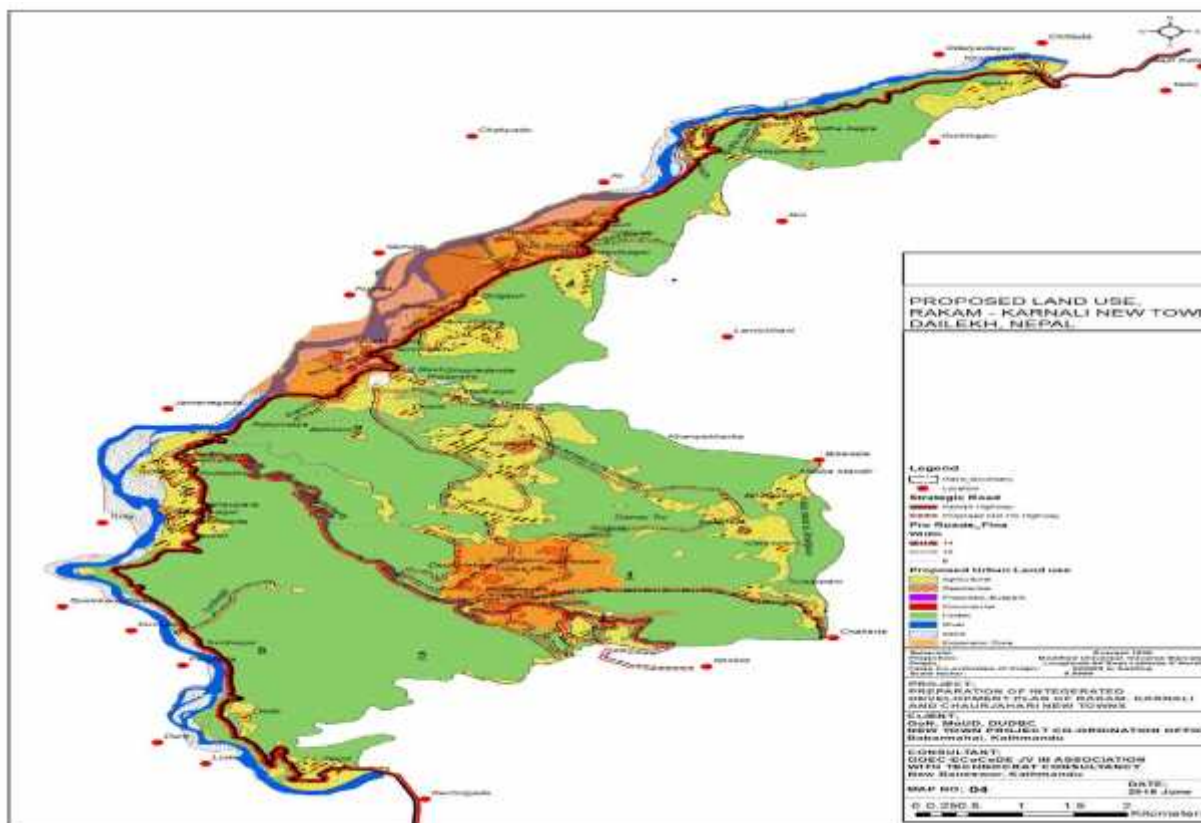


Government of Nepal
Ministry of Urban Development
Department of Urban Development and Building Construction
New Town Project Co-ordination Office
Babarmahal, Kathmandu



FINAL DRAFT REPORT
FOR
PREPARATION OF INTEGRATED DEVELOPMENT PLAN OF RAKAM KARNALI
VOLUME - I

April, 2017

Submitted by:
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PROJECT INFORMATION

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ACRONYMS AND ABBREVIATIONS

BOOT	Built Operate Own & Transfer
CAD	Computer Aided Design
CBD	Central Business District
CBO	Community Based Organization
CBS	Central Bureau of Statistics
CC	Climate Change
CSO	Civil Society Organization
DDC	District Development Committee
DOR	Department of Road
DPP	District Periodic Plan
DPR	Detailed Project Report
DTMP	District Transport Master Plan
DTO	District Transport Office
DUDBC	Department of Urban Development and Building Construction
EIA	Environmental Impact Assessment
EZ	Economic Zone
FAR	Floor Area Ratio
FGD	Focused Group Discussion
FNCCI	Federation of Nepalese Council of Commerce and Industries
GDP	Gross Domestic Product
GESI	Gender Equity and Social Inclusive
GIS	Geographic Information System
GON	Government of Nepal
GPS	Global Positioning System
IAP	Integrated Action Plan
IDP	Integrated Development Plan
IEE	Initial Environment Examination
INGO	International Non-Governmental Organization

IT	Information Technology
LFA	Logical Framework Approach
LSGA	Local Self Governance Act
MHH	Mid Hill Highway
MoFALD	Ministry of Federal Affairs and Local Development
MoUD	Ministry of Urban Development
MSIP	Multi-sectorial Investment Plan
MTMP	Municipality Transport Master Plan
NBC	Nepal Building Code
NGO	Non-Governmental Organization
NPC	National Planning Commission
NPD	Poverty Mapping of District
NT	New Town
NTPCO	New Town Project Coordination Committee
PDP	Periodic Development Plan
PPP	Public Private Partnership
PRA	Participatory Rapid Appraisal
QA	Quality Assurance
QMAS	Quality Management cum Assurance System
SWOT	Strength Weakness Opportunity & Threat
TDC	Town Development Committee
TOR	Terms of Reference
UN	United Nation
USD	United States Dollar
VDC	Village Development Committee
WUA	Water User Association

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1. PROJECT BACKGROUND

1.1 BACKGROUND

Nepal's urbanization process is rapid and imbalance compared to regional context. This trend is concentrated mainly in Kathmandu valley and other cities of terrain or fertile valleys. The result is that the large cities are falling to cope with the demand of infrastructure services and job opportunities are increasingly reeling under the externalities of the haphazard urbanization. Environmental degradation, congestion, urban poverty, squatter settlements, unemployment and lagging provision of infrastructure service has 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 have yet to emerge as the engines of economic growth and contribute to reduction of urban or rural poverty alike.

Despite all these problems, government's responses have been grossly inadequate. The responses trend to be scattered and ad-hoc rather than planned and coordinated. A institutional capability has been one of the leading in the poor performance of the government agencies. Above all, lack of the long-term development perspectives or plans has led to uncoordinated actions of agencies involved in urban development. Therefore the result is poor or limited impact in urban development efforts. Consequently, economic development has not taken place in the desired manner consistent with the pace of population growth.

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 the natural disaster and national parks etc.) were resettling 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 centers was prepared. Similarly, IAP was popular in 1990s before the self governance act enacted by government of Nepal. In 2000 long-term concept in 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. Beside, IAP's overwhelming concentration on ward level problems has also led to neglect of municipal level vision and desires. As a result, through several municipalities shows 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

large cities, encouraging planned development of potential hill cities and building infrastructure that can facilitate about one hundred thousand populations in hilly cities 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 on the development of these new towns (NTs) comprises significant economic base of the nation development.

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

1.2 PROJECT OBJECTIVES

The main objective of the proposed assignment is to the Integrated Development Plan and Building Bye-laws of all proposed ten new towns described in related chapter. 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 basic of Sectoral Goal, Objectives, Output and Programs.
- To prepare building bye-laws to regulate development in the town integrating Land Use and road network plans and long- term vision of the town.

1.3 UNDERSTANDING OF STUDY OBJECTIVE AND TOR

Project Location

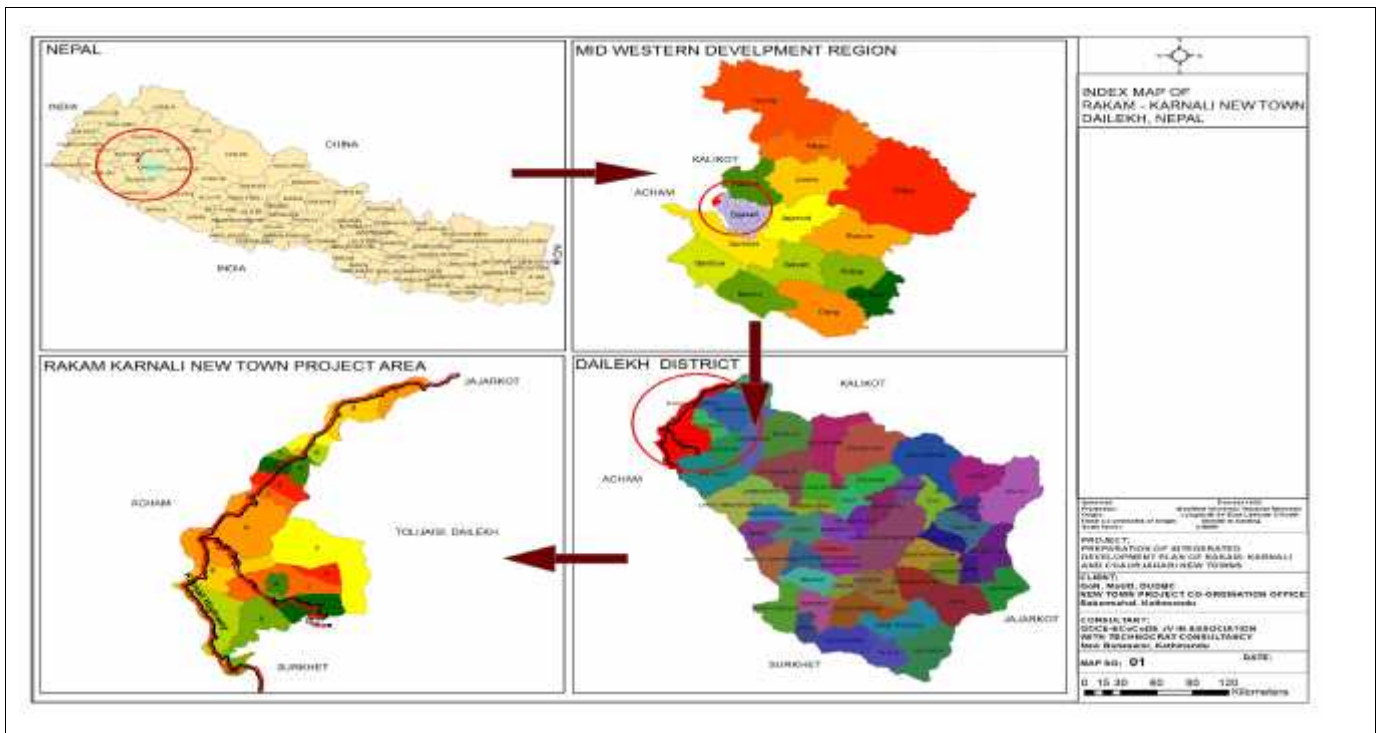


Figure 1: Location Map of Rakam Karnali NT

RAKAM- KARNALI- DAILEKH

Rakam Karnali NT is located in Mid-western Development Region of Dailekh District. The settlement is growing rapidly and providing marketing and other services in its hinterland. The lead sectors of this market center are trade and business center, education and health center and tourism and service Centre. Based on those potential lead sectors, Rakam Karnali can be developed as a regional center for marketing as well as tourism center of Mid-western Development Region of Nepal. The center is providing social, economic, touristic as well as various services in its hinterland. The rock type is of Rakam area composed of Grey grifty chloric phylites and phylitic quartzites, metas and stones and conglomerate beds with white, massive quartzites. The temperature varies from 34.6°C maximum in summer and 2.6 °C minimum during winter season in Rakam NT. The average annual precipitation is approximately 1290mm at Rakam NT.

Further detailed site introduction and profile of the town will be followed in field report and draft reports.

1.4 SCOPE OF SERVICE

The scope of consulting services for preparation of Integrated Development Plan & Building Bye-Laws (as mentioned in expected output) shall include but not necessarily limited to the following:

- ❖ Update GIS based base maps of NTs which are recently declared as Rakam Karnali NT by GoN.
- ❖ The consultant should spell out the Vision of the town. The Vision should articulate the desires of the Town and its citizens, and will provide the guiding principles and priorities for the Plan's implementation. Consultant should critically review Feasibility study of Economic Development of New town prepared by NTPCO and rigorously discuss it in local level.
- ❖ Prepare overall Integrated Development plan of entire area including existing and future (5, 10 and 20 years) land use plan in cadastral maps. This should be based on land use plan and followed by narrative description, analysis, facts and figures.
- ❖ Conduct additional study on local economy 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.
- ❖ Identify potential area for urban development based on land suitability and other factors. Analyze present and future (5, 10, 20 years) housing needs/market, stock, conditions and recommend strategies for land acquisition, distribution of land and housing in future.
- ❖ Conduct studies on present and future (5, 10 and 20 years) demand in infrastructures (such as transportation, communication, electricity, water supply and sewerage system) and their supply. Analysis of demand should be in 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 should be worked out in details. Before recommending it consultant should revise road network plan prepared by NTPCO based on land use and other factors. The
- ❖ Network plan of infrastructures, both existing and proposed should be shown in cadastral maps with other detailed drawings and unit rate cost estimates. The consultant should also indentify and produce landfill site, treatment plant location and their detail drawings and cost estimate. A management scheme of both water supplies, solid waste management

system and landfill site should also workout.

- ❖ The consultant should carry out full study of existing social infrastructure such as health/education/sports/communication/security centers and other community facilities by addressing present deficiencies and future (5, 10 and 20 years) demands. The location and area of land required for all these infrastructures should be identified in cadastral maps. Both architectural and structural detail drawings and cost estimate of these should be presented in the reports.
- ❖ Identify and assess critical, sensitive and other natural resources including parks, green belts, recreational area, along with strategies for their protection, preservation and stewardship against the adverse impact of future development and land use changes. Calculate the cost estimate on unit rate basis for their preservation and protection. Show locations and calculate future requirements of such resources.
- ❖ Verify Government, Guthi and Public Land identified by NTPCO and assess the area required for future development and expansion of the town including land required for government and public purposes. Produce appropriate plan and policy to protect such land from private/public encroachment and others.
- ❖ Identify and assess 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, along with strategies for avoidance/mitigation of such hazards in the course of future development and calculate the cost estimate on unit rate basis.
- ❖ Prepare the Proposed Land Use Plan for 5, 10 and 20 years in the existing cadastral maps (plans) based on:
 - i) The policies enunciated for different urban activities,
 - ii) Population to accommodate maximum 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.
- ❖ Provide a full study of following Land Use Zone and recommend bye-laws for the construction of building and other infrastructures. 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.
- ❖ Prepare Building and Planning bye-laws that clearly spells minimum in the following areas regarding the construction of building:
 - (a) Minimum land area
 - (b) Population density
 - (c) Maximum ground coverage and Maximum floor area ratio (FAR)
 - (d) Maximum building height and Maximum no. of floors
 - (e) Right of way of roads

- (f) Set back in four sides of the building
 - (g) Minimum parking area
 - (h) Lift
 - (i) Minimum distance to be left in both sides of stream/river.
- ❖ The building and planning bye-laws of the towns should prepare in accordance with existing Bye-laws of Kathmandu valley" prepared by Kathmandu Valley Town Development Committee, NBC, Building Act and Apartments Act of Nepal.
 - ❖ Recommend 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. Prepare separate report by volume each Integrated Development Plan, Building and planning bye-laws, infrastructures etc for each town, also prepare investment and cost recovery Plan.
 - ❖ Within the first four month of study period the consultant should submit draft report of Land Use map with final demarcation of land and its areas to be required for future urban development purposes.
 - ❖ Prepare detail feasibility of priority sectoral sub-projects (3 in each NT which are not declared as Rakam Karnali NT)
 - ❖ Prepare summary of IDP of each town in Nepali language for the purpose of approval from government of Nepal.
 - ❖ Prepare physical model of each towns. The scale will be finalized based on the area covered by New town.

1.5 OUTPUT EXPECTED

The completed Integrated Development Plan, program and Building bye-laws/ project report will include followings; and are subject for further addition as per the requirement of the project:

Town profile:

An up to-date profile will be prepared, comprising of base line information of the existing physical, social, economic, environment, financial and organizational state of the NT. Apart from the key statistics, such base line information will also include textual descriptions, thematic maps, charts, diagram, and key problems prevailing in the settlements and the / VDC, Base line information of at least two time points-having minimum interval of (past) five years will be included.

a) Analysis:

The section will contain at least of the followings:

Trend analysis: The analysis will reveal among other things growth trend of population, migration, land use, infrastructure provisions, import-export of goods, agricultural outputs, jobs, and other economic opportunities.

SWOT analysis: This will reveal potentiality of the NT based on its strength and opportunities. The analysis will also reveal the weaker side of the town which tends to

pose threat to the future development of the NT. Moreover study will focus on the opportunities and the strengths of the town.

Spatial analysis: The analysis will clearly reveal demand and supply situation of vacant land, besides including land develop ability analysis. The analysis, therefore, will clearly show the location where the future growth can be channelized

Financial analysis: The analysis will reveal income potential and financing sources including TDC/ NT expenditure pattern of the NT for the fifteen-year plan period.

b) NT vision:

To make the vision operational, necessary development principles to guide the sectorial activities also need to be outlined. Vision and principles will be formulated with broadly participated TD committee meeting and will be endorsed by the public hearing.

c) Sectorial goals, objectives, output, programs:

These will be formulated mainly using Logical Framework Approach (LFA), and will be supplemented by performance indicators and means of verification of such indicator as far as practicable. When adequate data are not found and formulating indicators becomes not feasible and if the central technical advisory committee and the technical working committee in the field are also satisfied of such deficiency of data, the team leader on the advice of such committees may introduce necessary modifications in the LFA technique. Sectors, which are required to be included, will include at least physical, environmental management, social, economic development, disaster management, Climate Change, financial mobilization, and organization development. Such Sectorial plans and programs will be formulated by forming Sub-Steering Committees, with isolated subcommittee or combined committee of similar themes. Sectorial plans and programs will be prepared giving due attention to national concerns such as poverty reduction and social inclusion.

d) Long-term physical development plan (PDP):

Such physical plan (can be termed as physical master plan) will essentially reveal the future desired urban size and form of the NT, keeping in view of planning horizon of 20 years and also classify the Town land revealing broadly urban areas, urban expansion areas, natural resource areas and also disaster prone area. Such physical plan will be separately supplemented by the relevant data and thematic maps of existing land use, environmentally sensitive areas, and infrastructure services such as road network", water supply and drainage system, sewerage network, telecommunication network and electricity distribution network. Also hierarchy of the open space will also be justified within NT areas. Plan will also be supplemented by social and economic data and thematic maps revealing the social and economic infrastructures of the NT. The proposed land use plan will be justified with geological investigation, hydrological & metrological parameters of the NT area, and will have overlaid with base and cadastral maps too. There will be strategic steps/ suggestions to make available land for NT urban infrastructures. The master plan will be supported by some critical local area plans especially of CBD of the Town.

e) Social Development Plan:

Social development plan significantly contributes to bring qualitative improvement in the lives of the common people. Attention will be given focus on social development programme when

social development programme is getting priority in the present context. Plan will be formulated on the basis of the analysis of social condition of municipal / town area. Such plan will essentially cover the following aspects:

- Education/ Public health
- Security (physical as well as social)
- Main streaming GESI (Gender Equity and Social Inclusion): Inclusion of women, disadvantaged groups, children, elder, physically challenged etc.
- Cultural and Sports/ Hierarchy of Parks & open spaces
- Other urban social service centers (information, library, and space for social gathering)
- Others as per NTs requirements

f) Cultural & Tourism Development Plan:

Culture makes a distinct identity of the place and people, way of life and level of civilization. Cultural development plan significantly contributes to bring qualitative improvement in the conservation of local cultural heritage, art and architecture. Similarly, more attention will be Given to the preservation of tangible and intangible cultures. Cultural planning will be integrated with other planning. Such plan will essentially cover the following aspect:

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

g) Economic Development Plan:

One basic contemplation from the consultant regarding economic development plan is that the project should be made socially as well as economically sustainable. Hence it is must for a town of one lakh people to have direct job opportunity of twenty thousand population viewing the present socio-cultural status.

An Economic development plan which directly contributes in economic activities of the town and support in the development of the NT is also main component of the study. It will be better if the proposed new town have some economy based identity. It may base on the proposed town potentiality or we can add new features for its identity Sport city or IT City or Tourism City or Commercial city etc. The proposed integrated development plan needs to support to have the NT with identity based on its potentiality. This will be the vision for the new town. Such plan will essentially cover the following aspect:

- Economic development plan: Area of comparative analysis
- Industry development (as per comparative advantage of the NT/ hinterland):
- Trade promotion, Tourism development
- Employment generation, poverty reduction
- Agricultural development (commercialization of agro-forestry products, cold storage, vegetable market)

- Rural urban linkage- strategic location of different market center/ product collection centers
- Micro/small industry and entrepreneurship/ business promotion
- Possible EZs based on local economic growth potentials (driving forces)
- Others as per NT requirements

h) Financial Development plan:

Financial Development plan will essentially include:

The work is to formulate, identification and mobilization of resources required during the period of IDP implementation. The following things/ subjects needs to be considered while formulation the financial plan.

- Financial analysis and assessment of possible financial resources for the implementation of IDP in each NT.
- Analysis and projection of town income and expenditure, Revenue improvement action plan
- Allocation of Development budget (for coming five year), cost sharing among sectorial agencies, and expenditure management action plan
- Promotional strategy of private sector and civil society (PPP)
- Financial and economic analysis of proposed priority sub-projects
- Others as per NT requirements

i) Institutional Development plan:

Human Resources Development plan and organizational development planned are the areas of the institutional development plan. Following things will be considered in the formulation of institutional development plan:

- Decentralization, good governance and mobilization of people's participation
- Institutional coordination and establishment of network
- Organizational capacity and capacity building
- Others as per NT requirements

j) Environmental Management Plan:

The environmental management has remained as the major problem of the NT. The environmental management plan will be formulated by studying and analyzing in detail site study. Such plan will essentially cover the following aspect:

- Solid waste Management: 3R promotion- reduce/ reuse/ recycle, Sanitary land fill site
- Waste water Management
- Air, water, visual and Noise pollution
- Urban Greenery (forestry, Agriculture), park, garden
- Control and management of built environment
- Conservation of environmental sensitive areas
- Assessment of requirement of EIA/ I EE of major sub-projects
- Others (such as emergence of low carbon city, loud green city, garden city etc. concepts)

as per requirements

k) Disaster Management Plan:

The Risk Sensitive land use Planning/ Mapping of the NT due to the following disaster causes shall include whenever seems necessary:

- Landslide/ soil erosion, Floods Earthquake, Fire
- The vulnerability mitigation plan through the vulnerability mapping/ geological study of the area, a proper strategy will be adopted to formulate the action plan for Disaster management. This formulated plan may be of
- Pre- Disaster Plan
- Action Plan for During or immediate after disaster
- Post- Disaster Plan
- Disaster/calamity occurred previously in that urea will he overlapped in the updated geological and disaster event maps (overlays or historic events)

l) Climate Change Adaptation plan:

The Climate Change perspective study shall cover:

- Hydro-logical and metro-logical study of the area.
- Scope/ area of CC in the context of particular NT
- Vulnerability Assessment, analysis of impact of CC, its trends, projection
- Adaptation Plan/ Measures
- Main streaming CC in Planning and implementation of NT projects

m) Building Bye-Laws:

The complete planning and building bye-laws will be formulated with the overlay of cadastral map of the NT area. This shall be based on the NT vision and land-used objectives. This may cover following:

- General definition/ Zoning classification and bye-laws/ regulations
- Implementation mechanism & procedures etc
- Expected behavioral change from NT citizens

n) Multi-sectorial investment plan (MSIP):

Any project needs a detailed investment plan for pragmatic implementation of the project. Such plan will reveal short and long-term programs/projects, cost estimate, and probable financing sources prioritized in sequential manner for the planning period of each five years. Such programs/projects will be to cater to both the short-term and long-term needs of the NT and the wards, and will be consistent with the long-term development plan, sectorial goals and objectives, and the vision. Furthermore, MSIP will clearly reveal programs/projects for each fiscal year for the first five years. Such MSIP will be pragmatic, and be consistent with the financial resource plan. The city level plan/projects (Mega project) and the projects that can be implemented exclusively by NT will be clearly mentioned in MSIP. It is suggested that the plan/projects that have to implement by different line agency in MSIP, included after thoroughly consultation with the concern offices. The cost estimate of the projects will be done according to the approved district rate of the NT.

o) Detail Feasibility Study of Prioritized Major Sub-Projects:

In order to prepare reliable project banks for the recent execution of different sub-projects in NTs, consultants will prepare detail feasibility study of minimum 3 in each NT which have already declared and the details have been dealt on later part of this report. Necessary drawings, maps, economic and financial analysis, preliminary costing and other document will be submitted in different annexes.

Preparation of detailed project feasibility report will substantially include following:

- Examination of technological parameters. / Description of the technology to be used.
- Broad technical specification./ Evaluation of the existing resources.
- Schedule plan/ General layout.
- Volume of work

p) Block Physical Model of Town:

For more clarification and visualization, consultant will prepare a block physical model with 1:5000 or agreed scale to display the NT vision, land use plan and effect of implementation of bye-laws to the common public. CBD and important landmarks objects will be presented in higher scale as possible.

The thematic maps of these all development plans will be prepared in A-CAD drawing format in color A3 paper size. For the additional advantage on the utilization of the maps, it is recommended to present those thematic maps in GIS environment. The study will contain but not necessarily limited to following maps and drawings of agreed scale and information with required explanation.

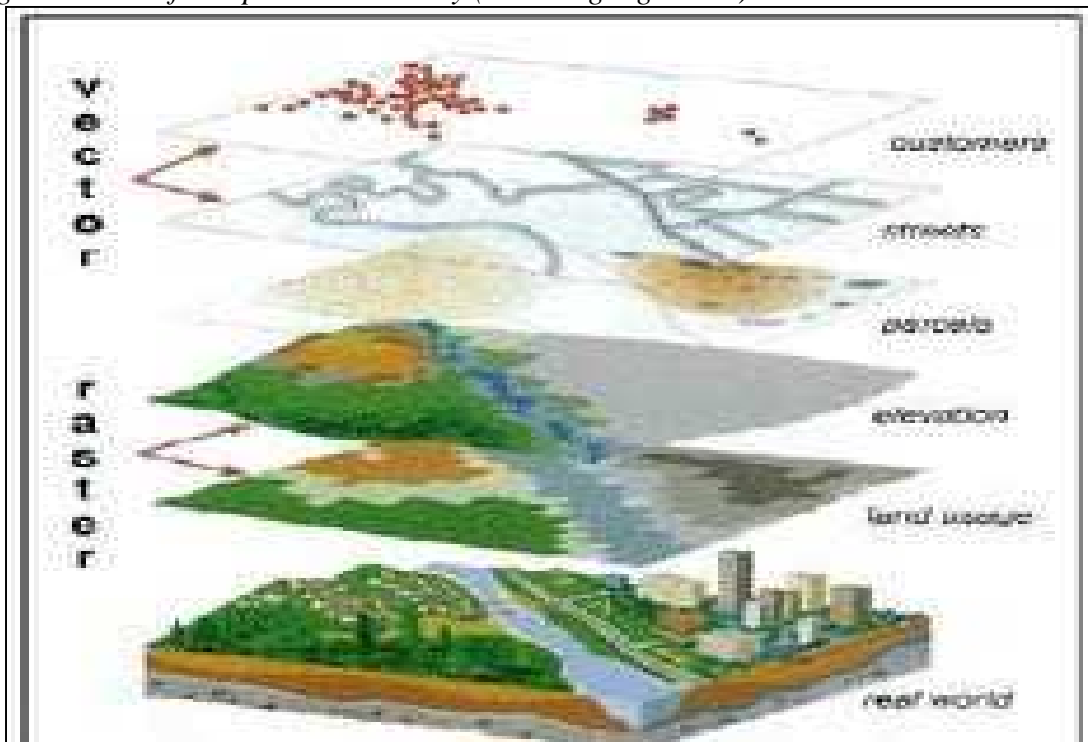
Index Map/ Location Map/ Hinterland Map

- Existing and proposed Land use and zoning Map including an overlay of cadastral map, and contour line with approved intervals (≤ 5 m).
- Urban expansion area map: total Land area required for future town development will be identified and demarcated. The planned area will have network plan with contour map, detail drawings. ·
- Existing and proposed Road Network Map, road sections, bus bays/stop, bus park (inter/ intra city), truck yards, and location of underground infrastructures etc
- Existing and proposed water supply network Map/ Sewerage/Drainage network Map
- Existing and proposed of electricity network Map/ communication network Map
- Proposed Solid Waste Disposal /Landfill Site Map with an overlay of contour line of agreed intervals.
- Environmental Sensitive Map/ Geological sensitive area map
- Map showing government/ public/ guthi land, with an overlay of contour line of agreed intervals and other details etc.
- Map showing proposed location, site plan and tentative sketch/size of social/cultural/ economic infrastructures such as City Hall/ convention centre, public parks, sport complex, security center, public toilets/ urban service centers, museum, zoo, cold store/ dry port etc.
- Detail Architectural/ Engineering Design/Drawing of selected priority sub- projects.
- Pictorial Presentation of Expected Outputs

Figure 2: Pictorial Presentation of Expected Outputs



Figure 3: Used for representation only (source: google.com)



2.

2. METHODOLOGY

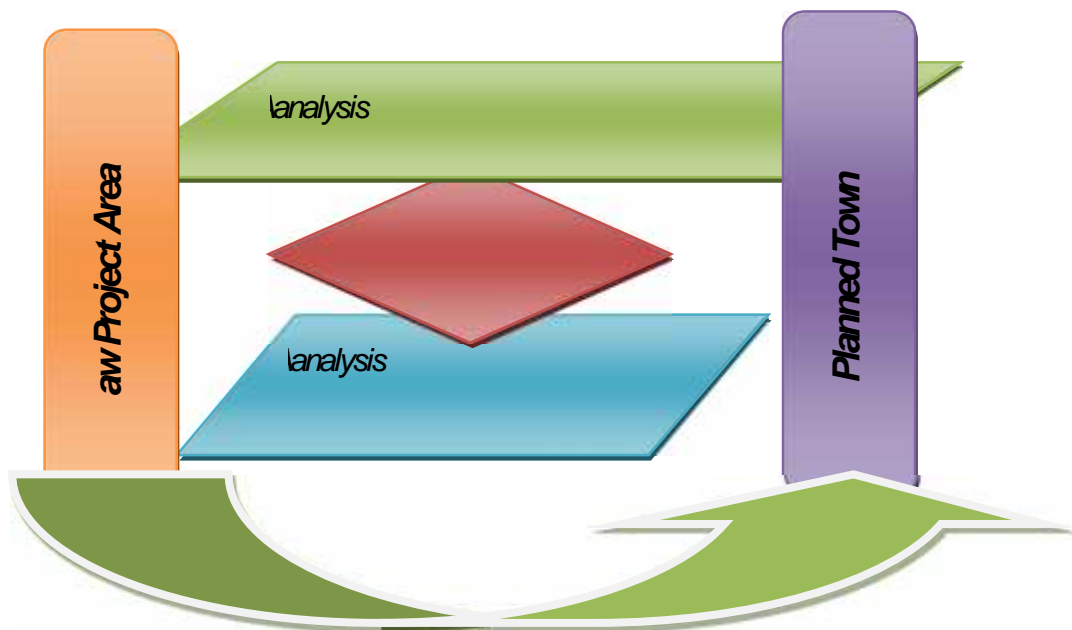
2.1 CONCEPTUAL FRAMEWORK

Similar kinds of problem exist in all the communities which lack the common vision and collective set of goals followed by set of objectives to achieve the desired future. Lack of comprehensive planning and integration, in different planning agencies has result in multi-directional growth. This is often observed in Nepali planning context. “Every year in some community, the state transportation department improves the roads on the east side of the town, while the public works department extends new sewer and water service to the south and the school district decides to build on the west side of the town, on the land that turns out to have been a bargain because it has poor road access and no sewer or water service. Communities ought not to make such mistakes in planning their own futures.” (Kelly & Becker 2000, p.17).The best example of lack of coordination of planning was outrageously witnessed by all the Kathmandu residents in recent time of road expansion, where it took months to complete task of single day lacking the coordination of road department and electricity department for shifting poles. Loss of irreversible infrastructural investment is yet to follow where recently made road is to be dig up again for laying water (Melamchi) and sewer pipelines. Thus such lacking coordination in planning are major challenges in recent time especially in underdeveloped countries like Nepal. Hence it is important to make conceptual framework for the study which enables for the integrated approach of planning and comprehend things which are not observed at the moment but are must in nearby future. Project will be carried out in two primary phases where in the initial phase contextual case study and field study will be done followed by the important phase of project identification or planning phase. Consultant is aware about the importance of ground/ contextual study as well as increasing influence of globalization in planning culture. In the literature or field study, expected framework is to come up with theorizing “Why we need comprehensive plans and how can we improve the effectiveness and efficiency of plans, for sustainable development of emerging towns” and “How can we achieve?”, which will be followed by more rigid planning approach in next phase including land use plans, infrastructure services plan and other different types of plans mentioned above. The study is expected to be conducted on the basis of both the exploratory and descriptive methods in the first phase followed by recommendation of integrated plan for the sustainable development of town.

Similarly, different data through the primary sources will be collected through focused group discussions with stake holders, key informants and direct observations. From the above sources it can conclude that what are existing conditions of the site, perception of people towards development, development trends and the impacts of urbanization in changing land use, social spaces, infrastructure planning, etc. and how that change can be tackled by planning in sustained growth. Lastly all the information will be collected, analyzed and evaluated for final analysis and recommendation for integrated planning will be made with extensive public participation. Planning phase will be extensively inclusive in its process where vision of the IDP will be set in the primary phase and planning will be done to achieve the target set in the vision. Planning will be carried with the consideration of existing planning legislations, standards, policies and requirements of modern planning approaches. Plans will be made to make it more achievable with its implementation plan and its investment plans, i.e. MSIP.

2.2 APPROACH OF CONSULTANT

Figure 4: Flow Chart on Approach of Consultant



General Approach:

The following outlines the Consultant's approach to the project. The Consultant will draw on its extensive experience in providing consultancy services for similar projects, and the Consultant's general approach will be based on:

- Development of a close working relationship with the client.
- A comprehensive response specific to the requirements of all works carried out on the project site at all times in a manner that ensures the attainment of the requirements of the design, specifications, budget and time schedule.
- Inspection in all critical activities by backup senior consultant of JV firms.
- Maintaining all necessary records, books, diaries , minutes and project records including all correspondence by administration of JV firms

Project Management Approach:

Project Management services for all project phases will be provided through well established procedures/processes. Project Management activities span the life of projects beginning with the conceptual design phase and ending with the defects liability and occupancy phase.

Quality Management Approach:

The firm has a comprehensive quality assurance program which includes a set of procedures that cover all key processes in the business including outputs and this will be laid down by the management team to this assignment. Adequate logistic and administrative support to provide adequate backstopping to the Project Team will be made available. The firm's assigned Project Manager for the task will be made responsible for insuring the effective application of these procedures and project management methodologies for entire project period. At the completion of

the project, the lessons learned shall be documented by the Team Leader and disseminated within the project unit and also to client. The consultant is serious in the matter of quality of work. Orientation and training will be conducted in various stages of the project to maintain the quality of work i.e. data collection, analysis, planning etc.

Technical Approach to the Services

In order to achieve various requirements of TOR, the approach has been conceived and developed to fulfill the objective and scope of the service. The Consultant firmly believes that the approach presented herein reflects the commitments for providing high quality services for the successful implementation of the project in time bound manner. Based on the understanding of the works and the scope of works as stated in the TOR general approaches to the proposed works will be based on the followings:

The Consultant Team will adopt a “system perspective” or approach in the following tasks in particular:

- The Consultant intends to apply optimum combination of the proven methods, expert professionals and recent available technology familiar with site-specific required studies/analysis, strategic importance and sound professional judgment based on practicality to fulfill the Client’s requirements with optimum satisfaction;
- Selection and timely mobilization of team members;
- Close contact, interaction, and consultation with the Client, and the beneficiaries/WUA, and all other concerned personnel and authorities;
- Regular briefing to the client and DUDBC concerned personnel regarding the progress, out comes, and problems encountered;
- Completion and reporting of the services in time.

Apart from some basic standards of technical approach in planning, consultant is aware about the importance of public participation and social inclusion in the ground. Consultant is cautious about the political inclusion during decision making, hence will actively play role in endorsing the decision by as many as possible among political parties and local representatives.

Phase Wise Development

The phases proposed in the technical approach have been further broken down into task series and specific tasks according to the intended content of the task, to help ease in comprehending the methodology planned for carrying out the task. Analysis has been carried out for the input requirements of discipline experts and the output expected for each task. Since the methodology has been developed in the form of phases formulated in the Technical Approach, their compatibility has been assured. The problems that normally come up in such projects have been identified. Phase included in the approach and methodology address them adequately. Task and sub tasks have been organized in a sequence, to run in series or in parallel.

The project is divided in to four distinct Phases detailed below:

Figure 5: Project Phases



PHASE I: Inception Phase

RESPONSIBILITIES

Urban Planner/ Team Leader, Urban Planner, Architect, Water supply and Sewerage Engineer, Civil Engineer, Environment Engineer, Geo-tech Engineer, Electrical Engineer, GIS Expert, Economist/Financial Analyst, Sociologist/Community Development Expert, Institutional Development Expert, Office Assistant support staff.

TASK DESCRIPTION

1. Collection of Secondary Level Data and Literature Review:

Various relevant documents and Maps relevant to the study will be collected from the concerned authorities and will be critically reviewed. Findings of these secondary sources information will be outlined and tabulated. Pertinent VDC profiles, DDC Periodic Plan, VDC Plans and other reports will be critically reviewed. The topographical map of the Study area will be collected and a hinterland base map of the study region will be prepared depicting name of VDCs, settlements, road, canal, water body, contour, environment sensitive area, agriculture, forest and other pertinent geographic and geological (mines and minerals) information in the vicinity of the VDC area. Similarly cadastral map of the bazaar and surrounding settlement within the VDC will be collected and used as base map of the bazaar area. The base map will be used for all planning purposes during the study. The VDC/ward level information will be collected from CBS and other published reports.

However, other relevant documents pertaining to Mid-hill Highway and planning related documents prepared by various government and non-government organizations, the project office, the previous DPR reports, existing reports on corridor study, physical development planning report, periodic planning reports, cadastral map of the settlements will be collected. Moreover, other relevant information will be collected from MoUD, NPC, DOR, MoFALD, DUDBC and other libraries. Similarly, relevant acts, regulations and standards regarding preparation of Integrated Development Plan and Building Bye Laws, DPR preparation, Settlement plan, Physical Development Plan and other relevant documents and details will be collected from the project settlements as well as from central offices.

The following documents, literature, maps and photographs will be collected and reviewed.

I. Maps

- Topographic maps of concerned settlements prepared by Survey Department, 1:25000 scale
- Concerned VDC map prepared by Survey Department of scale 1:15000
- Concerned district map
- Aerial Photographs/GIS base Digital maps (if any) of concerned Settlements
- Land Use, land cover maps, soil maps etc.

II. Existing literature, reports and other socio-economic data

- Feasibility Study of the Development of Urban Growth Centers and Urban Infrastructure of Selected Settlements along Mid Hill Highway (MHH) Corridor of Nepal.
- Local Self Governance Act (LSGA) 2055, LSGA Regulation 2056 Strategic planning documents of regional perspectives if any.
- Environment Protection Act, 2053 and Rule, 2054 Planning norms, guidelines, etc.
- Others Planning related existing laws, policies, plans and strategies.

Existing planning documents/reports (including IAP report, Physical development plan report, periodic plan report, dense settlement plan) relating to the concerned Municipalities and VDCs. Demographic, socio-economic data from CBS, DDCs, VDCs, Municipalities of concerned settlements or towns.

III. Critical Review of Past Experiences in New Town Planning

Review critically on the success and failure of the towns that were planned and implemented since last forty years period such as the five regional development centers, Kohalpur new town and other Terai towns and recommend planning and implementing tools that might play a major role to succeed town plans of new towns. Other documents like Population Census Report at VDC level, area of wards/village, Agricultural Census Report, District Transport Master Plan (DTMP), District Periodic Plan (DPP.), Poverty Mapping of District (NPC) National (3 years Interim plan) Plan, relevant sectorial development plans, Aerial photographs, topo map, satellite imagery if accessible and other related materials will be collected and reviewed.

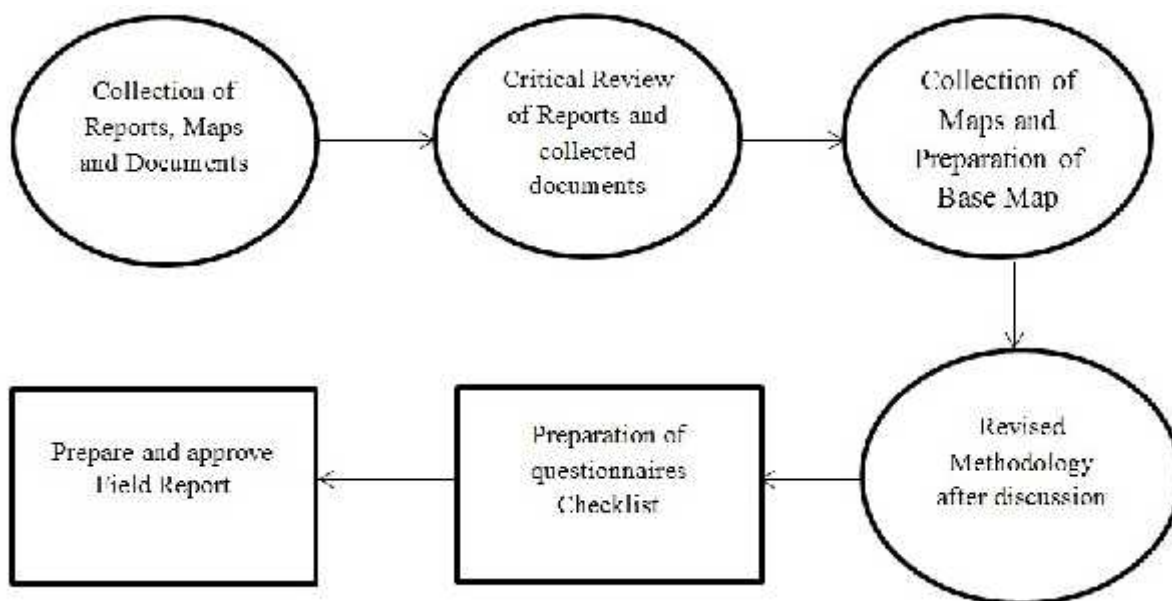
Output: Required secondary data and information collected.

2. Preparation of Questionnaire and Checklists:

The scope of the study clearly indicates the importance of the primary data and information for the preparation of meaningful and implementable plans and programs for the balanced development of bazaar area and its linkage with the hinterland. On the basis of literature review and scope of work checklist are prepared for data collection, Focus Group Discussion with different stakeholders like local people, local leaders, women group, Dalit Janjati, business community etc. Similarly a key informant survey questionnaire has been also prepared to collect views from recognized individual, experts and institutions like VDC/DDC officials, DUDBC Division office, NGO/INGO, other district line agencies etc. These questionnaires and checklists are attached in annex section.

Output: Fully prepared Consultant's team.

Figure 6: Flow Chart Inception Phase



3. Prepare and submit Inception Report:

Consultant had prepared and submitted draft Inception Report to the client within 7 days from commencement order of service. The report has been covered the requirements of Field Report as per TOR.

Output: Inception Report

4. Incorporation of Client’s Comments on Inception Report and Submit Final Inception Report:

After the Draft Inception Report reviewed by the client and available of comments the consultant has prepared the Final Inception Report incorporating the comments and suggestions provided by client.

Output: Finalized Inception Report

PHASE II: Investigation Phase

RESPONSIBILITIES

Urban Planner/ Team Leader, Urban Planner, Architect, Water supply and Sewerage Engineer, Civil Engineer, Environment Engineer, Geo-tech Engineer, Electrical Engineer, GIS Expert, Economist /Financial Analyst, Sociologist/Community Development Expert, Institutional Development Expert, Office Assistant support staff.

TASK DESCRIPTION

The study team will be mobilized to respective settlements and a consultative meeting will be organized with the client and relevant stakeholders in each project settlements immediately. The concerned TDC will be activated and sub committees will be formed to facilitate the field

investigation, contribute in planning and its execution. Such committees will be chaired by member of TDC and will include experts from concerned line agency, people from local groups, NGOs, CSOs, private sector etc. Secondary information concerning to the selected settlement will also be collected from the field.

Task II.1: Primary Data Collection: Physical Survey, Social Survey, Data Collection and Discussion:

The Study Team will use mainly observation, measurement, photography, FGD, formal and informal discussion/consultation with local people and stakeholders, Interview etc techniques to gather information, opinion and views of the development of the TDC.

The Study Team will be equipped with following equipment:

- Measuring Tape 30m long
- Camera
- GPS
- Local Body (New towns, Market centers, VDCs) contact names and numbers
- Checklists and Questionnaires
- Pens, Pencils and clip boards
- Calculator
- District Unit Rate
- Base Map

As the study relies on both primary and secondary sources of information, primary data will be collected through onsite observation, mapping and interviews with the local social workers, leaders, teachers, local administrative officials and other related stakeholders. The prospect, problems and development issues of the study area will be thoroughly identified by the way of field observation, extensive interaction and discussion with key stakeholders including DOR/MHH project Office, DUDBC Division Office, Local bodies and other relevant agencies. The socio- economic data will be extracted by secondary sources like official records or archives and published reports including CBS and others. In the case where settlements are not confined in a single or clear political boundary, the geographical boundary will be ascertained. Primary information will collected thoroughly as following methods:

a) Consultation with Stakeholders

The consultant will consult with the local stakeholders such as VDCs, TDC, user's committee, concerned line agencies, local people residing within the study area. An interaction will be made with the local stakeholders about the project being carried out by the consultant. They will be fully informed about the objective and the scope of the project. Consultant will try to eliminate any negative rumors about the project and ambiguities are cleared during the discussion. The consultant not only expects the co-operation from stakeholders but also will try to achieve participatory approach in execution of the project. The objective of the above consultation is to gather information, sensitize local stakeholders and identify problems which are done through.

b) Focus group Discussion

Focus group discussion concerning to the development plan in the selected settlements will be conducted to know the key potentials and problems related to development planning.

