributed electricity transmission lines can be the cause of fire.

Fire hazard is one the frequent occurring accidental phenomena in the towns. Since forest is one of the most area covered use of the Khurkot, the area is more vulnerable to the fire. Besides, the whole settlement of Thula gaun, ward no. 4 and Tar of ward no. 3 in the year 2060 B.S. and 2071 B.S. got destroyed due to fire.

4.9 LAND USE

The land use of Khurkot New Town shows that nearly 21% of total land is used for cultivation. Majority of area is covered by forest and bushes, 72%. At present only 0.5% of total area is built up. Dense settlement is limited along the highway and on flat lands of Chainpur, Mathillo Baraha and Ratatar. Land use pattern affects the planning process to large extent. Future development of the area is largely dependent on the present land use pattern. Existing legislation rules forbids the extensive use of forest area for settlement development. Hence, cultivable land is the only alternative for settlement development. In the New Town, cultivable lands are being comprehensively used for settlement development.

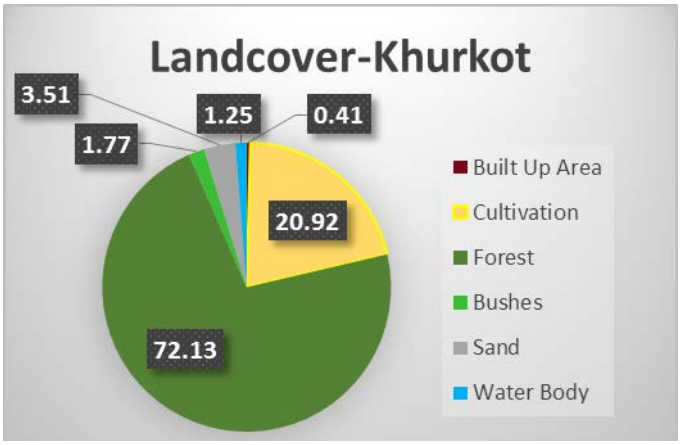

Figure 4: Land use Composition-Bhimeswor, Khurkot

Table 15: Area of Landcover in Bhimeswor-Khurkot

S.N.	Landcover	Area(Hec)	Percent
1	Built up	6.94	0.41
2	Cultivation	353.19	20.92
3	Forest	552.30	32.71
4	Bushes	695.39	41.19
5	Water Body	21.11	1.25
6	River Bed	59.31	3.51
	Total		100.00

Source: Digital Base Map, 2014

4.10 URBANIZATION

Urbanization is growing along the highway in Khurkot New Town. Khurkot is developing as the market center for all the settlement of the New Town. Hotel business is growing rapidly within the market area. The rate of building construction is also increasing in the market area of the New Town. Urbanization is centralized in Khurkot market of ward 2 as it is the junction of two highways viz. B.P Highway and Khurkot Manthali Road. Urbanization trend is rapid but unbalanced.

5 ANALYSIS

5.1 TREND ANALYSIS

5.1.1 Migration

The migration rate of the New Town is not significant. Apart from temporary migrants to Kathmandu and even other countries for work, education and foreign employment, the number of permanent out migrants is significantly low. But within the New Town, people from surrounding villages are migrating to wards and 2 is on the rise. Exact number of such in migrants is not recorded. Household survey conducted in Bhimeshowr VDC showed some number of persons in foreign employement. In general, the population composition of the New Town is not affected by migration.

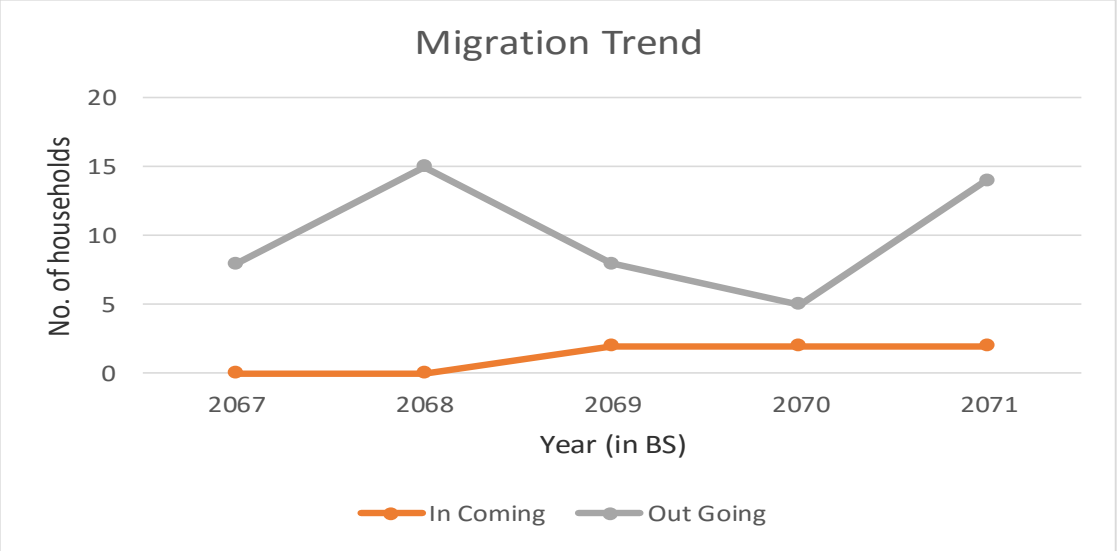

Figure 5: Household level Migration Trend-Bhimeswor, Khurkot

5.1.2 Population Projection

In wards 3, 6 and 9 the growth rate was found negative. Hence, minimum growth rate was used for population projection.