Issues such as the economic potentialities, possibility of future expansion of the settlements, rural-urban linkages, major problems facing/may face in the future and key projects to be focused with will be covered during the focus group discussion. This information will be helpful to identify the most potential sectors and major problems of the settlements. Furthermore, this information will suggest for preparing DPR of the selected projects of the particular settlement.

These methods will be helpful for identifying lead sector, potential function, function of hinterland areas, selecting key project for DPR, possible urban growth of the settlements etc.

c) Observation

Observational information will also be collected using the checklist. Basically information relating to existing infrastructural condition, possible expansion areas of the settlement, physical location, environmental situation and existing social infrastructure will be collected. This information will be important while coming into the phase of data analysis.

d) Key Informants Interview

Key information relating to the project will be collected through key informants. Key informants including the representative of civil society, political parties, local focal person, college lecturers, technical persons and local aged people will be collected. Information such as changed on land use and local practices for developmental works, key information regarding potential sector of the settlements, economic, social linkages etc will be collected through this method. This method will be useful for collecting focal/key information of the settlements.

e) Questionnaire Survey

If required, questionnaire survey will be conducted to collect household socio-economic and demographic information. Information such as population composition, trend of migration, age- sex composition, language and ethnic composition etc. will be collected through questionnaire survey in each settlement. Similarly, economic condition of the household, occupation, source of income etc. will also be collected through questionnaire survey. This information will be useful for preparing provisional list of the settlement and detail profile of the project settlements.

f) Information from Line Agencies

A checklist and data collection format will be used to collect information from the line agencies about their past, present and future activities in the selected settlements.

Output: Primary data collection completed

Task II.2: Vision Workshop

A vision workshop will be organized in the VDC or any convenient place. All stakeholders will participate including local people, line agencies, NGOs, CSOs, private organizations, Media Person, DUDBC officials, TDC members and subcommittee members and FNCCI etc. A working paper will be presented by the consultant depicting the potential and prospects of the settlement and its possible lead sectors. The consultant then will facilitate the workshop to set a long term vision for the settlements along with the lead sectors to achieve the vision. The Vision for the Integrated Development Plan will articulate the desire of the Town and its citizens based on prospects, roles and function of the new town, and will provide the guiding principles and

priorities for the plan's implementation.

Output: Data collection about desire of town and its citizen completed.

Task II.3: Identification and collection of Ward and Town Level strategic resources

Strategic resources/project at major settlements/village centers will be ascertained through Participatory Rapid Appraisal (PRA) by holding citizens gathering/meeting. The location for such gathering could be ward office/VDC office or any other convenient place/ location of the town.

Strategic resources/project at major settlements/village centers shall be identified through opinion survey of prominent citizens, official of the VDC and government agencies, and through the town level meeting which may include meeting of the town Development committee (TDC) and subcommittee if any, Data on physical Environment, social, economic, financial, and institutional shall be gathered from sources such as office records or archive, VDC reports, ward profile, published academic or professional reports, and data published by CBS. Analysis will include trend, spatial Analysis using GIS, and interpretation of aerial photographs.

Output: Identification and data collection of Strategic resources/project at major settlements/village centers

Task II.4: Project Identification Workshop at Local Level:

The study team after collecting all the information and data will prepare initial analysis and conduct one day workshop at bazaar level. The participants will include the people from VDC, DDC, NGOs, GOs, DUDBC division office, civil society and local party representatives. During the workshop, the perception of local people and institutions will be collected. The long term vision along with the major problem faced by local people and the bazaar area will be discussed. At the end of the workshop, the major program and projects required for the representatives.

Output: Workshop for collection information at local level completed.

PHASE III: Planning

RESPONSIBILITIES:

Urban Planner/ Team Leader, Urban Planner, Architect, Water supply and Sewerage Engineer, Civil Engineer, Environment Engineer, Geo-tech Engineer, Electrical Engineer, GIS Expert, Economist /Financial Analyst, Sociologist/Community Development Expert, Institutional Development Expert, Office Assistant support staff.

TASK DESCRIPTION

Task III.1: Data Analysis

The information collected through Observation, Measurement, FGD and key informant interview along with information from secondary sources will be analysed using following techniques:

Flow Analysis (goods and people): it will give the relationship of selected settlement with other settlements in the vicinity, surrounding market centers.

Resource Potential Analysis: It will be done to outline the resource endowment in concern TDC and its surrounding area. Human Resources will be analyzed in terms of education level, population, economic activities and availability of skilled and unskilled labor within the region. Institutional capability of government and nongovernmental organization to provide services in agriculture, industrial, resource development and social development will be assessed and analyzed.

Regional linkages and importance of the site will be deeply considered while analysing its potential analysis while this is the most important to develop the town as the regional center.

SWOT analysis to evaluate the opportunity and resources of the VDC will be carried out. The analysis will finally present the VDCs/Market Center wise strength, weakness, opportunity and threat of the area. The SWOT analysis will be supplemented with the problem, cause and effect analysis to explore for proper planning intervention in the VDC.

Demographic Analysis:

VDCs/Market Center wise population, ethnicity wise population, religion wise population, Poverty profile of population will be outlined, analyzed.

Socio Economic Analysis:

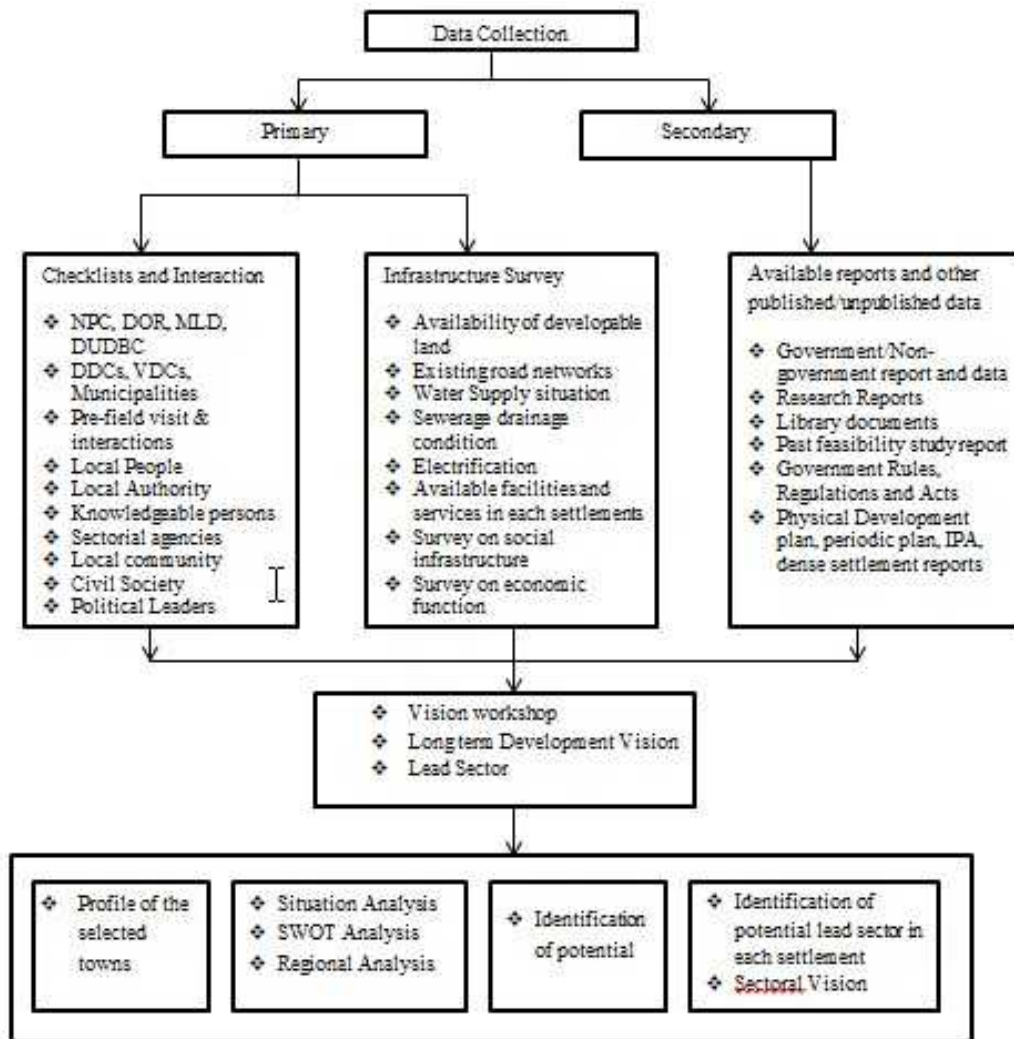
Work force composition, Economically Active Population, Land holding, farm size and sectoral analysis of Agriculture, Planning, Fishery, Livestock, Mining, Industry, trade and commerce, market linkages, physical and social infrastructures etc.

Environment/ Hazard Vulnerability Analysis:

Data regarding the hazard and environmental sensitivity will be collected and hazard vulnerability assessment will be carried out. Data will be analysed by generating specific tables. As a part of data analysis series of maps will be prepared through GIS (if applicable) method.

Output: Data analysis and synthesis is completed.

Figure 7: Data Analysis



Task III.2: Preparation of Plan

Based on the interaction with local authorities and local people, local supporting committee, and findings of different analysis / interpretation, integrated development plan and Building Bye Laws of the selected settlement will be prepared.

Planning process

Planning process will be a participatory one. The role of Town Development Committee (TDC) is emphasized and been formed in each town to guide preparation of Integrated Development Plan and building bye laws. The role of TDC is two- fold. First it will coordinate between sectorial agencies to channel capital investment and enable plan implementation, even after the completion of plan preparation. Second, broader participation in TDC can include concerns and aspirations of all the sectors and stakeholders therefore land credibility and legitimacy to the integrated development plan and building bye laws.

The subcommittee is envisaged to include local bodies, ward offices, government agencies, and

political parties/leaders, civil societies such as NGOs, CBOs, TLOs, intellectuals, prominent professional bodies, and planning team. TDC shall be key body to formulate policies and guidelines related to plan and building bye laws preparation. This shall meet to advise on various aspects of plan preparation including identifying problem and issues of the town, formulating and reviewing of town vision, goals, objective, and programs. TDC and its subcommittee will be the key forum to set the vision of the town.

The TDC, if needed, may also form a core advisory committee, comprising members of the TDC, but small in size, so as to expedite the planning proceeding. Such core advisory committee shall work in lieu of TDC, and shall work as a bridge between the TDC and sectoral (sub)-committees. In the long run-that is in the plan implementation phase, such core advisory committee may be transformed into advisory committee for the town to facilitate the plan implementation.

Planning team will be responsible to present all necessary analysis in all stages of planning process and to facilitate necessary meeting and workshops. Planning team will comprise of technical personnel from DUDBC/DO, VDC besides experts from the consultant firm. Town level meeting composing of officials of VDC, citizens, NGOs, CBOs, and TLOs will be held to determine the town level problems and needs. Accordingly, process will be identified. To ensure adequate participation in the planning process of deprived groups such as dalit, janjatis and disadvantages groups such as women, children, disabled; separate interactions with these groups will be carried out as and when necessary. The internally displaced people (IDPs) and squatters also need to be duly included in the planning process. To make meaning full participation of children, elders, physically disables, women, business group, leaders/officials and marginal groups innovative ideas will be introduce i.e. sketch competition between children with prize.

TDC members may lead Working Sub-Committees to facilitate the focused Group Discussion (FGD) and enable the specialized input of the experts so as to prepare sector-wide plans and programs. The Working Sub-Committee with the support of planning team will formulate Town sectorial plans and programs, using Logical Framework Approach (LFA). Such Plan shall clearly reveal the sectorial goals, objectives, outputs, activities, progress indicators, means of verification of these indictors and implementation strategies. The Plan cover the development sectors identified earlier. The planning team shall also elaborate consultation with the concerned Sub-Committee to formulate the development principles and guidelines for the preparation of Integrated Development Plan and Building bye-laws. The town will be planned on the approach of trickle down urban design approach consisting of various incentives making it more meaningful and attractive to public and private investors. Consultant will design realistic investment plan and operation maintenance plan of town so that private sector with in the interest of public sector is attracted in the implementation of town's project. Similarly options such as the resources that were mobilized could recover from the development benefits will also be worked out.

Output: Planning process identification completed

Task III.3: Planning and Identification of different component of study.

Town Boundary and Land Use pattern

The integrated development plan will comprise of physical /Social/ Economic/ Infrastructure/ Financial/ Institutional Development plan, and Disaster/Environment Management plan etc.

interrelated to multi sector investment plan and followed by narrative description, analysis, facts and figures. Land Use Map of both existing and proposed (5/10/20 year) will be developing considering new town boundary. The proposed Land Use Plan will be integrated with transport network plan of new town and adjoining hinterland.

Economic Development, Population and Demography

Current trends and pattern of local economy, population growth and distribution will be analyzed and forecasted for next 5,10 and 20 years. Analyze future economic growth sectors such as service, trade, and industry etc for 5, 10 and 20 years period that may also change in demographics and migration trends.

Housing and Population

The present trend of urban expansion and housing construction will be analyzed. The potential area for urban development based on land suitability and other factors will be identified. Consultant will analyze present and future (5,10,20 years) housing needs/market stock conditions and recommend strategies for land acquisition, distribution of land and housing in future for all age/income levels as per the study.

Physical Infrastructure

Consultant will conduct studies on present and future (5,10 and 20 years) supply and demand of physical infrastructures of town and recommend strategies for addressing the deficiencies if necessary. Demand analysis will be in different scenarios with facts and figures. The recommended complete network plan with additional space for urban services will be worked out in details. The network plan and recommended urban service spaces of physical infrastructures, both existing and proposed and will be shown in base maps with other detailed drawing and unit rate cost estimates. Study will clearly spell:

- Presently available land/sources etc; Present demand and supply
- Future requirements and supply condition; Gap in supply and demand
- Additional land/sources required; Augmentation plan for additional requirements
- Network map, flow diagram with salient features of existing and proposed systems etc.

Social Infrastructure

Consultant will provide a full study (inventory, analysis, and recommendations) of the Social Infrastructure addressing present deficiencies and future demands of 5, 10 and 20 year. Show the land area and location of such infrastructures and services existing and to be provided in coming 5, 10 and 20 years in the base maps. Work out architectural and structural drawings and cost estimate in unit rate basis.

Economic Infrastructure

Consultant will conduct study on pull and push factors that may attract people from hinterland and other parts of the country. Analyze existing acts/regulation/directives etc. that may substantially affect in migration to the new towns and will interrelate to the vision of towns. Propose location and areas with details of the infrastructures to be required in the horizon of 5/10/20 years.

Government/Public Land

Consultant will provide a full study of existing Government and Public Land Identify and assess area for future development and expansion of the town including land for government and public purpose. Produce appropriate Plan to protect these identified lands with their location and areas based on existing act and regulations. If required recommend appropriate suggestions in this matter.

Natural Resources/Open Space Conservation and Preservation

Consultant will identify critical and sensitive natural resources and area including parks, green belts, recreational area, along with strategies for their protection, preservation and stewardship in the course of future development. Consultant will calculate the cost estimate on unit rate basis for their preservation and protection.

Natural Hazards

Consultant will identify and assess 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, along with strategies for avoidance/mitigation of such hazards in the course of future development. Cost estimate will prepare on unit rate basis.

Cultural and Historic Resources

Consultant will identify and assess existing resources, and recommend strategies for their preservation and protection against adverse impacts from other/future developments. Cost estimate will prepare on unit rate basis.

Preparation of Building bye-laws

Consultant will conduct detail study on Land Use and recommend Bye-Laws for the regulation of Building and other Infrastructures that may appear in the Towns in future. Bye-Laws will be prepared in accordance with Sample bye laws, 2071 prepared by MoUD and "Bye-Laws 2064, of Kathmandu Valley" prepared by Kathmandu Valley Town Development Authority will also refer.

Implementation Strategy

The consultant will recommend an implementation strategy (including a suggested action program that generally describes the actions, cost time frames, responsibilities, procedures and the Town's capacity to use them) necessary for implementing the Master Plan of the town and prepare separate report by volume of each integrated development plan, Building bye-laws, Infrastructures development and management plans etc for each town.

Investment Plan and operation Maintenance Plan

Consultant will prepare realistic investment plan and operation maintenance plan of all existing and proposed infrastructures so that concerned authority could allocate required resources for smooth running of all infrastructures.

Output: Planning of different component of the study completed.

TASK III.4: Preparation of Integrated Development Plan

Incorporating all the analysis and plan that have been discussed above will be incorporated and integrated development plan will be prepared along with the Building Byelaws to guide and control the urban development in the selected town. The master plan will in different volume with following outputs:

- Separate reports with maps/drawing of integrated development plan and Building bye-laws, DPRs and other plans for each town.
- A complete town profile will be established with all relevant up dated primary and secondary data base and information; maps and drawing, issues and problems with proper analysis (including trend, spatial, resources and aided with tables, charts, diagrams etc), interpretation and findings about the planning / project area in local (ward), city and regional level/context.
- The town will be devised by Long term development vision very logically and rationally with a wide range of participation of stakeholders in the workshop organized at the city level.
- Framing of Sectorial goals, Objectives, Output and Programs for all planning/ project components with performance indicators and means of verification by LFA approach.
- Integrated Planning / Project document of different components like Master plan, Physical Development Plan, Social Development Plan, Economic Development Plan, and Environment Management Plan and Disaster Management Plan; with interrelated Multi Sectorial Investment Program (MSIP), Operation and Maintenance(O&M) plan, Building bye-laws; Brief Project Report on major Sub project including all relevant maps, drawing will be in hand.
- Overall planning document will contain following maps and drawings of agreed scale (digital also) and information with required explanation.
- Index Map,
 - Location Map
 - Hinterland Map
- Existing and proposed land use and zoning Map including an overlay of contour line with approved intervals. Land use map will cover major Roads, Drains, Electricity Line, open spaces, play grounds, rivers, lake, ponds, religious centers/area, agricultural, forest, residential, commercial, institutional, urban area, administrative boundary etc.
- Existing and proposed Road network Map, road sections, bus bays/stop etc and Location of underfund infrastructures.
- Existing and proposed sewerage/surface drain network plan showing surface drainage
- Existing and proposed water supply network Map showing intake, treatment plants, transmission line, reservoirs, distribution line etc.
- Existing and proposed electricity supply network Map with location of substation
- Existing and proposed communication network Map.
- Proposed Solid Waste Disposal / Landfill Site Map with an overlay of contour line of agreed intervals.
- Environmental Sensitive Map with an overlay of contour line of agreed intervals.
- Map showing government/guthi land, Bus Park, truck yard with an overlay of contour line of agreed intervals and other details.
 - Detailed Feasibility Report of 3 sub projects will be prepared in Rakam-

Karnali, Where detail Drawing/design of proposed social infrastructures (sports complex, city hall, security centre, convention centre, public parks, school, hospital, zoo, library etc.) including site/location plan.

- Detail Drawing/design of intake, treatment plant, pipe network and reservoir tank etc. with site/location plan etc.
- Detail Drawing/design of ring road, arterial road, major roads (contour map, profile, sections etc.) and bridges/ culverts etc. with site location plan..
- Apart from the sections related to integrated development plan, a separate volume of Building Bye-laws for the sake of building control and urban development guidance will be prepared as per the proposed IDP.

Output: overall integrated development plan preparation completed

PHASE IV: Reporting Responsibilities:

RESPONSIBILITIES

Urban Planner/ Team Leader, Urban Planner, Architect, Water supply and Sewerage Engineer, Civil Engineer, Environment Engineer, Geo-tech Engineer, Electrical Engineer, GIS Expert, Economist /Financial Analyst, Sociologist/Community Development Expert, Institutional Development Expert, Office Assistant support staff.

3. LITERATURE REVIEW

Literature review will be carried out to develop concept about the concept of planning, Concept of Settlement Planning, Concept of Spatial Planning, planning efforts in Nepal, Planning Practices in Nepal, legal frameworks, and Planning Practices in Global Context and trend of town development as well as urban planning development in the world including Smart City.

3.1 CONCEPT OF PLANNING

Classical definition of Planning explains root of the planning out of the three sections 'land-based professions' of architecture, engineering, and surveying (Gunder, 2010), where Zhang (2006) believes as "Planning functions as an institutional arrangement between governments, the private sector and civil groups in a given society." Dynamism in human society are the driving forces behind changes of all professions, including planning where evolution of planning theory reflects the changing society and its changing demand on planning (Zhang, 2006). Gunder's (2010) planning as inherently ideological, because of its chosen and dominant belief, or value, systems is challenged by Zhang's (2006) explanation of planning theory as segmental, diverse, and diverging, rather than integrated, uni-directional, and linear.

Concept of settlement planning

Human settlements means the totality of the human community - whether city, town or village - with all the social, material, organizational, spiritual and cultural elements that sustain it. The fabric of human settlements consists of physical elements and services to which these elements provide the material support (UN, 1976). The physical components comprise, Shelter, i.e. the superstructures of different shapes, size, type and materials erected by mankind for security, privacy and protection from the elements and for his singularity within a community; Infrastructure, i.e. the complex networks designed to deliver to or remove from the shelter people, goods, energy or information; Services cover those required by a community for the fulfillment of its functions as a social body, such as education, health, culture, welfare, recreation and nutrition. Broad concept of human settlements as a framework for economic, and social development.

The second United Nations conference on human settlement was held in April 1996 at Istanbul, Turkey. Popularly called the "City Summit", it brought together high-level representatives of national and local governments, private sector, NGOs, research and training institutions and the media. The Conference adopted the Habitat Agenda, a global action plan to realize sustainable human settlements. The Regional Action Plan and the Habitat Agenda has become the major guide for countries of the region to improve the quality of life and promote the sustainable development of human settlements in the Asia and the Pacific region. What is now required is to follow-up the recommendations the Habitat Agenda and the Regional Action Plan in the country or city context with appropriate actions. This reveals that UN is also taking initiation for sustainable management of human settlement in the world and investing large amount in this sector. However, increasing urbanization trend in developing countries led to growth to unplanned settlements.

Concept of spatial planning

Spatial planning is a key instrument for establishing long-term, sustainable frameworks for social, territorial and economic development both within and between countries. Its primary role is to enhance the integration between sectors such as housing, transport, energy and industry, and

to improve national and local systems of urban and rural development, also taking into account environmental considerations. This study on spatial planning is an overview document that draws the attention of policymakers to the importance of spatial planning. It also aims at raising awareness of the importance of increased community involvement and social cohesion as well as of the role of all parties concerned in territorial development in the implementation of housing and related policies and in environmental protection.

Spatial planning has a regulatory and a development function. As a regulatory mechanism, government (at local, regional and/or national levels) has to give approval for given activity; as a development mechanism, government has to elaborate upon development tools for providing services and infrastructure, for establishing directions for urban development, for preserving national resources, and for establishing incentives for investment, etc.

Aims of Spatial Planning

- Improve development generated by urban functions
- Improve the relationship between the town and countryside
- Promote balanced accessibility
- Develop access to information and knowledge
- Reduce environmental damage
- Enhance and protect natural resources
- Enhance natural heritage
- Enhance cultural heritage
- Develop energy resources while maintaining safety
- Encourage high-quality, sustainable tourism
- Limit the impact of natural disasters.

Benefits of Spatial Planning

Economic benefits

- Provides Ground for investment;
- Provides land to meet the need for economic development;
- Promoting environmental quality in both urban and rural areas,
- Identifying development that meets the needs of local communities;
- Promote regeneration and renewal;
- Making decisions in a more efficient and consistent way.

Social benefits

- Using local communities in policy development;
- Improving accessibility of new development;
- Supporting local facilities;
- Optimum use of vacant and derelict land,
- Maintain pleasant, healthy and safe environments.

Environmental benefits:

- Regeneration and the appropriate use of Physical Infrastructures including land, buildings and infrastructure;
- Promoting developed land and minimizing development on greenfield land;

- Conserving historic and cultural assets;
- Addressing potential environmental risks .
- Protecting and enhancing areas for recreation and natural heritage
- Promoting access to all modes of transport
- Encouraging energy efficiency.

3.2 PLANNING HISTORY IN NEPAL

The major challenge facing Nepal is to overcome the vicious cycle of poverty and low human development. Hence, sustainable economic growth, poverty alleviation, and reduction of regional imbalances have remained the principal objectives of the development policy of Nepal. Decentralization and devolution of responsibility and decision making authority, an equitable and regional balance of resource distribution; priority to poor areas and disadvantaged section of the population; overall improved socio-economic conditions, have been the central theme in the development policy of Nepal. One of the objectives of the current budget and the 3 Year Interim Plan is to promote agriculture and rural development, enhancement of employment, poverty alleviation and social welfare.

In the last decade the urbanization process is very rapid in Nepal. Migration from rural area to an urban area is very high due to an over concentration of all types of facilities, services as well as high opportunity of job. 17% of the national population lives in urban areas and growth rate of urban population is 4% per annual. On one side old settlement and market center are converting into town and on the other side new settlement and new market center are coming up along the highway and rajmarga due to internal migration from hill to Tarai region. In urban areas also expansion is taking place along a narrow road as ribbon development, construction of scattered big housing and apartment project and haphazard urban expansion is taking place in peripheral VDC of New Town's boundary leading to future slum settlement. It is because of easily available cheap vacant land, no proper development plan, very simple building bye laws and easy to get a construction permit from related VDC. Impact of haphazard development might not be noticeable at present but in the long run it might become a big problem. It will need a huge amount of finance for re-habitation.

Urbanization is not a new phenomenon in Nepal. The total urban population was only 228 thousand in 1951 accounting for 2.8 percent of the total population of the country lived in 10 municipalities. In 1961, 3.57 percent of the total population lived in 16 municipalities. In 1981, 6.3 percent of the total population lived in 23 municipalities. In 1991, 9.11 percent of the total population lived in 33 municipalities. Similarly, in 2001, 14 percent of the total population lived in 58 municipalities. As per 2011 census, 4523 thousand urban population lived in 58 municipalities. Presently level of urbanization is estimated at about 17 percent. It was 2.8 percent in 1951, 3.57 % in 1961, 4.1% in 1971, 6.3% in 1981 and 9.11 percent in 1991. Since 1971, urbanization trend has increased dramatically in Tarai town. Although the valley share of urban population stood at 38 percent in 1981. As per 2011 census, Kathmandu Valley accommodates almost 40 percent of the urban population. The 2001 census indicates a population of Kathmandu valley in 1.6 million but in 2011 the Kathmandu district alone has a population of 17, 44, 240 (NPHC 2011). Urbanization in Kathmandu Valley has crossed the municipal boundaries of five municipalities of the Valley viz. Kathmandu, Lalitpur, Bhaktapur, Madhyapur and Kirtipur. If the present rate of urbanization continues, Kathmandu will experience tremendous population growth. The rate of growth of Kathmandu district estimated at 4.78 percent per year is one of the highest in the world.

People migrate to cities for a better life, with the hope of earning more income as income is supposed to make them able to meet their needs, desired and provide education, health to their

family. Cities can absorb more people even the quality and quantity of infrastructure and service does not improve. This results in rapid deterioration of living condition and working environment as a whole. In our context, extension and construction of infrastructure and services are not developed as much with urbanization. There is always a wide gap between need and availability of basic infrastructure and facilities in our towns. So, urbanization had led to environmental problem by increasing shortage of services and facilities. As a result, there are increasing conflicts, crimes, illegal activities, drugs and girl trafficking, slum habitation and so on.

Table 1: Urbanization trends in Nepal (1951-2011)

Table: Urbanization trends in Nepal (1951-2011)

S. N	Items/Years	1951	1961	1971	1981	1991	2001	2011
1	No of Towns	10	16	16	23	33	58	58
2	Nation Pop.(in millions)	8.3	9.4	11.5	15	18.5	23.15	26.49
3	Urban Pop.(in thousands)	2,28	3,36	4,62	9,58	22,87	32,28	45,23
4	Level of Urbanization	2.8	3.57	4.1	6.3	9.11	14.00	17.00
5	Urban Pop. Growth Rate (UPGR) % per Annum	---	---	3.23	7.55	5.89	3.6	3.38
6	Nation Pop. Growth Rate(NPGR) % per Annum	---	---	---	2.7	2.1	2.06	1.35

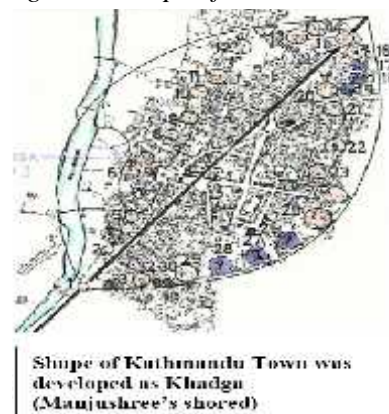
Sources: National Planning Commission, CBS report, National Plan of Action, 1996 (Habitat II) and NPHC 2011.

3.2.1 Urban Planning Practices in Nepal

Planning effort in Malla period (1300 to 1800 A.D.):

Developed across the trade routes of 'Kirtipur' to 'Sankhu' and, India to Tibet in the 10th century, Kathmandu, in the following centuries was extended on 'Mandala principle' basis with grid-iron pattern (deviating some 12-15 degree towards the east), dividing the city into three parts – the central part (Dathuwa) during 10-12th century, southern part (kotwa) between 12-15th century and the upper part (thatwa) between 15-17th century. The social fabric comprised of two basic elements - building blocks of closely built three to four story houses clustered around the courtyards and Buddhist Monasteries (Bahal and Bahil) and network of narrow non-axial streets and pedestrian lanes including public squares and courtyards linking these blocks acting as a figure-ground for each other. Composition of neighborhoods and their spatial location, together with housing type, size and style within the town were based on socio-economic hierarchy. People were classified as per their profession (Jaata) and caste group (touchable and socially untouchable) and, accordingly their housing were zoned - high officials, traders and craftsmen (upper cast Newars) surrounding the centrally located palace complex (Hanuman Dhowka) and the lower caste progressively living further away. Socially untouchable community such as 'Pode' and 'Chyame' (sweeper) and 'Kasain' (butcher) was neither allowed to live within the town nor permitted to construct houses of brick and tile, higher than one storey. Street network and its hierarchy was also categorised based on their religious functions into three types namely: (i) streets around the 'Darbar square' and connecting it to the main town squares (festival procession route), (ii) streets linking different neighbourhoods (for general public), and (iii) streets at the back of the town connected to the major river banks, especially to carry out the dead body (funeral route). The first two types, non-axial streets widening and contracting in

Figure 8: Shape of Kathmandu

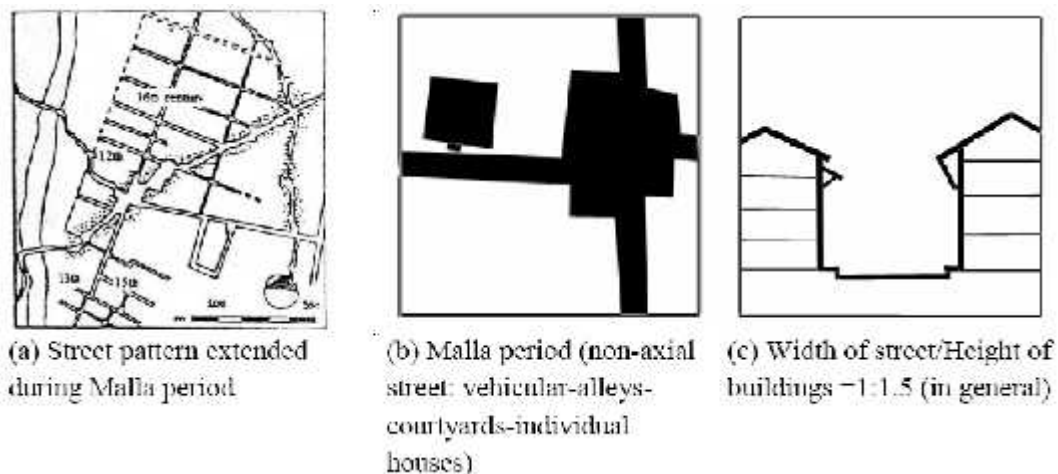


different places frequently intersect at different locations within interval of 200-300m to form public squares (Durbar square, market square and neighborhood square) of varying shape and size. Courtyards and pedestrian alleys link the individual houses to the non-axial streets.

Houses of Kathmandu during “Malla” period were unique - fixed depth of generally 6m with vertically arranged rooms - which facilitated extension on both sides with equal building height. Common lifestyles, use of locally available building materials (Sun dried brick in mud mortar for walls, woods and mud for flooring and tiles with mud layers on wooden battens for roofs) together with similar construction methodology (load bearing walls) led to a uniformity in architectural styles with little variations only in material quality, workmanship and building façade finishing. To give continuity in elevation of adjoining houses, the eaves of the skirt-roof of a four storey house continues through at the same level as the roof of an adjoining three storey house.

The overall result is the formation of a singular composition with little variation on building bulk, elevation treatment and roof-lines thereby strengthening the unity in many street scenes. As streets were generally 4-6m wide with buildings of 3-4 storey (6.5 - 8.5m) lining continuously on both sides, the street width to building height ratio lies within the range between 1:1 and 1:2, mostly within 1:1.5 thus ensuring the sense of enclosure and human scale.

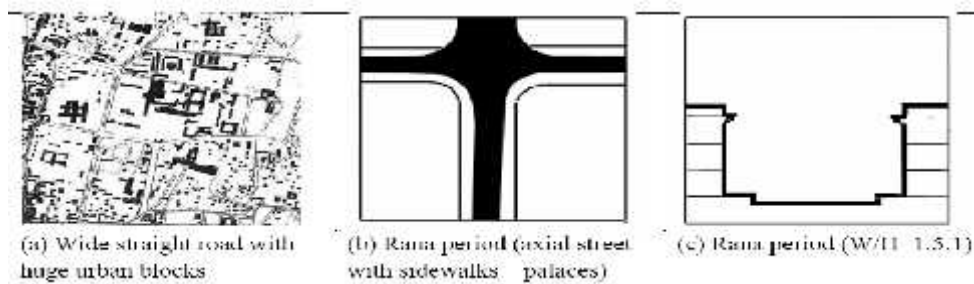
Figure 9: Street pattern in Malla Period



Planning effort in Rana period (1800 to 1952 A.D)

Ranas constructed many huge palace complexes with extensive gardening at higher topography in the peripheral areas of the town. Such palaces had a Neo-classical style of the West. The urban blocks are huge filled with only few buildings. Streets are wide and straight with sidewalks for pedestrians and have monumental character focusing towards the palaces. In fact, Ranas did not destroy the old historical core but extended the town with new urban fabrics based on new planning principles. The 'Singha Darbar' complex (Rana palaces but now houses almost all major ministries) built during that time covered the area about half the size of the old Kathmandu whose population was almost 80,000 whereas the old 'Hanumana Dhoka' palace complex including its courtyards occupied just 1/25th of the town space. Even the earthquake (1934) damaged streets in the historic core area was realigned, made wide and added footpaths on both sides during reconstruction. Moreover, identical houses of four storeys with white plastered walls on both sides of the streets were built.

Figure 10: Planning effort in Rana Period



Except for the reconstructed streets of the core areas, all other streets developed during this period basically facilitated vehicular movement only rather than acted as a place for socialisation. Nonetheless, establishments of fire fighting unit (Juddha Barun Yantra), public schools (Darbar School, Juddodaya Public High School, Padmodaya High School, etc.), college (Tri-chandra), Bir Hospital and the Military Hospital, and Electricity Authority around the vicinity of 'Rani Pokhari' and 'Tundikhel' has not only demonstrated a new style of composing public structures around urban spaces but has also known as beginning of the development in the fields of education and health including in public safety against earthquake and fire hazards. However, unlike in the Malla period, streets and localities were named after person's names such as Singha Darbar, Juddha Sadak, etc. during this period. In 1919 New Town was established in the name of "Kathmandu Safai Adda" which later becomes Kathmandu Nagar Palika.

Shah period (Formal planning practices in Nepal, 1952 to onwards):

Political change of 1950 brought a great transformation in cityscape and functional character of city. The first five year plan (1956-60) and modernization of the urban fabric and expansion of physical infrastructure of Kathmandu started. In Third Plan (1965-70), the first landmark planning document "The Physical Development Plan for Kathmandu Valley" 2026(1969) was prepared and initial effort towards the beginning of modern urban planning concept, approaches and practices in the country. The plan focused on regional level planning, settlement planning, urban design and site planning. Later on series of development plan for the valley were prepared by different line agencies and donor agencies. In Fourth Plan (1970-1975), the adoption of regional development strategy number of Physical Development Plans were prepared and executed as designated growth centers which are Pokhara valley, Surkhet valley, Dhankuta region and Dipayal Silgudhi. . The Physical Development Plan were prepared and executed for the important head quarter and urban centers mostly situated at junction of high way and main trunk road in the Terai region. Until 1976 there was hardly control in any form of development in the valley. Different public authority planned and implemented their project in isolation.

Figure 11: Formal Planning Practices in Shah Period



Storey Height Development in Different Time Period

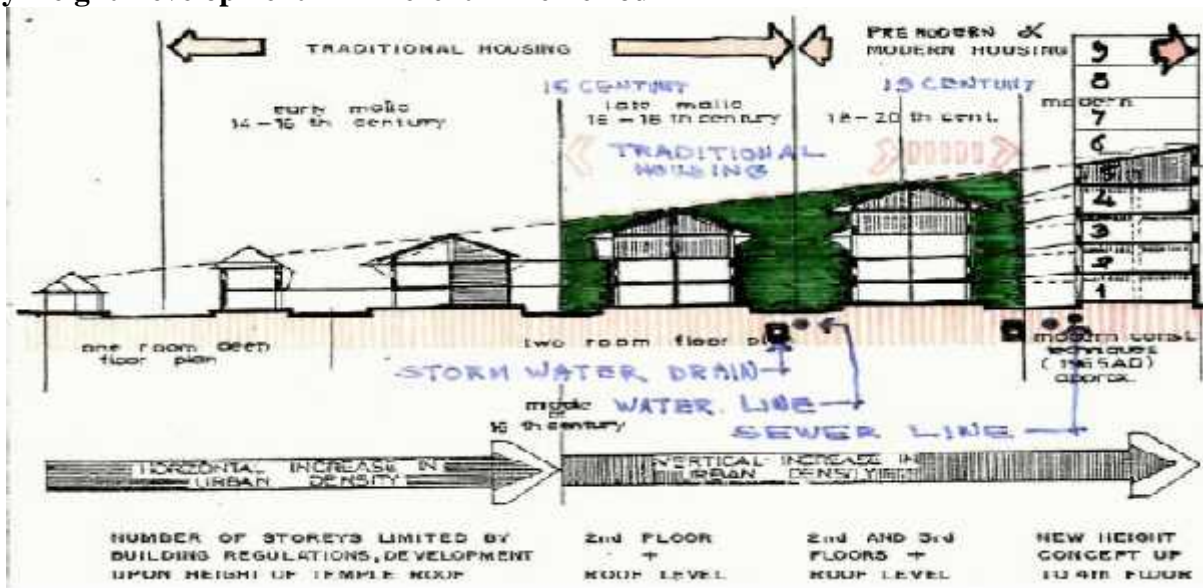


Figure 12: Storey Height Development in Different Time Period

Earlier the planning was in low-rise, high-density pattern but today it is changing to high-rise and high density.

Mostly the city core's building use is changing from Residential to Commercial use. In the Eight Development Plan (1992-97), emphasis was given to the necessary of making regular improvement in the process of refining and updating the physical development plan of almost all the municipalities. In the Ninth Development Plan, emphasis was given for well balance urban development system. Similarly in the Tenth Development Plan emphasis was given to provide 20 thousand developed housing plots through Land Development project in Kathmandu valley. To cope these issues, Kathmandu Valley Town Development Committee has launched several land development project with the help of legal tool under "Town Development Act 2045 B.S". Some of Land Development Projects are as follows:

1. Site and Service (S.S)

This is a traditional form of land development technique, in which the government may acquiesce or buy primarily the cheaper vacant sites or make available the public land and develop then by adding necessary infrastructure services. The necessary financial resource incurred in



purchase of land and development of infrastructure services is recouped by selling the developed residential plots at affordable prices to predetermined target group. Thus, this technique requires substantial up front budget to implement the project until the developed plots are sold. The main problem in this concept is the displacement of landowners and farmers from their land and often low compensation from the government agencies, which makes this concept Unpopular among landowners as well as among policy makers. Under this technique, two projects (Kuleshwor and Galphutar) are completed.

2. Guided Land Development (G.L.D.) Program in Kathmandu Valley:

The approach adopted for all Guided Land Development (G.L.D.) schemes in Kathmandu Valley has involved the planning authority taking the lead role to mobilize land owner and community members to participate in the land development effort. The planning authority selects sites for Guided Land Development (G.L.D.) application on the basis of request from user community. The local community is informed through official modification. Preparation of an access road layout plan is carried out by the planning authority and then presented to local community and land owners. Under this technique 475 KM road was proposed in 2054 B.S. Detail of the scheme is given in table below.

Table 2: Guided Land Development (G.L.D.) Program in Kathmandu Valley.

S.N	KVTDI Committee	Proposed Road for Opening(KM)	Road Opened III 2061-62(B.S.)
1	KATHMANDU	300	204
2	Talitpur	137	85
3	Bhaktapur	38	16
Total		475 KM	305 KM

Source: KVTDC

3. Land Pooling (L.P.) Program in Kathmandu Valley.

Land Pooling project runs entirely on land owners participation in which all scattered undeveloped or under developed land parcels are readjusted in appropriate size, shape and in orientation with new infrastructure services. The readjusted and developed plots are returned back to the original land owners and farmers and this effectively removes the prospect of farmer themselves, and the prior investment to purchase land is not necessary although some up-front budget is necessary to finance initial development cost, main positive aspect of this concept is its cost recovery, which is done by selling some developed plots that ultimately reduces the government financing in improving the community infrastructure services.

Figure 13: Sainbu Land Pooling Project



Concept of Land Use Planning

a) Modern concept of Land use Planning

The modern concept of land uses such as residential, commercial, institutional etc was isolate from each other. This concept was mainly responsible for producing the type of land use now seen in developed countries. Planner in the past tried to avoid mixed land use, as it would impair the quality of urban living. Although for development of new city, such type of planning is good because in this case function of city and targeted people who are going to live in new cities is known before. But, they are now rediscovering that a city becomes livelier when certain uses coexist.

b) Informal Concept of Land use Planning

In organic developed cities in developing countries are based on the appreciation and practice of mixed use. It is not only allows varies elements to co-exist, but also brings diverse group of people closer. Various mixed-use designs have turned out to be successful in their case as well. It is very necessary to enforce laws of land use, zoning and building bye law for how to use land and building in particular area.

In Nepal most of cities are developed in incremental with time and each city has their own development history. So, mixed land use is better than classical modern land use for developing countries like Nepal. In each land use can have mixed land use. For example, shops, office, cinema hall, work shop in residential land use. In such condition, we have to analyze the impact of the use in that area and after analysis only whether allowed to permit or not to be decided. On the basis of following points these impact can be analyzed.

- ❖ Total impact of use
- ❖ Environmental impact of use.
- ❖ Transportation and population presser to use.
- ❖ Pressure on existing infrastructure.
- ❖ Use is compatible or not.
- ❖ Other negative impact.

After finalization of a particular land use, it is very necessary to prepare zoning map of each land use area. Zoning will guide the three dimension of the city and decide the allowable density as well as development of city in low rise with high density or low rise with low density or vice versa high rise with high density or high rise with low density of the particular area of city. For implementation of land use and zooming map, building bye-law should prepare for each zone with respect to land use map.

Land Use Distribution Pattern of Indian Cities

Prepared by the Bureau of Public Enterprises of India the below Table shows the Land use distribution in percentage for India cities.

Table 3: Land Use Distribution in Percentage for India Cities

Land use distribution in percentage for India cities.

S.N	Uses	Percentage
1.	Residential	45% TO 60%
2.	Road	15% TO 20%
3.	Education	10% TO 15%
4.	Parks, Sports and Open Space	5% TO 10%
5.	Commercial	3% TO 5%
6.	Other Institute	Remaining rest
Total		100%

Source: Delhi Master Plan

A. Land Use Pattern in Government Housing project of Kathmandu Valley

As per 13 numbers of completed government land development project in Kathmandu Valley, except for Kuleshwor, Dallu and Sainbu project, the land use distribution pattern in percentage for

residential zone is 58% to 81%, for the roads 14% to 28% and for the open space 3% to 8%. Other facilities like commercial, industrial and sports are not provided.

Table 4: Land Use Pattern of Housing Project in Kathmandu Valley

Land Use Pattern of Housing Project in Kathmandu Valley.

S.N	Name of the Project	Residence	Road	Open Space	Other (Commercial / Education / Service)
1	Kuleshwor	60.00	28.00	4.00	8%
2	Galphutar	81.00	14.00	5.00	X
3	Saibu	58.00	23.00	7.00	12%
4	Dallu	67.00	25.00	5.00	1%
5	Gongabu	78.35	16.65	3.00	X
6	Lubhu	78.30	17.10	4.16	1.6%
7	Kamal Binayak	74.13	21.71	4.83	X
8	Liwali	72.95	22.22	3.83	X
9	Gopikrisna	73.45	22.72	4.00	X
10	Nayabazar	74.00	22.00	5.50	X
11	Sinamangal	74.20	20.30	3.40	X
12	Siuchatar	77.77	18.82		X
13	Bagamati Coridor	81.00	19.00		X
	Average Distribution	73.00	20.81	4.52	5.56%

Source: KVTDC

B. Land Use Distribution Pattern of Indian Cities:

Prepared by the Bureau of Public Enterprises of India the below Table shows the Land use distribution in percentage for Indian cities.

Table 5: land Use Distribution in Percentage for Indian Cities

Land use distribution in percentage for India cities.

S.N	Uses	Percentage
1.	Residential	45% TO 60%
2.	Road	15% TO 20%
3.	Education	10% TO 15%
4.	Parks, Sports and Open Space	5% TO 10%
5.	Commercial	3% TO 5%
6.	Other Institute	Remaining rest
	Total	100%

Source: Delhi Master Plan

C. Land Use Pattern in Government Housing project of Kathmandu Valley:

As per 13 numbers of completed government land development project in Kathmandu Valley, except for Kuleshwor, Dallu and Sainbu project, the land use distribution pattern in percentage for

residential zone is 58% to 81%, for the roads 14% to 28% and for the open space 3% to 8%. Other facilities like commercial, industrial and sports are not provided.

Table 6: land Use pattern of Housing Project in Kathmandu Valley

Land Use Pattern of Housing Project in Kathmandu Valley.

S.N	Name of the Project	Residence	Road	Open Space	Other (Commercial / Education / Service)
1	Kuleshwor	60.00	28.00	4.00	8%
2	Galphutar	81.00	14.00	5.00	X
3	Saibu	58.00	23.00	7.00	12%
4	Dallu	67.00	25.00	5.00	1%
5	Gongabu	78.35	16.65	3.00	X
6	Lubhu	78.30	17.10	4.16	1.6%
7	Kamal Binayak	74.13	21.71	4.83	X
8	Liwali	72.95	22.22	3.83	X
9	Gopikristna	73.45	22.72	4.00	X
10	Nayabazar	74.00	22.00	5.50	X
11	Sinamangal	74.20	20.30	3.40	X
12	Sinchar	77.77	18.82		X
13	Bagamati Corridor	81.00	19.00		X
	Average Distribution	73.00	20.81	4.52	5.56%

Source: KVTDC

Nepal Standard Planning Norms

The Planning Norms prepared by Department of Urban Development and Building Construction in 2070 is a useful guideline for urban development / planning work. The basic standard for medium sized city (pop. 40000 to 1 lakh) proposed by norms for roads, water supply and sanitation (mostly used in LP project) are below in chart.

Review of Master Plan of Kavre Valley, 2011:

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

Review of Dang Valley Long Term Development Plan, 2012:

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

Karki T.K., “An Assessment of Regional and Urban Development Policies and Programmes of Nepal”, FIG Working Week, Athens-Greece, May 22-24, 2004.

This paper includes an attempt to assess the current regional and urban planning policies and programmes of Nepal and conclude by recommending measures for sustainable urbanization policies. The paper reviews:

- All the five year national plans, urban development related policies and programme documents to see their continuity on the policy commitment overtime and the degree of budgetary support to the regional and urban planning policies; assess the inter-agency coordination and the coordination between spatial and economic or sectoral policies.
- The annual reports, evaluation mission reports, quarterly newsletters of the Rural Urban Partnership Programme (NEP/96/003) supported by UNDP/UNCHS to identify the extent of rural urban linkage the programme has generated.

On the basis of the reviews, the paper highlights various regional and urban planning issues and, finally concludes by recommending policy measures for regional and urban development, urban economic development, urban planning and rural urban partnership programmes.

- **Review of Government's policies and development plans** in the transport and other sectors, particularly those directed towards the accelerated integrated development of the influence area and the construction of secondary and tertiary roads and motorable trails.

Sub city Development Plan of Delhi for New Delhi Municipal Council Area, IL&FS Ecosmart, Final Report, 2007

This report outline a vision for the future development of New Delhi, based upon a thorough understanding of the area's current state of development, the challenges it faces and its potential. In this process, it seeks to identify priority areas of intervention and strategies for achieving set goals.

PLANNING PRACTICES IN NEPAL

Some of the major planning practices held in Nepal, especially in Kathmandu are briefly described here:

MASTER PLANNING APPROACH

One of the fundamental premise of the master plan is based on the western concept of 'zoning' which outlines a land use pattern by dividing the city into zones, where those traditional master plans had physical planning approach translated into spatial plans (SPA, Thesis, n.d). The physical planning strategies are geared towards identifying and targeting development, by conserving the available priorities, risk, opportunities and gaps in the urban and regional areas. After the

coronation of King Mahendra (1955) and Queen Elizabeth's visit (1962) as introduction period of modern urban planning which was soon followed by UN Technical assistance program in 1962 for planning initiation Kathmandu Valley. The study resulted "The Physical Development Plan for the Kathmandu valley" in 1969 also called as Master Plan or the first comprehensive planning document in the country, referred to as "1969 Plan" as well. Based on the "Survey-Analysis-Evaluation- Implementation", master plan approach of planning took enormous time in collection and analysis of data (Joshi, 2008, p. 95). Further on the analysis results on alternative solutions where best alternative is selected and developed into master plan (Joshi, 2008).

STRUCTURE PLAN

Alternative to master plan, structure plan was introduced in 1988- 1991 for municipalities in support of Department of Housing and Urban Development (DHUD) in the name of Management Support of Urban Development (MSUD) (Irwin & Joshi, 1996). Structure plans were prepared for 33 municipalities but were limited to policy statements and details were not worked out (Joshi, 2008).

Structure plans were backed up by series of action plans which were detailed local area plan which provided legal basis for development control and brought planning issues before public (Joshi, 2008). Another learning steps from the structure plans were indicative plans where Joshi explains in his book "Planning approaches in Nepal" that simple, feasible and understandable plan has better chance to success, where everyone gets to participate in the process and decision making.

INTEGRATED ACTION PLAN

Integrated action planning (IAP) as a simple form of urban planning involving participatory events of the people who are affected, in order to achieve a greater feeling of ownership of the policies that will lead to more effective implementation and considers the financial resources available to the local as a rolling investment plan for the next five years of projects that follow a physical plan (UDLE, 1997:10). Integrated Action Planning was introduced at a time of decentralization of responsibilities and of expected increases in funding for urban infrastructure to overcome deficits and serve rapid urbanisation (MHPP, 1992) (Mattingly & Winarso, 1999). Alternative to conventional approaches of planning, it was more action oriented and realistic as it translates and implements the goals of strategic planning within shorter time frame. (Irwin & Joshi, 1996). It was understood that Integrated Action Planning would become integrated into the regular activities of a New Town, such that the New Town would prepare its annual development investment budget as the first year of a 5 year rolling multi-sectorial investment programme, while continually updating and implementing its physical development plan (Mattingly & Winarso, 1999). Joshi (2008) pushes the fact that IAP is more appropriate in case of Nepal where urbanization is rapid, resources are constraints, institutional capacities are inadequate and planning processes needs to be simplified and less time taking.

Parallel to the community consultation, analysis of acquired information is conducted to determine and evaluate the opportunities and constraints existed in resources & institutional capacity of New Town, legislative framework and existing project (Irwin & Joshi, 1996). Parallel to earlier steps, physical and environmental analysis of the locality is done to conduct the SWOT analysis of site by preparing thematic maps, assessment of land use, identifying trends and patterns of growth, resource distribution and others (Joshi, 2008). Based on the previous collected information, problems are identified and prioritized, projects are formulated with solutions to each problem. Projects formulated are examined on the basis of their social, physical, topographical and financial

feasibility, and applicable projects are set to implement. Most of the towns are using IAPs which generates two mutually integrated planning tools, MSIP (Multi Sectorial Investment Plan) covering projects to satisfy the present needs of the people and PEDP (Physical and Environmental Development Plan) helping to sustain the ecological base. These two tools MSIP and PEDP will be elaborated in next sub-chapters.

PERIODIC PLAN

Periodic plan is a long term plan of generally 5-7 years, picturing the future image of that locality comprising different disciplines of plan such as physical, social, environmental, financial, economical and institutional development. It consists of plan, policies & regulations related to the programs, investments and implementation of the program including budgeting and allocating tasks for responsible line agencies. According the guideline published by government, it can be taken as ‘participatory and inclusive plan’. With the enactment of the Local Self Governance Act, 1999, municipalities were required to prepare their periodic plans themselves where udle supported MLD to prepare a manual for municipal periodic planning (gtz: udle, 2006). It require a municipal data profile and a participatory planning process with a log frame format that includes a rolling budget. Compared to Integrated Action Planning, comprhensive nature of periodic plan is considered as more realistic because of its legal status of Local self governance act and regulations (2058,2059), hence these are also considered as one of the performance indicators of municipalities (gtz: udle, 2006).

Periodic planning processes have been extremely slow due to endless data collection, lengthy public participation, the limited analytical capacity to utilise existing proxy data, the unwillingness to make decisions due to the changing political climate and the conflict within the country, the lack of local representation, weak insitutional capacity and other priorities that override periodic planning (gtz: udle, 2006).

But periodic plans have certain benefits over other sorts of planning because of its integrated nature of planning, legal and financial base for planning and budget allocation, foreign agencies in enhancing the institutional capacity building of municipalites and participatory appraoches. GTZ/ udle believes that the changing political scenario in Nepal will help to provide a more realistic management approach that will provide strong guidelines for urban development where, with a joint vision decided by all stakeholders will strengthen the legitimacy of all municipalities as being dedicated service providers for local communities.

3.3 PLANNING PRACTICES IN NEPAL

ISSUES AND CHALLENGES

Nepal has started modern urban planning after 1950s with international expertise of UN, when country was freed from century of feudocracy of Ranas. Since then we have gone through series of new urban planning processes to control the haphazard urbanization, where the present doesn’t shine as was planned in the past (K C, 2015). Many scholars like Dhakal (2004), Joshi (2008) and Irwin (1996) believe that plannings in Nepal were limited in papers without taking in consideration of ground reality and unexpected scenarios. So far the first kind of master plan for Nepal prepared by UN experts in 1969, covering a number of aspects in planning and conservation for next 20-30 years was not really well accepted by government in its policies (Dhakal, 2004). Dhakal blames that ‘Kathmandu Valley Physical Development Plan, 1976’ which consisted many subplans like

urban design, residential development, zoning, etc always remained in the file and in reality greens were converting into greys.

Local Self Governance Act, 1999 authorises local bodies to prepare periodic plans and annual plans with support of guidelines by planning commission, DUDBC and MLD which were also failed due to institutional incapability of the local authorities. Two major planning authorities of Nepal Town Development committees and Municipalities itself are merely 'Jaw-less bodies' (Dhakal, 2004). LSGA authorises TDC to prepare plans and policies for that locality but lack of budget, technical competence and human resources, they are merely as sleeping except KVDA (which was previously established as KVTDC now changed to authority). According to article 96 (b) New Town are also mandated to frame land use, prepare housing plans, management plan for drainage and drinking water, plan recreational space, and approve the construction of building. But, problems are similar for the both institutes in their inefficiency and incompetency of planning urbanization. Lack of coordination between private and public sector, national and international development agencies as well as among the sectorial line agencies in the implementation of urban projects has been a problem since long time. Technical competence for implementing the municipal projects is also severely lacking (Irwin & Joshi, 1996) where factors like privileged coordination of various actors, trend to violate laws, insufficient zoning regulations and improper planning consciousness are distorting the urban features (Dhakal, 2004).

Scarce supply of urban land, high cost and slow mechanism for land acquisition act is also considered as major challenges in implementation of big urban infrastructural project (LSGA, 1977). Prolonged public participation and often misguided by ill political will are hindrances in implementation of many urban projects. Joshi (2008) adds that present planning guided by political feasibility, is becoming more complex to control the situation from external mechanism or intervention as it is no more controlled by a single actor. As Roy (2009) describes about the situation of urban governance in India as 'regime is itself an informalized entity, one that is a state of deregulation, ambiguity, and exception'. She further adds on that 'incontrovertible argument about the failure of planning in India: that informality and insurgence together undermine the possibilities of rational planning, and that therefore India cannot plan its cities,' which is exactly the similar ground reality of Nepal. Law rendered as unrestricted and subject to multiple elucidations and interests can be positioned as, 'law as social process is as idiosyncratic and arbitrary as that which is illegal' (Berry, 1993; Holston, 2007, Roy, 2009).

One of the major challenges, that piercingly stands in planning arena is lack of coordination and failing to take advantage of synergy between projects. Tendency to deal with overlapping issues like environment, land use and expansion zones as isolated sectors have made planning implementation more complex and disputable. Planners and politician acting as two opposite poles and blaming each other has been problematic by keeping people out of the center of interest (Joshi, 2008). While in present, dominance of improper urban plan due to haphazard development became the major reason about shortfall of basic urban services (Dhakal, 2004).

Joshi (2008) explains that many attempts have been made to make planning more comprehensive, mechanisms to integrate different aspects are either not in place or very weak where such failures to integrate these sectors explains why planning has failed in Nepal. Plans in Nepal has always lacked the 'harmony within and among the organization' (Joshi, 2008). Integrated plan finding practical, effective and meaningful ways to individual citizens is an important challenge. Kelly & Becker, (2000) explain that success in planning is determined by the effort of its leadership, that can be governing body or planning commission or working together, which is one of the major drawback of planning institutions in Nepal. Joshi (2008) adds that institutional incapacities of

planners or implementing agencies to consider the unexpected scenario caused due to external factors is making planning incompetent in Nepal.

He highlights the implementation as ultimate goal of any plan hence it should be strategically ready to cope up with situations due to changes in environment, both internal and external

3.4 LEGAL FRAMEWORKS

To facilitate and enabling environment many legislations have been enacted in Nepal. Different Rules, Regulations and Guidelines have been developed and put to use in this regard. In this connection, Important Acts, Regulations, policy frameworks etc. are described below:

A. LOCAL SELF GOVERNANCE ACT, 2056 (1999)

The Local Self-Governance Act 1999 has provisioned broad based organizational structure, devolution of authorities, special provision to promote disadvantaged communities, planned development process and judicial authorities to local bodies, where whether the Act has provided enough legal basis for the development of a capable, responsive and accountable local self-governance system is itself an issue. Some of the major issues that can be critically analyzed on the self-governance act and other acts related to decentralization can be grouped into three areas: Fundamental issues (Essence of the Act), Institutional issues and Implementation issues.

FUNDAMENTAL ISSUES

The initial concept of self-governance is understood as decentralized governance system as an attempt to make the center powerless while empowering the local level. Decentralization, in fact, means defining responsibilities at each level. Similarly, there are other sectors involved in local development such as NGOs, INGOs, donors and private sector, whose responsibilities is not clearly defined.

Decentralization is a system of governance for balanced development in a heterogeneous geographic, social, cultural and economic setting like ours. However, the essence of this policy needs to be understood, visualized and developed at the political level where professionals and donors are only complement in designing, implementing and institutionalizing the policy, once it is conceived with commitment at the political level. Some of the principle essence of the act are: effective participation of the people in the governance process, equitable distribution of resources across the regions, organized presence of the government at all levels, empowerment of disadvantaged communities and enhancement of production and job creation. Such policy can be designed and implemented only when the major political parties can visualize such potentialities.

INSTITUTIONAL ISSUES

The organizational structure of local bodies is unresponsive and unaccountable to the voters and most of them function on an undemocratic manner, especially when it lacks the locally elected bodies. Even with the elected personnel from ward or Illaka (DDC), there is no institutional mechanism for the voters to monitor the activities of their leaders and question and expel them, if so required. Thus, all the representatives of DDC, as well as VDC and New Town (Mayor), remain in their seat for full term irrespective of their performance, further which functions not on a parliamentary style guided by the majority, but on a presidential style guided, mainly, by the Chairman.

IMPLEMENTATION ISSUE

Majority of the poor and disadvantaged communities are living in an unorganized, vulnerable and scattered manner, much below than the reach of decentralized institutions. However recent guidelines for New Town in making their development plan strategy have guided them to invest 40% of municipal budget in scheduled caste, women and children in area of infrastructure development, social, skill development, and economic development.

In most of the cases like LGCDP (Local governance and community development Program) have made effort to strengthen the municipal institutional capacity but in other sense they are making more defunct and donor dependent due to their own implementation strategy and parallel institutional mechanism. At the same time the local bodies also could not ascertain their rights and duties, whatever was devolved under the present legal framework, and implement with the true norms and values of a democratic institution. Consequently, a huge resources and opportunities channeled through local bodies were captured by a limited group of people, leaving a large number of people out of the development mainstream.

B. TOWN DEVELOPMENT ACT, 2045 (1988)

Town development Act, 2045 can be taken as one of the prominent act related to land development which authorizes Town Development Committee (TDC) for supply of urban land. Especially in case of this project Integrated Development Plan, TDA authorizes TDC to be the core authorized body for planning and implementation of the project. It entitles local body to carry out physical development in an integrated manner with reconstruction, expansion and development of existing towns as well as to build new towns. It is provided with policy of land pooling and land development in urban areas in order to supply urban land in well facilitated manners. Town development committee which functions on legal base of TDA couldn't function with full expectation because of inefficient institutional framework and unnecessary political intrusion in development work. Lack of technical and administrative manpower in the TDC, essence of TDA is not reflected, where TDC merely acts as a planning institution. Act authorizes TDC to ask fund from Town Development Fund for carrying out plans and urban land development projects, but lack of interest and institutional framework makes it more lifeless in any urban development programs.

C. THE LAND ACQUISITION ACT, 2034 [1977]

Most of the land are either private or forest area in Nepal. Public land or government owned land is limited. So, Land Acquisition Act, 1961 was passed to provide legal provision and procedure to acquire private land. With change in condition and time requirement, this act was revised in 1977 and enforced as "Land Acquisition Act, 1977" in 2034/5/22 (1977/09/07). This act has helped to solve problem of delay in urban planning work due to conflict in land. It provided legal provision for acquiring land for public purpose. This act ensures the justice to individual and community in the regarding land property as no one even government can arbitrarily acquire private land without compensation. Important provisions of the land acquisition acts are:

- Conditions and decision provision for acquiring land
- Land acquisition in emergency condition
- Compensation of land, property and other losses
- Allocates authority to officers for acquisition procedure
- Land ownership transfer
- Giving information and notices
- Ensures right to file complain

Land acquisition act has empowered government to acquire land for development work. Although it has incorporated many aspects like assign authorities, compensation, time allocation, procedures etc., it fails to include issues like time frame of compensation, guideline for amount of compensation, social and cultural aspects. With integration of these issues, land acquisition can be much more free disputes and urban development can be more effective.

D. NATIONAL URBAN POLICY, 2007& NATIONAL URBAN DEVELOPMENT STRATEGY, 2015

National urban policy is found to be more integrated, updated and comprehensive document addressing the major issues of urban planning and its implementation. It basically focuses on the problems related with urban planning and come up with solutions expressed by different institutions, intellectuals and experts. Majorly focused on issues of Kathmandu Metropolitan areas, it identifies the reason behind urban services delivery deficiency due to ineffective infrastructure, weak institutional capacity and inadequate resources. It admits the existence of policy level confusion of local body and central government agency due to lack of integrated approach in urban development.

Three major objectives forwarded by the policy are:

- Achieve balanced national urban structure through proper guidance to development
- Raise living standard of urban residents through clean, secure and economically vibrant urban environment
- Achieve effective urban management through institutional strengthening and legal empowerment of local bodies.

To achieve those objectives, NUP has proposed several policies and strategies such as industrial promotion, urban infrastructure investment, linking highways from North to South, etc. NUP has proposed several strategies for urban development like:

- Develop local bodies.
- Set up an integrated urban planning and monitory system.
- Special programs for conservation and protection of cultural heritage and sensitive natural resources.
- Develop land development, housing, and land market plan.
- Develop inclusive plan for physically disabled, women and aged people.
- Develop sustainable public transportation system.
- Prepare disaster-management plan

Despite being very exciting kind of strategies and policies involved, it basically lacks any incorporation in the national policy..

The objectives of NUDS, therefore is not to replace NUP, but to complement and expedite its implementation. It includes 8 thematic areas, which includes 4 themes and 4 mechanisms. The Themes are urban system, urban infrastructure, urban environment and urban economy. Similarly, the Mechanisms are urban investment, urban finance, urban governance and urban land management. NUDS, 2015 includes 41 desirable conditions or milestones envisaged for different themes, 65 indicators to measure the desirable conditions, 86 thematic strategies to achieve the desirable conditions or milestones, 164 activities identified to operationalize the strategies. It is prepared considering the 15 years planning horizon.

E. Others

1. National Urban Policy, 2007
2. National Urban Development Strategy, 2015
3. Planning Norms and Standard, 2015
4. National Land Use Policy, 2012
5. Environment Protection Act (2055 B.S)
6. Guthi Corporation Act-1976
7. Ancient Monument Preservation Act (1956)
8. Motor Vehicle and Transport management Act (1993)
9. Public Road Act (1974)
10. National Road Standard (2070)
11. Nepal Urban Road Standard prepared by DUDBC (2071)
12. Nepal Urban Drain Standard prepared by DUDBC
13. Industrial Enterprise Act (1992)
14. Labor Act (1992)
15. Building Bye-Laws
16. Land Use Policy (2069)
17. Public Procurement Acts 2063 and Regulations 2064
18. Public Roads Act, 2031
19. Contract Act, 2023 and 2058
20. Construction Industry Acts 2055
21. Public Infrastructure Build, Operate and Transfer Policy 2057
22. National Transport Policy, 2001
23. National Agriculture Policy, 2004
24. Tourism Policy, 2008
25. National Industrial Policy, 2011

Many other acts, directives and legislation related to urban planned development have been approved by Nepal government to authorize, guide and promote local bodies in urban development programs, but result doesn't seem to be more effective in most of the urban areas. Some of the major policies as: National Shelter Policy, Apartment Act 1997, Build Operate Transfer Policy (2000) for promoting public private partnership, directives for New Town in guiding urban development plans, and monitoring guidelines or policies.

3.5 PLANNING PRACTICES IN GLOBAL CONTEXT

GARDEN CITY CONCEPT: LETCHWORTH CITY

There is a long tradition of planned town-making in Britain, arguably dating back to the model communities and settlements of the 17th and 18th centuries. The notion of a programme to provide planned new communities in the public interest emerged at the end of the 19th century. New communities were first built through philanthropic and private initiative, as exemplified by the Garden City movement, but were subsequently developed by public authorities through the government new towns programme. "Letchworth Garden City has a special place in the history of town planning as the world's first Garden City. Established in 1903, it is based on the theories of

Ebenezer Howard in his book 'Garden Cities of Tomorrow', which outlined how new, ideal communities, could be created by combining the best of town and country. Houses were constructed to harmonise with each other and architectural features were designed to add visual interest and variety."

Today, the 'sustainable urban extension' is an important element in a portfolio of solutions to the problem of meeting the need for housing and related development. Both new settlements and urban extensions provide opportunities for concentrated rather than sprawling development. By virtue of their scale, and if carefully designed and developed to produce integrated, 'holistic' settlements, they can encourage and accommodate highly-sustainable patterns of living. Garden cities had varied range of achievement, environmentally, socially and economically, and many are among the greenest places to live in the UK today. In 2007 there were the beginnings of a new wave of new settlements and urban extensions.

DICKENS HEATH VILLAGE CENTRE

The new village of Dickens Heath began taking shape in 1997. It is located in a rural setting beside the Stratford upon Avon Canal and within the Solihull metropolitan green belt. The village is three miles from the nearest main settlement, Solihull, and will house around 4,000 people when completed. The origin of the new village lies in a decision made by Solihull Metropolitan Borough Council (Solihull MBC) in 1989, in response to its housing allocation requirement of 8,100 new homes between 1988 and 2001. The adopted 1997 Solihull Unitary Development Plan (UDP) originally proposed a settlement of 850 houses adjacent to the existing hamlets of Cheswick Green and Tidbury Green.

The masterplan approved in 1995 was underpinned by four key overarching principles:

- The village should have a clear identity which gives residents a sense of place and belonging.
- It should echo the traditional features of village development, including homes, employment, recreation and social and welfare facilities, intermixed to create a cohesive whole.
- The village should provide a range of housing from first-time through to family houses, together with smaller units for the elderly, thereby creating a mixed community for all ages and incomes.
- The village should create a safe and pleasing environment for pedestrians while still accommodating the car, but without allowing it to dominate.

The key to the design of the master plan for the village was the creation of a series of public places that are attractive and enjoyable to walk through. The overall aim of the layout at Dickens Heath is to encourage street activity by making it easy, convenient and pleasurable to move around the settlement as a pedestrian. The design ethos focus on arrangement of shared public spaces, as opposed to dispersed estates which tend to foster lifestyles focused around the private car.

As a conclusion: Dickens Heath has attracted a mix of businesses and residents. Despite its proximity to larger urban centers, a sense of community cohesion has been established, as borne out in the range of retail, restaurant and commercial uses in the village centre. There are issues to be resolved related to car parking and the inadequate provision of public transportation. However, in terms of the planning policy context and the process of steering the scheme through the local and sub-regional planning systems, Dickens Heath offers a valuable lesson in delivering growth on the ground and in achieving good relationships between local authorities and developers. The scheme

was developed at a time before sustainable construction techniques and the on-site energy generation agenda began to emerge into the mainstream, but Dickens Heath nevertheless offers many lessons for a new small-scale settlement developed within or close to the green belt.

SMART CITIES IN INDIA

The term "smart cities" is a bit ambiguous. Some people choose a narrow definition - i.e. cities that use information and communication technologies to deliver services to their citizens. Some people prefer a broader definition: Smart cities use Information and Communication Technologies (ICT) to be more intelligent and efficient in the use of resources, resulting in cost and energy savings, improved service delivery and quality of life, and reduced environmental footprint - all supporting innovation and the lowcarbon economy, accessed on 18/08/2013 (<http://www.fastcoexist.com/1679127/the-top-10-smart-cities-on-the-planet>). A city that monitors and integrates conditions of all of its critical infrastructures, including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, power, even major buildings, can better optimize its resources, plan its preventive maintenance activities, and monitor security aspects while maximizing services to its citizens (Hall, R. E, 2000).

Mitchell's (1995) book on the City of Bits sets out a vision of urban life literally done to bits, left fragmented and in danger of coming unstuck. Mitchell's (1999) next book on e-topia provides the counter-point to this vision of urban life and scenario where the city is no longer left in bits and pieces, but a place where it all comes together. As Mitchell's (2004) states in his more recent book: ME++: the Cyborg-Self and the Networked City, all this coming together is possible because: 'the trail separation of bits and atoms is now over' and this post-AD 2000 dissolution of the boundaries between the virtual and physical is what makes everything worth playing for. The first concerns the proliferation of cities that adopt intelligent city strategies and define themselves as smart or intelligent cities. Since 2005, when Urenio Watch (www.urenio.org) began recording developments in the field of innovation ecosystems and intelligent cities, the increasing announcement and diversity of cities announcement and diversity of cities adopting intelligent city strategies has been noted. This has often led to a simplistic use of the terms 'Smart' and 'Intelligent', which are easily assigned to any digital application associated with cities-often just for marketing purposes-without making clear what intelligence is being improved and how Holland's (2008) accurately pointed out that urban development in many countries has been increasing influenced by smart city concepts, but despite the wide use of this urban labeling phenomenon, we know little about so called smart cities.

The Cities that Think for you are also calling as Electronic Cities, I(Internet) Cities, Cyber Cities, Connected Cities, Wired Cities, Ubiquitous Cities, Intelligent Cities, Semantic cities, Transparent Societies and Digital Societies or Digital Cities. This is a new paradigm on how to build cities, which requires new strategies, technologies, models and urban processes in order to meet the current challenges related to quality of life, balance of the environment and efficiency of natural resources, to inequality and social exclusion.

Smart cities, digital cities and intelligent cities are concepts that have characterized recent academic literature. Smart Cities have been gaining popularity among researchers and practitioners. Smart Cities constitute a major breakthrough in contemporary urban development and planning literature, which spans over a period of 20 years. The first academic paper on intelligent cities appeared in 1992 (Laterasse, 1992), while the first academic paper on smart cities was also published in the same year (Gibson et. al, 1992).

Globalization, with trade liberalization measures and fast technological changes altering the relations of production, distribution and consumption, has very substantial effects on city

development. As one important consequence (network-) economies evolved" [...] with easier physical movement, globalized players making decisions with no regard to national boundaries" (Thornley, 2000). Cities around the world aspire to provide superior quality of life to their citizens. Furthermore, many are also seen as centers of unique opportunities, like business, fashion, entertainment and governance, for their citizens. Cities want to retain such preeminent positions or re-position themselves for newer opportunities. But, resources needed to reach and sustain such aspirations are decreasing while the expectations continue to rise from an increasing population-base. A positive trend of the internet age is that more data than even before is open and accessible, including from governments at all levels of jurisdiction, which enables rigorous analysis. Wellington E. Webb - Former Mayor of Denver, Colorado said that about cities

"The 19th century was a century of empires;

The 20th century was a century of nation states;

The 21st century will be a century of cities"

Cities play a decisive role, not only in Denver-Colorado but throughout the world. Cities are driving the economy. Cities are where people want to live, invest and work. That is why cities are focal points in the future sustainable economy (Claus Bjorn Billehoj, Sustainable City Development, and New Town of Copenhagen). There are numerous definitions of the term 'city' depending on countries, but the most common one defines 'city' as a relatively large and permanent settlement. Paul R Brown, AICP, CDM Smith Executive Vice President defined that "Cities are complex ecosystems that are dependent on natural systems, challenging out thinking about the development of both natural and urban environment".

SINGAPORE- THE CONCEPT PLAN

Singapore is one of the youngest yet most developed country with interracial population of 5.5 million and 277 sq. mile area. Singapore was the archetypal 'colonial city' in south-east Asia, a product of British planning and development where land was allocated with rigid guidelines regulating a range of aspects from street patterns and lot sizes to covered walkways, for government and commercial uses and for the various ethnic groups (Yuen, 1996).

The Concept Plan is a strategic land use and transportation plan that guides Singapore's development over the next 40-50 years. Reviewed every ten years, the Concept Plan ensures that there is sufficient land to meet long-term population and economic growth needs while providing a good quality living environment for our people (Singapore Government, 2015). The first Concept Plan was formulated in 1971 and laid the foundation for Singapore's growth for a better quality of life with new towns, transport infrastructure and access to recreation further subsequently reviewed in 1991, in 2001 and in 2011 to factor in changes in local and global trends, and ensure the plan remains relevant to address future challenges and meet needs. At present, Singapore is expecting 6.5-6.9 million population by 2030 (Singapore Government, 2015). Regular public consultation through different surveys, FGD, and public forums have helped to upgrade the plan as per the global as well as local demand.

In reviewing the Concept Plan, we take into account all major land needs in collaboration with relevant government agencies. Public consultation is on crucial component of the Concept Plan process. In every Concept Plan Reviews, extensive public consultation has been carried out through various channels such as surveys, focus group discussions, and public forums.

The latest Concept Plan review of 2011 took into account the public feedback gathered by the National Population & Talent Division (NPTD) on building a sustainable population for Singapore. This population discussion resulted in the release of the Population White Paper in January 2013, which set out the key considerations and roadmap for Singapore's population

policies and also projected Singapore's potential population by 2030 The Land Use Plan is a conceptual plan that outlines the strategies to provide the physical capacity to sustain a high quality living environment for a possible population of 6.9 million by 2030.

Today, Singapore's total urban socio-spatial infrastructure has been developed essentially according to the Concept Plan.

4. RAKAM KARNALI -TOWN PROFILE

4.1 SITE INTRODUCTION

Rakam Karnali NT is located in Mid-western Development Region of Dailekh District. The settlement is growing rapidly and providing marketing and other services in its hinterland. The lead sectors of this market center are trade and business center, education and health center and tourism and service Centre. Based on those potential lead sectors, Rakam Karnali can be developed as a regional center for marketing as well as tourism center of Mid-western Development Region of Nepal. The center is providing social, economic, touristic as well as various services in its hinterland.

4.2 LOCATION

Rakam-Karnali new town area includes Rakam VDC and Siguadi VDC of Dailekh District of Mid-Western Development Region and is located along the Karnali Highway in the north and Karnali River in the south, Situated at an elevation of 500 m from sea level. The project area, especially Rakam, has been the transit place for providing the goods and services to surrounding places from before the construction of Karnali Highway.

4.3 GEOGRAPHY

Geologically, Rakam NT lies at The Lower Himalaya zone in between Sub-Himalayas and Higher Himalayas separated by the Main Boundary Thrust (MBT) and the Main Central Thrust (MCT). It is made up mostly of the unfossiliferous sedimentary and meta sedimentary rocks; like shale, sandstone, conglomerate, slate, phyllite, schist, quartzite, limestone, dolomite etc. The rocks range in age from Precambrian to Miocene. Tectonically, it consists of two sequences of rocks: allochthonous, and autochthonous-parautochthonous units; with various nappes, klippe and tectonic windows. The rock type is of Rakam area composed of Grey grifty chloric phylites and phylitic quartzites, metasandstones and conglomerate beds with white, massive quartzites.

The temperature varies from 34.6°C maximum in summer and 2.6 °C minimum during winter season in Rakam NT. The average annual precipitation is approximately 1290mm at Rakam NT.

4.4 HISTORICAL INTRODUCTION

According to popular local myth, the name Rakam itself originated from the word 'Rakham' which means 'to put down', often used by the porters for resting while carrying goods to the surrounding districts. At regional level, the project area is the entry point for Karnali District. Because of its strategic location, the project area is expected to serve as market center for Achham of Far Western Development Region and Dailekh, Humla, Jumla, Dolpa and Kalikot Districts. The market is expected to be connected with Kuchi Kalikasthan VDC of Achham District once the motorable bridge over Karnali River is completed

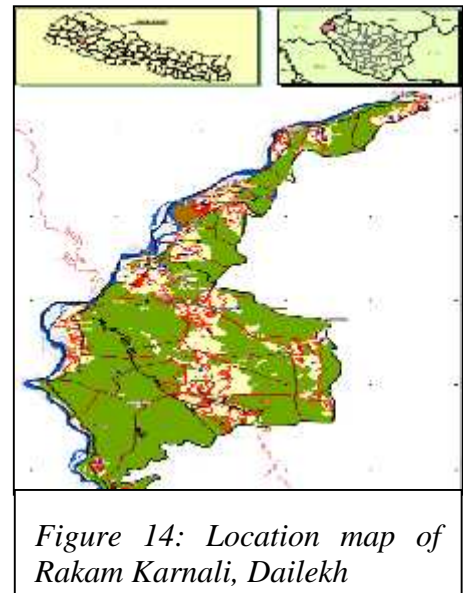
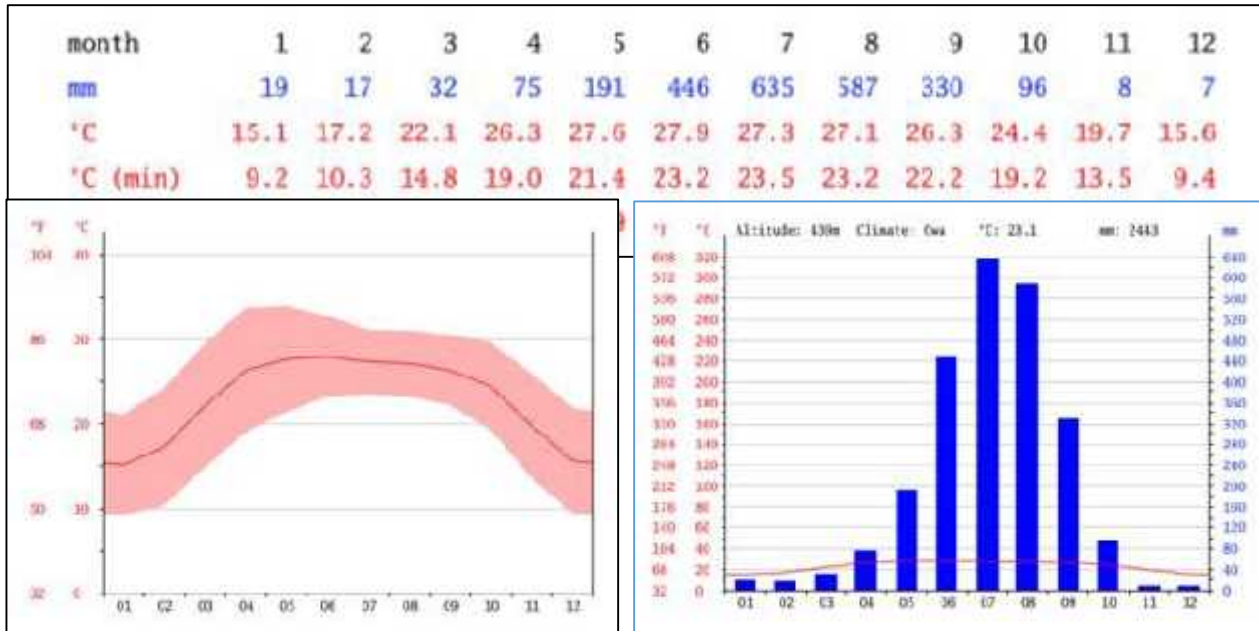


Figure 14: Location map of Rakam Karnali, Dailekh

4.5 CLIMATE

Rakam Karnali is hot in the summer time and too cold in inter. During the winter season Rakam Karnali is covered with misty fog which is visible from some VDC of surrounding districts in the morning.



4.6 TOWN PROFILE

The total population of Rakam Karnali VDC is 2,814 of which 1,344 and 1,470 is the male and female population respectively. Similarly the total population of five wards (ward no 1,4,6,7 and 8) of this VDC where the potential sites for LPP were identified is 1,678. Out of the total 556 HH, these five wards account for about 58% (326) of the houses.

Table 7: Household and Population of Rakam

Ward no.	Household no.	Population		
		Total	Male	Female
Rakam Karnali VDC				
1	36	183	83	100
2	83	447	202	245
3	36	181	91	90
4	110	538	271	267
5	69	269	136	133
6	66	317	149	168

Ward no.	Household no.	Population		
		Total	Male	Female
7	35	190	86	104
8	79	450	211	239
9	42	239	115	124
Total	556	2814	1344	1470
Sigaudi VDC				
1	108	614	310	304
2	107	618	325	293
3	109	551	277	274
4	29	156	85	71
5	96	561	291	270
6	208	1082	539	543
7	109	719	349	370
8	203	1048	510	543
9	135	683	301	382
Total	1104	6032	2987	3045

Source: National Population Census, 2011

Ethnically the VDC is inhabited by multicultural groups. Among which, Chhetries are dominant population accounting for about 59% of the total population followed by 22% Dalit (Kami) and 8% Thakuri respectively. The Bramhins and Damai/Djoli account for about 2% each whereas Muslim and Magars also accounting for 0.9% each. Other minorities include Dashnami, Sarki, and Majhi etc. Nepali language is used by almost all (99%) followed by Maithali and other local language. The literacy rate stands at 62.9 %.

Table 8: Population by Caste

Ward no.	Dalit				Janajati				Others			
	HH	Male	Female	Total	HH	Male	Female	Total	HH	Male	Female	Total
1	14	33	28	61	0	0	0	0	18	43	39	82
2	35	82	78	160	0	0	0	0	44	103	97	200
3	19	44	41	85	0	0	0	0	7	15	14	29
4	41	96	90	186	0	0	0	0	27	63	60	123
5	15	35	33	68	0	0	0	0	33	74	73	4.7 147
6	37	87	85	172	0	0	0	0	27	62	60	122
7	0	0	0	0	0	0	0	0	38	89	85	174
8	31	73	69	142	0	0	0	0	44	103	100	203
9	1	4	3	7	0	0	0	0	32	75	72	147
Total	193	454	427	881	0	0	0	0	270	627	600	1227

Source: National Population Census, 2011

Table 9: Population by Caste

Ward no.	Dalit				Janajati				Others			
	HH	Male	Female	Total	HH	Male	Female	Total	HH	Male	Female	Total
1	14	33	28	61	0	0	0	0	18	43	39	82
2	35	82	78	160	0	0	0	0	44	103	97	200
3	19	44	41	85	0	0	0	0	7	15	14	29
4	41	96	90	186	0	0	0	0	27	63	60	123
5	15	35	33	68	0	0	0	0	33	74	73	147
6	37	87	85	172	0	0	0	0	27	62	60	122
7	0	0	0	0	0	0	0	0	38	89	85	174

8	31	73	69	142	0	0	0	0	44	103	100	203
9	1	4	3	7	0	0	0	0	32	75	72	147
Total	193	454	427	881	0	0	0	0	270	627	600	1227

Source: National Population Census, 2011

Table 10: Age wise Population of

VDC		Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+
Rakam Karnali	Total	2,814	407	437	413	311	244	207	150	132	130	95	86	62	66	31	23	20
	Male	1344	199	220	202	149	107	95	65	66	66	41	43	32	29	12	9	9
	Female	1,470	208	217	211	162	137	112	85	66	64	54	43	30	37	19	14	11
Sigaudi	Total	6032	908	921	826	646	538	403	348	292	243	200	175	153	162	119	56	42
	Male	2987	481	465	422	324	269	180	163	138	112	92	86	76	70	58	32	19
	Female	3,045	427	456	404	322	269	223	185	154	131	108	89	77	92	61	24	23
Total	Total	8,846	1,315	1,358	1,239	957	782	610	498	424	373	295	261	215	228	150	79	62
	Male	4,331	680	685	624	473	376	275	228	204	178	133	129	108	99	70	41	28
	Female	4,515	635	673	615	484	406	335	270	220	195	162	132	107	129	80	38	34

Source: CBS, 2011

Table 11: Population by Mother tongue

		Total	Male	Female		Total	Male	Female	Total	Male	Female	
All	Rakam Karnali	2814	1344	1470	Sigaudi	6032	2987	3045	Total	8846	4331	4515
Nepali		2786	1328	1458		5999	2969	3030		8785	4297	4488
Maithili		19	10	9		0	0	0		19	10	9
Urdu		0	0	0		24	13	11		24	13	11
Others		9	6	3		9	5	4		18	11	7

Source: CBS, 2011

Table 12: Households, population and average Household Size

VDC	Households	Population			Average Household	Sex Ratio
		Total	Male	Female		
Rakam Karnali	556	2814	1344	1470	5.06	91.43
Sigaudi	1104	6032	2987	3045	5.46	98.1
Total	1660	8846	4331	4515	10.52	189.53

Source: CBS, 2011

Household Types

In Rakam Karnali VDC, here is a total of 556 HH out of which 500 are owned followed by 55 rentals HH. In case of Sigaudi VDC the total HH number is 1104 out of which 1046 HH is owned

followed by 42 rentals HH. In Rakam 20 to 30 houses is being build without following building by laws .Most of the houses in Rakam are built up of Mud bonded brick or rock.AS for the roofing Material ile/ slate is dominant followed by mud roof, CGI and Thatch respectively.

Table 13: Household by construction Type

Rakam VDC	No	Sigaudi VDC	No
Mud bonded brick/ stone foundation	530	Mud bonded brick/ stone foundation	1091
Wooden Pillar foundation	21	Wooden Pillar foundation	5
Cement bouned foundation	-	Cement bouned foundation	1
Bamboo wall	19	Bamboo wall	20
Mud Brick/ stone walls	526	Mud Brick/ stone walls	1074
Cement brick/stone walls	4	Cement brick/stone walls	3

Source : CBS :2011

Table 14: Household by Roof Type

Rakam VDC	No	Sigaudi VDC	No
Thatch Roof	21	Thatch Roof	304
CGI roof	44	CGI roof	80
Tile Slate	401	Tile Slate	622
RCC	6	RCC	18
Wood Planks	0	Wood Planks	4
Mud	79	Mud	68

Source: CBS: 2011

Table 15: HHs by type of HHs Facilities

VDC	Total	Without Facilities	Atleast one	Radio	TV	Cable TV	Comp	Internet	phone	Mob ile	Motor	Mot orcy cle	Cycle	Other Vehicl es	Refrig enator	Not Stated
Rakam Karnali	556	159	394	302	22	3	1	1	13	298	0	4	2	0	2	3
Sigaudi	1104	562	537	368	4	1	1	1	1	395	0	3	6	0	1	5
Total	1660	721	931	670	26	4	2	2	14	693	0	7	8	0	3	8

Source: Field Survey, Interview

Table 16: Population by Literacy

Description	Male	Female	Total
Can read & write	296	51	347
Can't read & write	364	643	1007
Can read only	22	37	59
Not stated	-	12	12
Total	682	743	1425

Source: Field Survey, Interview

4.7 SOCIAL DATA

EDUCATION

In this VDC there is a higher secondary school, two lower secondary schools and four primary schools within the wards where New Town sites are proposed. The name of the schools and the nearby settlements and bazaar are listed below:

Table 17: Existing Schools and College

Institutional Buildings	Ward	Settlements/bazaar
Nepal Rastriya Lower Secondary School	1	Jakshi-Chimmne
Himal Primary School	2	Simtol, Selgaun, Gadeabata
Bloomoon Primary School Janachetana Lower Secondary School	4	Bakhrekotbazar, Khulibazar
Janajyati Higher Secondary School	7	Serabada
Dipendra Primary School	8	Bheltadi, Dhategairegaun, BudhaAagra, Tarapani
Ganodaya Primary School	9	Saddu, KhidkiJyula

Source: Field Survey, Interview

Table 18: Population aged 5 years & above by educational attainment

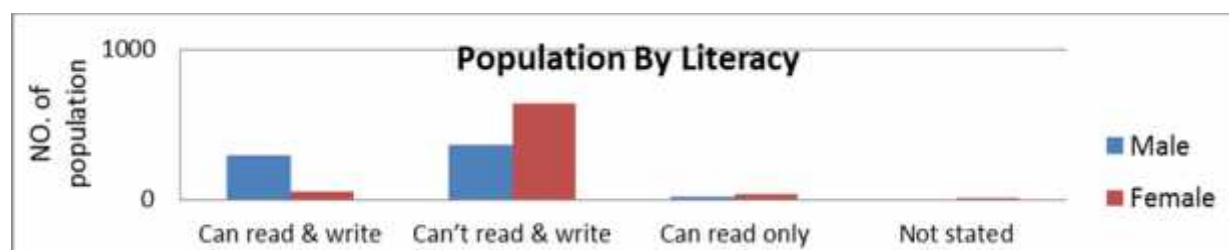
VDC		Total	Beginner	Primary	Lower Secondary	Sec	SLC & equ.	Intermediate	Graduate	Post-Graduate	Other	Non-Formal	Level Not Started
Rakam Karnali	Total	1581	125	754	300	108	114	72	16	0	0	240	51
	Male	898	67	395	181	75	83	60	13	0	0	117	27
	Female	683	58	359	119	33	31	12	3	0	0	123	24
Sigaudi	Total	2671	259	1334	528	197	148	84	17	6	3	78	17
	Male	1674	123	761	369	144	124	69	16	6	2	54	6
	Female	997	136	573	159	53	24	15	1	0	1	24	11
Total	Total	4252	384	2088	828	305	262	156	33	6	3	318	68
	Male	2572	190	1156	550	219	207	129	29	6	2	171	33
	Female	1680	194	932	278	86	55	27	4	0	1	147	35

Source: CBS, 2011

Table 19: Population aged 5-25 years by school attendance & Sex

VDC	Population		Currently Going		Currently Not Going		attendance not	
	Male	Female	Male	Female	Male	Female	Male	Female
Rakam Karnali	618	728	478	483	126	224	14	21
Sigaudi	1406	1500	971	828	400	618	35	54
Total	2024	2228	1449	1311	526	842	49	75

Source: Field Survey, Interview



Source: Field Survey, Interview

PUBLIC HEALTH

There is one sub health post named Rakam Karnali Sub health post in ward no 7 and at least 3 private clinics within Rakam New Town area (1 in Sigaudi and 2 in Rakam VDC). The health post and the private clinics only serve the people for general health checkups and primary health care. In the absence of modern diagnostic facilities, patients are referred to Kathmandu or Surkhet District Hospital for major health problems.