Table 16: Population Projection- Bhimeswor - Khurkot

Ward	Population(CBS)		Growth Rate	Population			
	2001	2011		2015	2020	2025	2030
1	161	245	4.29	290	357	441	544
2	273	378	3.31	431	507	596	701
3	348	339	-0.26	351	367	384	401
4	301	374	2.20	408	455	507	565
5	152	166	0.88	172	180	188	196
6	154	140	-0.95	145	152	158	166
7	217	236	0.84	244	255	265	277
8	107	118	0.98	123	129	135	142
9	311	302	-0.29	313	327	342	357
Total	**2024**	**2298**		**2476**	**2727**	**3016**	**3349**

5.2 GAP ANALYSIS

5.2.1 Infrastructure Development

Educational Institution

As per Planning norms and standards, it is stated that there should be 1 primary school for 300 population within the distance of 0.4 to 0.8 km and 1 higher secondary school per 7500 population within a distance of 30 minutes by public vehicles. Similarly, there should be at least 1 Campus per 25000 population within a distance of 45 minutes by public vehicles and 1 University per 40,000 population should be within distance of 1 hour by Public Vehicles.

Bhimeshwor-Khurkot new town is expecting a population of 100000 within 20 years so, it will demands for about 34 primary schools, 13 higher secondary Schools, 4 Campus and 2 to 3 universities.

Table 17: Gap Analysis of Educational Institutions

Education Level	Number of Schools at Present	Required Number Within 20 years
Primary School	4	34
Higher Secondary	1	13
Bachelors	1	4
University	0	2-3

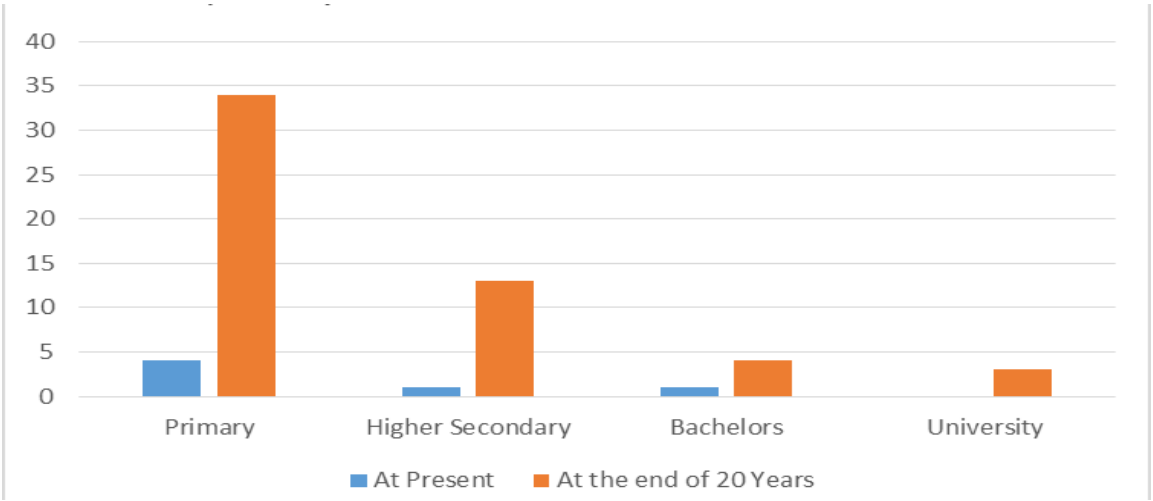

Figure 6: Gap Analysis Educational Institutions, Bhimeswor-Khurkot

Health Institutions

As per Planning Norms, there should be 1 Primary Health Center (PHC) with 5-15 bed capacity per 20,000 population, and 1 district level hospital with 25-50 bed capacity. As town is expecting population of 1,00,000 within 20 years. So there must be at least 5 PHC and 2 Hospitals within the new town. Hospitals should be within easy access of people.

Water Supply

Drinking water supply might be one of the major problems for the New town, Khurkot, in future .It is because adequate water sources do not exist here. Bhadaure Khola and Andheri Khola only serve the present need of drinking water in the New Town, Khurkot. Andheri Khola provides drinking water to the settlements of wards 3 and 4 of Khurkot. However supply of water seems to be inadequate. The distribution of River water is supplied to the settlements directly via pipes. There are not any filtration and treatment plants.