Table 20: Health Institution in the Project VDCs

VDC	Hospital	HP/SHP	Private Clinic	Total
Rakam Karnali	1	2	3	6
Sigaudi	1	0	1	2

Source: Field Survey, Interview



Figure 15: Medical Hall



Figure17 . Health Post



Figure 16: Open Space

PARKS, OPEN SPACES AND REFRESHMENT CENTER

There are lot of open spaces which can be developed as Parks and open spaces in Rakam NT area like Nantapu, Dhaulakot area, Budhakhola area, Basundhara area and other forest. Karnali River and its area itself are the open place during low flow. There is one refreshment center at Kholi Bazar. There are no play grounds and other infrastructure facility for Sports.

PHYSICAL & SOCIAL SECURITY

An Ilaka police post is located in Bakhrekotbazar area and similarly Karnali Ilaka Post Office is located in ward no 5 of RakamKarnali VDC. There are several agriculture related building infrastructures. Among others, Agriculture Service Center and Agriculture Collection Center are important which are located in ward no 1 and 2 respectively.

4.8 PHYSICAL INFRASTRUCTURE DATA

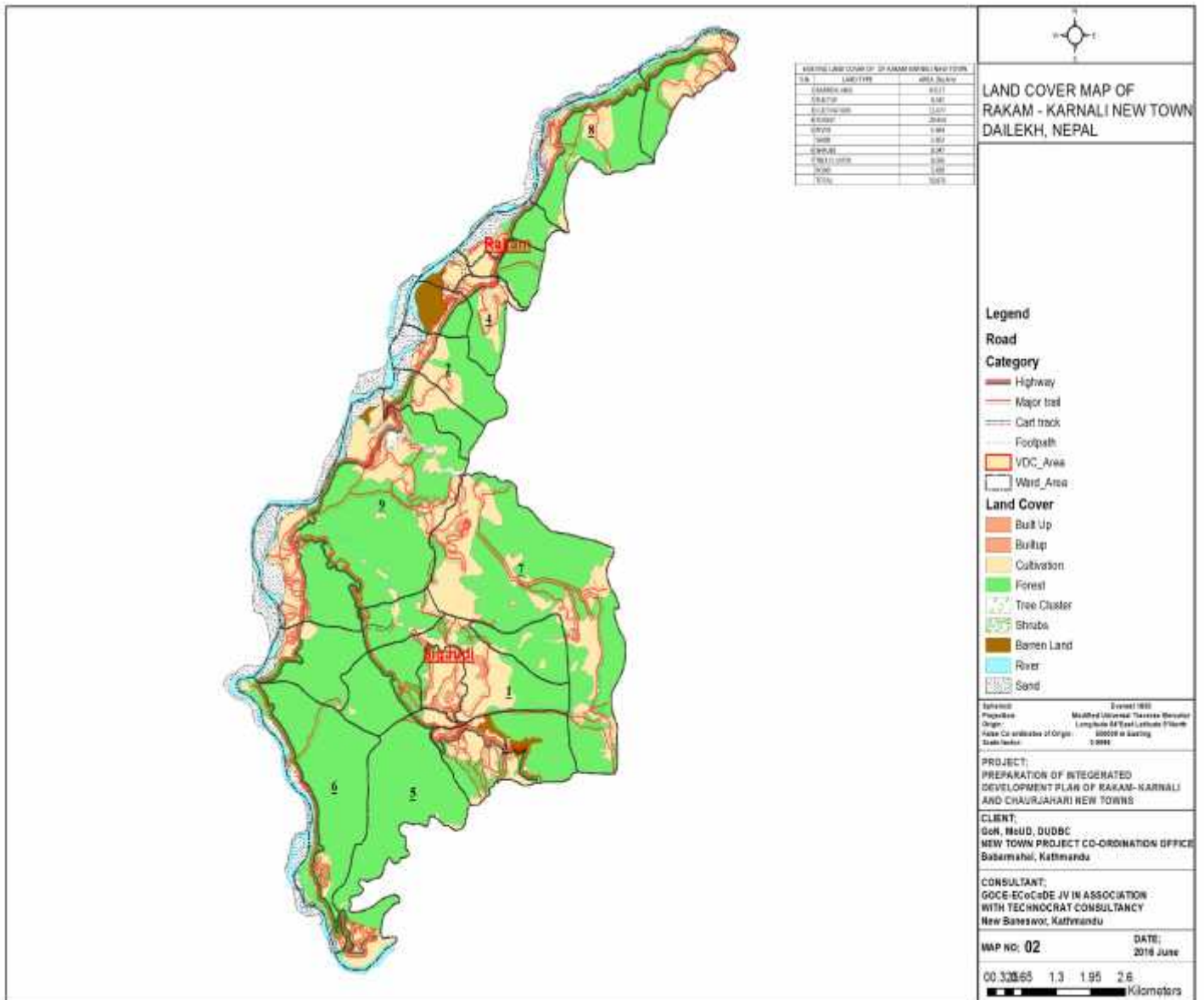


Figure 18: Land cover Map of Rakam

Urban Form

EXISTING LAND USE/ LAND COVER

Existing land use of the Rakam Karnali consists of Government Land (Parti, Gaucharan), Forests, Roads, Rivers and Private Land. The composition is as follows.

Table 21: Existing land cover of of Rakam Karnali New Town

EXISTING LAND COVER OF OF RAKAM KARNALI NEW TOWN		
S.N.	LAND TYPE	AREA (Sq.Km)
1	BARREN LAND	0.617
2	BUILTUP	0.642

EXISTING LAND COVER OF OF RAKAM KARNALI NEW TOWN		
S.N.	LAND TYPE	AREA (Sq.Km)
3	CULTIVATION	11.077
4	FOREST	29.454
5	RIVER	2.684
6	SAND	2.862
7	SHRUBS	0.047
8	TREE CLUSTER	0.056
9	ROAD	3.438
	TOTAL	50.876

Source: Base map, GIS Calculation

Table 22: Existing land use on the basis of ownership of rakam Karnali

EXISTING LAND USE ON THE BASIS OF OWNERSHIP OF RAKAM KARNALI			
S.N.	Category	Arae(Ha)	Area (%)
1	GOVERNMENT	982.57	19.313
2	PUBLIC	343.80	6.758
3	FOREST	2661.87	52.321
4	GUTHI	40.36	0.793
5	PRIVATE	1059.0	20.815
	TOTAL	5087.60	100.000

Source: Base map,, GIS map, interview with DoLR Dailekh

TRANSPORTATION

Karnali Highway which connects Surkhet to Jumla by 200 km road passed through this VDC. Out of 200km, 86 km lies in Dailekh district in which this VDC lies. Mid-Hill highway also passed through this VDC. In this district there is 67 km long feeder road connecting Surkhet and Dailekh. Out of 67 km, 47 km lies in Dailekh district. In this VDC there are 2.5 km Graveled road. Most of the part of the VDC is linked with earthen road.

Rakam VDC do not have a good road system apart from the Karnali Highway. Among the road network in Rakam, 10.48 km are bituminous roads, 1.03 km are graveled, and around 25.34 km roads are earthen roads in this VDC. Karnali Highway accounts for 100% of the bituminous road and earthen road takes into account the trails also, within this VDC. Detail road distribution in accordance to the ward is shown in the table below.

Table 23: Existing Road Lengths In Rakam (In KM)

Wards	Bituminous	Graveled	Earthen	Total
1	0.96	-	2.20	3.16
2	0.80	-	2.00	2.80
3	0.79	0.39	1.70	2.90
4	0.76	0.24	3.60	4.60
5	-	0.40	1.00	1.40
6	0.43	-	1.14	1.60
7	1.14	-	1.80	2.99
8	3.50	-	6.90	10.0
9	2.10	-	5.00	7.20
Total	10.48	1.03	25.34	36.45
Sigaudi VDC				
9	5.9		4.6*23	33.8

Source: Extracted from GIS Base Map, NTPCO

Table 24: Total Road Network available in Rakam Karnali

EXISTING ROAD NETWORK OF RAKAM KARNALI NEW TOWN

S.N.	ROAD TYPE	LENGTH (Km)
1	FOOT PATH	5.207
2	EARTHEN ROAD	128.685
3	GRAVELED ROAD	0.986
4	BLACK TOPPED	37.018
	TOTAL	171.896

Source: Extracted from GIS Base Map, NTPCO

WATER SUPPLY

According to 2011 national census, of total HH of Rakam Karnali VDC, about 46% populations have access to tap/piped water supply. A total of 24% of total HH uses river/ stream followed by 22% who use water sprout as major source of water supply. About 1 % resort to the uncovered well to fetch the water for daily use. There are 15 small & medium water supply project, most of them are outdated.



In Rakam Karnali VDC, although not enough for all households, piped water supply is available in ward no 1, 2, 6, 7, 8, 9 and 5. The water is made available in ward no 1 and 2 from Sim khola Water Supply, Jaksi and Babipani Water Supply respectively. According to key informants, water supply throughout VDC can be made perennial by using the Bhitari Khola (18km from east of Serabada) and Kanegaad Khola (from 3km upstream). It was stated that feasibility survey was carried out to bring water from Kanegaad Khola by constructing overhead water tank in TalloNauli. Among other possible and important source cited by the informants is Lamihani spout, located 3 km away in Tilapata VDC-7 for the distribution of water to ward no 3, 4 and 5.

Table 25: Drinking Water Facilities (in Percent)

VDC	Piped Water	Well/Spring	Stream	Total
Rakam Karnali	40	30	30	100
Sigaudi	30	20	50	100

Source: Field Survey, Interview

SANITATION

According to 2011 national census, of total HH, about 44% households do not have access to toilet facilities in Rakam, but all the households have built toilet in present days. The state of drainage and other sanitation facilities are almost negligible. Solid waste from kitchen and degradable matters are decomposed for manure, and other solid wastes are either collected and burnt or disposed along the riverside. Thus, from the current status of the VDC, landfill sites are extremely necessary. The prevailing solid waste disposal from toilet includes pit system of disposal. There is no provision of storm water drains in Rakam - Karnali.

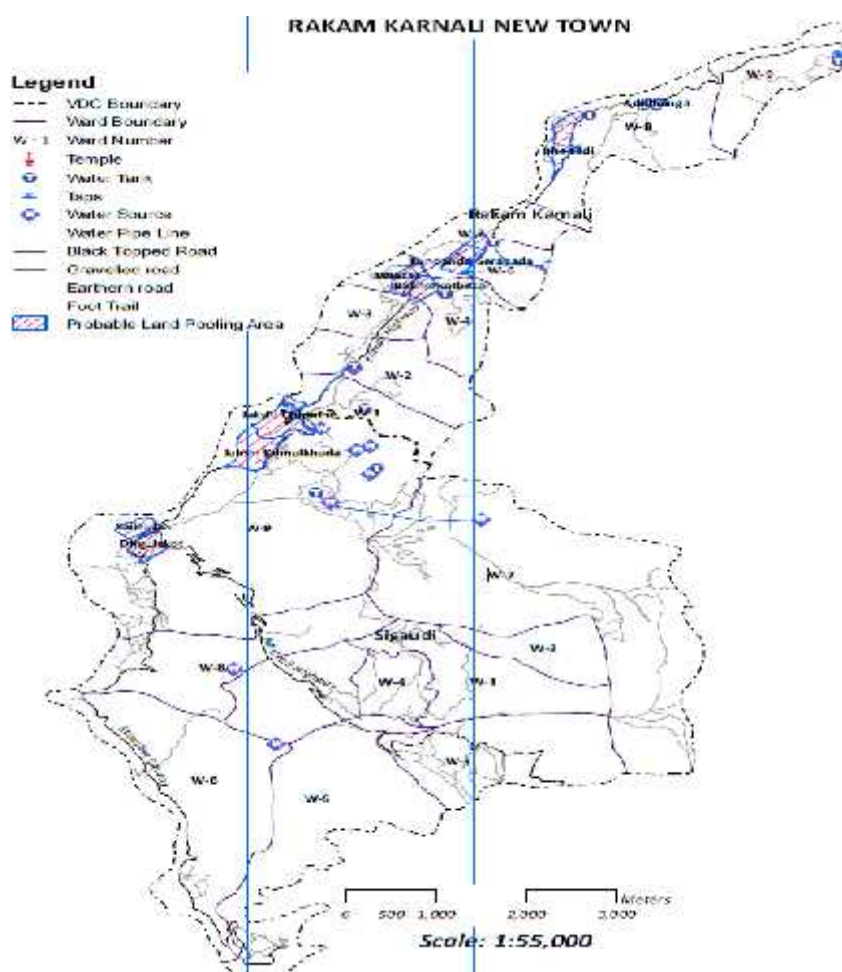


Table 26: HHs by type of toilet

VDC	Total	Without Toilet	Flush	Ordinary	Not Stated
Rakam Karnali	556	246	301	5	4
Sigaudi	1104	878	128	96	2
Total	1660	1124	429	101	6

Source: Field Survey, Interview

STORM WATER DRAIN

There is no provision of storm water drains in Rakam-Karnali. Natural Drains are available which drained out the storm water up to its outlet.

SEWERAGE

There is neither public centralized sewerage network system for sewage collection nor sewage treatment plants for sewage disposal. Most of the households have ordinary toilets. Mostly open septic tank is used and the toilets are temporary nature. Certain families used proper collection system of sewerage.

ELECTRICITY

According to 2011 national census, of total HH, about 50% households have electrical connection. A total of 25% of total HH uses solar system as alternative to electrical connection and about 23% HH resorting to other means than electricity or solar for lighting. The main source of electricity is from Kanegaad Micro Hydro Power. The total capacity of Hydro Power is 18kw, but in now days only 8kw electricity has been produced. All the household of ward no. 3, 4,5 6 and 7 uses electricity from Kanegaad Micro Hydro Power.

Table 27: HHs by usual source of Lighting

VDC	Total	Electricity	Kerosene	Bio-Gas	Solar	Others	Not stated
Rakam Karnali	556	279	0	0	140	133	4
Sigaudi	1104	5	3	0	498	596	2
Total	1660	284	3	0	638	729	6

Source: Field Survey, Interview

Table 28: HHs by usual type of fuel used for cooking

VDC	Total	Wood	Kerosene	LPG	Guitha	Bio-Gas	Electricity	Others	Not stated
Rakam Karnali	556	538	0	12	0	2	0	0	4
Sigaudi	1104	1101	1	0	0	0	0	0	2
Total	1660	1639	1	12	0	2	0	0	6

Source: Field Survey, Interview

TELECOMMUNICATION

The facility for communication is average in Rakam New Town. People connected with telephones, mobiles and internet connections are not dependable. Based on the field observations and key informant interviews, in Rakam Karnali VDCs about less than 1% of total HH has land line telephones respectively. The respective figure is 38% in case of having access to mobile facilities. According to Census 2011, Rakam accounts for 70% HH having access to Radio as a means of mass communication followed by 3% of HH having televisions.

4.9 CULTURE AND SPORTS

The important religious places of Rakam Karnali VDC are Shiva Temple, Kalika Devi Temple in ward no 3, Basundhara Pati and Saat Okhal in ward no 2, Attunia Karo (cave) in ward no 6 and Nainal Temple in ward no 8.

Table 29: Religious and Cultural Important Locations in the Project Area

SN	Location	Name	Importance
1	Rakam karnali-3	Shiva Temple	Religious
2	Rakam karnali-3	Kalika Devi Temple	Religious
3	Rakam karnali-2	BasundharaPati	Historical
4	Rakam karnali-2	Saat Okhal	Historical
5	Rakam karnali-6	AttuniaKaro	Natural sceneries
6	Rakam karnali-8	Nainal Temple	Religious

Source: Field Survey, Interview



Figure 18: Local Temple



Figure: Kalika Devi Temple

TOURISM

In Rakam, there is a large number of historical, religious important places such as Basundhara pati, Saat Okhal, Shiva Temple, Kalika Devi Temple, Nainal temple etc. Beautiful natural scenery can be observed at Attuniakaro. Thus, there is a high possibility of tourism development. Yearly, about 450 tourists visit different places of Rakam and about 200 tourists visit Rakam for religious purposes. To increase the number of tourists in Rakam, conservation of religious and historical places should be done.

Table 30: Type of tourist Visit in Rakam

Type of Tourist	National Tourists	International Tourists	Others	Total
Number	300	100	50	450

Source: Field Survey, Interview

4.10 ECONOMY

TYPES AND NUMBER OF EXISTING INDUSTRIES

There are no any industries in Rakam New Town area. Most of the people depends on the agriculture base economic activities. Local house hold industries which produce agriculture products exist.

PRODUCT AND SERVICE IN NEW TOWN

Rakam NT is 'A' grading market with centrality index of 151 points. Since Rakam NT has been a service/market time from the past it has good backward and forward linkages with its surrounding areas. Serving as a transit center, currently it provides linkages to rural areas for the export of their local products ranging from seasonal vegetables, rice, wheat, maize, potatoes, soybean, ghee, milk and dairy products. The market center provides various goods and services to the surrounding rural populations ranging from fertilizers, medical shops, clothing's and general household items.

EMPLOYMENT STATUS

The main occupation of people with Rakam NT and surrounding VDCs is agriculture. According to local sources, in Rakam Karnali VDC, some 60% of the total population is in agricultural occupation followed by 20% working in labor market and 10% in business sector. About 5% each work in service and foreign employment sector.

Table 31: Table Distribution of Population by Occupation (in Percent)

VDC	Agriculture	Service	Trade	Labour	Foreign Employment	Total
Rakam Karnali	60	5	10	20	5	100
Sigaudi	60	2	3	33	2	100

Source: Field Survey, Interview

BUSINESS

In Rakam ,there is mainly two market area Bakhrikot bajar and tar bajar. There are 108 Shops in Bakhrikot and 28 shops in tar bajar. People in Rakam sale their agriculture production in these markets.

Table 32: Type of Shop

Bakhrikot Bajar			Tar Bajar	
Shop	NO	Economic transation(Rs.)	NO	Economic transation(Rs.)
Kirana Shop	25	1000000	5	500000

Bakhrikot Bajar			Tar Bajar	
Fruits and vegetable shop	2	200000	2	200000
Cloth Shop	7	800000	4	800000
Medicine shop	5	500000	3	500000
Redimade and cosmatic shop	5	300000	3	300000
Utensil shop	1		-	
Stationary	3	500000	1	500000
Mixed of kirana pasal and cloth shop	1	800000	2	1000000
Tea shop	40	200000	5	200000
Hotel and lagge	5	300000	3	400000
Electrical shop	7	500000	-	-
Watch maintainance shop	2	200000	-	-
Photocopy nd computer shop	2	200000	-	-
Silai	3	200000	-	-

Source: Field Survey, Interview

SAVING AND CREDIT CULTURE

There are local saving and Credit co-operation, but there is no any branch of banks. People used to save their incomes in local co-operation. As people are aware about saving, they used to save their income at safe deposit at local level. There is facility of the IME in local market.



Figure 20: Local people Participating Meeting of Saving and Credit Co-operation.

FINANCIAL

Rakam-karnali VDC has been serving as the main market center for business from Achham and Dailekh, Humla, Jumla, Dolpa and Kalikot Districts. The local agricultural products and dairy products from the VDC and surrounding VDC's are collected and market in the town. When the construction of bridge over Karnali river will complete, it will connect the Achham district which will support financially. As it is the center market the financial activities in this town is relatively more than others similar market. The lead sectors of this market center are trade and business, tourism development and center for health and education services. Base on those potential lead sectors, Rakam karnali can be developed as a regional center for marketing as well as tourism center of Mid – western Development Region of Nepal.

4.11 CLIMATE CHANGE AND ENVIRONMENTAL PROTECTION

As the town is bound by the Karnali river and the Karnali Highway, the environment of the VDC is sound. There is no any Industries in the VDC, so there is no any pollution that caused by the industries. Local mothers group, youth group etc are aware about the environmental factors and they are launching awareness programme in local level.



Figure 21: Locality of Rakam Karnali

AGRICULTURE

Agriculture is one of the major sources of the local people with major crops like: Paddy, Maize, etc. Most of the flat lands are cultivable land with cash crops like potatoes, vegetables and there are plenty of paddy field on the site. Animal husbandry and Poultry farm is also important source of income for local people.

FORESTRY

Most of the sloppy land is covered with Sal forest where there are many community forests in the study area. Community forests in the study area are very successful with inclusive working committee and active participation of the women. Similarly they are very well supported by INGO's, NGO's and District Forest Office, GoN.

FORESTRY-WARDWISE

Industry/Small Scale

Most of the sloppy land is covered with Sal forest where there are many community forests in the study area. Community forests in the study area are very successful with inclusive working committee and active participation of the women. Similarly they are very well supported by INGO's, NGO's and District Forest Office, GoN.

4.12 DISASTER

From the interaction of people, very few people are aware of the natural disaster and anthropogenic disasters that have occurred in the area. By using interviews and secondary information from the Desinventar.net, we've identified around 12 cases of disaster at Rakam and 10 in Singaudi. Most common natural disasters were Landslide, thunderstorm (lightening) and Vehicle accidents. Recent earthquake of April 25, 2015 had almost no effect in the site because of far distance from the epic center

4.13 INSTITUTIONAL

One of the major aspects of modern urban planning is urban governance and institutional mechanism that needs to work in the field of planning and implementation. Lack of locally elected election has been the major national problem which is not different in case of Rakam Karnali New Town. Recently declared are yet to get into full shape with required technical staffs and administrative staffs. It is challenging for the project as well in case of implementation as it falls under the two different and one Town development committee. Town development Committee is the local representation nominated by central government which functions under the Ministry of Urban Development. It is important to understand the fact that accountability and authority is limited with its lack of public endorsement. Rakam - Karnali New Town office is to be technically reinforced by division office of DUDBC, Dailekh with one appointed engineer or DE of the division as secretary of Town Development. In no any manner, there is one integrated high authority body endorsed by local people/ politics, which can address and make decision regarding the new town development issues. Absence of some of the committee members during the decision making stage and during some important workshop also puts some serious doubt about the legitimate importance of TDC. While saying so, serious enthusiasm of some of the members in developing their town is really appreciable. Town development issues are directly linked with some thematic departments like: department of water and drainage, Department of survey, Department of Land Reforms, district development office and others which are district level departments and are situated in Damauli, district headquarter of Rakam. Growing number of private institutions and association is also important aspect of governance. In case of Chaurjhari, strong participation of FNCCI, Rakam and other local private business associations play vital role in decision making of development works. Private sectors have great role in development sector in terms of services and business modality. Growing number of residential plot is because of the uncontrolled intervention of private sector in land market which has negative impact on urbanization similarly private sectors are increasing the economy of that urban area.

Hence good governance is prerequisite for today's development, would control and maintain fair, transparent and accountable relationship between different factors such as business community, civil society and government sector.

4.14 EXISTING PROJECTS

Every city should be pre planned and then projects should be implemented as per the vision set in the city planning. But in no case, city development can or should remain stagnant till the plan finalization

period. In the strategic level as well as in the annual budget program as well, there are many plans adjacent to the new town development. Some of the major projects carried out by Rakam office are listed below:

- Road Upgradation Project
- New Road Construction Project
- Track Opening Project
- Landslide Management project
- Building Construction Project
- Land Pooling Project
- Apart from the above mentioned projects, Rakam is trying to buy around 50 ropani of land for the development as land banking.

5. ANALYSIS

After the collection of different information from site, interaction with local people, key informants, observation, different meetings and workshops performed in the site, we’ve analyzed opportunities and weakness of the new town with different perspective. Starting with the SWOT analysis to explore the Strength, Weakness, Opportunity and Threat, we further move to study the trend analysis of the site which includes the review of google earth and other information which gives historical development of the site. Some of the observed information and views collected from the local people or from different focused group discussion are placed in the field analysis. Finally, linkage of the town is studied with regard to the flow of people, services and goods. Linkage of the Rakam Karnali is identified in two perspectives with inter regional (Amongst the district) and Intra Regional (Within District or amongst VDCs).

5.1 SWOT ANALYSIS

SWOT Analysis is a useful technique for understanding Strengths and Weaknesses of town, and for identifying both the Opportunities open to town development and the Threats that it may face in future. With some minor reframing of SWOT Matrix with different aspect, we’ve presented analysis as follow



Figure 22: Swot Analysis

Table 33: SWOT Analysis

	PHYSICAL	SOCIAL/ECONOMIC	ENVIRONMENTAL, INSTI TUTIONAL, TOURISM AND OTHERS
STRENGTH	-Abundant availability of flat terrain and government land for future big projects	- Economic linkage with nearby VDC - Good economic and social (literacy) status of people,	-Political and touristic advantage -Natural of river and Hilly area
WEAKNESS	-High terrain topography -Unplanned	-Uncontrolled speculation of land price.	-No building bye laws implementation
OPPORTUNITY	-Virgin land for good development	- Close link with neighbouring towns	-Entry town for touristic destinations Manakamana.
THREAT	-Degradation of natural resources (Forest & River)	-Lack of acceptance for bigger projects in local level	-Weak institutional framework and Lack of political consensus

As a potential market town and in the locus of touristic destination, Rakam Karnali bears some good opportunities to be developed as business and touristic town. Rakam Karnali is expected to serve the gateway commercial town where as in aspect to the service providing aspect, Health and education are some strategic aspects of the town.

5.2 FIELD ANALYSIS

From the first day of field visit and informal interviews that we've conducted, we've found two kind of city lying in Rakam Karnali New Town. One is typical rural town another is urban town with all the facilities that is available in bigger cities. Most people are not aware about the ambitious project hence is trying to migrate to other cities where land mafia has already distorted the economy causing the unnatural speculation of prices. Rakam Karnali New Town has been the market area for more than half century. Rakam Karnali is well facility with road accessibility and market opportunity. It is obvious that the town territory delineated at the moment is not complete on its own as the development aspects are to be scattered as per the suitability of project and availability of resources and opportunity. Another positive response that we got from local people is that they want to see their city as clean and healthy city unlike other unplanned city. Awareness of future problem will let them to accept some basic facts as; following byelaws, working together to clean their city and following other basic manners for the citizen of healthy city.

While doing field survey, some of the smaller markets were afraid of the big city plan will replace them. Later on they convinced that the project is for all and should be planned by collaborative effort of all.

5.3 TREND ANALYSIS

It shouldn't be difficult to identify the changing land use of the Rakam Karnali New Town Region. With the recent years or after 2006, market area has boomed and land use change is at its peak without any proper guidelines. Increasing number of houses built at the region and development of Nayabasti as land pooling area are some of the observable features in the picture.

Expansion of Rakam Karnali bazaar with high density is also the character of expanding market. With every new year, green agriculture lawn are destroyed and are converted into building plot. It is usual trend of haphazard urbanization as observed in any other city. Roadside market development is another urbanization trend of cities in Nepal which is also observed in Rakam Karnali New Town. High yielding cultivable lands are in verge of conversion to urban plots unless controlled by urban bye- laws. Migration from Rakam and and other VDCs from neighbourhood is one of the major factor for increase in population and growing market area.

5.4 LOGICAL FRAMEWORK APPROACH (LFA)

1 ROAD				
DESCRIPTIONS		INDICATORS OF ACHIEVEMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOALS	Safe and Convenient movement of goods, Services and people in the Project area and periphery	Ease on modes of transportation in the <u>Project area and its periphery</u>	City profile, DDC / VDCReport, DoR/DTMP Report, Traffic report. I/NGO's Reports / HDI Reports	Approval and Implementation of IDP
		Interlinkage of Rakam Karnali with nearby cities		Prioritization of IDP
OBJECTIVES	Public Transportation Enhancement	Affordable, easy accessible and reasonable travel time	City profile, DDC / VDCReport, DoR/DTMP Report, Traffic report. I/NGO's Reports / HDI Reports	Effective local governance
	Road accesblity to every households	Maximum households are within 200 m distance of moterable roads		People's willingness
	Enhancement of interlinkages with nearby cities	Increased interconnectivity of the city and flow of goods, services and people		Approval and Implementation of IDP
	Prioritize on Peoples friendly inclusive road networks	People friendly walking		Awareness level of people and willingness.
	Terrain friendly roadwork development	Walkable road connection and easy access in high difficult terrain		
OUTPUT	Planned road network within city in different heirarcy	Defined Heirarchial road pattern / road laid as per GLD and Land pooling	City profile, DDC / VDCReport, DoR/DTMP Report, Traffic report. I/NGO's Reports / HDI Reports	Strong local governance and prioritization of project
	Public transportation within and among cities	Preparation of MTMP		Efficiency and effectiveness of implementing institutions
	Busstops and Busparks along different localities without disturbing the old market area.	Upgradation of Existing Bus parl along with new bs parks in different places		Prioritization of the project
	Connection of Rakam Karnali with nearby VDCs and within each settlement of Rakam Karnali VDCs.	Road connections including 1. NIMAYAL SIGAUDI ROAD CONSTRUCTION 2. RIVER SIDE ROAD CONSTRUCTION ALONG KARNALI RIVER		Prioritization of IDP and Budget allocation
	Pedestrian/ Disabled group and terrain friendly transportation planning	Footpaths and cycling tracks for flat terrains and walking trails on difficult terrain		Awareness level of people and willingness.
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1. Improvement of road networks and Preparation of M/TMP			
	2. Construction and Expansion of road system by Landpooling and GLD roads			
	3.Urgent Construction of Road structures and road furnitures including bicycle lanes and foot paths			
	4.Maintain and synchronise traffic lights through Government and Private sectors			
	5.Construction of road connectings Rakam Karnali New Town and to all nearby VDCs			
	6.Construction of RC, Suspension and suspended bridge for quick accessibility			
	7. Programs on public awareness			

2 WATER SUPPLY				
DESCRIPTORS		INDICATORS OF ACHIEVMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	Provision of reliable water supply services	Safe, reliable and affordable water supply	Report from DDC, DWSS, DWSSO and CBO's	Approval and Implementation of IDP
		Water supply facility to all HH	HDI Report	Availability of water supply in nearby areas
OBJECTIVES	Increase water availability and access by 80 per cent by 2017	24 hours access to clean hygienic water supply for Every households	Report from DDC, DWSS, DWSSO, CBO, and HDI Report	Prioritizing projects and Budget allocation
	Reduce incidences of waterborne diseases by 80% by 2017	Participation of individual HH and community in Rain water harvesting		Availability of open space and extensive public participation in rainwater harvesting
	Prevention of water contamination and pollution and Reduce the distance to the nearest water point from the current point of average of 3 km to 1km by 2017.	Ease for travellers for drinknig water and washing		Prioritizing projects and Budget allocation
OUTPUT	Adequate safe, reliable and affordable water supply facility	100(lpcd) hygienic water supply (18-24 hours per day)	Report from CBO DDC DWSS DWSSO HDI Report	Budget allocation and project prioritizations.
	Rain water harvesting provision in HH and community level	Each household will have rain water harvesting system and community will have water storage for community purpose		Extensive public contribution and participation
	Water supply for private, institutional and industrial purpose	Water supply for cleaning roads, greeneries and fire fighting		Budget allocation and project prioritizations.
	Public taps for drinking water and washing	Public taps installed on major junctions and important locations		Connections of water supply from nearby source
	Storage tank of 12mlpd required			
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1.Construction and expansion of Water supply Projects including Kanekhola Water Supply Proj			
	2. Adopt water recycling at a large scale through Water treatment plant			
	3.Water harvesting directives to be included in planning for all city developments for Rain water to be stored in community and HH level			
	4.Public tabs installed along necessary junctions			
	5.Provision of hose pipe along the roadside for cleaning, fire-fighting, greeneries and others.			
	6.Programs on public awareness			

3 Drainage & Sanitation

3 Drainage & Sanitation				
	DESCRIPTIONS	INDICATORS OF ACHIEVMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	Clean, Safe and affordable, sustainable sanitation and terrain friendly drainage system	Provision of sustainable sanitation and drainage system for all HH	Report from DDC,VDC, DWSS, RWSSP, NWSC, DDC, STWSSSP	Implementation of IDP Budget allocation
OBJECTIVES	Efficient and effective sewer and drainage networks in the city Toilet facility in every household and institution equipped with Septic tank Make the city "Open Defecation Free Zone" To aware people about healthy sanitation and drainage system.	All houses and institutions with toilet and septic tank Clean, green and healthy city People motivated toward cleaning their own city	Report from DDC,VDC, DWSS, RWSSP, NWSC, DDC, STWSSSP	Availability of technology and skilled manpower Monitoring by concerned authority Use of public toilets by people Budget allocation
OUTPUT	Each HH and Institution with toilet and Septic Tank Drainage and Sewerage lines installed along the road side of capacity as per demand Drain water treatment plant installed at the exit of drainage Easily accessible public toilets in public spaces Storm water drainage	100% HH with proper toilet and septic tank Integrated sewerage system Use of drain water in various purpose Open defecation free city No collection of rainwater on road	Report from DDC,VDC, DWSS, RWSSP, NWSC, DDC, STWSSSP	Monitoring by concerned authority Budget allocation Availability of technology and skilled technicians Maintenance issue Maintenance issue
ACTIVITIES	TYPES	INPUT/RESOURCES	COST/SOURCES	
	1.Mandatory toilet with septic tank in every buildings			
	2.Upgrade existing sewerage systems including Drainage and sewerage pipe along the roads			
	3.Installation of Sewer pipeline network and Localise sewer treatment units			
	4.Set up public toilet in public zone.			
	5.Programs on public awareness through Radio/TV Broadcasting/Publicity			
	6.Use modern technology and Adopt the 3Rs (reducing, recycling, and reuse of waste)			
	7.Awareness campaign and trainings			

4 Solid Waste Management (SWM)

4 Solid Waste Management (SWM)				
DESCRIPTIONS		INDICATORS OF ACHIEVMENT	MEANS OF VERIEICATIONS	ASSUMPTIONS
GOAL	Systematic, effective and sustainable management of soild waste	Clean and Healthy city with sustainable solid waste management Participatory approach of SWM with Refine, Recycle, and Reuse (3R) concept	Report from DDC,VDC, DWSS, RWSSP, NWSC, DDC, STWSSSP	Approval and Implementation of IDP Availability of landfill site
OBJECTIVES	Extensive reduce, reuse and recycle of solid waste (3R) Maintaining clean and healthy environment by minimizing adverse effect of the soild waste in public health and environment Effective management of sanitary land fill site and organic Aware people about importance of 3R concept in SWM and promote community involvement in SWM Strong institutional mechanism for SWM	Production of energy from solid waste 100% houses to be provided with dustbin to separate degradable and non degradable waste Clean city without dumping of solid waste on road side People aware about 3R concept and practising sustainable SWM practices Strong New Town	Report from DDC,VDC, DWSS, RWSSP, NWSC, DDC, STWSSSP	Efficiency of bio gas on winter season Use of separate dustbin for separate waste Project prioritization and Budget allocation
OUTPUT	Sanitary land fill site Bio gas installed Clean city with properly laid out dustbin on road side Community participation extended, Waste collection activities coordinated	Landfill site at the valley (Pass) of Bismar and Bhawareta Functional SWM units in Rakam Karnali New Town and sorrounding VDC 100% of HH waste collected in Rakam Karnali New Town and sorrounding VDC Proportion of potential waste reduced, reused and recycled	Report from DDC,VDC, DWSS, RWSSP, NWSC, DDC, STWSSSP	Budget allocation and project prioritizations. Operation of bio gas on winter season Peoples participation
ACTIVITIES	TYPES	INPUT	PRECONDITIONS:	
	1.Promote bio gas installation and penalties on public disposal of solid wastes			
	2.Provision of separate dustbin for HH for degradable and non-degradable waste			
	3.Proper selection of sanitary land fill site			
	4.Awareness campaign and program on 3R's and segregation of solid waste			
	5.Formation of capable SWM committee on Rakam Karnali New Town and sorrounding VDC			
	6.Promote reuse and recycling			
	7.Annual and Long Term strategy for SWM			
	8.Privatisation of SWM			

5 Electricity and Communication (E & C)

5 Electricity and Communication (E & C)				
	DESCRIPTIONS	INDICATORS OF ACHIEVMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	Develop quality, reliable, and resilient electricity and communication infrastructure, connecting with the national grid	Universally available electricity facility and promotion of renewable source of energy in household and institutional level	Reports from MoIF, Nepal electricity authority (NEA), Nepal Telecom, DDC, VDC etc	Implementation of IDP
		Increase universal and affordable accessibility of internet and communication		Budget allocation
OBJECTIVES	Access of affordable internet and communication facility	Each and every locality facilitated with internet & telecommunication	Reports from MoIF, Nepal electricity authority (NEA), Nepal Telecom, DDC, VDC etc	Availability of technology and skilled technicians
	Connecting national electricity grid with the microhydro development of Rakam Karnali New Town and surrounding VDC	Exchange of electricity with national and local grids.		Maintenance issue
	Qualitative and Reliable street lights and WiFi in major public locations	Solar street lights and wifi spots in public locations		Effectiveness of renewable sources
	Promote renewable energy	Mandatory and incentivized renewable energy policy		
OUTPUT	public and private ISPs	Quality, affordable and reliable internet and communication facility	Annual report from Nepal electricity authority (NEA), Alternative energy and promotion center (AEPC), VDC profile, DDC Profile , Nepal telecom, FM Stations	Surveillance from concerned authority
	Solar lighting on roads and public spaces	Sustainable energy source for public use		Operation on adverse weather
	Smart Grid infrastrucutre	Encouragement for public in sharing extra generated electricity		Budget allocation
	Incentives for renewable energy usage	Public motivated for renewable energy		Budget allocation
	Involment of private sector	Waste conversion to energy		Availability of technology and skilled technicians
	Promotion of radio stations	FM stations as the source of entertainment and awareness		
	Wifi Hotspots in public spaces	Easily accessible internet for public		Maintenance issue
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1.ST and LT program for Promoting private and government sector for qualitative internet and communication facility			
	2.Formulating Energy Policy for promoting renewable energy sources in public and private usage			
	3.Investing and Planning for smart grid electricity infrastructure			
	4.Solar lights installed on roads and other public spaces			
	5.Upgrading electricity infrastructure			
	6.Promoting and Monitoring FM stations			

6 EDUCATION				
	DESCRIPTIONS	INDICATORS OF ACHIEVMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	To develop Rakam Karnali New Town as educational hub	Good educational facility to cater surrounding VDCs	City Profile, DoE report, VDC report, HDI report. I/NGO's Reports	Lack of budget and prioritization Effective Implementation of IDP
OBJECTIVES	To literate all the citizen of the city	100% literacy rate	City Profile, DoE report, VDC report, HDI report. I/NGO's Reports	Prevailing gender discrimination Surveillance by concerned authority Awareness and adaptation of new technological innovation in education Government prioritization and budget allocation Government prioritization and budget allocation
	Gender equity in education	Girls equally literate as boys		
	To ensure all the children to complete a full course of primary schooling	All children completing at least primary school		
	Education for all	100% children attending school		
	Promote education for physically and mentally challenged children	Increase in number of physically and mentally challenged students		
To promote distance learning and digital education system	Use of digital instrument for scientific teaching method			
OUTPUT	Senior citizens and Women Education Program	100% literacy rate	City Profile, DoE report, VDC report, HDI report. I/NGO's Reports	Budget allocation and project prioritizations.
	Girl's education Prioritization	Increase in number of girls attending school		Budget allocation
	Establishment of primary secondary and higher secondary schools	Increase in number of school		People participation
	Establishment of good colleges with diversified program	Increase in number of college		Involvement of private sector
	Inclusive education policy promoting backward groups	Poor and dalit students attending school		Government prioritization and budget allocation
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1.Awareness campaign			
	2.Governmental support to open primary secondary and higher secondary schools			
	3.Establishment of primary secondary and higher secondary schools			
	4.Establishment of good college for higher education by government and private sector			
	5.Cross-subsidies for poor and dalit students in terms of book, dress and Tiffin			
	6.Cross-subsidised education for poor and dalit with established VDC fund			
	7.Agricultural and livestock resource center at Purkot and Ghosha respectively .			

7 HEALTH

	DESCRIPTIONS	INDICATORS OF ACHIEVEMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	Affordable, accountable, qualitative and accessible universal health-care facility to be provided for every citizen.	Effective and affordable health services for all citizens	Report from DHO, MoH, HDI, Census data, HDI report. I/NGO's Reports	Approval and Implementation of IDP Budget allocation
OBJECTIVES	Reduce dependency to Jumla, Surkhet, nepalgunj and Kathmandu for health facilities	Increase in number of patient from Jajrkot, Surkhet and Kalikot	Report from DHO, MoH, HDI, Census data, HDI report. I/NGO's Reports	Budget allocation for campaign
	Qualitative health facility with facilities of health educations	Increase in awareness level		Budget allocation
	Easy, affordable and accessible health facilities.	Accesses of All citizens to health facility		Availability of land for industrial zone
OUTPUT	50-100 Bed District Hospital with paramedical health education facility	Established of hospital	Report from DHO, MoH, HDI, Census data, HDI report. I/NGO's Reports	Availability of Land and Priority of National government
	Qualitative Health Posts in each wards	Established health post in all wards		Regular monitoring and evaluation of health facilities
	Private sectors involvement in health facilities.	Establishment of private clinics, hospitals, camps and other health facilities		Feasibility of investment
	Health Campaigns for awareness and camps for periodical health check-ups	Establishment of periodic camps and campaigns		Budget allocation
	Control of STD's	Decrease in number of STD's patient		Availability of technology and precautions
	Control of epidemics and communicable disease	Control of epidemics and communicable disease		Availability of technology and precautions
	Free open defecation area	No open defecation		Provision of toilets in open spaces and public areas
	Subsidized health facilities for economically deprived community	100% citizen with health facility		Budget allocation
	TYPES	INPUT/RESOURCES	COST/SOURCES	
ACTIVITIES	1.Upgrading district hospitals to 50 bed with paramedical health educational facility			
	2.Establishment of atleast one qualitative health post in every VDC and public toilets			
	3.50 Bed hospital establishment with private or community approach			
	4.Subsidizing health services for economically deprived group			
	5.Paramedical college associating with existing hospital			
	6.Program and campaign regarding health education			
	7.Organizing free medical camps periodically			
	8.Free distribution of precautions for STD's			
	9.Program and campaign regarding safe and healthy eating and drinking habits			
	10.Precautions and measures to stop the epidemic and communicable disease			

8 SECURITY AND SAFETY				
	DESCRIPTIONS	INDICATORS OF ACHIEVEMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	Safe and secure Rakam Karnali New Town City environment	Safe, secure and crime free city	GoN Reporta, HDI report, Municipal report, city profile, Traffic Record, local police record,I/ NGOs working for safe and secure environment	Implementaion of IDP Budget allocation
OBJECTIVES	Community Involvement in Resident Safety	Participatory city safety and security programme	GoN Reporta, HDI report, Municipal report, city profile, Traffic Record, local police record,I/ NGOs working for safe and secure environment	Availability of skilled manpower Availability of proper road network in the city Monitoring by concerned authority Avaibility of technology and manpower
	Community and city police around the city	Involvement of community and police working hand to hand for city safety and security		
	Promote vehicular safety	Safe Mobility		
	Promote Building safety	Implementation of bye-laws		
	Promote safety from natural and manmade disasters viz.Land slide, Floods, Fire, Epedemics and Accidents	Effective emergency response		
OUTPUT	Integrated city surveillance	City regularly monitored by security personnels	GoN Reporta, HDI report, Municipal report, city profile, Traffic Record, local police record,I/ NGOs working for safe and secure environment	Availability of technology and skilled manpower Level of maintenance Provision for pedesterian and cycle lane Monitoring by concerned authority Distribution of open space Availability of skilled manpower
	Lighting facilities installed on city spaces	Safety for women, children and others while walking on public space		
	Pedestrian friendly planning and regular monitoring on vehicular safety	People friendly mobility and safely in mobility		
	Strict implementation of bye-laws	Safe building construction practices		
	Identifying open spaces and establishment of emergency response team	Emergency evacuation space or used for open space		
	Community and city police coordinating for city safety and security	Responsive policing service		
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1.Improvement of survilience by Strengthen and broaden safer cities program and Local security management mechanisms			
	2.Solar lights on roads and other public spaces			
	3.Create employment for the youth and establish registration centres for the jobless youth – cottage industries			
	4.Constructing Separate lanes for pedestrians and vehicular mobility and Community participation on neighbourhood safety			
	5.CCTV surveillance to be installed in the city and Fire fighting facility			
	6.Establishing police station/ booths in city pockets and Establish up-to-date crime prevention strategy and Emergency response team for Disaster			

9 RECREATION

9 RECREATION				
	DESCRIPTIONS	INDICATORS OF ACHIEVMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	Recreational facilities for all	Access to the recreation facility regardless of physical ability, financial resources, or residence location.	GoN Reports, HDI report, Municipal report, city profile, Traffic Record, local police record, I/ NGOs working for Entertainment/Greenary Development	Implementation of IDP Budget allocation
OBJECTIVES	Provide access to all people	Green parks and open spaces accessible to all	GoN Reports, HDI report, VDC report, city profile, Traffic Record, local police record, I/ NGOs working for Entertainment/Greenary Development	Implementation of IDP
	Green parks, Play grounds and open space around the city	Safe and secure green pockets around the city, Minimum 5% of total city area		Maintenance of green spaces
	Promote sports and recreation facility around VDC's of Dailekh	People visiting to Rakam Karnali New Town for sports and recreation		Budget allocation
	Develop Rakam Karnali New Town as base station before reaching Rara Lake	Increase in number of tourist		Infrastructural development
	Promote Movie Theatre and other modern entertainment centers	Flow of people at Rakam Karnali New Town for entertainment		Cultrual degradation
OUTPUT	Parks and open spaces at every neighborhoods of the town	Center for recreation and outing for local people	GoN Reports, HDI report, Municipal report, city profile, Traffic Record, local police record, I/ NGOs working for Entertainment/Greenary Development	Avalability of open space
	Strategic plans for Sports and recreation at nearby VDCs and Districts	Increase in sports infrastructure and open space to settlement ratio		Budget allocation
	Identified recreation zone for daily purpose in closer proximity of settlements	Emergency evacuation zone		Avalability of open space
	Development of plans for recreational open space with community participation	Active involvement of Private and Public		Surveillance by concerned authority
	Increase participation of public and private parties in recreation industries.	Active public participation in management and operation of public space		
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1.Land acquisition for open spaces and green parks			
	2.Master plan for parks, reserves			
	3.Establishment of resorts and hotels for tourist			
	4.Formation of community groups for managing parks and spaces			
	5.Promotion of water based adventure tourism			
	6.Develop proper trekking route			
	7.People friendly city design with vegetation around the streets			

10 FINANCIAL PLAN				
DESCRIPTIONS		INDICATORS OF ACHIEVMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	Restructuring the financial framework of the city to address the financial sustainability	Efficient and effective financial status of city	Reports from TDC/ New Town, Budget spent on infrastructure (DUDBC/MOFALD), TAX and Land revenue, Land reforms and survey department, Report from FNCCI, NGOs Working in the economic /Financial sector	Strong, effective and efficient local government, good governance, participation in taxation by public
OBJECTIVES	Modern taxation	Coverage of larger business group under taxation	Reports from TDC/ New Town, Budget spent on infrastructure (DUDBC/MOFALD), TAX and Land revenue, Land reforms and survey department, Report from FNCCI, NGOs Working in the economic /Financial sector	Good governance, effective implementation of taxation, support from central government.
	Alternative source for resource mobilization and asset management	Innovative tax collection system so as to make equitable participation in taxation		Experts involvement in tax reforms and support from local & National government
	Participation of all stakeholders in financial planning	Participatory taxation		Good governance, strong institutional capacity.
OUTPUT	Introducing Modern/Scientific land and property taxation	Integration of larger property under value based taxation	Reports from TDC/ New Town, Budget spent on infrastructure (DUDBC/MOFALD), TAX and Land revenue, Land reforms and survey department, Report from FNCCI, NGOs Working in the economic /Financial sector	Good governance, effective implementation of taxation, support from central government, expert's team in integrating innovative taxation in city development, Strong institutional capacity.
	Increase scope of taxation of local government	Increase in tax collection		
	Collection of impact fee from polluting industries	Discouraging the polluting Industries		
	Provision of E-Taxation	Efficient and effective financing		
	Effective monitoring and implementation of financial plan to meet target	Effective collection of taxation		
	Private sector friendly financing model	Increase in investment and business		
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1.E-Taxation for increasing transparency			
	2.Implementation of combined property tax			
	3.GIS Mapping within the city			
	4.Provision of Impact fee (Pollution tax)			
	5. Asset management			
	6.Borrowing, Grants and Funds fro different Stakeholders			
	7. Provision of tax relief/exemptions			
	8. Extending territory of local taxation			

11 ECONOMIC				
DESCRIPTIONS		INDICATORS OF ACHIEVMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	To develop Rakam Karnali New Town as economically sustained region and economic center for nearby VDC's	Employment generation	Report from Ministry of Finance,CBS, HDI ,DDC/ VDC,I/NGO's report	Approval and Implementation of IDP
		Increase in GDP		Budget allocation
OBJECTIVES	Promote sustainable economy	Increase in export of local products	Report from Ministry of Finance,CBS, HDI ,DDC/ VDC,I/NGO's report	People's mentality toward foreign country
	Generate employment for people within VDC's	Increase in IN-migration for job opportunities		Road construction in terrane
	To promote trade linkage with Kalikot, Jumla, Sukhet, Nepalgunj and other districts	Accessible roads and storage centers		Budget allocation
	To alleviate absolute poverty	No absolute poverty		Lack of participation of deprived group
	To promote economic growth	Engagement of deprived group and women in economic activity		
OUTPUT	Establishment of industries for employment generation	Storage facility, Special Economic zone (SEZ)	Report from Ministry of Finance,CBS, HDI ,DDC/ VDC,I/NGO's report	Not enough resource
	"Central Business district(CBS)" as the single step solution for bigger market and economic transaction	Establishment of CBD and market zone		Lack of space for market center
	Road connection with nearby cities	Employed people		Lack of skilled manpower
	Subsidizing livelihood and promoting business for economically backward groups	Equitable economic development of all citizens		Lack of new techniques and technology
	Promotion for agricultural and livestock industries	Increase in agricultural and livestock		
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1. Establish/strengthen the links between informal and formal (e.g., garbage collection, prevention of communicable diseases, water, and sanitation)			
	2.Create designated business premises for garages, stalls, etc.			
	3.Construction of export/import transfer station			
	4.Provide necessary access to markets for businessmen and clients			
	5.Promote exporting local goods and services			
	6.Promote new technology and techniques in agricultural activity			
	7.Upgrade existing market/ build open air market			
	8.Introduce modern urban farming: greenhouses, poultry			
	9.Monitoring for control of illegal market			
	10.Provide both open air and closed modern markets			

12 INSTITUTIONAL				
DESCRIPTIONS		INDICATORS OF ACHIEVEMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	Strengthen Institutional capacity and efficient mobilization of resources	Effective and efficient Local government	Reports from MoFALD, Public response, Annual report from DDC/VDC, TDC and report from important INGOs and NGOs working in the field of Governance, Municipal development annual report.	Willingness of bureaucratic system and support from local people
OBJECTIVES	Accountable, Responsible, Transparent and efficient government offices	Ease and efficiency in public works	Reports from MoFALD, Public response, Annual report from DDC/VDC, TDC and report from important INGOs and NGOs working in the field of Governance, Municipal	No intervention from political groups and strong government
	Monitoring and Evaluation	Better results in development works		Strong legal framework
	Promoting e-governance for efficient governing	Less paper works and fast public works		co-operation from NGOs, INGOs
OUTPUT	Comprehensive plans	No duplication of work	Reports from MoFALD, Public response, Annual report from DDC/VDC, TDC and report from important INGOs and NGOs working in the field of Governance, Municipal development annual report.	Adaptation of technological advancement
	Exchange of information and knowledge through common platform	Increase in efficiency and quality of public works		Strong local government and legal framework
	Integrated service through single window system	Ease and effective government service		Willingness and participation of bureaucratic system
	Regular monitoring and evaluation of Institutional bodies with reference to public opinion	Work completion in time and reduction in corruption		Improvement in legal framework for co-ordination among different sectorial agencies
	Increased efficiency of government employees	Public friendly service		Willingness and participation
	Devolution of resources for the implementation of plans	Ease in implementation of plans and execution of projects		Efficient use of resources
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1. Provide Education and capacity building for Participatory Integrated development plan			
	2. Establish communication centres for Common information sharing platform			
	3. Create an active interactive website to Minimize Paper work and single window system for similar or interlinked work			
	4. Establish information and intelligence gathering systems for Regular trainings and knowledge exchange workshops			
	5. Separate authority for monitoring and evaluation of government works for quality and timely completion.			