Table 18: Water Demand Analysis of Bhimeswor-Khurkot

Ward	Population		Water Demand (Litres per day)			
	2001	2011	2015	2020	2025	2030
1	161	245	26082	32175	39690	48962
2	273	378	38749	45596	53653	63133
3	348	339	31604	33028	34515	36070
4	301	374	36714	40925	45619	50850
5	152	166	15476	16173	16901	17663
6	154	140	13052	13640	14254	14896
7	217	236	21965	22907	23888	24912
8	107	118	11044	11598	12179	12790
9	311	302	28155	29423	30748	32133
Total	**2024**	**2298**	**222842**	**245464**	**271448**	**301409**

Environment Management

In Khurkot, it is found that 47.2 % of household dump their waste in the river whereas rest do composting. 61.1% of inorganic wastes are burnt and remaining is thrown in the river.

Land for Sanitary land fill site has to be decided by concerned agencies. About 125 ropani will be required for sanitary land fill site where about 5475 MT solid waste per year for 10 years can be managed.

Community Services

For the New Town, according to the standards for a city, provisions a community level Library 1 per 10,000 population and Central Level Library 1 per 15,000 population is required. The present total population of Baireni Galchhi New town is 13981 (Source: Details Study of Earthquake destruction2072/1/12) and that of Khurkot is 2298. This statistics shows there is need of a community level library in present context in Baireni Galchhi New Town. The expected total population of both the new towns within 20 years is 100000 so there will be demand of 10 community level libraries and 7 central level libraries in both the New Towns.

5.3 SWOT ANALYSIS

Strength

Khurkot is one of the ten new towns as identified by Nepal government.

Since, it is situated between Bardibas and Kathmandu, it possesses lot of location advantage. It has direct linkage not only with two national highways, i.e. B.P.highway and Pushpalal Lokmarga but also with Khurkot-Manthali district level road.

The area has Sunkoshi River as a potential source for integrated water resource development. Likewise, it is rich in natural beauty and provides balanced land use for urban development of the town. The irrigation and water supply system can be well managed by Andheri khola passing through Khurkot.

Since, it is located in one of the load shedding free zone, the operation of small cottage industries, different individual level commercial businesses like poultry farming, pig nurture, livestock, hotel business can be run successfully and easily.

The settlement of the extinct indigenous group, *Hayu* group, in the Khurkot might be the strengths of the new town.

Weakness

Available developable area is very limited in Khurkot new town. The new town has to rely on other towns for urban services. Likewise, physical and social urban infrastructure development of the new town, its extension and standardization are not in desired level.

Opportunity

The location aspect of the new town, situated nearer to capital city, is one of the opportunities. It is at a distance of 13 km and 40 km respectively from Ramechhap and Sindhuli headquarter. It is one of the entry point to Kathmandu from eastern mountainous region of the country.

The availability of plenty of agro-productive hinterland is the opportunity of Khurkot new town. The surrounding settlements are also transforming day by day into commercial and business centres. The investments are also available for urban infrastructure development in the Khurkot.

The geological diverse potential of the Khurkot would help it to develop into as film-city. The different sectoral internal tourism aspects like cable car, rafting, steamer, Tamakoshi, Sunkoshi, Khimti, Homestay can be developed in the regional level. Likewise, potential for the development of regional tourism i.e. from development of route from Janakpur to Dolakha Bhimsen can be seen in the Khurkot new town.

The presence of limestone mine and urban agriculture is one of the opportunities for its development.

Threat

Potentiality of providing adequate water supply to meet the demand of population of Khurkot new town is the major issue. Other threats are issues seen in the jurisdiction of town development committee and its income source, geographical features, urban infrastructure development, management of violating right of way of national highway, loss of attraction in concerned different sectors. Lack of public land like bazaar, buspark, community building, slaughter house; deficit in social and economical infrastructure development, Lack of skill labour and brain-drain in the Khurkot are other threatening factors for the overall development of the nation.

5.4 SPATIAL ANALYSIS

5.4.1 Land suitability Analysis

The land with high percent slope is extensively more in overall town. In order to prevent geological hazard, slope less than 30 % i.e only 21.73 % of total area can be used for urban expansion.

Table 19: Available Developable Land & Carrying Capacity (Bhimeswor-Khurkot)

S.N.	Settlement	Available Area (Ha)	Carrying Capacity
1	Sajhatole (LP)	83.31	12496
2	Chainpur	39.82	5973
3	Baraha	31.63	4744
4	Laukun	29.19	4379
5	Dhungelgaun+Palanse	23.77	3566
6	Mathillobesi	20.94	3141
7	Darimbote	19.51	2927
8	Devkotagaun	16.88	2533
9	Refreshment Centre Area	13.79	2068
10	Mathillo Baraha	10.51	1577
11	Ratatar	8.51	1277
12	Daandakateri	7.82	1173
13	Bhotechhap	6.95	1043
14	Chhapdaanda	5.67	851

6 LONG TERM DEVELOPMENT PLAN OF TOWN

6.1 VISION OF THE TOWN

तरकारी, फलफूल, पाहुना र पानी ।
खुर्कोट नँया शहरको पहिचानी ॥

6.2 GOALS & OBJECTIVES

To develop a well connected town with efficient distribution of infrastructure and services thereby providing opportunities to all.