13 ENVIRONMENT

DESCRIPTIIONS		INDICATORS OF ACHIEVMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	To promote environment friendly and Sustainable development in Rakam Karnali New Town	Eco friendly and Sustainable infrastructure development	Reports from Department of Environment, Department of Forests, city profile, Department of Hydrology and Metrology, City Profile, DDC/VDC, DoR and INGO's	Approval and Implementation of IDP Budget allocation
OBJECTIVES	Environment friendly and sustainable development	Sustainable development	Reports from Department of Environment, Department of Forests, city profile, Department of Hydrology and Metrology, City Profile, DDC/VDC, DoR and INGO's	Approval and Implementation of IDP
	Low carbon emission	High reduction on carbon emission		Availability of alternatives
	To protect natural resources , especially water bodies, forest and agriculture resources.	Preserved water bodies, forest and agricultural land		Implementation of land use plan
	To promote open spaces and green areas within the city	eco friendly development		Maintenance of open spaces
OUTPUT	Sufficient Open spaces around city with road side plantation	Follow of ROW and buffer spaces	Reports from Department of Environment, Department of Forests, city profile, Department of Hydrology and Metrology, City Profile, DDC/VDC, DoR and INGO's	Maintenance and care of plants
	Pederstiran friendly city promoting electric vehicles and cycles	Increase in environment friendly transportation mode		Public preference
	Preserved Conservation zone for natural resources in Land Use Plan	Preserved forest		Surveillance by concerned authority
	Preserved agricultural land	Increase in agricultural product		Surveillance by concerned authority
	Separate industrial zone separated with buffer zones	Use of treatment plant, Promoting low carbon emitting technologies		Availability of space
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	Scientific land Use Planning			
	Plantation along the road side and Buffer zone along			
	Sufficient buffer zone development in forest areas			
	Protect agricultural land by Laws			
	Proper zoning of the lands			
	Provide park and plant tree in open spaces			
Promotion of reduce, recycle and reuse				

14 DISASTER				
DESCRIPTIONS		INDICATORS OF ACHIEVEMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	Safe, Secured and Resilient urban people and areas.	Safe building construction practices	Report from MoUD, MoHA, DWIDP (Water induced disaster), Daibi Prakop Uddar Samiti, District Administration Office, Department of Soil Conservation (DOSC), Department of Hydrology and Meteorology (DOHM), and Reports of INGO's	Approval and Implementation of IDP
		Emergency response team and evacuation zones within the reach of community		Effectiveness of local government and active community participation
OBJECTIVES	Effective Risk sensitive land use plans and Bye-laws Implementation	Land use and Byelaws implementation	Report from MoUD, MoHA, DWIDP (Water induced disaster), Daibi Prakop Uddar Samiti, District Administration Office, Department of Soil Conservation (DOSC), Department of Hydrology and Meteorology (DOHM), and Reports of INGO's	Evidence based planning with information regarding disaster history and possibilities
	Enhanced preparedness and adaptive capacity of the local government, community and public	Participatory approach of disaster risk reduction and mitigation plan		Availability of skilled manpower to train others
	Disaster responsive urban design and Constructions	Open spaces and disaster evacuation zones within the neighborhood		Availability of evacuation areas, safe shelters and water source for fire station
OUTPUT	Rapid hazard appraisal technique, multi-hazard map of all urban areas.	Prepared Hazard maps and use in land use plans	Report from MoUD, MoHA, DWIDP (Water induced disaster), Daibi Prakop Uddar Samiti, District Administration Office, Department of Soil Conservation (DOSC), Department of Hydrology and Meteorology (DOHM), and	Budget allocation and project prioritizations.
	RSLUP , Byelaws and effectively implementation	Implementation of RSLUP		Effectiveness of local government
	Identified Open spaces and disaster evacuation zones in each neighbourhoods	100% easy and timely access to designated emergency area in case of disaster		Community involvement and Local government
	Safe building code implementation	Effective integration of byelaws in building practices		Willingness and participation of public
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1.Preparation of multi hazard map and RSLUP			
	2.Byelaws implementation			
	3.Identification of high-risk areas in all urban areas and relocating disaster prone settlements			
	4.Awareness campaign			
	5.Mandatory enforcement of land use regulation, by-laws and building code in all urban areas			
	6.Plan and implement appropriate periodic drills			
	7.Proper Infrastructure Development with Proper Design respect to terrain			
	8.Enhance human resource and institutional capacity			
Policies for restriction of development on slope greater than 30 degree				

15 CLIMATE				
DESCRIPTIONS		INDICATORS OF ACHIEVMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	To design climate-responsive Infrastructure development and building environment	Climate responsive built environment	Report from Meteorological Forecasting Division, DOE, city profile, Department of Hydrology and Metrology, Analysisi of Climatic change data over period of time, and	Approval and Implementation of IDP
				Budget allocation
OBJECTIVES	To mitigate climate change impact, and promote adaptation strategies	Increase in level of awareness of public	Report from Meteorological Forecasting Division, DOE, city profile, Department of Hydrology and Metrology, Analysisi of Climatic change data over period of time, and Reports fro INGO's	Budget allocation for campaign
	Minimize formation of heat island and Glacial Lake OutBurst Floods	No formation of heat island		Impact of global warming
	To enhance the effectiveness, efficiency and safety of mitigation processes	Use of effective technology		Availability of land for industrial zone
OUTPUT	Awarded publics	Level of awareness of public	Report from Meteorological Forecasting Division, DOE, city profile, Department of Hydrology and Metrology, Analysisi of Climatic change data over period of time, and Reports fro INGO's	Budget for program and campaign
	Climate responsive use of material	Wise selection of materials in built environment		Availability of climate responsive material
	To provide basic amenites within walking distance	Basic need within walking distace		Implementaiton of IDP
	Less formation of micro climate	No micro climate formation		Impact of global warming
	Adaption of green architecture	Green architecture around the city		Implementaiton of bye laws
	Sufficient Ground water recharge and Timely rainings	Increase in ground water table		Material used in roads and pavements
	Separate industrial zone	Land use adaption		Availability of land for industrial zone
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1.Public awareness campaign			
	2.Updating the climatic data			
	3.Develop pedesterian friendly roads			
	4.Water recharging pavements			
	5.Land use zoning with buffer around the industrial zone			
	6. Sufficient Parks and green buffer around roads			
	7.Promotion of energy efficient architecture			
	8.Promotion of renewable energy			
	9. Promotion of Organic development with respect to terrain			

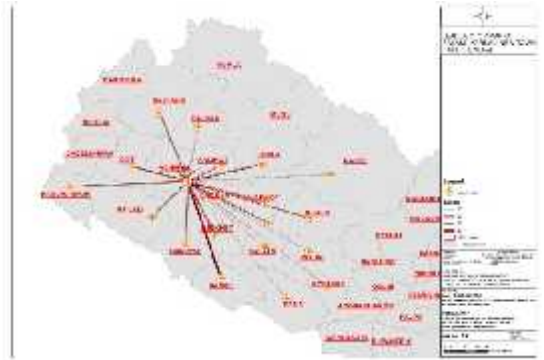
16 TOURISM AND CULTURE				
DESCRIPTIONS		INDICATORS OF ACHIEVEMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOAL	To make Rakam Karnali New Town as a leader Eco tourism	Increase in number of tourist	Reports from Ministry of Culture, Tourism and Civil Aviation (MoCTCA), DDC,VDC, Tourism information center,I/NGO's	Implementation of IDP
OBJECTIVES	To make tourism the key source of revenue and To make Rakam Karnali New Town a leading tourism destination	Increase in tourist to visit livestock,agriculture production and micro hydropower stations	Reports from Ministry of Culture, Tourism and Civil Aviation (MoCTCA), DDC,VDC, Tourism information center,I/NGO's	Budget allocation
	Develop Rakam Karnali New Town as the base station for NTFP (Non Timber Forest Products)	Development of Rakam Karnali New Town as few day stay spot before going to Rara Lake		Availability and identification of touristic spot
OUTPUT	Establish and promote resource center for livestock, agriculture and micro hydropower stations	Established infrastructure	Reports from Ministry of Culture, Tourism and Civil Aviation (MoCTCA), DDC,VDC, Tourism information center,I/NGO's	Budget allocation
	Identification of hiking trails, touristic spots and adventurous sports in tourism.	Increase in touristic destinations		Availability of touristic spots
	Promoting tourism friendly hospitality and investment in tourism sector	Hospitable touristic environment, with job opportunity generation		Willingness of private sector to invest
	Integrated institutional body comprising of stakeholders from different sectors (I/NGOs, Local people and other stakeholders)	Strong monitoring and evaluation mechanism for promoting tourism and culture.		
	Regular inspection of quality of services delivered for tourism development	Quality assurance for services provided to tourists		Availability of skilled manpower
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1. Create new roads and bridges and improve on existing ones.			
	2.Establish cultural centres and other tourism activities.			
	3.Allocate a percentage of its budget to tourism infrastructural development.			
	4.Quality control mechanism through joint commission for tourism development			
	5Train community especially youth on conservation and tourism.			
	6.Develop tourism marketing strategy /plan.			
	7. Offer incentives for investors in low end facilities			
8. Enact appropriate laws and regulation				

17 WATER WAYS

	DESCRIPTIONS	INDICATORS OF ACHIEVMENT	MEANS OF VERIFICATIONS	ASSUMPTIONS
GOALS	Safe and Convenient movement of goods, Services and people along the river side of the project area and periphery	Enhance new modes of transportation in the Project area and its periphery	City profile, DDC / VDCReport, DoR/DTMP Report, Traffic report. I/NGO's Reports / HDI Reports	Approval and Implementation of IDP
		Interlinkage of banks of Rakam Karnali New Town with nearby cities		Prioritization of IDP
OBJECTIVES	Public Transportation Establishment	Affordable, easy accessible	City profile, DDC / VDCReport, DoR/DTMP Report, Traffic report. I/NGO's Reports / HDI Reports	Effective local governance
	Accessibility to wide banks of the river	Maximum peoples are within 1000 m distance of motorable roads		People's willingness
	Establishment of interlinkages with nearby cities	Increased interconnectivity of the city and flow of goods, services and people		Approval and Implementation of IDP
	Prioritize on economical water networks	People / Environment friendly water ways		Awareness level of people and willingness.
OUTPUT	Planned water network within city in different heirarcy	Defined pattern as per international Standrads	City profile, DDC / VDCReport, DoR/DTMP Report, Traffic report. I/NGO's Reports / HDI Reports	Strong local governance and prioritization of project
	Public transportation within the cities and periphery	Preparation of Water ways Master Paln		Efficiency and effectiveness of implementing institutions
	Stations along different localities without disturbing the old market area.	Esatblishment of Stations		Prioritization of the project
	Connection of Rakam Karnali New Town with nearby VDCs and within each settlement of Rakam Karnali	Stations along the river banks		Prioritization of IDP and Budget allocation
ACTIVITIES	TYPES	INPUT/RESOURCS	COST/SOURCES	
	1. Preparation of Water ways Master Plan			
	2.Construction of Bank structures and furnitures			
	3.Government and Private sectors in Water ways transportation.			
	4.Construction of connections to all nearby VDCs			

5.5 LINKAGE

One of the important aspect this IDP is to grow the town with ambitious target of making it habitable space for around one lakh population. It is well known fact that it is only possible with induced development plans. It is also necessary to understand, most of the people flowing to the region are from the nearby VDCs or from nearby districts. Hence, study of the linkage has been done with aspect of flow of good and flow of people. Basically, Rakam Karnali New Town is a market center or some kind of gateway town for nearby VDCs and other neighbouring districts. Furthe more IDP will help to develop Inter Region as well as Intra regional Development oin all aspects of the development.



5.6 VISION SETTING

One of the most important part of field visit after the data collection was the vision setting of the new town. As the planner, we've taken this task as the preparation of long term strategic vision planning, which will basically form the structural guide for the development of the town. It is expected that long term vision set during the project will be considered as the basic development strategy for next 20-30 years' development plan. Major strategic roads, width of road, size of development blocks and land use plan for major plots are some important aspects which will define the project's future. Some of the lead sectors are identified with the local participation and with the planning workshop carried out in different stages of the time. It is important to consider the fact that government is planning to invest billions of rupees for the sake of resilient healthy city which can accommodate around 1 lakh population and serve as the iconic model city to future development of other cities in Nepal. Vision workshops were carried on Aasadh 13 and 14 (June 27/28,, 2016), on presence of municipal representatives, representative from district development office, representative from other development departments, local political leaders, representative from local news, community, ethnic groups, women groups and youth groups. It was a fruitful discussion that we had regarding the opportunity and long term vision of the town.

We started with the presentation of the town profile documents which we had collected from the focused group survey, key informant survey and other different modes of data collection. We basically focused on the key opportunity that the town can explore on emerging as the model city and challenges that it would face on its way.

On the first day of the meeting, we made the participant in the workshop aware about the opportunity that the town can explore and weakness that it is facing like: haphazard urbanization and unsafe building practices. We also listened to the voices from the local leaders, intellectual personality in the town, their expectations and their suggestions. It was an important practice of public participation where we made them aware about the opportunities and involved them in identifying lead sectors for future development. It is important to consider the fact that the intense degree of enthusiasm from local people would certainly help to stimulate the consultant in identifying more opportunities and explore in the direction. We had some fruitful discussion regarding identifying the lead sectors and some of the projects that could have longer and significant impact on the development of the town. Main theme of the meeting was to set the vision.

VISION

The NT / Municipal vision is still “To Be The Best Together” and the strategic goals are:

1. To ensure efficient and affordable basic services to all residents & migrants in new towns.
2. To strengthen the economy of NT for sustainable growth and job creation.
3. To develop a municipal / NT governance system that complies with international best practice.
4. Create an institution that can align planning with implementation of effective and efficient service delivery; and
5. To be a financially viable institution geared to providing affordable and sustainable services to the residents of the Rakam Karnali New Town.

5.7 LEAD SECTOR IDENTIFICATION

From the analysis of different opportunities and possible threats, we’ve concluded the lead sectors for Rakam Karnali New Town as:

- ❖ Commerce
- ❖ Health and Education
- ❖ Tourism

As for the longer period of time, Rakam Karnali New Town has been serving as the market center for nearby VDCs. With the advantage of highway linkage, it has got tremendous opportunity to serve as the commercial town where it can serve as the supply center for nearby VDCs. Developing it as the commercial town will certainly help to create job opportunities and attract larger group of population.

Another important lead sector that we identified and endorsed with the public was Health and Education. For every city to be self-sufficient basic social infrastructure are the must but in case of Rakam Karnali New Town it is must to focus on Health and Education. One city can’t be self sufficient unless it is equipped with good health and education facilities. Recent projects like medical college and technical institutes have boosted the logic behind the identification. As for now, people of Rakam Karnali New Town have to visit Surkhet or Nepalgunj for better health facilities, even for some minor surgery as well. Hence, a good medical facility will definitely help to increase the sufficiency of the town and help to attract bigger mass for the services. Similar is the case with education, where at present people of the town have to go Surkhet, Nepalgunj, Kathmandu or other places for better higher education. It is assumed and as a matter of fact as well that, good investment in these two sectors and promoting the R&D (Research and Development) in the field of health and education will definitely help to promote the new town development agenda of Rakam Karnali New Town.

Concept of tourism in Rakam Karnali New Town is dialectical on its own. From one perspective it is seen as the touristic base point for Rara Lake and other nearby touristic destination. Another perspective declines the possibility of staying at Rakam Karnali New Town or considering it as the base point. Practically it is not feasible to consider Rakam Karnali as the base point for this touristic destination but with proper intervention in the growth pattern and developing it as the healthy, clean and resilient city will definitely help to increase the possibility.

5.8 LONG TERM VISION

At last the vision was finalized as;

*सुन्दर, सुरक्षित र गतिशिल शहर,
कृषि, पर्यटन र जलयात्राको राकम कर्णाली नगर"*

**" A BEAUTIFUL, SAFE AND DYNAMIC RAKAM KARNALI TOWN,
HAVING DEVELOPED AGRICULTURE, WATER WAY AND, TOURISM "**

5.9 IDENTIFIED PROJECTS:

As in line with lead sectors and long term vision, we gathered in the second day of workshop to ask their projects demands. We made them aware about the fact that projects must have direct linkage with the identified lead sectors and for long term vision. In the different thematic categories and with different priority of lead sectors, projects were identified.

Table 34: Different priority of lead sectors, projects

	Physical	Social/Economic	Cultural, Tourism
Commerce and others	<ul style="list-style-type: none">• Bridge construction• Landpooling projects• Ringroad• Commercial Trade center• Industrial belt at the northern part and Modern Buspark	<ul style="list-style-type: none">• Dumping Site	<ul style="list-style-type: none">• Culture Center
Health and Education	<ul style="list-style-type: none">• Medical college• Technical College• Park construction	<ul style="list-style-type: none">• Bio and Agro Park• Agrocenter	<ul style="list-style-type: none">• Cultural:Center
Tourism	<ul style="list-style-type: none">• Tourism Promotion	<ul style="list-style-type: none">• Developing homestay touristic destination center	<ul style="list-style-type: none">• Water way

Easy availability of flat land toward New Town has been one of the most positive aspects for Rakam - Karnali New Town. Amongst the different projects, to fulfill the long term vision of the town as commercial town, commercial hub center has been proposed. It is s expected to boost the economy. Linkage of these locations to the highway is being made with the road connection developed by Armed Police Force. To develop the town as the center for education and health, 2 education institutions have been proposed at Rakam - Karnali New Town and one medical college and another technical college with 200 and 100 ropani respectively. Bio Agro park, Agro Center (cold storage and agriculture research center) will certainly help to boost the agriculture production of the region. From the touristic aspect, as the entry point of touristic destinations, a well informed tourist information center would certainly help to organize tourism. Hence with all those project enlisted, Consultants intends to prepare 3 detailed feasibility reports (design) as follows:

1. KANEKHOLA DRINKING WATER SUPPLY PROJECT
2. NIMAYAL HULAKDANDA (SIGAUDI) ROAD CONSTRUCTION PROJECT
3. RIVER SIDE ROAD CONSTRUCTION ALONG KARNALI RIVER

The Detail Feasibility Study Report is attached herewith in Volume - III.

6. TRANSPORT MASTER PLAN

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

6.1 ACCESSIBILITY SITUATION

Rakam Karnali NT is rich in existing and proposed road networks comprises 2 numbers of strategic roads, 3 numbers of class A roads and 15 numbers of class-B roads. According to VDC sources 37 km black top and graveled and 36 km earthen road, 45.7 Km class A-14m RoW road, 19.92 km class B-10m RoW road, 8.43 km class C-8m RoW road and 93.42km existing foot trail scattered over the new town should widen by GLD, having 6m Right of Way.

6.2 ZONE OF INFLUNCE AREA

National Transport Policy has considered 30 minutes walking distance as the zone of influence (ZoI). Mainly influencing factors such as a) existence of rivers and b) existence of river crossing facilities were used in determining the ZoI. The zone of influence area is determined by two ways concerning the road facility viz. all weather and fair weather service.

According to GIS analysis all potential centers and market centers have been covered by all weather as well as fair weather roads.

6.3 DELINEATION OF ACCESSIBLE AREA

Delineation of accessible within ZoI is carried out using the GIS Model for Strategic roads and New Town roads in three different categories viz. 20 minutes.

From the accessibility analysis, approximately 54% of people and 47% of the areas coverage are within ZoI for strategic road network. Similarly, 63% of the areas coverage and 59% of people are within ZoI for strategic and road networks (Table 5.1 and 5.2). This indicates that at present existing and proposed road networks cover almost all areas and population accessible to motorable roads. However, there are still some area and population mainly of hill part of New Town to be linked by new motorable road network.

Table 5.1 All Weather Accessibility with respect to Area Coverage, and Population Coverage

Walking Time	Population	Population %	Area coverage excluding forest (Sq.Km)	Area excluding forest %
30 minutes	5430	54	14.7	47

Table 5.2 all weather and Fair Weather Accessibility with respect to Area and Population Coverage

Walking Time	Population	Population %	Area coverage excluding forest (Sq.Km)	Area excluding forest %
30 minutes	6,346	63	22	59

6.4 PROPOSED ROAD NETWORK OF RAKAM KARNALI NT

Road name	ROW (m)	Total length (Km)	Upgrade (km)	New Construction (km)
Class-A (14m Row) upgrade to Black Topped				
Ring Road	14	8.7	8.7	8.7
Karnali Highway	50	24.9	15	
Midhill Highway	50	12.06	12.06	
Class - B (10m RoW) Upgrade to Black Topped Road				
Nimayal- Sigaudi	10	4.64	4.64	4.64
Basundhara Road	10	0.5	0.5	-
Belatadi -Khada	10	0.7	0.7	-
Belatadi – Pipalbot	10	0.5	0.5	-
Budha – Agra	10	1.2	1.2	-
Hospital- Kundada-Nainabadu	10	1.1	1.1	-
Kanegad Road	10	1	1	-
Pokhara khal - Kalika Mandir	10	3	3	-
Roatomatya Road	10	1.07	1.07	-
Saddhu Road	10	0.5	0.5	-
Serebada Road	10	0.53	0.53	
Sima - Salgau Raod	10	1.9	1.9	
Tara Bazzar - Hospital Road	10	1.0	1.0	
Tara Pani - Budha Agra	10	0.9	0.9	

Road name	ROW (m)	Total length (Km)	Upgrade (km)	New Construction (km)
Tunibagar Road	10	1.7	1.7	
Class - C (8 m RoW) Upgrade to Black Topped Road				
Dadagaun Road	8	1.6		1.6
Dharapani - Sigaudi Road	8	2.8		2.8
Hulak danda - Bhatgaun Road	8	2.0		2.0
Hulak danda- Dharapani Road	8	1.1		1.1
Tarabazzar - Talighat Road	8	0.9		0.9
Class -D (6 m RoW) Upgrade to 6m wide Road , GLD				
Foot Trail	6	93.4		93.4

Note; Foot Trail detail name are in Annex as existing road name.

7. DEVELOPMENT PLANS

7.1 DIRECTIVE PRINCIPLES

Rakam Karnali is an already developed town with limited availability of land for development. As at the base of mountains and no government land, Rakam Karnali lacks the availability of developable flat as only around 400 hectare of land is available which is permissible developable area considering parameters of: No forest land or natural conservation area and No land greater than slope of 30 degrees.

“The city is a state of mind, a body of customs and traditions, and of the organized attitudes and sentiments that inhere in these customs and are transmitted with this tradition. The city is not, in other words, merely a physical mechanism and an artificial construction. It is involved in the vital processes of the people who compose it; it is a product of nature, and particularly of human nature.”

Robert E. Park, The City (1925)

In 21st century, we all have agreed that “city is the process” evolved within, unlike injected by some external interventions. While in another way, some of the important economic or social decision can decide the future of the city in next coming years. While in the case of Rakam Karnali, a mountainous town along midhill highway is expected to cater at least 1 lakh population in next 20 years. In the mean time, we all are looking to develop Rakam Karnali as a sustainable city, where, with the growing number of literatures and contextual approach in sustainable city development, we have identified some of the basic features of sustainable city like:

- People friendly city
- Inclusive city
- Resilient city
- Flexible city,
- Economically vibrant city

Hence, in order to achieve these targets of sustainable cities, we have categorically defined some of the strategies and directive principles of planning. Some of the basic principles are as follows:

a) **Develop people friendly human scale neighborhoods**

It is important to relate the existing environmental and social setting of Rakam Karnali with the changes that is going to happen in coming years. No city should be utopian in its aspect. House should look and response like the house, so should a city must behave like that has evolved within. It is important to consider the scale of buildings (regarding their height), and width of the road, which should be humane in scale. One should feel the city with the sense of space and own the development of city in individual level. First step towards people friendly city and inclusive city would be planning city in humane scale, either that be the height of building or width of roads or the distances between two important interconnected land uses.

7.2 WALKABILITY AND CONNECTIVITY

Being town in the high terrain, it is important to understand that we can't cut of the natural terrain and built new roads leading to each house. With the high tech engineering perspective, it might be possible but with our social status and economic feasibility, we tend to develop a city, which is more walkable and interconnected. Communities should be pedestrian-oriented, with daily needs situated within easy and enjoyable walking distance of each other. Important land uses within the

perimeter of 2Km radius would make the ideal concept of walkable city, which is beneficial not only in terms of energy and easiness, but in broader social coherence. To promote this access, residential, commercial, recreational, and civic uses should be connected by both public and private transportation options. Promoting cycle tracks along the road and widening the pedestrians should be prioritized in the planning process, especially on the flat urban terrain.

b) Sustainable water sources

Supply of easy accessible potable water within affordable range is one of the challenge in every city building. The current and long-term availability of water should be treated as the vital starting point of any decision making in urban issues. Community planning must include the provision and protection of local water supply. One of the major problem in present cities is lack of water supply for daily purpose and for other city purpose. As we know, one of the consideration in selection of these 10 new cities along mid hill highway is availability of water resources, challenge lies on the conservation and protection of these sources. Good water recharge system and conservation of ground water is going to be another challenge in case of Rakam Karnali, as in every city in Nepal, “boring” culture is booming. With increase in hard surfaces hindering the natural water recharge system, it might create problem in regional or sub-regional level, hence it is incorporated in earlier plans and policies of this design.

c) Support high-quality transit

Being the economic hub interconnected regionally and sub-regionally, it is necessary to make each town to be connected. No city can be complete with its infrastructure and high quality transit system will definitely help to increase the fringe of the city. With its linkage with Surkhet, kalokot and Jajarkot, it will definitely broaden its accessibility with the national market. With growing economic possibility of Rupendehi, it is high possibility that Rakam Karnali can take advantage of this linkage. Apart from that, it is important to consider the linkage of Rakam Karnali with its nearby VDCs which are dependent on Rakam Karnali for its administrative aspect as well as in economical aspect. High quality linkage needn't be of road connection, as with the increase in technological advancement, other rope ways, elevator system or cable car could be considered as other options. Within the city as well, high quality transit is must to stimulate the local economy.

d) Sustainable land use zoning

Sustainability requires the balancing of the needs for land for development with the amount of land available and conservation of natural resources. A good land use zoning is important reflection of the character of urban form and size. Sustainable land use zoning could be expressed in different issues starting with natural resource management, transportation and connectivity of the city. A land use zoning could guide the development of city within the principles of inclusiveness, resilience, flexibility, environmentally sensitive and economically vibrant.

Another important consideration to be provided in the city zoning would be the flexibility of the city. No one can predict the cities of 21st century, the best we can do is make near to perfect predictions. Rakam Karnali proposed today as eco-residential town with knowledge based city could be turned into touristic destination or some other sort of primary city. Economic zones designated could be turned into residential plots or could be into recreational zone for the greater good. It is important to plan for flexible city as the exponential growth in technology has fostered the new city as changing dynamics every another year.

e) Zone for mixed-use neighborhoods

Isolated land use zonings have already created social exclusion in the city and had lacked the essence of “Sense of Place”. One of the most important consideration of Land use zoning, is defining mixed land use planning, reducing the travel distance and increasing the social cohesion.

The planning of such neighborhoods should be balanced between the strict separation of disturbing land use with their usage and combining different land use as per their connectivity and relation to revive the location. As there should be clear demarcation amongst industrial and residential area, civic spaces could be intermixed with residential space along some small commercial area. The concept of mixed use neighborhood planning is widely praised in term of energy conservation and expounding the livability of spaces.

f) Create compact regions with short commutes

As already mentioned above, we all want to make walkable city which is inclusive in character. Major job centers and market area is to be created in the location where high volume transit services are available. In case of key employment areas, recreation, services and retails will be provided to provide the demand of daily needs within walking distance. A well compact neighborhood design is definitely going to save travel time by shortening trip distances and preserve large plot of arable land. High rise, high density planning in the commercial area and low rise high density in the residential area could be stimulating strategy to promote the compact city.

g) Opportunistic city

A town of merely 10 thousand scattered populations with decreasing population growth rate needs something reviving and some external development intervention to make it compact city of 100 thousand populations in next 20 years. Unlike other cities along MHH, it is important to understand that Rakam Karnali lies in isolated location where other cities merely have any dependency with it has. In linkage with other VDCs, that are closer to Rakam Karnali, we can consider it as a strategically important town which has its dependency from nearby VDCs and possible migration might happen from these VDCs, if not from other districts. We must understand the basic fact that city which is expected to cater population must have opportunity for people. Such opportunities are to be provided in terms of job opportunities, urban amenities, goods or any other urban services. To hold population of 1 lakh, we need to have, at least 20 thousand populations with direct job opportunities, which could be service based or industry based or entrepreneurship. It is obvious to create some secondary job opportunities in the longer run and expected to follow the trend of trickledown effect of economy. To hold the economy and keep the city moving, we must facilitate the economic booster and advance some of the important decision to make the city economically viable.

h) City for all

One of the major guiding principles of our planning derives from the concept of “City for All”. Referring to the “Goal 11” of Sustainable Development Goals’ UN 2015, we’ve focused on inclusive and sustainable urbanization (11.3). We primarily focus on safe, inclusive, accessible and affordable city, with special attention provided to children, senior citizens and persons with disabilities. We have to understand the principle behind inclusive city that is not physical but has social and broader political meaning as well. Right to the city is well advocated term in western academia in recent years. For the developing nation like Nepal, we have ignored the importance of this aspect in many development projects. City for all is the concept which comprises different aspects such as right provided to pedestrians, opens spaces, emphasis given to public vehicles than private, disabled friendly urban design and all others aspect, which make city for all regardless of their gender, economic status, caste, age group and physical abilities.

With all those points mentioned above with the universal principles of sustainable city development principles, there are still some important strategies which needs to be embraced in the local context. People friendly city designing with sustainable ecosystem and economy is major need of Rakam Karnali. It is important to consider the steep slope of the Rakam Karnali which covers more than 90 percent of the total area. Some of the new strategies which is to be adopted for

high steep are also incorporated in the planning strategies of physical infrastructure and land use zoning. With the concept of inclusive planning and environment friendly city planning, different approach of neighborhood development, transportation network and land use zoning is proposed. Considering the importance of shorter commuting distance and high quality transit, all settlements within city is interlinked with efficient transportation network and most possibly are proposed in walking distance. Finally, for a city being sustainable economic aspect is the most important. Hence, different economic activities are promoted through government intervention and through good corporate governance.

7.3 PLANNING STRATEGIES

Before jumping to the sectorial plans, we had some basic guidelines and principles that we set as the baseline. All the guidelines explained as in earlier chapter will basically guide the soul of planning, but still there are some structural setting that needs to be addressed. For the next step, accordingly with the lead sectors and long term vision of the town, we set on developing projects and made the comprehensive planning framework. It was an important part to identify the spatial strategic intervention to start with in terms of strategic roads and land use zonings.

In case of strategic roads, it was well guided by the demand of social and economic context and as per guided by prevalent planning guidelines and standards. Roads were connected with each wards of VDC to its market center and connecting each important settlement. It was important task to identify the existing settlement pattern and need of intervention required in spatial dimension. For this, important economic pockets were identified and linkages were created to promote the services and economic activities. With the linkages of existing highways, further feeder and district roads were developed to promote the linkage.

As we already explained that roads were important aspect of planning not in the sense of transportation network only but also to guide the urban form and size. Developing a town in a very high terrain in a planned way is a new experiment in context of Nepal, apart from some self developed settlement. Terrain friendly road development along with the settlement development is proposed to have the visual look of mountainous settlement along with the ecofriendly city

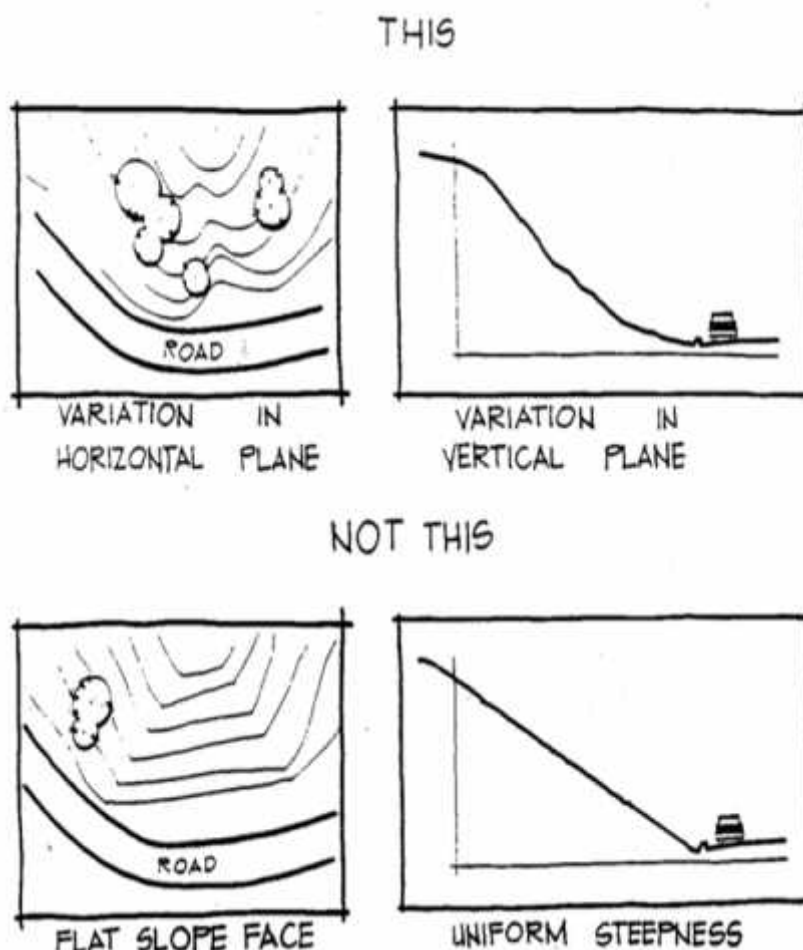


Figure 23: Terrain Friendly Planning. Source: (City of Glendale, CA, 2011)

planning.

Another important aspect of planning was commenced with the land use zoning of the site. With the base of separation of land into conflicting and non-conflicting zone, we identified some of the major land use classifications as residential, institutional, and commercial, CBD (Center business

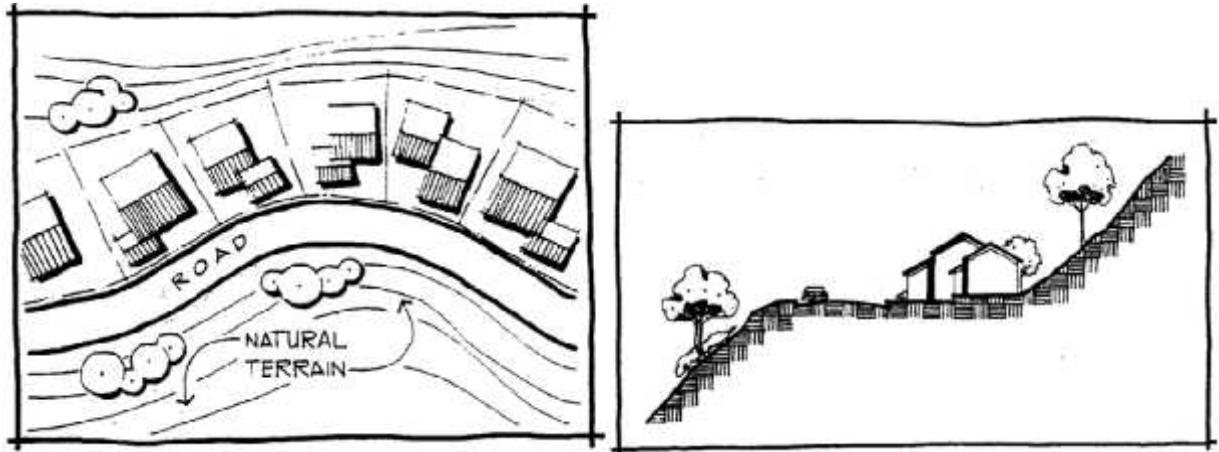


Figure 24: Retaining Natural Terrain, Source: (City of Glendale, CA, 2011)

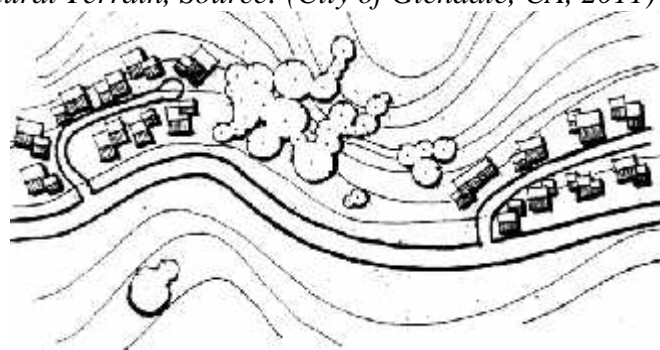


Figure 25: Clustering of lot, Source: (City of Glendale, CA, 2011)

district), industrial zone and others. We were aware of conservation of natural resources which were strictly identified as conservation zone, i.e. forests and water resources. It was also important for agriculture field to be protected hence is promoted for agriculture and built up activities are discouraged. It also needs to be embraced that only remaining developable plots are agriculture field at the moment. With the urbanization process, it is obvious to grow and turn into building plots, hence planning strategies is basically focusing on conservation the ecological footprint of these lands as much as possible. While identifying the built up and non-built up zones, in each built up zones, different bye-laws are proposed, which will serve as the development control tool in terms of height, built up area and others. Another important aspect of this strategy was consideration of mixed use land use planning. Mixed land use concept allows for compact settlement with reduction in commute and increase in social cohesion. It is equally considered about the conflicting land use while planning the mixed land use. Apart from that, new urban expansion zones are proposed along Shera, Tarikhet and other existing settlements, which are to be further developed after land-pooling and planned development.

The basic concept of high terrain settlements development is expressed in terms of road connections. Each settlement of around 500-1000 houses will have some sub-settlements of 50-100

houses which will have similar natural terrain. The proposed strategy is to have direct road accessibility to those settlements at one point along the road, which are to be interlinked with each household through walking pathways. Width of such walking pathways may vary with at least of 8-10 feet allowing some emergency vehicles to enter.

Similarly regarding the road connection and proposing allowable built of area, it is important to consider the natural terrain and existing settlement area's vulnerability to natural disaster like landslides. Residential lots are to be clustered to minimize graded area and maximize natural open space. Clustering must be sensitive to surrounding development and existing slope. It is important to retain smooth flow of ground form in both vertical and horizontal directions. Convex shaped top of slopes and concave shaped toe of slopes address vertical transition. Transitional slopes should not be covered up by building additions in the future. Horizontal transitions would generally be concave shaped for fill slopes and convex shaped for cut slopes. Transitions should use a minimum 25 foot radius curve. (City of Glendale, CA, 2011)

This integrated development plan of Rakam Karnali recognizes that many of the remaining undeveloped lands in the town are on steep slopes and hillsides, where flat agriculture plots are already occupied/ developed. These steep slope areas provide spectacular opportunities for home sites, but they also present special challenges in designing city development that is safe, economical, and maintains the qualities of hillsides that contribute to Rakam Karnali's natural beauty.

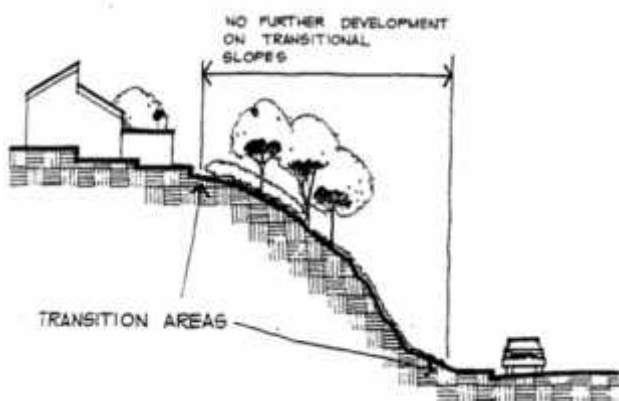


Figure 26: Transitional slope, Source: (City of Glendale, CA, 2011)

population status, linkage and land availability. . Accordingly, land use planning was proceeded and some potential interventions with some spatial strategic projects were proposed, which could have positive impact for development of town in longer run.

Hence, with some basic guidelines of steep slope topography, it was also important to come up with certain kind of innovation with building a city unlike other flat settlements. With the challenges coming from difficult land topography, we have considered the terrain friendly planning starting with some strategic location of settlements and connecting them with roads or some bridges. Those strategic spatial infrastructures like physical linkages and connections with inter and intra region, were the major planning strategies. we've further explored the land use potential as per the analysis done in earlier stage, regarding their

With the basic fact of difficult land topography and lesser linkage with outer city, it would certainly be difficult to develop Rakam Karnali as the city of one lakh population, but with the infrastructure like livestock promotion zone and developing it as more of the research town, it is expected to welcome the large number of floating population of researchers, learners and travelers who would want to enjoy the serene natural environment, with all the urban infrastructures.

7.4 LAND-USE PLAN

We know land is scarce, with the case of Rakam Karnali it is more justifiable. With no supply from nature and continuous consumption from the urbanization trend, it is very important to utilize the land use very wisely. The regulation of land use is a primary function of local governments but

it is primarily guided by the land topography as well. These local planning departments oversee and shape much of the regulation related to land use as they address issues such as infill development, neighborhood master plans, transportation, housing, economic development, and zoning. To start with the basic framework of planning and set out the by-laws within the site, a land use plan for the Rakam Karnali has been proposed, based on the existing characteristics of site, natural setting, potential and ownership, linkage with other cities and availability of developable land. Hence, to guide specific purpose of planning and promote the efficient utilization of land use, some basic zones like residential, commercial, Institutional, natural conservation, industrial and others, are proposed.

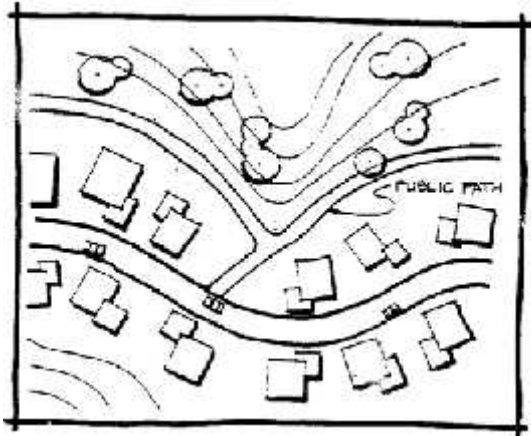


Figure: 29 Accessibility of natural areas,
Source: (City of Glendale, CA, 2011)

Land Use is the most visible of the sustainability topics. Cities with sustainable land use create an obvious balance of environmental preservation, commerce and livability. To promote the sustainability in land use development some of the basic aspects are followed which are briefed below:

Open space: ample supply of open green spaces designed to encourage consistent active and passive use. These open spaces could also be the restricted space which is unavailable for building construction. In case of Rakam Karnali, availability of forest land also serves as the open spaces.

7.5 SUSTAINABLE WATER SOURCES

The current and long-term availability of water is treated as the vital starting point of any land use decision. Community planning will include the provision and protection of local water supply. In most of the case of Rakam Karnali, water pump system is expected to be used, but with the use of solar power in pumping system it could be approached in more sustainable manner. Similarly, with the high terrain and difficult slope it is easier for drainage services as it is equally challenging as well.

7.6 WALKABILITY & CONNECTIVITY

Communities are developed pedestrian-oriented, with daily needs situated within easy and enjoyable walking distance of each other. To promote this access, residential, commercial, recreational, and civic uses are connected by both public and private transportation options, if not in walkable distance. In most of the terrain of Rakam Karnali, walking trail is proposed where at the old market at the flat terrain, more waling is promoted by discouraging vehicles with the policy approach and infrastructure approach.

7.7 STRONG SENSE OF PLACE

The design of geographic spaces and structures should reflect and celebrate what is unique about a community's people, culture, heritage, and natural history. Increase in high density low rise residential or business hub will develop people friendly setting. It is also important aspect of the town like Rakam Karnali which is not yet ready to accept the big city of one lakh population at once. We have to consider that the adaptive growth of the city needs to shape with its existing.

As already mentioned, land use plan is the function of local government. It completely depends upon local government for its implementation which is highly influenced by the different local political, social and economical aspect. With strict implementation of land use zoning, half of the planning implementation work will be done. It not only affects the land usage but overall affects the urban eco-system, in terms of transportation, natural resources, connectivity and economics. Hence, land use aspect is primarily considered as the important step of this planning process.

7.8 PHYSICAL DEVELOPMENT PLAN

One of the important aspects of urban planning is its spatial dimension. Structural guidelines of any city with road, water supply and other networks could guide the urban form and shape of upcoming cities. With the guiding planning principle and strategies involved, the identification of the network and connectivity within the city has been done, which features the physical site planning of the site. Site planning involves a careful analysis of the opportunities and constraints of the site, including existing site features such as mature trees, topography, and drainage patterns. The components of site development extend beyond building placement and configuration, including topography, surrounding uses, retaining walls, landscape design, hardscape considerations, and parking.

Physical development plan comprises of transportation plan, water supply networks, drainage and sewerage networks, solid waste management and electricity and communication plan. Physical strategic plans are basically guided by the National urban development strategy and other existing guidelines and national goals, but in case Rakam Karnali we had to consider its geographical terrain as well. It was complicated aspect of the planning to accept the demand of the local people as well as provide necessary physical infrastructure which would have longer impact without loss of any irreversible investment on infrastructure.

7.8.1 ROAD NETWORK AND TRANSPORTATION PLAN

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

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

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

EXAMPLES OF PREFERRED/NOT PREFERRED GRADING TECHNIQUES

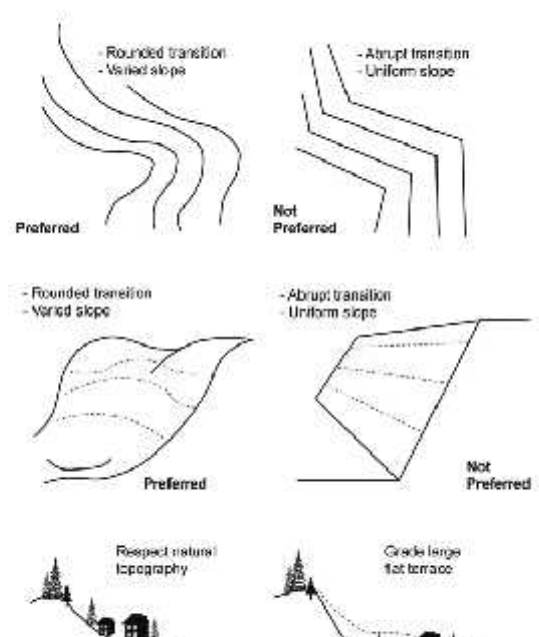


Figure 28: Examples of Preferred/not preferred Grading Techniques

Roadways should follow natural contours instead of being cut through landforms. Natural features, such as ridges, rock outcroppings, groves of trees, or riparian areas should be preserved (City of Glendale, CA, 2011).

With the basic goal of developing and maintaining multi-modal regional transportation system that meets the travel needs of residents, workers, and visitors, while improving regional mobility and city environment through expanded transportation alternatives and transit-oriented development, sustainable transportation plan has been approached. Of course, in the longer run, independent city transportation master plan will be developed, but with the framework provided in these strategic plans. One of the important aspect to be considered in the strategic level is that it's difficult geographic terrain which hinders the transportation system as well as equally provides opportunity to explore the traditional clustering of high terrain. Right of way of roads usually ranges from 10-30 meters with local to arterial, but in case of such terrain in Rakam Karnali, it doesn't seem feasible. Collector roads of 14m will basically act as the arterial road of the area; where as 10 meter road will serve as sub-arterial road instead of 22 meter. Hence, it is important to promote the walking friendly terrain with at least 3 meter (10feet) width, which could be used for emergency vehicular entrance as well. Apart from some basic goals and planning principles, there are some other strategies which are mentioned as below:

Objective (What to achieve)

- Maintain and promote connectivity with each settlement of Rakam Karnali VDC with major road of 14m (ROW).
- Promote regional linkage for trade and commerce, especially with Mangalsen and Manma along with western district Acham and Kalikot
- Reliable intra-city transportation system with pedestrian friendly movement enhancing terrain friendly walkways.
- Encouraging public transportation within the city.
- Exploring new possibilities in modes of transportation like ropeways or cable cars or lift system.

Strategy (How to achieve)

- Connecting city area with settlement area of each ward with arterial or sub-arterial road.
- Linkage with nearby districts/cities like Jajarkot, Surkhet, Acham and Kalikot.
- Ring road construction around the Rakam Karnali market, connecting major settlements like Daba, Khuli Bajar, Tuni Bagar.
- Connecting Rakam Karnali market with major settlements: Simtole, Khuli bajar, Tara Pani, Dholibada, Deukuta bada and Hulak dada etc.
- Connecting 3 hillocks with suspended bridge. Connecting: Bhawareta, Salamkot and Ghosa.
- Connecting mid hill highway with Simalchaur by Bridge construction.
- Construction of Busparks near Tarikhet/ Salamkot and on the way to Bongadovan at the end of old market.
- Planned development within the new settlement (Sisne and Bhadagu) with minimum width of 10-meter local road, especially in case of new urban expansion zones where there is flat terrain.

- Provision of GLD for existing roads of at least 6m of roads connecting to major road of 14m RoW.
- Construction of cycle-friendly road networks with minimum width of 2 meter.
- Construction of pedestrian pathways on each local, collector and sub-arterial road, width varying as per requirement but not less than 2 meter on each side.
- Plantation of trees along the road side to provide shading for foot-travelers.
- Investment in public transportation from government or community organization. (Ring road)
- Regular monitoring and evaluation by government bodies on privately owned/managed public transportation.

With above mentioned objective and activities, sustainable transportation system has been proposed which will serve as the planned city network for inter-city and intra city network. It is important to invest on the road infrastructure but it should be long term and inclusive in manner. With the basic principle of each settlement to be connected with market center, the roads have been proposed. (Refer Map). It is important to consider that these roads are proposed for the longer run and as a strategic plan for 20 years accommodating more than one hundred thousand populations. Hence, phase wise development could be done as per the available budget and priority.

Policy recommendations (Guiding Principle)

- Primarily focus on connectivity with any modes of transportation, like pedestrian, ropeway, cable car, bridges and definitely road connection.
- The City will implement measures that will relieve pressures on the existing transportation infrastructure by approaches that include, but are not limited to:
 - Multi-modal transportation alternatives
 - Land use coordination
 - Prioritized improvements
 - Consideration of engineering and planning guidelines from international cases in case of steep slope comprehensive guidelines for roads and transportation networks.
 - Timely Design and improvement of its transportation system to accommodate not only existing conditions, but projected growth based on adopted City and its projections.
 - Allow new development only when and where all transportation facilities are adequate at the time of development, or unless a financial commitment is in place to complete the necessary improvements or strategies.
 - Encourage the location of bicycle racks at appropriate destination points, such as within the downtown, parks, schools, transit, and park and ride lots.
 - Promote pedestrian walks as with the most priority followed by cycling and other motor vehicles.
 - Regulatory mechanism for public transportation.

Guidelines (Documents)

- Minimum Basic guidelines for roadside infrastructures, bicycle tracks, pedestrian facilities, curbs, bus lay bays, lighting and drainage should be followed as per the guidelines set by

Nepal Road Standard 2070. Especially in case of maximum slope and steep terrain road design.

- Furthermore, regarding the general design of urban roads: especially with pedestrian footpaths, cycle lane, bus stops, taxi stands and parking lanes, guidelines defined in “Urban Road Standards 2071: concept note” could be followed.
- If different guidelines are provisioned for same infrastructure, then the standard, which explains the pedestrian friendly transportation most, should be adopted.
- It is important to consider the limitation of availability of land and very steep slope in the town, hence road widths could be limited to two way in high terrain considering the safety aspect and social inclusion factor.

Strategic Projects:

Roads are important structures to set the urban forms and shape. With the consideration that the existing market is already developed and needs to be planned in order to preserve the town, the old market is proposed as the center business district where pedestrian movement is encouraged, discouraging vehicular movement. With related to the existing market area some of the projects are proposed as:

- Reviving the existing Buspark as the community parks and parking along with developing the whole surrounding settlement as vehicular calm zone. Further 2 Bus parks are proposed at Tarikhet (on the way to Sisne) and end of Rakam Karnali old market (on the way to Bhat Gau). Apart from that at the Zero Kilo, bus station is proposed.
- Ring-road (R1) surrounding the existing market area, running through the bank of river and surrounding through Bhabretta.
- Strategic Roads connecting different market center and settlements.
- Bridge connecting MHH to Karnali River, Paduka Khola and Kanegad khola to Rakam Karnali.
- Suspended bridge connecting upper Paduka Khola and Kanegad khola.
- Pedestrian footpaths and cycle tracks on the flat terrain along the roads of market, residential areas
- Pedestrian friendly route connecting houses at the terrain slope after primarily connecting with the strategic roads.

7.8.2 WATER SUPPLY PLAN

Guided by the target of delivering, equitable access to safe, adequate, affordable and sustainable water supply and sanitation services, water supply plan is another important physical plan which matters for the long term strategy of the town. One of the major criteria for the selection of these 10 towns was availability of water resources, which obviously makes the Rakam Karnali good location with sufficient attributes of water supply resources. It is important to consider as present half of the houses are accessed with water supply facility but with intermittent water supply and not all households are facilitated as well. The water supply facility is also promoted by the community approach. Public water supply facilities and water supply for city purpose are often ignored in the planning. The source of the water at the moment is entirely depended upon three water sources: Karnali River, Paduka Khola and Kanegad khola . it is entirely depended on water

pumping system, which is to be engineered in detail manner. With the following strategic frameworks, water supply plan is proposed for the long term strategy.

Objective (What to achieve)

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

Strategy (How to achieve)

- Continues water supply system installed in each household.
- Construction of treatment plant for 3million liter water per day, with area of around 30-40 Ropani. Such treatment plant and storage tanks will be constructed at the high altitude to provide continuous supply of water. Running public utilities up a slope may require additional expense as pumping stations may be required to maintain adequate pressure in the system.
- Provision of water storage from rainwater harvesting in public spaces like Buspark, parks, roadside areas and other public spaces. Such water reservoirs could be used for city cleaning process.
- Promoting rainwater harvesting in household level by subsidizing on money and technical support.
- Regular monitoring of quality of water as defined by WHO guidelines, National water quality standards 2062 or any other, which one is more effective.
- Sustainable usage of water sources and conservation of water resources from illegal encroachment.
- Control in extraction of ground water which could affect the overall water table of the region.
- Provision of public water supply in crowded area or in every settlement.
- Provision of public drinking water in public areas
- Pricing the water cost in reasonable and scientific manner
- Provision of treatment plant that makes water more acceptable for a specific end-use.
- Proper network development for effective distribution of water

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

Policy recommendations (Guiding Principle)

- Development and management of water resources shall be undertaken in a holistic, systematic manner, relying on integrated water resources management.
- Water utilization shall be sustainable to ensure conservation of the resource and protection of the environment. Each river basin system shall be managed holistically.

- Private participation will be encouraged on development, implementation, operation and maintenance of water supply and sanitation service delivery systems by fully or partially outsourcing provision of bulk water, system maintenance, management and other components of service delivery, as feasible. (GoN, MoPPW, 2009). Delivery of water services shall be decentralized in a manner that involves autonomous and accountable agencies (e.g., public, private, community and user-based agencies).
- Users involvement will be promoted through enhanced role in decision making at all levels to inculcate community ownership with aims to achieve a long term financial sustainability and consumer responsiveness in system development, implementation, operation and maintenance and effective service delivery (GoN, MoPPW, 2009)^[11]_{SEP}
- Poor and the marginalized sections of the communities within the project areas will be mainstreamed as valid customers for service delivery through defining pro poor strategies for connections and sustained use of services (GoN, MoPPW, 2009). Economic efficiency and social equity shall guide water resource development
- Promotion of rain water harvesting in households, institutions and other organization.

Strategic Projects

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

- Storage tank of total (1 lakhX100lpd X 2 days) 20MLD with treatment plant of capacity of 25 percentages at least.
- Water supply network to be laid as per the detailed project report of the town.
- Conservation of the water resources.
- Gravity /Pumping system implemented for water lifting from the Kanegad Khola.

7.8.3 DRAINAGE AND SEWERAGE NETWORK PLAN

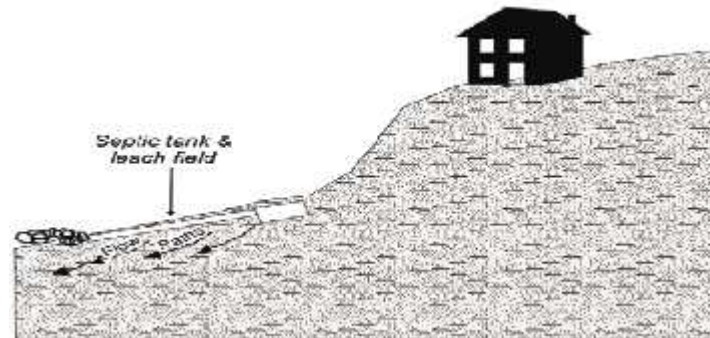
Steep slope development has the potential to start a cycle of erosion and flooding. Water that falls on forests, grass and other natural areas has a relatively high infiltration rate into the soil. Roofs, concrete, pavement and other impervious surfaces increase the amount of rainwater that runs off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

Sustainable sanitation for healthy, green and clean city is the goal of Rakam Karnali City. As demanded by the people of Rakam Karnali in many public hearings, they want the city to be free from urban pollutions. One of the major problems in the urban areas is unscientific drainage

system along with unsanitary disposal of such drainage and sewerage. After development planning and construction of drainage networks in developed city is another hindrance for infrastructure development. With the goal of clean, safe and sustainable sanitation program within the reach of every citizen, some of the focus sector have been identified. In order to protect hillside houses from landslides and water damage, drainage devices are necessary to convey storm water quickly away from manufactured slopes and houses.

Objective (What to achieve)

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



*Figure 31: How steep slopes can affect an On-Lot septic system.
Source: (LehighValley Planning Commission, 2008)*

- “Open Defecation free zone”

Strategy (How to achieve)

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

Policy recommendations (Guiding Principle)

Some of the important guidelines for drainage and sewerage networks is guided with national goal for sanitation and other action plans. (STEERING COMMITTEE FOR NATIONAL SANITATION ACTION, 2011)

- Enhance synergy among the actors in sanitation development, including municipal government agencies, the private sector, NGOs, and others.
- Encourage the development of community-based sanitation services, especially in areas where public and private services are difficult to establish.
- Create enabling institutional and regulatory frameworks to accelerate sanitation services development.
- (Lehigh Valley Planning Commission, 2008)
- Strategic Projects:

- Drainage and sanitation is day to day process, hence needs to have some certain level of awareness in people. Apart from that there is some important large scale infrastructure required to control the drainage mechanism for the city including some required treatment plant. Some of the important projects are identified as:
- Design of the integrated drainage network and laying around the city considering the slope of Rakam Karnali.
- Reed Bed Treatment plant in some identified location
- Proper waste water treatment plant at the outflow of the drainage system
- Construction of storm drain at the side of road.

7.8.4 SOLID WASTE MANAGEMENT PLAN

To attain the goal of systematic, effective and sustainable solid waste management, it is very important to proceed through the level of awareness of people in the town. In today's context the proper disposal of waste from household has been a major problem. So segregation of solid waste at household level is also emphasized. It is obvious that clean and dirt free Rakam Karnali is envisioned by all the citizen of the city, the sustainable approach will keep city even after long run. Participatory approach of solid waste management is one of the most important aspect of implementation.

Objective (What to achieve)

- Extensive promotion reuse, reduce and recycle of solid waste (3R)
- Effective management of sanitary land fill site
- Strong institutional mechanism for solid waste management

Strategies (How to achieve)

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

Policy recommendations (Guiding Principle)

- Separate unit exclusively working in the field of sanitation and SWM, in local government.
- Participatory approach in SWM, so that people take it as asset to their personal level rather than the liability.
- Zero waste to land fill site. Reducing the % of waste generated to the site to as low as 20%.
- Strong institutional and legal mechanism to control the solid waste mechanism. For e.g. Random dumping of the waste in roadside, rivers or any other places except designated one should be severely punishable.

With above mentioned goals and objectives, it is all aware that the city we all want to develop is the green, clean and healthy one. Out of one of the observation, the disposal of solid waste is one of the problems. Hence, good awareness of people and strong institutional mechanism could be milestone achievement in SWM. Apart from above mentioned policies, some of the important strategic projects are identified for short term and long term projects.

Strategic Projects:

- Awareness campaign for solid waste management.
- Identification of Sanitary land fill site of around 20 ropani, at around 10-15Km distance of the city area, which would be able to cater as much as settlements around
- Transfer station within each town area of around 5km.
- Separate unit for SWM in the local body.
- Placement of dust bins along the urban roadside and in public spaces.

7.8.5 ELECTRICITY AND COMMUNICATION PLAN

Shortage of electricity is one of the major problems in whole country. Places which are connected to the electricity line if National grid are even facing the problem of power shortage. Rakam Karnali even lacks the privilege of connection to National grid. Dailekh district, is not popular for having good micro hydro-electricity although it has Naumule micro Hydro power project which supplies the electricity to Naumule area only. In total, the Micro hydro powers are serving more than 800 households. The projects are mostly serving the households from ward 1, 2, 3 and 4. At the market area, during the peak hour, electricity load is not sufficient with micro-hydro. Another important aspect of modern urban planning is development of Information and computer technology .With the primary goal or providing, electricity and communication service to each individual in the town, the electricity and community plan is basically focused on optimization of resources in distribution of electricity and facilitation of communication services. Target of affordable and accessible electricity and communication are to be backed up by some objectives as follows.

Objective (What to achieve)

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

Strategies (How to achieve)

- Connecting power line with National grid
- Provision of smart electricity grid in each settlement for exchange of surplus energy amongst alternative energy and national grid. The project could be initiated as the pilot project in some of the settlement before experimenting in the whole city.
- Laying of underground wires for electricity and communication purpose.
- Subsidizing on alternative sources of energy, i.e. solar and wind energy, waste to energy and so on
- Technological upgrading of power stations and transmissions.
- Encouraging private and public sector to provide and upgrade the quality of internet and communication services.

- Promotion of FM, radio stations and other communication services through private and community participation.
- Wi-Fi hotspots in the public spaces like bus parks, parks and other urban squares.
- Encouraging streetlights and other digital boards & devices connected with solars.

Policy recommendations (Guiding Principle)

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

Strategic Projects:

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

- Connecting the power line with National grid
- Separate substation for town as per the required electric load
- 3 Phase electricity for industrial and institutional zones as per the demand
- Working for the underground wiring for electric and communication networks
- Regular monitoring to control leakage of electricity
- Promotion from both private and public sector to convert waste to energy.

7.9 SOCIAL DEVELOPMENT PLAN

In order to enhance the quality of life of every citizen of city and to provide direction for future decision-making, strategic social development plan is prepared. Social development plan is important guideline to set the framework for social amenities. Qualitative social services attract population to the town, where it might be floating population, which in longer turn turns into trickledown effect of economy. Some of the different social sectors are explained below with their strategic plans.

7.9.1 EDUCATION

The goal of Rakam Karnali in educational sector is to make it the educational hub for 6 nearby VDCs. It will so develop that it will provide good educational facility to cater the surrounding VDCs. In the current scenario, Rakam Karnali caters more than 2000 students, which is around 20% of whole population. These students are mainly from nearby VDCs and even from another district, Dailekh. In addition, focus should be made to control the out-migration for education purpose, especially for education higher than higher secondary level. Some of the strategic objectives for the education development plan are briefed below.

Objective (What to achieve)

- To achieve 100% literacy in the town.
- Increase in quality of education and easily accessibility of higher and technical education.
- Education for all: regardless of sex, caste and age group.

Strategies (How to achieve)

- Primary and secondary education in the easy accessibility of residential neighborhoods.
- Promotion of technical education from private and government sectors.
- Institutional zoning in Land use plan especially with non-conflicting land use zones.
- Promotion of digital educations.
- Encouraging education facility for backward society, gender equity and other economically deprived groups.
- Regular inspection, monitoring and evaluation of education quality.
- Promoting higher education facility, especially above SLC.
- Provision of primary schools within travel distance of 15minute
- Provision of secondary schools within travel distance of 30minute

Policy recommendations (Guiding Principle)

- Cross-subsidized promotion of higher education facility.
- Education facility for Backward society and deprived group, with cross subsidies.
- Provision of proper hostels for students from other district at reasonable rate. (Student hostels)
- Involvement of different actors and stakeholders in terms of establishing technical colleges, university and other institutions.
- Government initiatives in promoting digital education
- Ensuring the qualitative education.

As true in all the regions of Nepal, education sector is mainly driven by the private sectors. Very few cases have been successful where it was started with community approach. Some of the technical educations in higher level initiated by local government or that particular community have been successful in case of KHWOPA group. One of the major roles of government policies and strategies will be to encourage private sectors to invest in the field of education and monitor & evaluate the quality of education. Albeit such paradigm of education sector, there are still some of major sectors where government could invest in education sector with some strategic projects. Some of which are identified as below.

Strategic Projects:

- Upgrading the quality and physical infrastructure for primary and secondary schools operated by government
- Establishment of agricultural resource center at Rakam
- Establishment of livestock resource center around Sat talla area.
- Paramedical college associating with existing hospital at Dullu Area
- Accommodation facility (Housing) for students and other job seekers in the town regarding education facilities.

7.9.2 HEALTH

The goal is to provide affordable, accountable, qualitative and accessible universal health-care facility for every citizen. In current scenario Dailekh has one district hospital with 13 bed with only one permanent doctor. There are 20 health posts and One Sub health post running under this

hospital administration. Apart from that, there are 2 other private hospitals with some health clinics and pharmacy. Lack of sufficient equipment and lack in power source has created major hurdle in health sector. The waste water connected to river can also lead to some epidemic disease.

Objective (What to achieve)

- Reduce health service dependency towards Surkhet, Nepalgunj, Kathmandu and India
- Qualitative and quantitative health facilities in the town for all.

Strategies (How to achieve)

- Health facilities in the close distance from residential land use.
- Upgrading the current district hospital to 50 bed from 13 bed.
- Promoting private sectors in investing on health facilities.
- Awareness campaign regarding some of the common diseases like of STDS, and control of epidemics and other communicable disease.
- Health facilities subsidized for economically deprived people.
- At least one health care center for every 20,000 people within the accessible distance of 15-30 minutes.
- Monitoring and evaluating the health services provided by the private sectors.
- Investing in the field of research and development for health services.

Policy recommendations (Guiding Principle)

- Encouraging private sectors to invest in health facilities with subsidized taxation or allocating land for the investors.
- Provision of health insurance in local level with some subsidized cost and employer's contributions.
- Establishing and regulating the quality of government hospitals and health posts.
- Medical camps within the town with regular periods and awareness raising campaigns.
- Focusing on cleanliness of town by making it open defecation free zone, availability of public toilets, good SWM and other sanitation programs in the town.
- Establishment of laws for proper disposal of waste that comes from hospital

As already stated, with the national policy guidelines in the health facilities, there is very less to do with the local level or in government level. Most of the health facilities are provided with the private sectors and moderated by the government sectors. Apart from such, few leading health institutions are from the government bodies. Some of the important strategic projects are listed below.

Strategic Projects

- Upgrading the existing 13 bed district hospital to 50 bed hospital
- Awareness campaign and monthly medical camps.
- Cross subsidies for deprived group
- Paramedical college associating with existing hospital at Bhawareta

7.9.3 SECURITY

- The ultimate want of any citizen is to reside in safe and secure city. Keeping this in mind the goal of Rakam Karnali is set as “Safe and secure Rakam Karnali city environment”. Current status of crime.

7.9.4 RECREATION

Recreation is an essential part of human life and finds many different forms which are shaped naturally by individual interests but also by the surrounding social construction. Recreational activities can be communal or solitary, active or passive, outdoors or indoors, healthy or harmful, and useful for society or detrimental. It is important to allocate spaces for recreational activities. They may come in form of open space, semi open or closed depending on its type. The major concern in Rakam Karnali is, there is lack of public open spaces owned by government. Due to the slope constraint, many parts of Rakam Karnali can't be used for built environment. So these spaces can be developed as parks and open spaces for recreational activity. The recreational zones developed may be private or public and should be accessible to all. The recreational activity may differ from age groups. Keeping this in mind, different policies and strategies are adopted to fulfill the goal of “Recreational facilities and program for all”.

Objective (What to achieve)

- Equitable access to different recreational spaces regardless of physical ability and financial resources.
- Promote skills in sports and extra curriculum activities from school level
- Different recreational activities for different age groups

Strategies (How to achieve)

- Construction of parks and open spaces in walking distance from each neighborhood.
- At least 5 % of total city area Neighborhood park (Playing equipment). At least 1 for each 800 populations.
- Local Park (.4 ha. per site), Community park (1 ha. per site), and Parade ground (2 ha. per site), for each 10,000; 20,000; and 1 lakh population respectively.
- Promoting private sector to invest in the entertainment industry like movies, theatre or other fun theme parks.
- Promotion of water related adventures and promotion of adventure tourism.
- Encouraging Hiking and recreation retreat for all the adventurous activity in the town.
- Promote sports and extra curriculum activities from school level
- Promotion of non-built up areas for parks and recreational zones

Policy recommendations (Guiding Principle)

- People friendly city planning with parks, opens spaces and roadside vegetation.
- Tourism activity as to promote national tourism and to attract people to do business in such.
- Encouraging private sector as well as government sector in investing in recreation activity.

Strategic Projects

- Neighborhood parks and local parks construction with at least 5-10% of city occupied area.
- Roadside vegetation and seating area in pedestrian areas.
- Construction of training center for some sports like- football, cricket and other indoor games.
- Park construction with recreational amenities
- Construction of fun parks, movie theatres and other recreation activities by private sector and local government.

7.9.5 URBAN SOCIAL INFRASTRUCTURES

With the above-mentioned social infrastructures with health, education, security and recreation, there are still many urban amenities that are important for a city to run. Some of the common urban social infrastructures could be identified as library, religious institutions, museums, gallery, old age home and orphanage center for differently able people, exhibition center and many more. These infrastructures are not only important to run the city as a whole but are also important aspect to make the city complete in its own. Some of the important strategic moves for these aspects are pointed below.

Objective (What to achieve)

- A city with abundant urban social infrastructure as per the standards
- Ownership of such infrastructure by citizen of the town and sustainable financing mechanism of such infrastructure.

Strategies (How to achieve)

- Involvement of private sector and community level in achieving such infrastructure.
- Construction of library in community level promoted by local government. Such library should be provided with all necessary stationary along with digital information sharing system for its advancement.
- Old age home, orphanage and differently able people to be treated and cared by local government.
- Promotion of events and other activities through multipurpose convention hall.
- Provision of community parking bay at difficult terrain
- Provision of local vegetable markets

Policy recommendations (Guiding Principle)

- Encouragement of public and community sector for the investment in urban social infrastructure. Management of such infrastructure should be from local government or should be owned by local citizens.
- Economically sustainable and viable infrastructures should be promoted. Annual management of such infrastructure should be handled under single authority or as per the existing bye-laws.
- All such infrastructures should be accessible to every citizen irrespective of their caste, gender and other socio-economic status.

Strategic Projects:

- Construction of 10-12 community library and one central library.
- One old-age home
- One Center for differently able people
- 1 multipurpose convention hall and exhibition center.
- Multipurpose convention hall for catering population of around 600-1000 people.
- Separation of area for religiously identified sector.
- Community parking spaces at difficult terrain
- Preservation of existing micro hydro-power and develop some as live working museum

7.10 CULTURAL AND TOURISM DEVELOPMENT PLAN

Rakam Karnali itself does not have its typical language, culture, tradition or festivals. People here are heterogeneous and celebrate their own festivals. Rakam Karnali lies on the highway that links to Dhorpatan. Dhorpatan is renowned tourist spot of Nepal. Rakam Karnali has already developed itself as the base station for Dhorpatan. After the construction and well maintenance of the linked road there is a chance that Rakam Karnali will no more have the privilege as the base station. But with good facilities and promotion of Rakam Karnali with the goal of Eco-residential tourism, Rakam Karnali holds the capacity to develop itself as touristic spot.

With some basic area of focus there are some strategies identified for the longer terms, which are briefed as:

Objective (What to achieve)

- To promote Rakam Karnali as touristic destination or stay town for touristic purpose
- To make Rakam Karnali hub for resource center for agriculture, livestock and micro hydropower stations

Strategies (How to achieve)

- Easy accessibility/ connectivity with nearby touristic destination.
- Good facility for hotels, hostels or other sorts of accommodations.
- Trainings regarding home stay for hospitality and other tourism related activities.
- Making infrastructure related to tourism activities.
- Separate monitoring and evaluation mechanism for qualitative services to be provided to tourism sector.
- Tourist police to advise and assist tourist in safety and security during traveling, trekking, rock-climbing and other adventurous sports and hotel stay in any part of Rakam Karnali.
- Promotion of livelihood program linking with tourism by commercialization of rural products and providing training to them as of such.
- Proper marketing of the tourism related activities.
- Safety and security provided to the tourist visiting the area.
- Investment in the tourism sector by private sectors.
- Establishment of live museums for micro-hydro and resource center for livestock and agriculture

Policy recommendations (Guiding Principle)

- Promoting the town as the stay-town for tourists from nearby destination.
- Strong monitoring and evaluation body for the tourism activity in the town.
- Promotion and maintenance of micro hydropower as museums.

Strategic Projects:

- Establishment and promotion of agricultural resource center at Purkot
- Establishment and promotion of areas around Dullu as resource center for livestock
- Tourism information desk at the convenient location along with digital information boards.
- Maintenance of existing micro hydropower and develop some as live working museum.

7.11 ECONOMIC DEVELOPMENT PLAN

The prime goal is to develop Rakam Karnali as economically sustained sub region and economic center for nearby VDCs. Rakam Karnali can be developed to promote the trade linkage with Surkhet, Kalikot and Achham. Rakam Karnali is the junction area of the three ways to Mugu Kalikot, Jumla and Achham. Primarily focusing on some commerce and industry, we have identified some of the major sectors that could boost the economy of the town and are presented with some strategic plans below.

Objective (What to achieve)

- Promoting sustainable economic development along with equitable and just economic growth.
- Job opportunity for more than 20,000 populations.
- Abolition of absolute poverty
- Promotion in export based economy by increasing linkage with Surkhet, Kalikot and Achham

Strategies (How to achieve)

- Establishing production based industries resulting in job opportunities and export based economy.
- Promoting small-scale industries and micro enterprises with some local level subsidies.
- Separate Land use zones for: Central Business District (CBD), Industrial zones, and other commercial zones.
- Promoting local goods and local industries.
- Promotion of high value crops in agriculture lands and commercialization of agriculture products.
- Promotion of Non-Timber Forest Product (NTFP), if available. Like herbs, shrubs and others.
- Promotion of tourism industry by subsidizing and investing in such sector.
- Promotion of agricultural and livestock by establishing resource centers in Dullu and areas around Rakam respectively.
- Ease in banking and financing facilities.

It is well known that most of the economic activities are promoted by the private sector with facilitation provided by government sector. Government has major responsibility for making the environment, which could bring the investment in the town. Government should primarily focus on facilitating the investors and assuring the safety of their investment. In the meantime, being a service oriented government; it is responsibility to maintain the equity and justice in the market as well. It is very important to control the illegal market or monopoly in the market, which obviously is to be guided by central government but needs to be monitored in local level as well. Hence, there are some policy recommendations, which could guide the economic development of the town.

Policy recommendations (Guiding Principle)

- Subsidizing economically backward group and small enterprises.
- Subsidizing agriculture activity and NTFP.
- Investing on the tourism sector.
- Abolition of absolute poverty
- Strict implementation of bylaws regarding the zonings with punishments and awards.
- Promoting export based industries creating job opportunities for local people.

Strategic Projects

- Freight house for collection, storage and transfer of commercial products.
- Special economic zone for industrial and commercial activities.
- Vegetable market or collection center in each settlement.
- Agriculture and livestock resource center at Dullu and Rakam respectively.
- Urban service center.

7.12 FINANCIAL PLAN

As the world continues to rapidly urbanize, investment in good urbanization holds the key to sustainability. Global challenges like combating poverty, reversing rising inequality, and mitigating climate change will be increasingly won or lost in cities. Financing sustainable urbanization is therefore an investment in our present and future. Local government capacity must be expanded to harness private sector participation, leverage local assets through value capture, and partner with central governments to invest in urbanization. Since financing for infrastructure is insufficient, the path to long-term finance is to diversify sources. One source is more private participation and expanding the territory of taxation for local government.

While quality urbanization demands huge investment, with the right planning and institutional support, it also finances itself. Cities need the ability to access an increasing share of national wealth and revenue, borrow, increase and utilize local revenues, leverage land values, and apply complex financial products.

The implementation of plans for compact, connected, mixed and integrated cities can be made possible by a three-legged approach that joins planning with legal and financial support. Therefore, finance supports good planning, and good planning supports finance through its economic benefits. By linking finance, planning, economic activity and value capture, a virtuous cycle of investment and growth can be created. Building future cities by linking good urban design, effective financing, and good institutions can create growth, jobs and wealth; where it also promises the solution to the challenges of climate change and social inequity in broader term. Well-planned urban finance and investment can unleash a broader base of economic activities, allowing a wider range of

participation in the urban economy and stimulating bottom-up prosperity. With the goal of setting a sustainable and stable financial institution as in the form of local government or development institution, major objectives **and** strategies are identified as follows:

Objective (What to achieve)

- Increase taxation base by broadening the territory of tax paying stakeholders
- Introduce innovative and effective measures of resource mobilization and asset management.
- Introduction of transparent and participatory model of financing.

Strategies (How to achieve)

- Introduction of innovative land and property taxation with proper land reforms.
- Increasing territory of taxation by broadening the extent of taxation, for larger collection of tax.
- Collecting impact fee from big polluting industries and subsidize for non polluting industries, as means of cross subsidies.
- Provision of E-taxation in close collaboration with E-Governance
- Strict monitoring and implementation of financial plan to meet the target of city development.
- Initiation and promotion of private sector friendly economy.
- Encouraging public private partnership (PPP) modality of financing in larger infrastructure projects.



Policy recommendations (Guiding Principle)

- Improved financial systems, like better budgeting and accounting system.
- Improvement of the planning capacity, resulting in the preparation of town/area financial action plan for poverty alleviation and infrastructure development. Population needs to be consulted and involved in the formulation and execution stage of the project (Participatory planning and execution).
- Introduction of the financial sector infrastructure necessary to support financial market activities and improve outreach to the rural poor,
- Improved personnel management and human resource development cooperation with the program to achieve human resource development at municipal level.
- Improved cost recovery of services delivered.

Strategic Projects:

- Development of human resources and specialized knowledge, with expertise intervention in local government.
- Mobilization of the domestic financial resources needed to meet the demands of a fast-growing economy.
- Awareness, preparedness, and close coordination among all key stakeholders
- Effectively implementing of new regulations intended to improve data quality, transparency, corporate governance, business ethics, market disclosures, and achieve fair competition across the financial sector;
- Integration of E-Financing as the tool of good governance.

7.13 INSTITUTIONAL DEVELOPMENT PLAN

A good plan is only half work done but to execute any good plan, we need good institutional mechanism that could help to execute the project. Institutional development plan comprises of making strong institutional mechanism for the implementation, monitoring and evaluation of the project. With the goal of strengthening the existing institutional structure, upgrading the weak ones and formation of strong autonomous body, institutional plan aims to strengthen the institutional capacity of different government and non-government bodies for efficient mobilization of resources. After the decentralization act, “Local Self Governance Act-1999”, legal provisions have been provided to New Town to act in autonomous manner. Two tier of governance, (Central and Local) was considered during LSGA, which is subject to change in its principle after the effective implementation of federal character of nation. It is important to consider that nothing much of the institutional features have been discussed in public forum regarding the decentralization. Especially, devolution of authority, power and responsibility is never enough until the devolution of resources are done, which has been proved repeatedly. Some of major practices in the field of autonomous instructions in case of Nepal have been Authority, Council and Committee, which are from the decision of Council of ministers. As autonomous, they seem, in most of the cases they lack the resources if not technical input in the body.

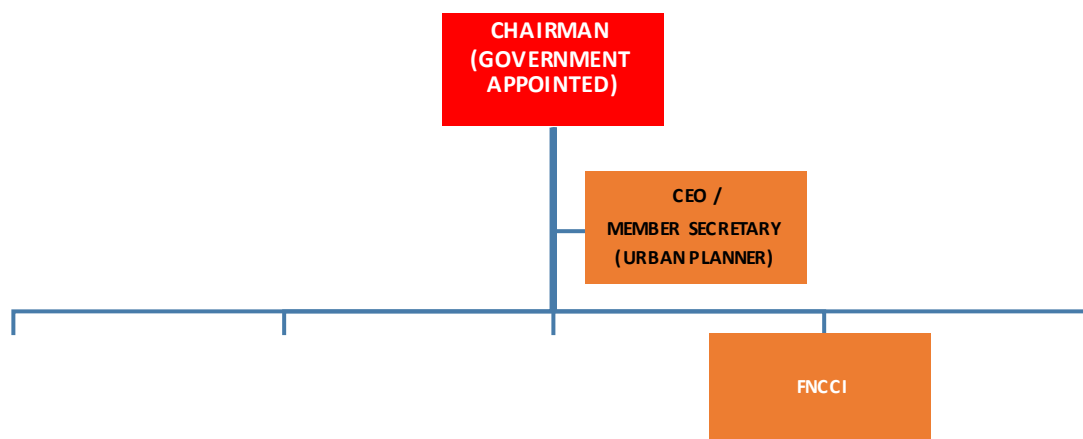


Figure 30: Revised TDC

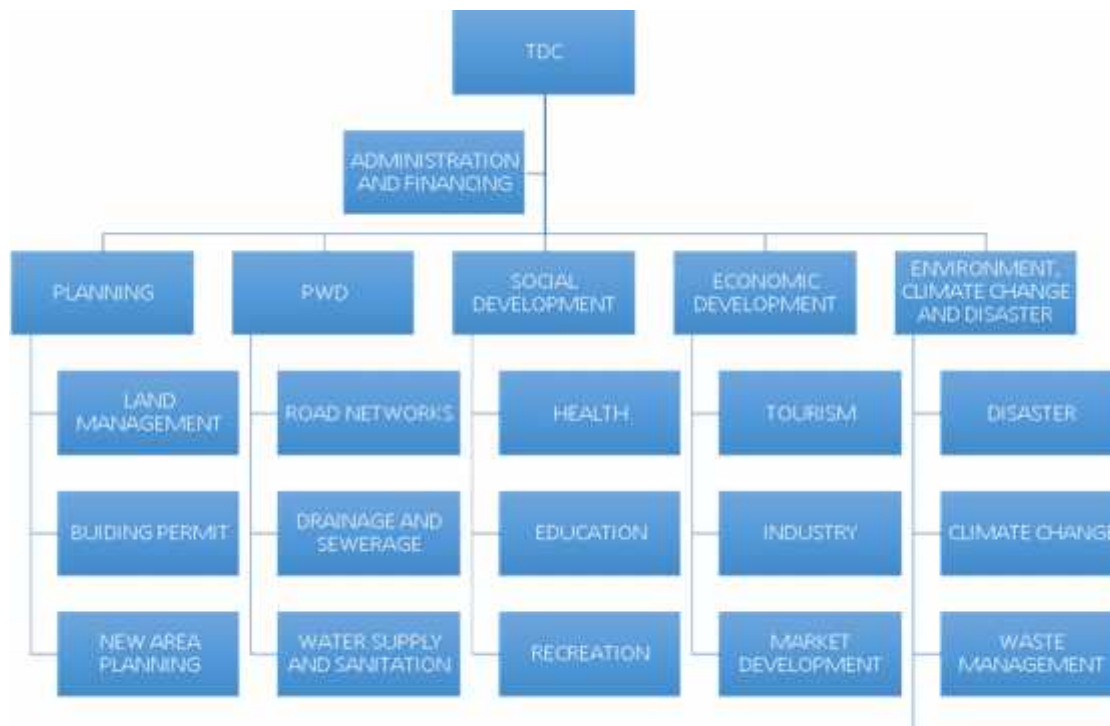


Figure 31: Extending Territory of TDC

With some examples like Kathmandu Valley Development Authority (KVDA) and other development councils formed for specific thematic programs, we could have some special planning and implementation agency in the form of TDC with technical support from DUDBC.

With two of the major local planning implementing agencies: VDC (Rakam Karnali VDC) and Town development committee (Rakam Karnali TDC), there is always conflict in implementation of bigger project. The case is more complicated when the institutions are not equipped with the resources and are unable to execute the plan of billion rupees. It is also important for the institution to have its own resources (Human resources and physical resources) to execute the plans. With the present modality of TDC to be appointed by cabinet including some government officials and political leaders is very inefficient and ineffective to implement the technical project of such huge budget and ambition.

With some major inefficiency of TDC and New Town like some pointed below:

- Excessive political influence
- Weak institutional capacity
 - *Technical human resources*
 - *Financial resources*
 - *Physical resources*
- Limited to physical development plan, i.e. Land management (for TDC) Excluded: social, environmental and economic concerns of city

With two institutions led by political leader: one locally elected (Considering case of local election) and appointed by central government, there is some chance of misunderstanding in planning implementation, as there is no clear territory in their work jurisdictions. New Town being more resourceful than TDC seems to be more dominant but TDC must be strengthened to improve its institutional capacity and execute long term goals. Below is the proposed work jurisdiction

amongst two institutions in future, where if there are still some grey areas, they need to be addressed keeping intentions for greater good of the city.

As the existing legal provision of TDC is very complicated to change in the quick time period, it is proposed to have best option in the form of improvised TDC where as TDC will be backed up by the team of technical experts provided by DUDBC through its district unit or from central department. Such team of technical experts should be given high position in the whole planning process where it could be termed as the project implementation unit comprising of all necessary resources. While in the formation of TDC, it is also necessary to incorporate the involvement of private sectors which could be represented through FNCCI.

Apart from this, there are some basic strategies, which could strengthen the existing structure of TDC and New Town as well.