6.3 LEAD SECTORS

1. Agriculture

63.13% of total population in Khurkot is engaged in agriculture. So, the activities related to the agriculture sector will help the economic sector of the new town. Though only 20.92 % of land area of Khurkot is used for agriculture, due to connection with two highways and a district road, it has high potential of being agriculture collection market as well as a processing zone. VDCs near to the new town has a high quantity of fruit production. These nearby potentials can be capitalized for the economic development of the new town.

2. Tourism

There are lots of tourism development potentials in Khurkot. As the settlement is located on the bank of Sunkoshi River, possibility of development of rafting and other adventure tourism is high. The geographical diversity of Khurkot also can be the attraction for internal and external tourists. In addition, settlement at Ratatar can be developed as potential home stay for the outsiders. The high hills of the New Town can be developed as the viewpoint of the varied landscapes. Bank of Sunkoshi can be developed as recreational spot. Khurkot New Town lies on the way to Sindhuli Gadi, a historical place and in between the proposed religious route from Janaki Temple to Dolakha Bhimsen. So tourists travelling to these destinations can be accommodated in Khurkot to take a rest where they can enjoy the scenic beauty and landscape of the New Town.

3. Water Bodies

Sunkoshi River and Andheri Khola are two major water source of Khurkot. They have high potential for the multi-use. They can be integrately used for drinking and irrigation purpose.

6.4 PLANS & PROGRAMS

6.4.1 Long – term Physical Development Plan

Settlement Development

For the ease in infrastructure development, the concept of compact settlement development would be appropriate for the new town. Due to limitation in availability of buildable land area in low land, the settlement expansion should be focused on the uplands, like in the traditional Newari Settlement of Kathmandu Valley. The land along the highway is proposed for the commercial use however, the commercial activities along the whole Highway stretch is discouraged as it might interrupt the character of express way. In Khurkot, a dam for the electricity is proposed near to the

Khurkot, which causes the low land areas below the highway within the water table.[1] So, the infrastructure and settlement is totally discouraged below the highway level.

The targeted population for the next 20 years in the new towns is 1 lakh. The topographical analysis for the new town shows the carrying capacity of Galchhi and Khurkot to be 61562 and 43454 respectively with population density 150 ppha. The phase wise development in the new town is proposed as below:

Table 20: Phasewise Settlement Development & Carrying Capacity

Phase	Settlement	Available Area (Ha)	Carrying Capacity
I	Sajhatole, Ratatar	18.07	13773
II	Chainpur, Laukun	54.17	8126
III	Dhungelgaun, Palanse, Chhapdaanda	29.44	4417
IV	Baraha, Mathillobesi, Devkotagaun	69.45	10418
V	Darimbote, Mathillo Baraha, Daandakateri, Bhotechhap	44.79	6720
	Total	**215.92**	**43454**

Since the compact settlement is proposed in the area, mixed land use is preferred within the settlement. However, specific zones are proposed in new towns with dominant use as shown in the table below: (Refer map)

Table 21: Proposed Zoning (Bhimeswor-Khurkot)

Zone	Dominant Use	Settlement
A1	Commercial	Refreshment Centre Area, Khurkot Bazar, Dihi Tole, Sajha Tole
A2	Commercial and Institutional	Chautara Tole, Laukun
B	Agriculture	Palanse, Devkotagaun, Bara, Mathillobaraha, Baraha
C	Residential	Ratatar, Chhapdaanda, Dhungeldaanda
D	Low Dense Settlement	Daandakateri, Rupakot, Thulogaun, Mathillobesi, Bhotechhap
E	Low Dense Settlement	Chainpur, Arukhola, Darimbote

Road & Transportation

Every settlement should be well connected with the urban services through the road network. Besides, the linkage with other nearby settlements is also necessary for the development of New Town. So to provide motorable roads to every household, on the basis of field survey, discussion with Physical Development Sub-Committee different Roads of class A and B are finalized and its detail description are shown below:

The transportation network should be developed along with land development process. In Baireni-Galchhi New Town, ring road along the possible settlement developable area is proposed as urban-rural boundary delineation.Since two Highways meet at the New Town, both regional and local level bus parks are required in the town. Regional level bus park is proposed in Daltar, Khantar and the feasibility study is also in the progress. While the bus bays are proposed near to the settlements.

[1] *On the basis of Key Informant Survey in NEA, Sindhuli*

Table 22: Proposed Road Category in Bhimeswor-Khurkot

SN.	Road Name	Nodal Point	Class	ROW
1.	Refreshment Centre-Daandakateri- Rupakot-(Majhuwa VDC)- Mainapur- Batase- Bhotechhap- Jalkanya VDC-Sindhuligadhi- Sola Bhanjyang(BP Highway)	Refreshment Centre	A	30
2.	Daandakateri–Bimire–Ratatar–Devisthan(Ward 4)–Mathillobesi–Gharti Khahare(Ratanchura VDC) - Jogimod BP Highway	Jogimod (BP Highway)	C	15
3.	Refreshment Centre- Sunkoshi River Bank- Laukun – Pushpalal Highway	Refreshment Centre	B	20
4.	Ward 8(Bar ko Bot) – Kamitole – BP Highway	BP Highway (Ward 8)	D	10
5.	Pushpalal Highway-Daandagaun-Chainpur-Arukhola-Pokhari Gaun- Nayakharka- Nakajoli- Hirding-Khaniyakharka (BP Highway)	Pushpalal Highway (Ward 5)	A	30
6.	Bhimsenthan – Dihitole – Sunkoshi Dharmasala	Bhimsenthan	D	10
7.	Ganesh Mandir-Chhapdaanda-Thulagaun-Bhotechhap	Ganesh Mandir	B	20
8.	Pratikshyalaya (Ward 7)-Ganesthan-Darimbote-Ghogshila Khola	Pratikshyalaya (Ward 7)-	C	15
9.	Gyanjyoti PS – Chainpur- Palanse (Ward 6)	Gyanjyoti PS	B	20
10.	Sajha Tole – Dhungendaanda-Mathillobesi (Ward 9)	Sajha Tole	C	15
11.	Bhimesthan – Suspension Bridge (Ward 1)	Bhimesthan	D	10
12.	Sajha Tole (Ward 3)- Ratatar	Sajha Tole	C	15
13.	Badakhahare (Ward 7) – Phaat (Ward 7)-Aandheri Khola- to Ward 9	Badakhahare (Ward 7) BP Highway	B	20
14.	Jagire Khola – Admara - Thulogaun	Chapdaanda	C	15

Water Supply

There are four options in water supply system for Bhimeswor VDC water supply system. Existing scenario of the sources like Andheri khola water is using for irrigation purpose. Ghogsila Khola can be used as water supply source, but transmission line will be more than 6km and source is also not enough for present demand also. So, Bhadaure khola is proposed to fulfil short term water demand up to 10000 populations. For intake, double layer gabion structure about 4 m height have to be construct in two intake locations with invert arched shape. At least three weirs with two no. of 100 m3 capacity reservoir tanks and three nos. of 10 m3 distribution tanks are proposed to construct. Transmission pipe about 1500m of 120mm dia will be suitable to fulfil short term water demand. For water distribution, main pipe lines about 4500m of 100mm dia. and 2000 m of 80 mm dia have to be layed along with both sides in highway and centre on other tracks respectively.

For water treatment purpose, bar screening, sedimentation tanks, filtration units and disinfection units have to be designed.

For the long term, Sunkoshi River should be used for proposed population. At least two Sump wells have to be developed nearby Sunkoshi suspension bridge ( ) with connection with river providing approx. 1m dia Hume pipes about 200m length for easy water infiltration mechanism. About five stage submersible pump have to be installed to uplift water from sump well to treatment plant located above suspension bridge ( ). For water treatment purpose, bar screening, sedimentation tanks, sedimentation with coagulation, filtration units and disinfection units have to be designed. At least two balancing reservoir tanks have to be designed to distribute water.For the water supply system, the whole town can be divided into 4 sub- systems.

6.4.2 Social Development Plan

Being near to the capital city and district headquarter and because of the unavailability of services and facilities, most of the working age groups are out migrated for higher education and health services. Hence in order to retain the population in the area, basic facilities of education and health should be available within the town. Private investments on the health and education should be encouraged. Besides, integrated community building with resource centre and training hall should be established so that different trainings focusing women, children, disadvantaged groups can be organized and the regional level conference can also be organized.

Educational Development Plan

Table 23 : Logical plan for educational progress and development

Plan	Indicator	Verification Base	Hindering Aspects
Objective 1:			
To provide facilities of education to all the people residing and improve the quality of education			
Result:			
i) Increase in literacy rate	• Present literacy rate (81.45% male and 57.10% female) will be increased to 100%	• D.E.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
ii) Increase in old literacy rate due	• Establishment and start of Adult literacy Class in each and every ward	• D.E.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
iii) Retain of working age groups	•Establishment of good and facilitated school and colleges within easy accessibility	•D.E.O report •DDC information centre •NGOs report	•Political unstability •Support from gov.agencies
iv) Decrease in variation of male female educational attainment	• Increased female literacy rate	• D.E.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies

v) Special scholarships provided for women, poor and disadvantaged groups	• Certain budgets allocated for providing scholarships to poor, disadvantaged group and women	• D.E.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
vi) Regulaltion of informal primary classes in each and every area.	• Regulation of number of informal primary classes according to the population density and participation ratio in each area	• D.E.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
Ojective no.2:			
Raise in number of qualitative educational institutions.			
Result			
i) Educational institutions with basic facilities will be established	• Increased educstional institutions with basic facilities a) Increase the education level to Masters level in Bhim Jyoti Campus, Ward no. 3 Baireni b) Add higher level in Gyan Jyoti Primary School, Ward no.5 Laikun c) Pushpa Primary school to Pushpa Higher Secondary School, Ward no 7 • Establishment of technical education centre in Ward no.4 (Related to health) • Arrangement of libraries and IT based learning activities and facility of technical education as well	• D.E.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
ii) All the teachers will be trained	• Arrangement of training for all the teachers • Develop a provision of recruiting only trained teachers for qualitative education	• D.E.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies

Table 24 : Health reforms and development plan

Plan	Indicator	Verification Base	Hindering Aspects
Objective 1:			
To improve health condition of the local people by providing regular and qualitative health service.			
Result:			
i) Hospitals and health centres with all the facilities will be established	• Establishment of Primary Health Centre with 5-15 bed capacity and District level hospital with 25-50 bed capacity • Develop Bhimeshwor health post as a 100 bed capacity hospital • Plan developed for construction of Health post in Ward no.7 and other wards	• D.H.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
ii) Clinics, Medical Stores and Health post will be in easy access	• Health facilities will be in reach of all the local people within the half an hour distance	• D.H.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
iii) Health Service of infant and mother will be increased	• Decreased mother death rate, infant mortality rate, increase in average living age • Decrease in occurrence of general diseases	• D.H.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
iv) Awareness about long-term diseases and treatment	• Regulation of awareness programs related to diseases like asthma, diabetes, T.V, Cancer, Polio, Rheumatism, AIDS in regular basis	• D.H.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
v) Awarness about importance of vaccination	• Regulation of vaccination programs time and again	• D.H.O report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies

Table 25 : Security Development Plan

Plan	Indicator	Verification Base	Hindering Aspects
Objective 1:			
To develop the condition to live respectfully in the context of Old Age People, Disabled and Helpless people of the society			
Result:			
i) Old age people will be facilitated with easy health facilities along with economic security as well.	• The service related to Old Age People, Disabled and Helpless people will be added • All the old aged people will be provided basic health treatments • Construction of Old Age Home in …… Wards • Collection of data relating helpless old age people to to plan in helping programme.	• V.D.C report • DDC information centre	• Political unstability • Support from gov.agencies
ii. Old aged people will have easy life	• With the provision of identity card, old aged people will be provided free health as well as transport facilities	• V.D.C report • DDC information centre	• Political unstability • Support from gov.agencies
iii) Differently able people will be provided skillful trainings and opportunity to related jobs and social respect	• Regulation of special educative program for differently able people in both areas • With the provision of identity card, differently able people will be provided free health as well as transport facilities in both areas	• V.D.C report • DDC information centre	• Political unstability • Support from gov.agencies
Objective 2:			
To assure social security to all the general public/children			
Result:			
i) Assurance of Social Security to all the general people	• Establishment of Police station,in different areas • Development of plans for establishing Police Station, Bit	• V.D.C report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
ii) Provision of special security service providing fundamental child rights to the homeless, conflict suffered and children in problems	Construction of Child Age Home in suitable area for the children in different problems with all the arrangements	• V.D.C report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies

Table 26 : Social Inclusion Plan and Program

Plan	Indicator	Verification Base	Hindering Aspects
Objective 1:			
To involve marginalized group in each and every development plan			
Result:			
i) Provision of social inclusion in the development program.	• Establishment of User group with certain percentage of women, ethnic group and marginalized group • All the old aged people will be provided basic health treatments • Finding different women's group and make plan for economic empowerment • Establishment of an office in Khurkot .to include all caste, religion and sex in the meeting held for the development of education, sports and other sectors of the area • Establishment of a centre in Khurkot for regulating meeting on recent problems, social subjects and develop plans to improve social activities of the new town area • Collection of different data related to different institutions and keep record on Municipal Development Committee. • Establishment of a regional office to provide all the sevices of District as well as Central level offices to general people within the new town area	• V.D.C report • DDC information centre • NGOs report	• Political unstability • Support from gov.agencies
ii. Increase educational attainment in dalits	• Special scholarship arrangements for dalits and marginalized people in both areas. • Establishment of multi-purpose building to upgrade the education	• V.D.C report • DDC information centre	• Political unstability • Support from gov.agencies

	level and provide different trainings to marginalized group in both areas • Regulation of awareness programme regarding social discrimination in both areas		
iii. Increase in women's involvement in development program and job placement with equality	• Both male and female will have same wage in both areas • Increase in budget related to women and child development in both areas	• V.D.C report • DDC information centre	• Political unstability • Support from gov.agencies
Objective 2:			
To involve NGOs in different IT related institutions to provide different skillful trainings, service and job opportunities to certain communities			
Result:			
d) Involvement of NGOs in IT related institutions for providing trainings, service and job opportunities	• Regulation of different trainings in support of NGOs in both aareas • Collection of data of different NGOs working in different field to know about the different services they are providing in both areas	• V.D.C report • DDC information centre	• Political unstability • Support from gov.agencies

Table 27 : Development plan of Open Space: (Playground)

Plan	Indicator	Verification Base	Hindering Aspects
Objective 1:			
To construct and upgrade the condition of playground in new town areas			
Result:			
Construction and Upgradation of Playground	Construction of Playground, Open Space and Community park in the river bank of ward no 1	• V.D.C report • DDC information centre • D.E.O report	• Political unstability • Support from gov.agencies

6.4.3 Cultural and Tourism Development Plan

The new town has lots of potential potential for the tourism development in different sectors like religious, adventurous, agro-tourism etc.