Objective (What to achieve)

- Good governance (Accountable, Responsible, transparent and efficient local government)
- Integrated governing bodies
- E-Governance
- Close monitoring and collaboration with
- all actors involved. (Private, Non-Governmental and Governmental organizations)

Strategies (How to achieve)

- Strong implementation and effective execution of comprehensive planning documents.
- Increasing performance and capacity building of the government employees with regular trainings and exchange of knowledge within the department
- Devolution of resources along with the authority
- Separate authority for monitoring and evaluation of government activities for quality and timely completion.
- Integrated service through single window system: Formation of integrated service center (City Center) could be interesting steps towards it. The integrated service center could be elaborated with further detailed institutional plan, but it needs to have one single data entry system which would ease the customer for any government service rather than running for every single department for single task.

Policy recommendations (Guiding Principle)

- Digitization or paper less governance by promoting E-governance
- Integrated governing mechanism through single window system.
- Effective implementation and execution of comprehensive long-term documents.
- Common platform for information sharing regarding the inter-related topics.
- Controlling and monitoring mechanism for effective co-ordination with governmental, non-governmental and private organizations.

Strategic Projects/ Programs

- Setting up and upgrading the resource capacity of TDC.
- Monthly training programs for capacity building of government employees
- Data infrastructure system for integrated E-Governance
- Integrated service center / complex

7.14 ENVIRONMENT MANAGEMENT PLAN

One of the major evolving topics of new urban planning is environment management plan. With reference to Ebenezer Howard's Garden city concept of 3 Magnets, all citizen want is greenery and beauty of rural setting and facilities of urban areas. Rakam Karnali is situated at the bank of Badighat River. Rakam Karnali settlement is surrounded by green forest and agriculture terrains all around. Most of the land is gradient and respecting the contours, organic development is focused. Without compromising the serene green environment, urban area is developed. Ghosha area is rich in iron and copper ore. Special care should be taken while extracting the ores. Detail assessment of EIA and IAA should be done during the process of extraction. With the goal of environment friendly city planning, Rakam Karnali has set some basic green and sustainable planning features. Some of them are drafted as below.

Objective (What to achieve)

- Environment friendly and sustainable development trends.
- Low carbon emission and preventing ecological footprints.
- Protect water, land, forest and air from possible pollutions and destructions.
- Green and healthy city environment.

Strategies (How to achieve)

- Provision of EIA and IAA for bigger influencing project with third party evaluation criteria.
- Strict laws or bylaws for protection of water bodies and forest areas.
- Promotion of 3R concept in Solid waste management and segregation of organic and non-organic waste at HH level.
- Promotion of environment friendly materials to use in households and in commercial purpose.
- Provision of treatment of wastewater/ waste product from industries or hospitals.
- Promotion of electrical vehicles.
- Preservation of agriculture land and clear delineation of conservation zone for natural resources.
- Roadside plantation.
- Identification of green pockets within the different areas of town.
- Formation of artificial water bodies to address the microclimate and manage rainwater.
- Cycle friendly and pedestrian friendly mobility plan
- Separate industrial zone and buffer zone identified from water bodies.

Policy recommendations (Guiding Principle)

- Effective implementation of land use plan.
- Strict bye-laws for protection of water resources, agriculture lands and forest areas
- Developing city with roadside plantation, green parks and water bodies.
- Reduction of carbon footprints and increase in green pockets within the city.
- Subsidies in electric vehicles and bicycle.

Strategic Projects/ Programs

- Roadside vegetation

- Urban Parks and water bodies
- Campaign regarding environmental protection
- Environment conservation action plan

7.15 DISASTER RISK MANAGEMENT PLAN

With basic guidelines and strategies secured in National Strategy for Disaster Risk Management (NSDRM), DRM plan focuses on institutional capacity to strengthen regarding Disaster risk and promote participatory resilience of disaster risk management. With 5 priority actions from institutional mechanism, identifying and assessment of risks, knowledge building regarding disaster, reducing risk factors and enhance preparedness of risk factor, NSDRM highlights all the strategy that could be done in national level and local level to strengthen the capacity building of local people against disaster. The disaster management plan is guided by national strategy but it is important for local government for implementation while coordinating other different stakeholders like: Civil society, including NGOs, volunteer groups, the academia and private sector; the UN system; and other external development partners. Rakam Karnali area has slope land. The care has been taken during the process of policy making for development. The area greater than 30 degree has been classified as land not suitable for construction. The roads are developed as per the contour. With basic goal of disaster resilient Rakam Karnali City, there are some of the basic strategies identified, which are briefly mentioned below.

Objective (What to achieve)

- Enhance preparedness and adaptive capacity of local government, community and local groups.
- Participatory approach of disaster risk reduction.
- Disaster responsive urban design features.
- Implementation of disaster resilient building bye-laws.

Strategies (How to achieve)

- Preparation of Risk Sensitive Land Use Plan (RSLUP) and strict implementation.
- Implementation of bye-laws and building codes.
- Enhance human resource and institutional capacity of local government by regular trainings and safety drills.
- Participatory approach in community level and local level for disaster risk management program.
- Regular awareness campaign regarding pre-disaster and post-disaster events.
- Identification of high-risk areas with hazard mapping and resettlement of such, if necessary.
- Identification and delineation of disaster evacuation zone.
- No built up development in land which is greater than 30 degree.

Policy recommendations (Guiding Principle)

- Effective implementation of RSLUP
- Effective implementation of building byelaws and building codes.
- Awareness regarding the pre and post disaster management by incorporating in the daily newspapers, academics (curriculums), or any other means of interaction methods.
- Policy Guiding documents:

- Local Disaster Risk Management Planning Guideline-LDRMP, 2068
- National Strategy for Disaster Risk Management in Nepal, 2008

Strategic Projects/Programs

- Fire stations within the 5-7 km radius of the city or 1 fire engine for 50000 population.
- Evacuation Zone located at every community with the escapable distance.
- Awareness campaign regarding the pre and post disaster incidents.
- No development in landslide prone area.

7.16 CLIMATE CHANGE ADAPTATION PLAN

The global climate is changing and the impacts of this change are being felt across the world, and it's challenging for the country like Nepal, which holds the Himalayan regions, and depends on it for water sources. Significantly, climate change is the national issue, but it could be awareness regarding the impact of climate change in longer run.

Objective (What to achieve)

- Promoting ground water recharge system and conservation of urban forestry.
- Promoting alternative source of energy

Strategic Projects

- Construction of parks
- Plantation of road side vegetation and trees.
- EIA and IEE before implementation of big projects

Table 34: Proposed Land Use Plan

PROPOSED LAND USE OF RAKAM KARNALI NEW TOWN

SN	LAND USE TYPE	Existing		Proposed		Change (+/-)
		Area (ha)	Area (%)	Area (ha)	Area (%)	Area (%)
1	Forest	3127.15	61.46	3105.76	61.04	-0.42
2	Barren Land	347.89	6.84	286.20	5.63	-1.21
3	Built Up	64.17	1.26	104.47	2.05	0.79
4	River	268.37	5.27	268.36	5.27	0.00
5	Cultivation Land	1280.20	25.16	912.32	17.93	-7.23
6	Urban Expansion Zone	0.0	0.00	343.41	6.75	6.75
	Total	5087.79	100.00	5087.79	100.00	

Table 35: Main Residential Sub Zone with less than 30 0 Slope

Main Residential Sub Zone with less than 30 0 Slope				
S.N.	Particulars	Area in ha	Proposed Density/ha	Projected Population
1	Built Up (Exi Residential)	55.47	150.00	8321
3	Residential Expansion Including Planned Area	650.01	150.00	97501
	Total	705.48		105822

7.17 MULTI-SECTOR INVESTMENT PLAN (MSIP)

As we've already discussed in earlier sections of financial plan and economic development plan, a city development of 20-year plan with ambition of one lakh population needs lots of investment. And these investments could be in the form of annual budget, loans, grants/aid or some international projects. With model of public private partnership modality of infrastructural investment, it is also expected to have investment of private sector in city infrastructure projects. Apart from security and major strategic roads, in most of the sector we can expect the investment from private sectors and from other donor agencies. We have to understand that these entire budgets should be funneled down through the single channel of local project implementation body, which could be TDC or any other new autonomous body. For this projects are identified under different sections, which could be new construction, upgrading existing scenario or upgrading the existing quality or capacity. With some standard rate of similar contemporary projects, under different headings, cost estimation is allocated. As we know that these development plans have target period of 20 years, we've divide into 3 major milestones, short term, midterm and long term projects. Depending upon the priority of the project and possible budget required, different projects are put under different time frame. Some longer term projects may fall under different time period and some of the projects are continuous process throughout the development, like: training and updating the institutional capacity.

The estimated budget of around 39.62 Billion for 20 years' plan, around 52 percent is expected to be spent from central government with different department sections along with new town development office. Around 34 percent of the total budget is to be spent from the local government over the range of 20 years. Remaining investments are to be expected from private sectors followed by NGO/INGOs and other community sectors. It is expected that around more than 200 crores are to be spent every year where in earlier year more investment is to be done in short term goals (0-3 years) where in longer goal are to be spent on improving quality and standards of the town.

Highest investment is done under infrastructures like road and sanitations and others. Apart from the road, health and education are the most prioritized sector under social development plan to increase the dependency of the town within VDC and between the cities. In yearly basis, budget will be spent on training and awareness campaigns on various issues on longer term. It is also important to consider that large amount of investment are put under the recreation, where as that will be spent on buying chunk of lands on urban areas, as the city is already grown or cost is very high. Good investment is allocated on improving the institutional capacity of the different service oriented institutions in the form of institutional development plan, financial plan or in terms of security as well by making citizen friendly city. Large investment is expected from private sectors as well, especially in the field of housing, job opportunities, entertainments, recreations and others. Private sectors are obvious to focus on profit oriented investment such as in industries, economic field along with some well-known field like education and health. In the field of solid waste

management, disaster risk mitigation plan, environment conservation plan or in the field of climate change, non-governmental organizations are expected to be in good part. Such national and international organizations will help to improve the institutional capacity as well as promote the awareness regarding the topic. Finally, it is expected that more participatory model of investment is promoted which not only eases the investment burden of central government but also helps to build the ownership among the resident of that city.

Basic summary of the MSIP is shown below:

Table 36: MSIP Summary Sheet

Projects		Cost Estimation				Phase-Wise Development			Investment Sector					Remarks
		Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community	
Road Network and Transportation Development Plan														
	Ring Road	KM	8.70	10	87.0				90%	10%	0%	0%	0%	
	Public Transportation	Number	20	10	200.0				30%	30%	0%	40%	0%	
	Pedestrian Improvement	KM	30	3	90.0				50%	40%	10%	0%	0%	
	Bicycle Track	KM	30	3	90.0				25%	75%	0%	0%	0%	
	Buspark 1	Number	1	50	50.0				100%	0%	0%	0%	0%	
	Buspark 2	Number	1	50	50.0				25%	25%	0%	50%	0%	
	Existing Buspark Upgradatoin	Number	1	30	30.0				25%	25%	0%	50%	0%	
	Bridge 1	Number	1	100	100.0				100%	0%	0%	0%	0%	
	Bridge 2	Number	1	100	100.0				100%	0%	0%	0%	0%	
	Suspended Bridge	Number	3	20	60.0				100%	0%	0%	0%	0%	

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks	
	Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community		
Strategic Road 1	KM	56.26	15	843.9				50%	50%	0%	0%	0%		
Strategic Road 2	KM	33.61	12	403.4				50%	50%	0%	0%	0%		
Strategic Road 3	KM	82.02	10	820.2				50%	50%	0%	0%	0%		
		Total		2924.49				61%	27%	1%	11%	0%		
Water Supply Development Plan														
	Water Storage Tanks (12.5ML)	Number	16	20	320				40%	20%	10%	15%	15%	
	Water Treatment Plant (3ML)	Number	6	12	72				75%	25%	0%	0%	0%	
	Water Supply Networks	KM	50	50	2500				50%	40%	0%	10%	0%	
	Public Water Supply	Number	100	1	100				10%	40%		50%		
	Community/Public water storage	Number	10	2	20				0%	50%	0%	0%	50%	
Rain Water Harvesting	Number	10	1	10				0%	25%	25%	25%	25%		

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks	
	Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community		
Water Source Conservation	Number	3	2	6				40%	40%	0%	10%	10%		
	Total			3028.00				61%	27%	1%	11%	0%		
Drainage and Sanitation Development Plan														
	Drainage Networks and Pipes	KM	40	2	80				50%	40%	0%	10%	0%	
	Treatment Plants	Number	6	20	120				100%	0%	0%	0%	0%	
	Storm Water Drain	KM	60	1	60				40%	40%	10%	10%	0%	
	Organic Treatment Plant	Number	10	3	30				25%	25%	50%	0%	0%	
	Public Toilets	Number	100	2	200				25%	75%	0%	0%	0%	
	Awareness and Training	Number	100	2	200				0%	50%	25%	25%	0%	
	Total			690.00				40%	38%	14%	8%	0%		

Projects		Cost Estimation				Phase-Wise Development			Investment Sector					Remarks
		Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community	
Solid Waste Management Development Plan	Landfill site	Number	1	50	50				50%	50%	0%	0%	0%	
	Transfer Station	Number	3	10	30				50%	50%	0%	0%	0%	
	Bio-gas promotion	Number	10	10	100				0%	50%	25%	25%	0%	
	Awareness (3R)	Number	100	0.2	20				25%	25%	25%	25%	0%	
	Waste Bins	Number	100	0.2	20				0%	40%	40%	20%	0%	
	Waste to Energy	Number	1	20	20				25%	25%	25%	25%	0%	
		Total			240.00				25%	40%	19%	16%	0%	
Electricity and Communications Development Plan														
	Electricity Grid Connection (National grid)	Number	1	500	500				100%	0%	0%	0%	0%	
	Promoting Microhydro	Number	1	100	100				50%	20%	10%	10%	10%	
	High Speed Internet	Number	1	50	50				20%	20%	0%	60%	0%	

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks	
	Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community		
Alternative energy Promoting	Number	1	500	500				25%	25%	50%	0%	0%		
Street Lights	Number	200	0.2	40				20%	50%	10%	0%	20%		
Digital Information Boards	Number	50	0.5	25				50%	50%	0%	0%	0%		
Underground Wiring	KM	60	3	180				50%	50%	0%	0%	0%		
Wifi Hotspots	Number	100	1	100				0%	20%	0%	80%	0%		
Monitoring Quality and Leakage Control	Number	1	10	10				25%	25%	25%	15%	10%		
		Total		1505.00				38%	29%	11%	18%	4%		
Education Development Plan	Upgrading Physical infrastructure of public education institutions	Number	10	50	500				80%	10%	10%	0%	0%	
	Agriculture Research	Number	1	100	100				50%	30%	20%	0%	0%	

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks
	Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community	
center													
Paramedical College	Number	1	100	100				80%	20%	0%	0%	0%	
Livestock Research center	Number	1	50	50				0%	40%	10%	50%	0%	
ICT development	Number	1	50	50				80%	0%	20%	0%	0%	
Higher Education Development	Number	1	100	100				100%	0%	0%	0%	0%	
Cross-Subsidies	Number	1	200	200				50%	50%	0%	0%	0%	
			Total					60%	23%	8%	8%	0%	
Health Development Plan													
	50 Bed Hospital	Number	1	100	100			80%	20%	0%	0%	0%	
	50 Bed community hospital	Number	1	100	100			50%	25%	0%	25%	0%	
	Health Posts	Number	9	30	270			100%	0%	0%	0%	0%	

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks	
	Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community		
Awareness Campaigns	Number	1	20	20				50%	50%	0%	0%	0%		
Cross-Subsidies	Number	1	20	20				0%	100%	0%	0%	0%		
Health Insurance	Number	1	200	200				100%	0%	0%	0%	0%		
Monitoring and Evaluation	Number	1	20	20				25%	50%	25%	0%	0%		
		Total		730.00				58%	35%	4%	4%	0%		
Security Development Plan														
	CCTV Surveillance and Street Lights	Number	50	0.5	25				50%	50%	0%	0%	0%	
	Security Facilities	Number	1	50	50				100%	0%	0%	0%	0%	
	Police station	Number	1	10	10				100%	0%	0%	0%	0%	
	Community Policing	Number	1	100	100				50%	50%	0%	0%	0%	
Traffic Development Plan	Number	1	500	500				100%	0%	0%	0%	0%	Traffic Lights/	

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks
	Unit	Qty	Rate (Milion Rs)	Amount (Milion Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community	
													instruments
Community/ Citizen friendly capacity Building of Security personnel	Number	1	400	400				50%	50%	0%	0%	0%	
			Total	1085.00				75%	25%	0%	0%	0%	
Recreation Development Plan													
Parks , Play ground and Opens Spaces	Number	10	20	200				0%	50%	0%	25%	25%	
Greenary development	Number	1	200	200				0%	50%	25%	0%	25%	
Fun Parks	Number	1	300	300				0%	0%	0%	100%	0%	
Covered / Open Theatre	Number	10	10	100				0%	50%	0%	0%	50%	
Entertainment (Movies/ Theatre)	Number	1	30	30				0%	0%	0%	100%	0%	

Projects		Cost Estimation				Phase-Wise Development			Investment Sector					Remarks
		Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community	
		Total			830.00				0%	30%	5%	45%	20%	
Urban social infrastructures Development Plan	Social Housing	Number	3	100	300				50%	50%	0%	0%	0%	
	Old Age Home	Number	1	200	200				50%	50%	0%	0%	0%	
	Library	Number	6	20	120				0%	50%	25%	0%	25%	
	Multipurpose Hall	Number	1	500	500				80%	0%	0%	0%	20%	
	Youth Center/ City hall/Covered Hall	Number	2	50	100				0%	80%	0%	20%	0%	
	Resource Center	Number	1	50	50				0%	100%	0%	0%	0%	
			Total			1270.00				30%	55%	4%	3%	8%
Cultural and Tourism Development Plan														
	Campaigning/Marketing of tourism scope	Number	1	50	50				0%	50%	0%	50%	0%	

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks
	Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community	
Cultural Musuem	Number	1	50	50				0%	50%	0%	0%	50%	
Walking trail	Number	1	50	50				0%	100%	0%	0%	0%	
Tourism Action Plan	Number	1	10	10				0%	80%	0%	0%	20%	
		Total		160.00				0%	70%	0%	13%	18%	
Economic Development Plan													
	Industrial Zone	Number	1	500	500			100%	0%	0%	0%	0%	
	Agriculture Zone	Number	1	100	100			50%	50%	0%	0%	0%	
	Freight House	Number	1	200	200			0%	50%	0%	50%	0%	
	Markets center	Number	5	5	25			0%	50%	0%	50%	0%	
	Urban Market Center	Number	5	10	50			0%	50%	0%	50%	0%	
	Promoting CBD	Number	1	100	100			0%	50%	0%	50%	0%	
	Developing old market's infrastructures	Number	1	200	200			80%	20%	0%	0%	0%	

Projects		Cost Estimation				Phase-Wise Development			Investment Sector					Remarks
		Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community	
		Total			1175.00				33%	39%	0%	29%	0%	
Financial Development Plan	Financial Action Plan	Number	1	10	10				80%	20%	0%	0%	0%	
	Capacity Building	Number	1	10	10				20%	50%	30%	0%	0%	
	E-financing	Number	1	10	10				50%	50%	0%	0%	0%	
	Strict Implementation Strategy	Number	1	10	10				0%	100%	0%	0%	0%	
		Total			40.00				38%	55%	8%	0%	0%	
Institutional Development Plan	Setting independent planning authority	Number	1	300	300				80%	20%	0%	0%	0%	
	Capacity building of institutions	Number	1	200	200				50%	30%	20%	0%	0%	
	Integrated Service	Number	1	500	500				100%	0%	0%	0%	0%	

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks
	Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community	
Center													
E-Governance	Number	1	500	500				50%	50%	0%	0%	0%	
		Total		1500.00				70%	25%	5%	0%	0%	
Environment Management Plan													
	Plantation	Number	1	100	100			50%	50%	0%	0%	0%	
	Subsidies in Electric Vehicles	Number	1	100	100			0%	50%	0%	0%	50%	
	Awareness Campaign	Number	1	100	100			50%	25%	25%	0%	0%	
	Resource Conservations	Number	1	500	500			50%	50%	0%	0%	0%	
	Urban Parks	Number	1	500	500			0%	50%	0%	0%	50%	
	Water Bodies	Number	1	200	200			0%	50%	0%	0%	50%	
		Total		1500.00				25%	46%	4%	0%	25%	
Disaster Risk													

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks	
	Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community		
Reduction Plan	DRM Preparation and Implementation	Number	1	100	100				50%	50%	0%	0%	0%	
	Disaster Response team	Number	1	100	100				0%	50%	0%	0%	50%	
	Awareness and Training	Number	1	100	100				50%	50%	0%	0%	0%	
	Strict Building Code Implementation	Number	1	100	100				0%	100%	0%	0%	0%	
	Capacity Building	Number	1	100	100				0%	50%	25%	0%	25%	
	Fire Station	Number	1	100	100				50%	50%	0%	0%	0%	
	Disaster Evacuation Zone	Number	1	100	100				50%	50%	0%	0%	0%	
		Total		700.00				29%	57%	4%	0%	11%		
Climate Change Adaptation Plan														
	Awareness and Training	Number	1	2	2				25%	50%	25%	0%	0%	
	Plantation and Conservation of	Number	1	10	10				50%	25%	25%	0%	0%	

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks
	Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community	
resources													
Pervious Pavement	Number	1	20	20				25%	75%	0%	0%	0%	
Promoting Building friendly technology and materials	Number	1	200	200				0%	100%	0%	0%	0%	
Implementation of Environment Protection law	Number	1	50	50				50%	50%	0%	0%	0%	
				282				30%	60%	10%	0%	0%	
Water ways Establishment Plan													
	Feasibility Study and institutional strengthening and capacity building	Number	1	20	20			75%	20%	5%	0%	0%	
	Bank Estbilization work	KM	75	10	750			90%	10%	0%	0%	0%	

Projects	Cost Estimation				Phase-Wise Development			Investment Sector					Remarks
	Unit	Qty	Rate (Million Rs)	Amount (Million Rs)	Short Term (0-3 Yrs)	Mid Term (3-5 Yrs)	Long Term (5-20Yrs)	Central Govt	Local Govt	NGOs/INGOs	Private Sectors	Others/Community	
design and construction services for port and waterway	Number	1	100	100				90%	10%	0%	0%	0%	
services for restoration, freshwater diversions and sediment transport.	Number	1	200	200				40%	30%	20%	10%	0%	
	Total			1070.00				74%	18%	6%	3%	0%	

SUMMARY SHEET OF RAKAM KARNALI

S.NO.	SUBJECT	TOTAL BUDGET (Million Rs.)	Phase-Wise Development			INVESTMENT SECTOR					Remarks
			ST (0-5 YRS)	MT (5-10 YRS)	LT (10-20 YRS)	Central Govt	Local Govt	I/NGO's	Pvt Sectors	Others	
A. PHYSICAL INFRASTRUCTURE DEVELOPMENT PLAN											
1	Road Network and Transportation Plan	2924.49	20%	20%	60%	61%	27%	1%	11%	0%	
2	Water Supply	3028.00	20%	20%	60%	61%	27%	1%	11%	0%	
3	Drainage and Sanitation	690.00	20%	20%	60%	40%	20%	10%	15%	15%	
4	Solid Waste Management	240.00	30%	30%	40%	75%	25%	0%	0%	0%	
5	Electricity and Communications	1505.00	40%	60%	20%	50%	40%	0%	10%	0%	
	Sub Total	8387.49									
B. SOCIAL INFRASTRUCTURE DEVELOPMENT PLAN											
6	Education	1100.00	20%	30%	50%	60%	23%	8%	8%	0%	
7	Health	730.00	20%	30%	50%	58%	35%	4%	4%	0%	
8	Security	1085.00	30%	40%	30%	80%	20%	0%	0%	0%	
9	Recreation	830.00	20%	30%	50%	50%	25%	0%	25%	0%	
10	Urban and social infrastructures	1270.00	20%	20%	60%	100%	0%	0%	0%	0%	
	Sub Total	5015.00									
C. MISCELLENIOUS DEVELOPMENT PLAN											
11	Cultural and Tourism Development Plan	160.00	20%	30%	50%	0.00%	70.00%	0.00%	12.50%	17.50%	

S.NO.	SUBJECT	TOTAL BUDGET (Million Rs.)	Phase-Wise Development			INVESTMENT SECTOR					Remarks
			ST (0-5 YRS)	MT (5-10 YRS)	LT (10-20 YRS)	Central Govt	Local Govt	I/NGO 's	Pvt Sectors	Other s	
12	Economic Development Plan	1175.00	30%	30%	40%	32.86 %	38.57%	0.00%	28.57 %	0.00%	
13	Financial Development Plan	40.00	40%	30%	30%	37.50 %	55.00%	7.50%	0.00%	0.00%	
14	Institutional Development Plan	1500.00	40%	40%	20%	70.00 %	25.00%	5.00%	0.00%	0.00%	
15	Environment Management Plan	1500.00	30%	30%	40%	25.00 %	45.83%	4.17%	0.00%	25.00 %	
16	Disaster Risk Reduction Plan	700.00	40%	30%	30%	28.57 %	57.14%	3.57%	0.00%	10.71 %	
17	Climate Change Adaptation Plan	282.00	40%	30%	30%	30.00 %	60.00%	10.00 %	0.00%	0.00%	
18	Water ways Development	1070.00	40%	30%	30%	73.75 %	17.50%	6.25%	2.50%	0.00%	
	Sub Total	6427.00									
	Total Investment Reqd in M Rs.					24762.70	16245.69	1590.90	3371.65	1810.78	19829.49
	Contribution in %					51.82 %	34.00%	3.33%	7.06%	3.79%	100.00 %
	POTENTIAL INVESTORS					Central Govt	Local Govt	I/NGO 's	Pvt. Sectors	Other s	

ANNEX C-PLANNING BYE LAWS

परिच्छेद १: योजना मापदण्ड (Planning Bylaws)

सामान्य व्यवस्था (General Provision)

यस परिच्छेदको सामान्य व्यवस्था अन्तर्गत पर्ने नियमनका प्रावधानहरू भूखण्डीकरण गरी गरिने योजनाबद्ध आवास विकासको हकमा केही फरक पर्ने भए पनि सामान्यतया यस मापदण्डले समेटेका सबै क्षेत्रमा लागू हुनेछ । भूखण्डीकरण गरी गरिने योजनाबद्ध आवास विकासको हकमा फरक पर्ने प्रावधानहरू भएमा सोको उल्लेख सम्बन्धित उपखण्डहरूमा गरिएको छ ।

१.१ पहुँच बाटो (Means of Access)

भूखण्डीकरण गरी गरिने योजनाबद्ध आवास विकासदेखि बाहेक कुनै पनि भवन वा प्लटमा आवतजावतको निमित्त निजी वा सार्वजनिक बाटो जोडिएको हुनुपर्नेछ र कुनै पनि भवन निर्माण गर्दा आवत जावतको निमित्त आवश्यक पर्ने बाटो अतिक्रमण हुनेगरी वा क्षेत्रफल घट्नेगरी बनाउन पाइने छैन । कुनै प्रकारको निर्माण गर्दा अर्को भवन वा निर्माणलाई यस्तो प्रवेशको माध्यमबाट वञ्चित गर्न पाइने छैन । सबै आवासीय प्लटहरू सार्वजनिक बाटो वा त्यस्ता बाटोसम्म पुग्ने अन्य कुनै माध्यमसँग जोडिएको हुनुपर्नेछ (तालिका नं. १) ।

तालिका नं. १				
क्र. सं.	भवनको प्रकार र प्रयोजन	पहुँच बाटोको चौडाइ (मी.)	पहुँच बाटोको लम्बाइ (मी.)	कैफियत
१.१	आवासीय भवनहरू (सार्वजनिक भवनहरू अन्तर्गत उल्लेख भएबाहेकका आवासीय वा मिश्रित उपयोग वा प्रयोजन भएका भवनहरू)	४.० ६.० ८.०	५० २०० १०००	भूखण्डीकरण गरी विकास गरिने जग्गाको हकमा बाटोको चौडाइ बाटोको मुखभन्दा भित्र सानो चौडाइको बनाउन पाइने छैन ।
१.२	सार्वजनिक भवनहरू (टेबल नं. १ को १.१ मा उल्लेख भएका आवासीय भवनहरूबाहेकका सार्वजनिक उपयोग वा प्रयोजन भएका भवनहरू)	६.० ८.० १०.० १५.०	१०० २०० ३०० ५००	

१.२ खुला क्षेत्रहरू (Open Spaces)

क) निजी, आवासीय तथा सार्वजनिक भवनहरू निर्माण गर्दा छाड्नु पर्ने खुला क्षेत्र अधिकतम ग्राउण्ड कभर तथा एफएआरबाट नियन्त्रण गरिनेछ ।

ख) ३ रोपनीभन्दा कम क्षेत्रफल भएको जग्गालाई योजनाबद्ध आवासीय क्षेत्र विकासको लागि भूखण्डीकरण गर्न स्वीकृति दिइने छैन र यसरी गरिने योजनाबद्ध आवासीय क्षेत्रमा खुला सार्वजनिक क्षेत्रका लागि छुट्याइएको जमिनको क्षेत्रफल निम्न अनुसार हुनेछ :

३ रोपनीदेखि माथी

जम्मा जग्गाको ५ प्रतिशत

१.३ प्लटसम्बन्धी व्यवस्था (Plot Regulations)

क) कुनै पनि जमिनमा खुला भाग, प्यासेज आदि सहित उचित प्रकारले पानी निकास हुने व्यवस्था हुनुपर्नेछ, र ढल (Sewer) मा कुनै पनि प्रकारको निकास (Sub soil or surface water drain) जोड्नु परेमा सम्बन्धित अधिकारीको लिखित स्वीकृति लिनुपर्नेछ ।

- ख) विद्युत नियमावलीले तोकेको विद्युत लाइनको दायाँ बायाँको दुरीभित्र कुनै पनि प्रकारको निर्माण गर्न वा भवनको कुनै पनि भाग उठाउन वा फेरबदल गर्नसमेत पाइने छैन । यससम्बन्धी व्यवस्था **परिच्छेद २ को खण्ड २.९ उपखण्ड २.९.५** मा दिइए अनुसार हुनेछ ।
- ग) पुरानो आवासीय तथा व्यापारिक क्षेत्रवाहेकको अन्य भू-उपयोग क्षेत्रहरूमा एक वा सोभन्दा बढी कित्ताहरू हुनसक्ने कुनै एक आवासीय प्लटको कुल न्यूनतम क्षेत्रफल ४ आना भन्दा कम हुनेगरी कित्ताकाट भएको प्लटमा निर्माण स्वीकृति दिइने छैन । भूखण्डीकरण गरी गरिने योजनाबद्ध सामूहिक आवास विकास क्षेत्रको हकमा भने न्यूनतम क्षेत्रफल **परिच्छेद २ को खण्ड २.९ उपखण्ड २.९.३** मा दिइए अनुसार हुनेछ । सिमित पैतृक सम्पत्तिको बण्डा गर्दा वा यो मापदण्ड लागूहुनुभन्दा पहिले नै न्यूनतम क्षेत्रफल ४ आना भन्दा कम कायम भएको अवस्थामा भने यो प्रावधान लागू हुनेछैन ।
- घ) एक आपससँग जोडिएका साना ठुला कित्ताहरूको क्षेत्रफल घटबढ गरि मिलान गर्न परेको खण्डमा न्यूनतम तोकिएको क्षेत्रफल ४ आना भन्दा कम हुने गरि मिलान भएको पाइए त्यस्ता प्लटहरूमा निर्माण स्वीकृति दिइने छैन ।
- ङ) योजनाबद्ध आवासीय क्षेत्रको लागि भूखण्डीकरण गर्दा निर्माणको प्रकृति अनुसार जग्गाको न्यूनतम मोहडा निम्नानुसार हुनुपर्नेछ ।

निर्माणको प्रकृति

अग्रभाग (Frontage)

असम्बद्ध (Detached) भवन वा निर्माण

९ मी. वा सोभन्दा माथि

आपसमा सम्बद्ध (Semi-detached) भवन वा निर्माण

८ मी. वा सोभन्दा माथि

पङ्क्तिबद्ध (Row type) भवन वा निर्माण

६ मी.

प्लट र मोहडाको गहिराइ अनुपात

१:२ अथवा १:२.५

- च) भूखण्डीकरण गरी गरिने योजनाबद्ध सामूहिक आवास विकास क्षेत्र र योजनाबद्ध औद्योगिक क्षेत्रको हकमा सोसम्बन्धी मापदण्डमा उल्लेख भए अनुसार प्लट साइज हुनेछ । अन्यथा औद्योगिक क्षेत्रको प्लटको क्षेत्रफल न्यूनतम पनि २०० वर्ग मी. र यसको चौडाइ १० मी. भन्दा कम हुनुहुँदैन ।
- छ) नयाँ खोलिने सडकहरूको न्यूनतम चौडाइ ६ मी. भन्दा कमको दिइने छैन तर प्लटमा पुग्ने साविकका साना बाटाहरूको चौडाइ ४ मी. भन्दा कम भएमा र यस्ता सडकहरूमा छाडिनु पर्ने खुला भाग (Setbacks) सोसम्बन्धी खण्ड १.४ को उपखण्ड १.४.२ मा दिइए अनुसार हुनेछ ।

१.४ खुला भाग (Setbacks)

१.४.१ खुला भाग मापदण्ड (Open Space Bylaws)

तालिका नं. २			
क्र.सं.	भवनको प्रकार	अधिकतम भवनको उचाइ (मी.)	भवनको खुला छाड्नु पर्ने (Setbacks)
१.	आवासीय	१० मिटरसम्म	तल १.४.२ र १.४.४ मा लेखिएबमोजिम
२.	आवासीय (मिश्रित आवासीय)	१० देखि १५ मिटरसम्म	तल १.४.३ र १.४.४ मा लेखिएबमोजिम
३.	सार्वजनिक भवनहरू	१५ मिटरसम्म	तल १.४.५ मा लेखिएबमोजिम
४.	औद्योगिक भवनहरू	१२ मिटरसम्म	४ मिटर चारैतिर

१.४.२ घर अगाडिको खुला भाग सम्बन्धी व्यवस्था (Front Setback Provision)

आवासीय घरको हकमा अगाडिको विद्यमान मोटर बाटो ४.० मी. वा सोभन्दा माथि भएमा १.५ मी. सेटब्याक छाडनु पर्नेछ । ४ मी. भन्दा कम चौडाइ भएको मोटर बाटोका लागि भवन वा निर्माणरेखा बाटोको केन्द्रबाट कम्तीमा पनि ४.० मी. हुनुपर्नेछ ।

१.४.३ घरपछाडिको खुला भाग सम्बन्धी व्यवस्था (Rear Setback Provision)

आवासीय घर निर्माण गर्दा पछाडिपट्टि खुला भागको औसत चौडाइ १.५ मी. हुनुपर्नेछ र कुनै पनि ठाउँको चौडाइ १.५० मिटरभन्दा कम हुनुहुँदैन । साइटको प्रकृति ब्याक-टु-ब्याक साइट (Back-to-back site) भएमा पछाडिको खुला भागको चौडाइ सबैतिर १.५ मी. हुनुपर्नेछ ।

१.४.४ घरको साइडको खुला भाग सम्बन्धी व्यवस्था (Side Setback Provision)

आवासीय घर वा निर्माणको हकमा कुनै पनि आपसमा सम्बद्ध (Semi-detached) र असम्बद्ध (Detached) भवन वा निर्माणमा निम्न अनुसारको खुला भाग हुनुपर्नेछ :

- क) असम्बद्ध भवन वा निर्माणको दुवैतर्फ कम्तीमा १.५ मी. को खुलाभाग हुनुपर्नेछ ।
- ख) आपसमा सम्बद्ध भवन वा निर्माणको एकातर्फ कम्तीमा १.५ मी. को खुला भाग हुनुपर्नेछ ।
- ग) पङ्क्तिबद्ध भवन वा निर्माणका हकमा साइडतर्फ खुला भाग आवश्यक पर्ने छैन ।

१.४.५ सार्वजनिक भवनको खुला भाग (Public Buildings Setback)

- क) शैक्षिक प्रयोजनका लागि बन्ने भवन वा निर्माण (नर्सरी स्कूलबाहेक अन्ये का लागि त्यस्तो भवन वा निर्माणवरिपरिको खुला भाग कम्तीमा ३.० मी. हुनुपर्नेछ ।
- ख) संस्थागत (Institutional) भवन वा निर्माणहरू वरिपरिको खुला भाग कम्तीमा पनि ३.० मी. हुनुपर्नेछ ।
- ग) सभा, सम्मलेन वा भीड जम्मा हुने (Assembly) भवन वा निर्माणहरूको निमित्त अगाडिको खुला भाग कम्तीमा १२ मी. र साइडका खुलाभाग कम्तीमा ६ मी. को हुनुपर्नेछ ।

१.४.६ सेटब्याकमा छूट (Incentives on Setbacks)

- क) चौडाइ ०.५० मी. भन्दा बढी नहुनेगरी कर्निस (Cornice) छाना वा वेदर सेड (Weather shade) राख्न पाइनेछ तर यस्तो वेदर सेड सम्पूर्ण तलाका छानाबाट निकाल्न अनुमति दिनसकिने छ ।
- ख) चौडाइ ०.५० मी. भन्दा बढी नहुनेगरी सबै भ्याल, ढोका आदिमा सनसेड ९माल कजबमभ० का लागि अनुमति दिन सकिनेछ ।
- ग) भड्किएको भवन वा निर्माणको पछाडिपट्टिको खुला भागमा प्लटको सिमानाबाट १ मी. को दुरीमा खुला भागमा जमिनमुनि बन्ने सेनिटरी (Sanitary) सम्बन्धी निर्माण गर्न दिइनेछ ।
- घ) पार्किङका निमित्त साइड वा पछाडिको खुला भागमा २.४ मी. उचाइसम्मको ग्यारेज बनाउन अनुमति दिन सकिनेछ ।
- ङ) २.५ वर्ग मी. सम्म क्षेत्रफलको पम्प हाउसलाई अनुमति दिन सकिने छ ।

१.५ सडक अधिकार क्षेत्र (Road Right of Way)

सडक तथा भवनहरूमा पर्याप्त प्रकाश, हावा तथा पैदल तथा आवतजावतको सुगमताका लागि नगरभित्रका सडकहरूको आवश्यक न्यूनतम सडक अधिकार क्षेत्र तोक्ने र तत्सम्बन्धी व्यवस्था परिच्छेद (सडक मापदण्ड) मा दिइए अनुसार हुनेछ ।

१.६ पार्किङसम्बन्धी व्यवस्था (Parking Provision)

१.६.१ आवासीय भवन तथा निर्माण (Residential Buildings/Construction)

कारका लागि पहुँच सडक उपलब्ध भएको खण्डमा :

- क) एकल हकभोग (Single occupancy) भएको भवनका लागि कम्तीमा १ कारको लागि पार्किङ क्षेत्र ।
- ख) दोहोरो हकभोग (Double occupancy) भएको भवनका लागि कम्तीमा १ कार तथा १ मोटरसाइकलको लागि पार्किङ क्षेत्र ।

१.६.२ सार्वजनिक भवन तथा निर्माण (Public Building/Construction)

(कुल जग्गाको क्षेत्रफलको)

क) ठुला होटलहरु	२० प्रतिशत
ख) सिनेमा हल, सभागृह, थियटर आदि	२० प्रतिशत
ग) व्यापारिक कम्प्लेक्स, सुपरमार्केट आदि	२० प्रतिशत
घ) नर्सिङहोम, पोलिक्लिनिक आदि	१५ प्रतिशत
ङ) सरकारी, अर्धसरकारी कार्यालय	२० प्रतिशत
च) स्कूल, क्याम्पस	१५ प्रतिशत

१.७ वास्तुशिल्पीय नियन्त्रण (Architectural Control)

आवास प्रयोगकर्ताको स्वास्थ्य, ठाउँको प्रभावकारी उपयोग तथा भवनको सुन्दरताका लागि आवश्यक न्यूनतम वास्तुशिल्पीय नियन्त्रणसम्बन्धी व्यवस्था **परिच्छेद ३ को खण्ड ३.८** मा दिइए अनुसार हुनेछ ।

१.८ विपद् जोखिम न्यूनीकरण नियमनहरू (Disaster Risk Reduction Regulations)

१.८.१ नदी एवं कुलाको किनाराबाट छाड्नु पर्ने दुरी (Setbacks for Riveredge)

- क) भेरी नदी किनाराबाट निर्माणका लागि छाड्नु पर्ने न्यूनतम दुरी २०० मीटर हुनेछ ।
- ख) अन्य खोलाहरुकोहकमा किनाराबाट निर्माणका लागि छाड्नु पर्ने न्यूनतम दुरी ३० मीटर हुनेछ ।

पुनश्चः ८ सिञ्चाइ विभागले तोकेको न्यूनतम स्तरमान भएको तटबन्ध सम्झनु पर्दछ ।

१.८.२ पहिरोसम्बन्धी नियमन (Landslide Regulation)

कुनै पनि जमिनको भू-सतह ३० डिग्रिभन्दा बढी भिरालो (Slope) भएमा तथा विगत १० वर्षभित्र पहिरो गएको इतिहास भएमा त्यस्तो क्षेत्रमा भवन तथा अन्य निर्माण गर्न निम्न शर्तहरू पूरा गर्नु पर्नेछ ।

- क) निर्माणको लागि स्वीकृति लिदा निर्माणकर्ताले योग्य प्राविधिक ईन्जिनियर वा सम्बन्धीत प्राविधिक निकायद्वारा तयार पारेको भौगर्भिक तथा स्लोपसम्बन्धी विस्तृत इन्जिनियरिङ्ग विश्लेषण अध्ययन प्रतिवेदनका आधारमा स्थायी प्रकृतिको निर्माण गर्न इजाजत दिइनेछ ।

- ख) विद्यालय, स्वास्थ्य संस्था आदि जनधनका हिसाबले संवेदनशील भवन तथा निर्माणहरू गर्न दिइने छैन ।

१.८.३ अग्निसुरक्षा (Fire Safety)

सुरक्षित शहरी बसाइ तथा अग्निप्रकोपको जोखिम तथा यसको सुरक्षासम्बन्धी आवश्यक न्यूनतम अग्निसुरक्षा व्यवस्था **परिच्छेद २ को खण्ड २.८ उपखण्ड २.९.८** मा दिइए अनुसार हुनेछ ।

१.८.४ भूकम्पीय सुरक्षा (Seismic Safety)

सुरक्षित शहरी बसाइ तथा भूकम्पीय प्रकोपको जोखिम तथा यसको सुरक्षासम्बन्धी आवश्यक न्यूनतम भूकम्पीय सुरक्षा व्यवस्था (जस्तै : भवनको संरचनागत निर्माणका लागि चाहिने जग (Foundation, Reinforced Concrete, Structural Steel, Timber, आदि सम्बन्धी डिजाइन) National Building Code अनुरूप हुनेछ ।

ANNEX D -Building Bye laws

परिच्छेद २ : भवन मापदण्ड (Building Bylaws)

२.१ आवासीय क्षेत्र(Residential Zone)

आवासीय क्षेत्र भन्नाले भू-उपयोग नक्सामा अङ्कित न्यूनतम भौतिक, सामाजिक, आर्थिक तथा वातावरणिय पूर्वाधारहरू भएको र मुख्यतः आवासका निमित्त प्रयोग भएको क्षेत्र (अनुसूची २) लाई जनाउँदछ। विद्यमान शहरी जग्गा विकासका सूचकहरूलाई आधार मानी तथा भू-उपयोग नक्सामा देखाइएको आवासीय क्षेत्रहरूको स्थलरूप, मोटामोटी क्षेत्रफल तथा सम्भाव्य जनघनत्वका आधारमा यस क्षेत्रलाई निम्न उपक्षेत्रमा विभाजन गरी सोको आवासीय मापदण्ड तर्जुमा गरिएको छ।

- क) पुरानो आवासीय तथा बजार उपक्षेत्र
- ख) आवासीय विस्तार उपक्षेत्र
- ग) योजनाबद्ध आवासीय उपक्षेत्र
- घ) व्यापारिक उपक्षेत्र
- ङ) संस्थागत उपक्षेत्र
- च) औद्योगिक उपक्षेत्र
- छ) कृषि क्षेत्र

२.१.१ पुरानो आवासीय तथा बजार उपक्षेत्र (Old Residential & Commercial Sub Zone)

पुरानो आवासीय तथा बजार उपक्षेत्र भन्नाले पुरानो परम्परागत आवासीय तथा बजार क्षेत्रभित्र रहेका ऐतिहासिक, पुरातात्विक एवं सांस्कृतिक हिसाबले महत्वपूर्ण सम्पदा र जन्मजात बन्दोबस्तहरू रहेको, संरक्षण रणनीति अनुसार अतिक्रमण आदिको जोखिम न्यूनीकरणको प्रयास भइरहेको क्षेत्र (अनुसूची १) लाई जनाउँदछ। यस क्षेत्रभित्र निम्न भू-भागहरूलाई समेटिएको छ।

- क) टुनि बगर, राकम, डाबो
- ख) यस क्षेत्रमा निर्माण हुने भवनहरूको घडेरीको क्षेत्रफल, अधिकतम ग्राउण्ड कभरेज, अधिकतम एफएआर, अधिकतम बनाउन पाउने क्षेत्रफल र अधिकतम उचाइ तालिका नं. ३ बमोजिम हुनेछ।

तालिका नं. ३					
क्र. सं.	भवनको प्रकार	अधिकतम ग्राउण्ड कभरेज (%)	अधिकतम FAR	अधिकतम तला	अधिकतम उचाइ
१	नयाँ आवासीय भवन	८०		३	३० फिट (९.१० मी.)
२	पुनःनिर्माण हुने घरहरूको हकमा	१००		३	

ग) संरक्षित स्मारक क्षेत्र अन्तर्गत कला, वास्तुकला एवं धार्मिक दृष्टिकोणबाट महत्वपूर्ण रहेको स्मारक वा स्मारकको कम्पाउण्डको वरिपरिका पहिलो पङ्क्तिका घरहरू चाहे अन्य जुनसुकै भूक्षेत्र क्षेत्रिकरणमा परेता पनि स्मारकभन्दा होचो हुनेगरी वा अधिकतम उचाइ ३० फिट (९.१० मी.) भन्दा नबढ्ने गरी निर्माण गर्नु पर्नेछ ।

घ) यस उपक्षेत्रमा निम्न कार्यहरूलाई निषेध गरिएको छ । तल उल्लेख भएका निषेधित कार्यहरू बाहेक यस उपक्षेत्रको सांस्कृतिक तथा ऐतिहासिक पक्षलाई जोगाइराख्न नगरपालिकाले यस उपक्षेत्रमा गर्न पाइने वा निषेध गरिएका भूउपयोग सम्बन्धी क्रियाकलापहरूलाई सुचना प्रकाशित गरी विभिन्न समयमा आवश्यकता अनुसार परिमार्जन गर्न सक्नेछ ।

- यस क्षेत्रमा कुनै प्रकारका पर्चा, पोष्टर, ब्यानर आदि टाँस्न वा राख्न पाइने छैन ।
- यस उपक्षेत्रभित्रका भवनहरू भत्काउनु पर्दा पुरातत्व विभागको स्वीकृति लिनु पर्नेछ ।
- धार्मिक, सांस्कृतिक तथा भौतिक वातावरणलाई प्रतिकूल वा दूषित पार्ने अन्य क्रियाकलापहरू गर्न,
- अग्नि, प्रज्वलनशील पदार्थ, जस्तै : ग्यास, पेट्रोल, दाउरा, कोइला, मट्टितेल र बिस्फोटक तथा रासायनिक पदार्थ व्यापारिक दृष्टिकोणबाट सञ्चय र बिक्री वितरण गर्न,
- व्यापारिक दृष्टिकोणबाट भिडियो प्रदर्शन गर्न,
- निर्माण सामग्रीहरू, जस्तै : सिमेन्ट, ईटा, छड, जस्तापता आदिको पसल राख्न,
- तोकिएको ठाउँबाहेक अन्य ठाउँमा घुम्ती वा स्थायी तरकारी पसल राख्न,
- काँचो माछा, मासु बेच्ने पसल तथा साइकल, मोटरसाइकल, मोटर, ठेला आदि मर्मत गर्ने पसल राख्न,
- ग्रिल वा वेल्डिङसम्बन्धी उद्योग वा वर्कशप सञ्चालन गर्न,
- कुखुरा, हाँस वा चौपाया (गाई, भैंसी, बड्गुर आदि) पालन उद्योग सञ्चालन गर्न,
- यस उपक्षेत्रमा अरूको घरलाई असर नपर्ने तथा वरिपरिका स्मारक, धाराको मुहान आदिलाई प्रतिकूल असर नपर्ने गरी बेसमेण्ट, सेमिबेसमेण्ट बनाउन स्वीकृति दिन सकिनेछ ।
- यस उपक्षेत्रको विशेषतामा प्रतिकूल असर नपर्ने किसिमका आवासीय र आवाससँग सम्बन्धित व्यापारिक, शिल्पकला, धार्मिक र सांस्कृतिक उपयोगहरूका लागि अनुमति दिन सकिनेछ ।

२.१.२ आवासीय क्षेत्र (Residential Zone)

आवासीय क्षेत्र भन्नाले आवासीय प्रयोजनको मिश्रण भएका भवनहरू रहेको क्षेत्रलाई जनाउँछ । यस क्षेत्रभित्र मूलतः निम्न भू-भागहरूलाई समेटिएको छ ।

क) हुलाक डाडा, काठेबडे, देउकोटा, कामी गाउ आदि.