Khurkot is localted on the religious route from Dhanusha Dham to Dolakha Bhimsen. So the infrastructures could be developed targeting the pilgrims. Besides, huge variation in topography within a short distance have created a different tourism potentials. River Beach fun parks could be established along Sun Koshi River. Private Sectors should be encouraged for the establishment of tourism infrastructures.

Table 28 : Cultural development plan

Plan	Indicator	Verification Base	Hindering Aspects
Objective 1:			
To promote and conserve the cultures and rituals of the new town area			
Result:			
Preservation of specific cultures and rituals of the area.	• Involvement of youth in cultural development and different traditional festivals • Construction, Conservation and reconstruction of the religious temples • Construction of managed cremation area • Promotion of ethnic group of i.e. Hayu	• D.D.P report • DDC information centre • Report on Cultural development	• Political unstability • Support from gov. as well as non.gov.agencies

Table 29 : Tourism development plan

Plan	Indicator	Verification Base	Hindering Aspects
Objective 1:			
To establish and promote tourism as a leading business developing all the related infrastructures and improve the area as tourism centre thus increasing economic activity.			
Result:			
Development of tourism industry with all the basic infrastructures and manpower related to tourism.	• Involvement of youth in tourism sector generating economic stability. • Establishment of Hotels, Lodge and Resorts according to the national norms • Establishment of organized restaurants, cafes • Arrangement of rafting (Dumja- Laukun) • Development of trekking route from Khurkot-Chapali , Sindhuli Gadhi • Trekking through Khurkot, Majkuwa Nagi, Matanbas along with sight-seeing. • Establishment of Information Centre for tourists • Run Home stay in Ward Ward no.4 in Ratatar • Conservation of ethnic people like (Hayu) in Khurkot • Preservation of specific culture and festivals	• D.D.P report • DDC information centre • Report on tourism	• Political unstability • Support from gov. as well as non.gov.agencies

Agriculture

Communal farming should be promoted for the commercialization in the agriculture sector. Different Pocket areas for the agriculture should be defined. Training programs should be organized through District Agriculture Office for the non-seasonal and cash-crops products. Besdies the concept of Transfer of Development Right can be introduced for the preservation of agriculture land. In Khurkot, the agriculture land is very limited. So, the available river bank could be used for the agriculture purpose.

Table 31 : Logical plan for agricultural development and marketing

Plan	Indicator	Verification Base	Hindering Aspects
Objective 1:			
To increase agricultural as well as livestock productivity and organized market enhancing the economic condition of the local farmers			
Result:			
i) Increase in agricultural as well as livestock productivity and availability of market enhancing the income of the local farmers	• Availability of technicians, fertilizer, seed, irrigation and related facilities like easy loan increasing the population engaged in agriculture and hence enhancing the living standard and economic condition of the local farmers	• D.D.P report • DDC information centre • D.A.O. report	• Political unstability • Support from gov.agencies
ii) Faciliation of agriculture service centre and seed storage centre	• Establishment of agriculture service centre In different wards	• D.D.P report • DDC information centre • D.A.O. report	• Political unstability • Support from gov.agencies
iii) Increase in pocket areas leading to increase in agriculture production	• Recognition of pocket areas for vegetables, fruits and spices Ward no 2, 3, 4 above B.P. Highway	• D.D.P report • DDC information centre • D.A.O. report	• Political unstability • Support from gov.agencies
iv) Increase in irrigation facility	• Add irrigation facility as far as possible reducing the trend of seasonal agriculture	• D.D.P report • DDC information centre • D.A.O. report	• Political unstability • Support from gov.agencies • Hilly topography
v) Increase in livestock farming and its proper management	• Increase in commercialization of poultry farming as well as livestock	• D.D.P report • DDC information centre	• Political unstability • Support from gov.agencies as

	farming (Cattle, Pig)with the availability of easy loan in Ward no. 3 Ratatar, Ward no 5, 6 and 9	• D.A.O. report	well as non-gov.agencies
vi) Promotion of Diary industry	Establishment of Diary Industry and Refrigeration store in different areas	• D.D.P report • DDC information centre • D.A.O. report	• Political unstability • Support from gov.agencies as well as non-gov.agencies

Industry

Due to topography, large scale industries are not feasible in the new town. Industrial village is proposed in oreder to attract the privates to establish small scale industries there. Agricultural processing industries should be established in order to provide employment to the locals.

Table 32 : Logical plan for industrial progress and development

Plan	**Indicator**	**Verification Base**	**Hindering Aspects**
Objective 1:			
To establish and promote both small as well as large scale industries mainly focusing on the available resources			
Result:			
i) Establishment and promotion of small as well as large scale industries using natural raw material.	• Studies carried out for the recognition of employment opportunities and studies related to possibility of specific production of each ward • Establishment of industries in Ward no. 7, Bahara, Ward no 4, Thulo Gaun and Ward no. 1 Danda Kateri	• D.D.P report • DDC information centre • Small Local Industries Development Comittee	• Political unstability • Support from gov.agencies
ii) Increase in self-employment and small scale industry	Similar as above in different places	• D.D.P report • DDC information centre • D.A.O. report	• Political unstability • Support from gov.agencies
iii) Modernization in agricultural sector and increase in market-oriented production	• Facility of trainings related to modern technique of agriculture along with initiation for regular production of cash crops, vegetables	• D.D.P report • DDC information centre • D.A.O. report	• Political unstability •Support from gov.agencies

	and live stocks in both areas.		
iv) Proper utilization of forest product and increase in economy	•	• D.D.P report • DDC information centre • D.A.O. report	• Political unstability • Support from gov. as well as non.gov.agencies
Objective 2			
To increase remittance collection and reuse collected amount in agro-based industry			
Result:			
Increase in remittance and its proper utilization	• Proper utilization of remittance in development works	• D.D.P report • DDC information centre • Report related to foreign job placement	• Political unstability • Support from gov. as well as non.gov.agencies
Objective 3			
To develop agro-based industry as a main economic source			
Result:			
Establishment of agro-based industry	• Establishment of Resin Collection Center & medium scale juice industry in Khurkot	• D.D.P report • DDC information centre • D.A.O. report	• Political unstability • Support from gov. as well as non.gov.agencies

6.4.5 Environment Management Plan

In order to develop new town in sustainable manner, the environment management should be considered. For the solid waste management, the area should be categorized into urban and rural sector since character of waste is different according to the context. The land fill site for Galchhi is proposed in Mahesh Dovan while in for Khurkot. Public-Private Partnership concept should be adopted for the waste management.

For wastewater management, separate drainage system is proposed. Domestic wastewater will be collected only after septic tank provision in each household, offices, and other. In Khurkot, three sectorial collection systems will be designed for collection of domestic, commercial and other wastewater. About 3.6 km length of 30cm dia pipe is required for sanitary sewage and 5.5 km length of 1.5m dia or equivalent size sewer line for both side in highway is required to manage storm water. Combination of decentralized and centralized system will be beneficial for wastewater treatment system. Communal Compsoting system should be developed in the rural area.

For the management of the forest, users committee should be encouraged to do conservation activities in close co-ordination with District Forest Office. In order to stop the encroachment of the forest, boundary delineation of the forest should be prioritized.

IEE/ EIA should be performed before the establishment of the industry related to sand extraction.

6.4.6 Disaster Management Plan

An inventory of risk sensitive areas should be prepared along with mapping. A buffer zone is created along the river corridor and settlement development is restricted in that area. Control & preventive measures should be taken for the landslides in Bhote Chhap, ward no. 4 and landslide above Kol khola, ward no. 8 in Khurkot. Green areas are developed in high slope land. Different awareness programs should be launched for the conservation of the forest.

6.4.7 Climate Change Adaptation Plan

Different awareness program related to the climate change issues and adaptation, should be conducted. Data should be collected regularly by the concerned agencies to know the effect of the climate change.

7 Major Strategic Projects

7.1.1 Prioritized Projects

The prioritized projects are identified based on the rank gained through scoring (Refer annex)

Table 33: Projects priotized by subjective committes in Bhimeswor Khurkot

S.N.	Project	Priority
Project Finalized by Physical and Institutional Sub-Committee		
1	Integrated water supply with sub-systems	1
2	Sajha Tole-Baruthan-Ratatar-Jankalyan PS- Chhap Danda-Mathillo Besi-Thula Gaun-Ratanchura-Ghatta Mathi-Khoj Chowk Road	2
3	Sunkoshi River and Riverfront Development (Road (Refresh Center - Laukun), Recreational Parks)	3
4	Palanse-Chainpur-Afre Mandir Road	4
5	Andheri Khola-Mathillo Besi Road	5
6	Danda Kateri-Ratatar-Bhotechap Road	6
7	Drainage Management(w-1,2,3,4,5)	7
8	Jogi Mod Andheri Khola Bridge Construction (Mathillo besi)	8
9	Fun Park	9
10	Landpooling Ratatar	10
11	Landpooling Chainpur	10
12	Landpooling Daandakateri	10
13	Irrigation Canal Construction	13
14	Buspark	13
15	Upgradation of all roads within NT	13
16	Picnic Resort	17
17	Regional Bus Park	18
18	Electrification at remaing area	19
19	City Bus Park	20
20	Khurkot Sindhuli Gadhi Cable car	21
21	Electricity Sub-Station	22
Project finalized by Disaster Management, Environment and Climate Change Sub-Committe		
1	River Training of Andheri Khola	1
2	Control of Landslides	2
3	Sanitary Landfill Site	3
4	Development of Bio-Gas, Wind energy, solar energy	4
5	Disaster Management	5
6	Awarness Program for minimization of Disaster	6
7	Awarness Program related to Climate Change	7
Project finalized by Economic, Financial,Tourism and Cultural Sub-Committe		