ख) यस क्षेत्रमा निर्माण हुने भवनहरूको घडेरीको क्षेत्रफल, अधिकतम ग्राउण्ड कभरेज, अधिकतम एफएआर, अधिकतम बनाउन पाउने क्षेत्रफल र अधिकतम उचाइ तालिका नं. ४ बमोजिम हुनेछ ।

तालिका नं. ४					
क्र. सं.	भवनको प्रकार	अधिकतम ग्राउण्ड कभरेज (%)	अधिकतम FAR	अधिकतम तला	अधिकतम उचाइ
१	नयाँ आवासीय भवन	७०	१.५	३	३० फिट (९.१० मि)
२	पुनःनिर्माण हुने घरहरूको हकमा	७०	१.५	३	

ग) यस उपक्षेत्रमा निम्न कार्यहरूलाई निषेध गरिएको छ । तल उल्लेख भएका निषेधित कार्यहरू बाहेक यस उपक्षेत्रको सांस्कृतिक तथा ऐतिहासिक पक्षलाई जोगाइराख्न नगरपालिकाले यस उपक्षेत्रमा गर्न पाइने वा निषेध गरिएका भूउपयोग सम्बन्धी क्रियाकलापहरूलाई सुचना प्रकाशित गरी विभिन्न समयमा आवश्यकता अनुसार परिमार्जन गर्न सक्नेछ ।

- भवनको प्रयोग र प्रयोजन परिवर्तन,
- कुखुरा तथा चौपाया पालन गर्न,
- घर बनाउँदा डिस्कवाला काठ चिर्ने मेसिनबाहेक स-मिल तथा काठ चिर्ने मेसिन प्रयोग गर्न,
- वातावरणलाई दूषित पार्ने वा प्रतिकूल असर पार्ने क्रियाकलापहरू सञ्चालन गर्न,
- अत्यधिक ज्वलनशील पदार्थ, जस्तै : ग्यास, पेट्रोल र अन्य रासायनिक पदार्थ भण्डार गर्न ।

२.१.३ आवासीय विस्तार उपक्षेत्र (Residential Expansion Sub Zone)

आवासीय विस्तार उपक्षेत्र भन्नाले न्यूनतम भौतिक पूर्वाधार भएको, विद्यमान पूर्वाधार क्षेत्रबाट यातायात वा अन्य हिसाबले सामिप्य भएको, भौतिक तथा सामाजिक पूर्वाधारहरूको स्तरवृद्धि गर्नुपर्ने क्षेत्रलाई बुझनुपर्दछ (अनुसूची २) । यस उपक्षेत्रमा मुख्य आवासीय तथा बजार उपक्षेत्रमा उल्लेख गरिएभन्दा बाहेकका निम्न क्षेत्रहरू पर्दछन् :

क) डाँडे, सिस्ने, तुसार पानी आदि

ख) यस क्षेत्रमा निर्माण हुने भवनहरूको घडेरीको क्षेत्रफल, अधिकतम ग्राउण्ड कभरेज, अधिकतम एफएआर, अधिकतम बनाउन पाउने क्षेत्रफल र अधिकतम उचाइ तालिका नं. ५ बमोजिम हुनेछ ।

तालिका नं. ५					
क्र. सं.	भवनको प्रकार	जग्गाको क्षेत्रफल	अधिकतम ग्राउण्ड कभरेज (%)	अधिकतम FAR	अधिकतम उचाइ
१	आवासीय	४ आना व देखि माथि	७०	२.४०	उचाइ = (सडक चौडाइ X १.०) + २ सेटब्याकको योगफल*
२	साना (७५ देखि १०० प्रयोगकर्ताकोलागि) शैक्षिक भवनहरू (किण्डरगार्डन, प्राइमरी विद्यालय, डेकेयर सेण्टर आदि)	न्यूनतम १६ आना	४०	१.५	
३	संस्थागत भवन	न्यूनतम १६ आना	५०	२.०	उचाइ = (सडक चौडाइ X १.०) + २ सेटब्याकको योगफल*
४	तारे होटल	न्यूनतम ४८ आना	४०	३.०	
५	मझौला होटल, लज, डर्मिटरी तथा ब्यापारिक भवनहरू	न्यूनतम १६ आना	४०	२.०	
६	सिनेमा हल, थिएटर, सभागृह				

	फिक्सड सिटिङ्ग भएमा	न्यूनतम ४० आना	४०	२.०	
	फिक्सड सिटिङ्ग भएमा	न्यूनतम २४ आना			
७	मिश्रित उपयोगको भवन (पसल, कार्यालय आदि)	न्यूनतम ८ आना	६०	२.५	
८	क्लिनिक, पोलिक्लिनिक	न्यूनतम १६ आना	५०	२.५	
*सडक किनारको दायँ र बायाँ जोडिएका कित्ताहरूमा घर बनाउनु पर्दा छाड्नु पर्ने खुला क्षेत्र (setback) को कुल योगफल					

- ग) यस क्षेत्रको न्यूनतम घडेरी क्षेत्रफल ४ आनाभन्दा कमको कित्ताकाट गर्न पाइने छैन । तर, पुरानो कित्तामा कायम साबिकको घर भत्काई पुनःनिर्माण गर्नुपरेमा न्यूनतम क्षेत्रफल ४ आनाभएको जग्गामा १ मी. सेटब्याक छाडी साबिकको घर निर्माण गर्न दिइनेछ ।
- घ) माथि उपखण्ड १.४.२ उल्लेख गरिए अनुरूप यस क्षेत्रमा भवनको अधिकतम उचाइ प्लटको मोहडातर्फ भएको बाटोको चौडाइ र मोहडातर्फबाट छाड्नु पर्ने सेटब्याकको अनुपात अनुसार हुनेछ ।
- ङ) यस उपक्षेत्रमा बन्ने व्यापारिक तथा सार्वजनिक भवनहरूका लागि कम्तीमा पनि कुल क्षेत्रफलको २० प्रतिशत पार्किङ प्रयोजनका लागि छुट्याउनु पर्दछ ।
- च) यस उपक्षेत्रमा बन्ने आवासीय प्रयोजनबाहेक मिश्रित प्रयोजनका हिसाबले बनाइएका भवन तथा निर्माण (आवासीय तथा व्यापारिक अदि) हरूका हकमा कम्तीमा पनि कुल क्षेत्रफलको १५ प्रतिशत पार्किङ प्रयोजनका लागि छुट्याउनु पर्दछ ।
- छ) यस क्षेत्रमा निषेध गरिएका उपयोगहरू (क्रियाकलापहरू) अनुसूची १ मा दिइएको छ ।

२.१.४ योजनाबद्ध आवासीय उपक्षेत्र (Planned Residential Sub Zone)

योजनाबद्ध आवासीय उपक्षेत्र भन्नाले न्यूनतम भौतिक पूर्वाधार भएको, जग्गाको अनुकूल स्थलरूप, प्रकृति, विद्यमान भूखण्डीकरण तथा किनबेचको प्रवृत्ति र पूर्वाधारको स्तरबृद्धिको सम्भाव्यतालाई आधारमानी अड्कत गरिएको क्षेत्रलाई बुझ्नुपर्दछ । यस उपक्षेत्रभित्र निम्न क्षेत्रहरूलाई समेटिएको छ :


- क) घोप्ले डाडा, निमाडूल, गौरीपानी आदि
- ख) नगर क्षेत्रभित्र व्यवस्थित तथा योजनाबद्ध आवास विकास गरिँदा सम्बन्धित नगरपालिकाबाट आधारभूत सुविधाहरूको स्तर (जस्तै बाटो, ढल, खानेपानी, विजुलीको स्तर) तालिका नं. ६ बमोजिमको योजना मापदण्ड अनुसार खुलाएर योजना बनाई स्वीकृत गराउनु पर्नेछ ।

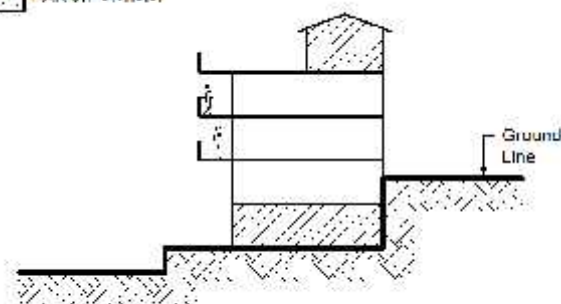
तालिका नं. ६ मा दिइएको योजना मापदण्ड योजनाबद्ध आवासीय उपक्षेत्रदेखि बाहेक अन्य जुनसुकै क्षेत्रमा निजी तथा सार्वजनिक क्षेत्रले भूखण्डीकरण गरी गरिने योजनाबद्ध आवास विकास गर्ने सन्दर्भमा लागू हुनेछ ।

तालिका नं. ६			
क्र. स.	पूर्वाधारको प्रकार	न्यूनतम नाप	कैफियत
१	योजनाबद्ध आवासीय क्षेत्र विकासको	• ३ रोपनी	

	लागि चाहिने जग्गाको न्यूनतम क्षेत्रफल		
२	मूल सडक जोड्ने बाटो	● १४ (आठ) मिटर न्यूनतम ^१ देखि ठाउँ तथा प्रस्तावित घनत्व हेरी अधिकतम २२ मिटरसम्म	
३	ब्लक ब्लकमा जाने बाटो	● १० (पाँच) मिटर न्यूनतम	
४	प्लट प्लटमा जाने बाटो	● * (चार) मिटर न्यूनतम	
५	टुङ्गिने बाटो (cul de sac) को अधिकतम लम्बाइ	● ४० मिटर	
६	विकसित घडेरीको न्यूनतम क्षेत्रफल	● ३ आना	
७	घडेरीको चौडाइ	● १० मिटर न्यूनतम	
८	घडेरीको गहिराइ (plot depth)	● ४ आनाभन्दा बढी ८ आनासम्म चौडाइको २ गुणा ● ८ आनाभन्दा बढी १२ आनासम्म चौडाइको २.५ गुणा ● १२ आना भन्दा बढि भएमा चौडाइको ३ गुणा	
९	खुला सार्वजनिक क्षेत्र (बाटोबाहेक)	● ३ रोपनीदेखि माथी जम्मा जग्गाको ५ प्रतिशत	
१०	सामुदायिक सुविधाहरूका लागि आवश्यक क्षेत्र	● ७५ रोपनीभन्दा माथि भएमा जम्मा जग्गाको थप ३.० प्रतिशत	

ग) पहाडी सिँढिदार जमिन ९तभचवअभम विलम० तथा सडकको दृश्य ९कतचभभतकअवउभ० लाई अक्षुण्ण राख्न भवनको अग्लो भाग (जस्तै भन्याङ्ग छोप्ने stair cover) सडकतर्फ र माथिल्लो कौसी सिँढिदार जमिन (terraced land)पट्टि फर्काएरमात्र बनाउन दिइनेछ (हेरौ चित्र: टेरेस लाइनमा बनिने घर) ।

 -FAR मा गणनिने



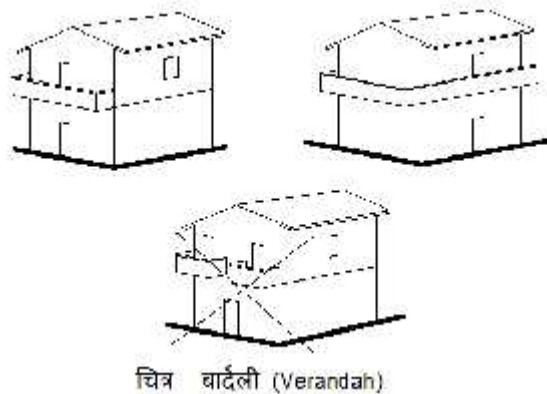
चित्र टेरेस (Terrace) लाइन मा बनिने घर

घ) योजनाबद्ध आवासीय उपक्षेत्रमा बन्ने भवनहरूले सडक अधिकार क्षेत्रपछि भवन बनाउँदा छाड्नु पर्ने खुला क्षेत्र (set back) १.५ मी. हुनेछ ।

ङ) यस क्षेत्रमा बन्ने आवासीय तथा व्यापारिक दुवै प्रकारका घरहरूका छाना असम्बन्धित (detached) घरहरू भए दुईपाखे छानो हाली बनाइएको हुनुपर्दछ र यसरी दुईपाखे छाना हाल्दा बुँडगल (attic) बनेमा सोको क्षेत्रफल FAR मा गणना गरिने छैन । सम्बन्धित (row) घरहरू भए एकपाखे छानो हाल्न सकिनेछ ।

^१पहाडी स्थलरूप तथा भिरालो भू-भाग, जहाँ एउटै सडक वाटमात्र प्रवेश तथा निस्कनु पर्ने अवस्थामा न्यूनतम ६ मी.

च) यस क्षेत्रमा बन्ने आवासीय तथा व्यापारिक दुवै प्रकारका घरहरूको चारै मुखाकृति (façade) हरूमा छज्जा निकाल्न पाइने छैन । निकाल्नुपरेको खण्डमा यसलाई यस क्षेत्रमा परम्परागत हिसाबले प्रचलित बार्दलीको रूपमा कुनै वा चारै मुखाकृतिको एक छेउबाट अर्को छेउसम्म अनवरतरूपमा निर्माण गरेको हुनुपर्दछ । यस्तो बार्दली कम्तीमा १.० मी. चौडाईको हुनुपर्दछ र यो खुला क्षेत्र एकभत दबअप०मा बनाउन पाइने छैन । (हेरौ चित्र: बार्दली)



छ) यस क्षेत्रमा निर्माण हुने भवनहरूको घडेरीको क्षेत्रफल, अधिकतम ग्राउण्ड कभरेज, अधिकतम एफएआर, अधिकतम बनाउन पाउने क्षेत्रफल र अधिकतम उचाइ तालिका नं. ७मा दिइएबमोजिम हुनेछ ।

तालिका नं. ७					
क्र. सं.	भवनको प्रकार	जग्गाको क्षेत्रफल	अधिकतम ग्राउण्ड कभरेज (%)	अधिकतम FAR	अधिकतम उचाइ
१	आवासीय	४ आनादेखि ८ आनासम्म ८ आनादेखि माथि	७० ६०	२.१ १.८	उचाइ = (सडक चौडाइ X १.७५) + २ सेटब्याकको योगफल*
२	साना (७५ देखि १०० प्रयोगकर्ताकोलागि) शैक्षिक भवनहरू (किण्डरगार्डन, प्राइमरी विद्यालय, डेकेयर सेण्टर आदि)	न्यूनतम १६ आना	४०	१.५	उचाइ = (सडक चौडाइ X १.५) + २ सेटब्याकको योगफल*
३	संस्थागत भवन	न्यूनतम १६ आना	५०	१.७५	
४	मिश्रित उपयोगको भवन (पसल, कार्यालय आदि)	न्यूनतम ८ आना	६०	२.५	
५	क्लिनिक, पोलिक्लिनिक,	न्यूनतम १६ आना	५०	२.५	
*सडक किनारको दायाँ र बायाँ जोडिएका कित्ताहरूमा घर बनाउनु पर्दा छाड्नु पर्ने खुला क्षेत्र (setback) को कुल योगफल					

ज) यस क्षेत्रमा निषेध गरिएका उपयोगहरू (क्रियाकलापहरू) अनुसूची १ मा दिइएको छ ।

२.१.५ व्यापारिक उपक्षेत्र (Commercial Subzone)

मुख्य आवासीय तथा बजार उपक्षेत्र, आवासीय विस्तार क्षेत्र र योजनाबद्ध आवासीय उपक्षेत्रभित्र पर्नेस विद्यमान सडक अधिकार क्षेत्र बढाउन सकिने, आवासीय क्षेत्रको आर्थिक क्रियाकलाप तथा व्यापारिक सुविधा पुऱ्याउने सम्भाव्यता भएका, अनुकूल भू-स्वरूप भएको र कम्तीमा १० मी. चौडाइ भएको विद्यमान तथा भविष्यमा खुल्ला

सक्ने सडकहरूसँग जोडिएका कित्ताहरूको हकमा फरक मापदण्ड लागूहुनेछ । यस उपक्षेत्र अन्तर्गत निम्न सडक खण्डहरूलाई समेटिएको छ ।

क) राकम, टुनि बगर, बाखेकोट .

ख) यस क्षेत्रमा निर्माण हुने भवनहरूको घडेरीको क्षेत्रफल, अधिकतम ग्राउण्ड कभरेज, अधिकतम एफएआर र अधिकतम बनाउन पाउने क्षेत्रफल तालिका नं. ८ मा दिइएबमोजिम हुनेछ ।

तालिका नं. ८					
क्र. सं.	भवनको प्रकार	जग्गाको क्षेत्रफल	अधिकतम ग्राउण्ड कभरेज (%)	अधिकतम FAR	अधिकतम उचाइ
१	आवासीय	४ आनादेखि ८ आनासम्म ८ आनादेखि माथि	७० ६०	३.० २.८	उचाइ = (सडक चौडाइ X १.७५) + २ सेटब्याकको योगफल*
२	साना (७५ देखि १०० प्रयोगकर्ताकोलागि) शैक्षिक भवनहरू (किण्डरगार्डन, प्राइमरी विद्यालय, डेकेयर सेण्टर आदि)	न्यूनतम १६ आना	४०	१.५	उचाइ = (सडक चौडाइ X १.५) + २ सेटब्याकको योगफल*
३	संस्थागत भवन	न्यूनतम १६ आना	५०	२.०	
४	तारे होटल	न्यूनतम ४८ आना	४०	३.०	
५	मझौला होटल, लज, डर्मिटरहरू तथा व्यापारिक भवनहरू	न्यूनतम १६ आना	४०	२.०	
६	सिनेमा हल, थिएटर, सभागृह फिक्स्ड सिटिङ्ग भएमा फिक्स्ड सिटिङ्ग भएमा	न्यूनतम ४० आना न्यूनतम २४ आना	४०	२.०	
७	मिश्रित उपयोगका भवन (पसल, कार्यालय आदि)	न्यूनतम ८ आना	६०	२.५	
*सडक किनारको दायाँ र बायाँ जोडिएका कित्ताहरूमा घर बनाउनु पर्दा छाड्नु पर्ने खुला क्षेत्र (set back) को कुल योगफल					

ग) यस उपक्षेत्रमा न्यूनतम घडेरी क्षेत्रफल १ रोपनीमा बन्ने व्यापारिक तथा सार्वजनिक भवनहरूका लागि चारैतिर सेटब्याक १.५ मिटर तथा १ रोपनीभन्दा बढी भएको खण्डमा चारैतिर सेटब्याक २.० मिटर हुनेछ र कम्तीमा पनि कुल क्षेत्रफलको १५ प्रतिशत पार्किङको प्रयोजनका लागि छुट्याइनु पर्दछ ।

घ) यस क्षेत्रको न्यूनतम घडेरी क्षेत्रफल ४ आनाभन्दा कमको कित्ताकाट गर्न पाइँने छैन तर पुरानो कित्तामा कायम साबिकको घर भत्काई पुनःनिर्माण गर्नुपरेमा न्यूनतम क्षेत्रफल ४ आनाभएको जग्गामा १.५ मिटर सेटब्याक छाडी साबिकको घर निर्माण गर्न दिइनेछ ।

ड) यस क्षेत्रमा निषेध गरिएका उपयोगहरू (क्रियाकलापहरू) अनुसूची १ मा दिइएको छ ।

२.१.६ संस्थागत क्षेत्र (Institutional Zone)

संस्थागत क्षेत्र भन्नाले विद्यमान संस्थागत भवनहरूको सघन तथा छिटपुट उपस्थिति, पूर्वाधारहरूसहितको संस्थागत संरचनाहरूको विस्तार गर्न जग्गाको उपलब्धता भएको भू-क्षेत्रलाई बुझनुपर्दछ । यस क्षेत्रभित्र निम्न भू-भागहरूलाई समेटिएको छ :

क) राकम, साततला, दुल्लु आदि

ख)यस क्षेत्रमा निर्माण हुने भवनहरूको घडेरीको क्षेत्रफल, अधिकतम ग्राउण्ड कभरेज, अधिकतम एफएआर, अधिकतम बनाउन पाउने क्षेत्रफल र अधिकतम उचाइ तालिका नं. ९ मा दिइएबमोजिम हुनेछ ।

तालिका नं. ९					
क्र. सं.	भवनको प्रकार	जग्गाको क्षेत्रफल	अधिकतम ग्राउण्ड कभरेज (%)	अधिकतम FAR	अधिकतम उचाइ
१	आवासीय भवनहरू	४ आनादेखि ८ आनासम्म ८ आनादेखि माथि	७० ६०	२.४५ २.१	उचाइ = (सडक चौडाइ X १.७५) + २ सेटब्याकको योगफल*
२	इन्जिनियरिङ्ग क्याम्पस तथा शैक्षिक संस्थानहरू	न्यूनतम घडेरी नेपाल इन्जिनियरिङ्ग काउन्सिलको मापदण्ड अनुकूल हुनेगरी	४०	२.०	उचाइ = (सडक चौडाइ X १.५) + २ सेटब्याकको योगफल*
३	अस्पताल तथा मेडिकल कलेजहरू	न्यूनतम घडेरी स्वास्थ्य मन्त्रालय तथा नेपाल मेडिकल काउन्सिलको मापदण्ड अनुकूल हुनेगरी	४०	२.०	
४	साधारण शैक्षिक भवन	न्यूनतम ३२ आना	४०	१.५	
५	संस्थागत भवन	न्यूनतम २४ आना	४०	२.०	
६	तारे होटल	न्यूनतम ३२ आना	४०	२.५	
७	मभौला होटल, लज, डर्मिटरी तथा व्यापारिक भवनहरू	न्यूनतम १६ आना	४०	२.५	
८	सिनेमा हल, थिएटर, सभागृह	न्यूनतम ४० आना	४०	१.५	

	फिक्स्ड सिटिङ्ग भएमा फिक्स्ड सिटिङ्ग भएमा	न्यूनतम २४ आना			
९	मिश्रित उपयोगको व्यापारिक भवन (पसल, कार्यालय आदि)	न्यूनतम ८ आना	६०	२.५	
१०	क्लिनिक, पोलिक्लिनिक,	न्यूनतम २० आना	५०	२.०	
*सडक किनारको दायाँ र बायाँ जोडिएका कित्ताहरूमा घर बनाउनु पर्दा छाड्नु पर्ने खुला क्षेत्र (set back) को कुल योगफल					

- ग) यस क्षेत्रको न्यूनतम घडेरी क्षेत्रफल ४ आनाभन्दा कमको कित्ताकाट गर्न पाइने छैन तर पुरानो कित्तामा कायम साबिकको घर भत्काई पुनःनिर्माण गर्नुपरेमा न्यूनतम क्षेत्रफल ४ आनाभएको जग्गामा १.५ मिटर सेटब्याक छाडी साबिकको घर निर्माण गर्न दिइनेछ ।
- घ) यस उपक्षेत्रमा बन्ने आवासीय तथा मिश्रित आवासीय प्रयोजनवाहेकका सबै प्रकारका ठूला सार्वजनिक भवनहरूको न्यूनतम चारैतिर सेटब्याक ३ मी. हुनेछ र कम्तीमा पनि कुल क्षेत्रफलको २० प्रतिशत पार्किङको प्रयोजनका लागि छुट्याइनु पर्दछ ।
- ङ) यस क्षेत्रमा निषेध गरिएका उपयोगहरू (क्रियाकलापहरू) अनुसूची १ मा दिइएको छ ।

२.२ औद्योगिक क्षेत्र (Industrial Zone)

औद्योगिक क्षेत्र भन्नाले विद्यमान औद्योगिक क्रियाकलापहरू भइरहेको हकमा उद्योगका लागि न्यूनतम भौतिक पूर्वाधार भएको तथा पूर्वाधारको स्तरवृद्धिको सम्भाव्यता भएको र वातावरणीय तथा प्रदूषण नियमन गर्नु पर्ने र व्यवस्थित औद्योगिक क्षेत्र ९क्षलमगकतचष्वत भक्तवतभ० निर्माणका लागि निर्दिष्ट गरिएको क्षेत्रलाई बुझ्नुपर्दछ । यस नगरपालिकामा व्यावसायिक कृषि तथा वन पैदावारमा आधारित मध्यमस्तरका घरेलु तथा कृषि उद्योगहरूलाई नियमन गर्ने मापदण्डहरू दिइएका छन् । यस क्षेत्रमा कुनै पनि व्यक्ति वा संस्थाले भवन निर्माण गर्न चाहेमा नगरपालिकाको स्वीकृतिबेगर निर्माण कार्य गर्न पाइने छैन । नगरपालिकाले योजना मापदण्डमा निषेधित क्रियाकलापहरूका लागि भवन निर्माण गर्न दिइने छैन तर मापदण्डमा स्वीकृत वा विशेष स्वीकृति लिएर सञ्चालन गर्न पाइने भवनको प्रयोगलाई भने नक्सापास गरी निर्माण स्वीकृति दिनेछ । यस क्षेत्रभित्र निम्न भू-क्षेत्रहरूलाई समेटिएको छ :

- क) राकम, दुल्लु
- ख) यस क्षेत्रमा आवासीय तथा अन्य निर्माणका लागि आवासीय विस्तार क्षेत्रकै मापदण्ड लागू हुनेछ । यस क्षेत्रमा निर्माण हुने औद्योगिक भवनहरूको हकमा भने घडेरीको क्षेत्रफल, अधिकतम ग्राउण्ड कभरेज, अधिकतम एफएआर, अधिकतम बनाउन पाउने क्षेत्रफल र अधिकतम उचाइ तालिका नं. १० बमोजिम हुनेछ ।
- ग) यस क्षेत्रमा बन्ने औद्योगिक भवन सडकबाट न्यूनतम १५ मिटरमा बनाइनु पर्नेछ । ठूला तथा वातावरणमा असर गर्न सक्ने औद्योगिक भवनको निर्माण स्वीकृति लिँदा वातावरणीय प्रभाव मूल्याङ्कन गराइएको हुनुपर्नेछ । पानी र हावा दूषित हुनेखालका उद्योगहरू सर्वसाधारण जनताको आवासदेखि ३०० मिटरभित्र राख्न दिइने छैन ।
- घ) यस क्षेत्रमा साना घरेलु तथा कृषि उद्योगका लागि व्यवस्थित औद्योगिक क्षेत्र (Industrial Estate) निर्माणका लागि न्यूनतम क्षेत्रफल १५ हजार वर्ग मिटर हुनुपर्नेछ, जसका लागि भिन्नै मापदण्ड लागू हुनेछ ।

तालिका नं. १०

क्र. सं.	भवनको प्रकार	जग्गाको क्षेत्रफल (रोपनी)	अधिकतम ग्राउण्ड कभरेज (%)	अधिकतम FAR	अधिकतम उचाइ (मीटर)
१	आवासीय भवनहरू	६ आनादेखि ९ आनासम्म ९ आनादेखि माथि	६० ६०	१.८ १.८	९
२	शैक्षिक संस्थानहरू (कृषिसम्बन्धी)	न्यूनतम घडेरी नेपाल इन्जिनियरिङ्ग काउन्सिलको मापदण्ड अनुकुल हुनेगरी	५०	२.५	९
३	हेल्थ पोष्ट, हेल्थ सेन्टरहरू	न्यूनतम घडेरी स्वास्थ्य मन्त्रालय मापदण्ड अनुकुल हुनेगरी	५०	२.०	९
४	संस्थागत भवनहरू (कृषिसम्बन्धी)	न्यूनतम ३२ आना	५०	१.७५	९

२.४ संरक्षण क्षेत्र (Preserved Zone)

संरक्षण क्षेत्र भन्नाले पर्यटकीय, विविध मनोरञ्जन तथा शहरको खुलाक्षेत्रका रूपमा विकास हुनसक्ने क्षेत्रलाई बुझनुपर्दछ। यस क्षेत्र अन्तर्गत निम्न ठाउँहरू पर्दछन् :

क) राकम, टुनि बगर, बाखेकोट

ख) खण्ड २.१ (क) मा उल्लेख भएको पुरानो आवासीय तथा बजार उपक्षेत्र अन्तर्गत पर्ने संरक्षित स्मारक क्षेत्र र परम्परागत आवासीय क्षेत्रबाहेकका अन्य स्मारकका क्षेत्र तथा स्मारकले चर्चेको क्षेत्र तथा कम्पाउण्डसँग जोडिएका कित्ताहरूमा ४ तला (१३.७० मिटर) उचाइसम्मको घर निर्माण गर्न सकिनेछ

ग) यस क्षेत्र तथा स्मारकहरूपट्टिको मोहडाहरू स्थानीय शैलीमा निर्माण गर्नुपर्नेछ।

घ) संरक्षण क्षेत्रभित्रका तोकिएका स्मारकका वरिपरि पर्ने कित्ताहरूमा घर, भवन निर्माण गर्दा स्मारकपट्टि कम्तीमा ३ मिटर छाडेर मात्र निर्माण गर्न पाइनेछ।

घ) यस क्षेत्रमा निषेध गरिएका उपयोगहरू (क्रियाकलापहरू) अनुसूची १ मा दिइएको छ। यसबाहेक उक्त क्षेत्रमा निम्न क्रियाकलापहरूसमेत निषेध गरिएको छ :

- यस क्षेत्रहरूमा लामो समयका लागि कुनै प्रकारको पर्चा, पोष्टर, व्यानर (जस्तै : सिनेमाका पोष्टर तथा व्यापारिक प्रचार प्रसारका सामानहरूका पोष्टर आदि) टाँस्न वा राख्न,
- ऐतिहासिक मठ मन्दिर, तलाउ आदिको खाली भाग (जस्तै : तलाउको ढिल) मा निर्माण गर्दा उक्त स्थलहरूको दृश्यावलोकन छेक्ने तथा वातावरणमा प्रतिकूल असर पर्ने हुँदा उक्त भागमा कुनै पनि प्रकारका निर्माणहरू (अस्थायीरूपमा समेत) गर्न,
- सार्वजनिकस्थलहरू तथा ताल-तलाउछेउको वातावरणमा असर पर्ने कुनै पनि प्रकारका भवन निर्माण गर्न।

२.५ FAR मा गणना नहुने भाग

निम्न लिखित भागहरूलाई FAR मा गणना गरिने छैन :

क) पाहाडी सिँहिदार जमिन भएको अवस्थामा सुविधा हेरी पार्किङ ग्यारेज सडक सिमानादेखि नै बनाउन पाइनेछ। स्टिल्ट तला (Stilt floor) मा पार्किङ प्रयोजनका लागि प्रयोग गरिएको क्षेत्रफललाई FAR मा गणना गरिने छैन।

- ख) पार्किङ प्रयोजन वा Storage का लागि प्रयोग हुने भूमिगत तला अर्धभूमिगत तलाहरू FAR मा गणना हुनेछैन । भुइँ तला पार्किङका लागि मात्र प्रयोग हुने भएमा र सोही अनुसार खुला रहेको अवस्थामा FAR मा गणना हुनेछैन ।
- ग) दुईपाखे छानाहाल्दा बुँडगल (attic) बनेमा सोको क्षेत्रफल ब्न्मा गणना गरिनेछैन ।
- घ) परम्परागत अथवा परिमार्जितरूपको नेपाली वास्तुकता भल्कने भवन निर्माण गर्दा साविकको FARमा ०.२५ थप सुविधा प्राप्त हुनेछ तर यो सुविधा प्राचीन स्मारक क्षेत्रमा लागू हुनेछैन ।
- ङ) आवासीय तथा व्यापारिकबाहेक अन्य प्रयोजनका लागि निर्माण गरिने बेसमेन्ट तथा सेमिबेसमेन्ट, सबैभन्दा माथिल्लो तलामा रहेको भन्याडको छोप्ने भाग (कुनै पनि कोठा नभएको अवस्थामा), लिफ्टको मेशिन रुम ।
- च) कम्पाउण्डवाल, ढोका, तला नउठाइएको पोर्च, खुला भन्याड, ग्याम्प, जमिनमुनिको पानीट्याङ्की, पौडी खेल्ने खुला पोखरी आदि । भवनको उचाइ प्लिनथ लेभलदेखि माथिल्लो तला (भन्याड) छोप्ने वा लिफ्ट (Lift) को मेशिन राख्ने कोठाबाहेकको छानासम्मको उचाइ गनिने छ ।
- छ) Void को साइज १.५ मी ट १.५ मी. भएमा Void ग्राउण्ड कभरेजमा गणना हुनेछैन । सोभन्दा सानो Void भएमा ग्राउण्ड कभरेजमा गणना हुनेछ ।
- ज) दुईतर्फ सडक भएको अवस्थामा भवन निर्माण गर्दा दुवैतर्फ सेटब्याक छाड्नु पर्ने अवस्थामा सहायक सडक (मुख्य मोहडा नपर्ने सडक) तर्फ छाड्नु पर्ने सेटब्याकको क्षेत्रफलबराबरको क्षेत्रफल एफएआरमा गणना नगरिना

२.६ विशेष प्रकारका भवन वा निर्माणहरू (Special Type Buildings/Constructions)

२.६.१ संयुक्त आवास (Apartments)

संयुक्त आवास निर्माणसम्बन्धी मापदण्ड देहायबमोजिम हुनेछ :

- क) संयुक्त आवासस्थलसँग जोडिने प्रवेशमार्गको न्यूनतम चौडाइ ४ वटा आवास एकाइ (Dwelling unit) सम्मका लागि ५ मिटर, १० आवास एकाइसम्मका लागि ६ मिटर, ५० आवास एकाइसम्मका लागि ८ मिटर हुनुपर्नेछ र योजनास्थलभित्र अन्य मार्गमा कल डे स्याक बाटोको लम्बाइ अधिकतम १०० मिटर हुनुपर्नेछ । कल डे स्याक सिधा बाटोमा मात्र राख्न पाइनेछ ।
- ख) गाडी घुमाउने स्थान ९९ मिटरको वर्गाकार वा वृत्ताकार क्षेत्र राख्नु पर्नेछ । दुई सडकको इन्टरसेक्सन कर्भको रेडियस न्यूनतम सडक चौडाइको आधा हुनुपर्दछ ।
- ग) सेटब्याकको सीमा भवनको उचाइको अनुपातमा वृद्धि हुनेछ । १७ मिटरसम्म उचाइ भएको भवनका लागि साविक ३ मिटरको सेटब्याक नै पर्याप्त हुने र सोभन्दा बढी उचाइमा भएको भवनको तीनतिरको खुला भागको चौडाइ कम्तीमा पनि भवनको उचाइको २० प्रतिशत (उचाइको पाँचौँ भाग) वा ६ मिटरमध्ये बढी भएको अङ्कलाई तालिका नं. १२ अनुसार कायम गरिने छ :

तालिका नं. १२					
क्र.सं.	भवनको अधिकतम उचाइ, मिटर	अगाडिको सेटब्याक मिटर	३ साइडको सेटब्याक, मिटर	प्रवेशमार्गको न्यूनतम सडक चौडाइ, मिटर	न्यूनतम आवास एकाइ
१	१७ मिटरसम्म	३	३	६ मिटर	२५
२	१८ देखि ३३ सम्म	६	६.०	८ मिटर	
३	३३ देखि ५५ सम्म	१०	१०	१० मिटर	

* न्यूनतमभन्दा कम आवास एकाइ बनाउन अनुमति दिनुपरेमा खण्ड ३.७ को उपखण्ड ३.७.१ (क) अनुसार भई जाने

- घ) अधिकतम फ्लोर एरिया अनुपात पुरानो शहरी क्षेत्रबाहेकको अन्य क्षेत्रमा ३ हुनुपर्नेछ । पुरानो शहरीक्षेत्रमा परम्परागत वास्तुकला कायम राख्नेगरी सम्बन्धित प्राधिकरण, समिति वा नगरपालिकाले तोकिएकाबमोजिम हुनेछ । अधिकतम ग्राउण्ड कभरेज ५० प्रतिशत हुनुपर्नेछ तर ४ रोपनीभन्दा कम क्षेत्रफको प्लटमा अधिकतम जमिन चर्चिन पाउने क्षेत्रफल ४० प्रतिशत कायम हुनेछ ।
- ङ) न्यूनतम खुला क्षेत्र अन्तर्गत भू-सतह खुला राख्नेको हकमा २० प्रतिशत र अन्य भागको हकमा ३० प्रतिशत हुनुपर्नेछ । भू-सतह खुला राख्ने क्षेत्रमा हरियाली बगैँचाको रूपमा प्रयोग गर्न सकिन्छ तर जमिनमुनि पानी जाने मार्ग ढाक्न पाइने छैन ।
- च) दुई ब्लकको बीचको न्यूनतम दुरी ६ मिटर हुनुपर्नेछ र सम्पूर्ण डिजाइन तथा अन्य सुविधाको व्यवस्था राष्ट्रिय भवन संहिता अनुरूप हुनुपर्नेछ ।
- छ) भुइँतला, बेसमेन्ट, सेमिबेसमेन्ट आवासीय प्रयोजनका लागि नभई स्टोर, व्यायामशाला, पार्किङ, तथा अन्य सुविधाहरू, जस्तै : लिफ्ट बेल, इलेक्ट्रिकल रुम, पानीट्याङ्की आदिको प्रयोजनका लागि भएमा त्यस्तो प्रयोजनका लागि उपयोग गरिएको भुइँतला, बेसमेन्ट, सेमिबेसमेन्ट तथा माथि निर्माण हुने लिफ्टको मेशिन कोठा, पानीट्याङ्की आदिले ओगटेको क्षेत्रफल FAR मा गणना गरिनेछैन ।
- ज) सेवा दिनु पर्ने एकाइको परिमाणका आधारमा ५० एकाइका लागि १०० व. मी., १०० एकाइका लागि १५० व. मी., १५० एकाइका लागि २०० व. मी. र २०० एकाइका लागि ३०० व. मी. न्यूनतम सामुदायिक क्षेत्रको व्यवस्था गर्नु पर्ने । यस्ता सामुदायिक क्षेत्रलाई कुल जमिन चर्चेको क्षेत्रफलमा गणना गर्ने तर भुइँ क्षेत्र अनुपातमा भने गणना गरिनेछैन ।

२.६.२ सामूहिक आवास (Group Housing)

सामूहिक आवाससम्बन्धी निर्माणकार्य सामान्यतया र अपेक्षितरूपमा धेरै तलाहरू भएका ब्लक नै हुनुपर्नेछ । यस्तो सामूहिक आवास चलनचल्तीका हिसाबले जमिनलाई प्लट र बाटोहरूको विभाजन गर्नेखालको हुनुहुँदैन । सामूहिक आवासका तलाहरू र उचाइसम्बन्धी सिमानालगायतका मापदण्डहरूका विषयमा विभिन्न क्षेत्र तथा उपक्षेत्रका लागि तोकिए अनुसार नै हुनेछ (तालिका नं. १३) ।

तालिका नं. १३							
क्र. सं.	जग्गाको क्षेत्रफल	न्यूनतम ग्राउण्ड कभरेज (%)	अधिकतम FAR	न्यूनतम प्रवेशमार्ग मिटर	न्यूनतम सेटब्याक (साइडको सेटब्याक भ्याल राख्ने भएमात्र लागू हुने)		
					अगाडि	पछाडि	साइडमा
१	३ रोपनी	४०	विभिन्ना क्षेत्र तथा उपक्षेत्रका लागि तोकिए अनुसार	८	१.० मी.	१.५ मी.	१.५ मी.

२.६.३ न्यून आयरविपन्न वर्गका लागि आवास (Housing for Low Income Group)

विपन्न वा न्यून आय वर्गको भन्नाले नगरको भू-उपयोग क्षेत्रीकरण (Landuse Zoning) अन्तर्गत छुट्याइएको न्यून क्रयशक्ति भएका तथा विपन्न वर्गले सुगम मूल्यमा आवास खरिद गर्न सकिने भौतिक पूर्वाधार भएको, वातावरणीय तथा कानुनी हिसाबले सुरक्षित समावेशी क्षेत्र (Inclusionary Zone) भन्ने सम्झनु पर्दछ । यस नगरपालिकाको

हकमा समावेशी क्षेत्र हाल नछुट्याइएको भए पनि न्यून आय तथा विपन्न वर्गका लागि सामूहिक तथा न्यून लागत आवास योजना लागू गर्नुपरेको खण्डमा तालिका नं. १४ अनुसारको मापदण्ड लागू हुनेछन् ।

तालिका नं. १४		
विवरण	विपन्न वर्गका लागि आवास विकास	पुनःस्थापनाका लागि अस्थायी प्रावधान
विकासको किसिम	सामूहिक आवास	सामूहिक आवास
प्लटको न्यूनतम आकार	४० व. मी.	४० व.मी.
अधिकतम तला संख्या	२ (दुई)	२ (दुई)
जमिन चर्चिने अधिकतम क्षेत्रफल	८० प्रतिशत	८० प्रतिशत
अधिकतम जनघनत्व	२७५ घरपरिवार प्रतिहेक्टर	

- क) विकसित घडेरीको १० प्रतिशत जग्गा खुला भाग रहनुपर्नेछ, जसको ६ भागको १ भाग सामुदायिक क्षेत्रका लागि छुट्याउनु पर्नेछ । यो क्षेत्रफलमा प्रवेशमार्ग तथा सडकको क्षेत्रफल गणना गरिने छैन ।
- ख) पङ्क्तिबद्ध भवनका हकमा प्रत्येक ८ घडेरीपछि आकाशतर्फ खुला रहने कम्तीमा ४ मिटर चौडा क्षेत्र पैदलमार्ग वा अग्निरेखाको रूपमा खुला छाड्नु पर्नेछ ।
- ग) प्रवेशमार्गको न्यूनतम चौडाइ स्थायी तथा अस्थायी पुनःस्थापनाका हकमा ३ मिटर हुनुपर्नेछ ।
- घ) अगाडि तथा पछाडिको न्यूनतम सेटब्याक १.५ मिटर हुनुपर्नेछ ।

२.६.४ पेट्रोलपम्प निर्माण (Petrol Pump Construction)

नगरपालिकाभित्र साधारण बिक्रेता, प्याकड बिक्रेता र मट्टिले वितरकले पेट्रोलियम पदार्थको बिक्रीवितरण गर्न पेट्रोलपम्प खोल्न चाहेमा सोसम्बन्धी मापदण्ड नेपाल आयल निगमले तोकेको मापदण्ड अनुसार हुनुपर्नेछ, जसका महत्वपूर्ण पाटाहरू तल दिए अनुसार हुनेछ ।

- क) नगरपालिकाभित्र प्रस्तावित बिक्रीस्थल राख्ने जग्गाको कुल क्षेत्रफल न्यूनतम १.५ (डेढ) रोपनी हुनुपर्नेछ ।
- ख) नगरपालिकाभित्र प्रस्तावित बिक्रीस्थल राख्ने जग्गाको सडकतर्फको मोहडा कम्तीमा पनि ३० मी. कुल हुनुपर्नेछ । हल्का गाडीको प्रयोजनका लागि राखिने बिक्रीस्थलको हकमा जग्गाको सडकतर्फको मोहडा कम्तीमा पनि १५ मी. कुल हुनसक्नेछ ।
- ग) माथि (क) र (ख) अन्तर्गत वर्गीकरणभित्र नपर्ने तर नगरपालिका भएर जाने कुनै पनि राष्ट्रिय राजमार्गमा प्रस्तावित बिक्रीस्थल राख्ने जग्गाको सडकतर्फको मोहडा न्यूनतम ४० मिटर भई कुल क्षेत्रफल न्यूनतम २.५ (अढाइ) रोपनी हुनुपर्नेछ ।
- घ) यदि प्रस्तावित बिक्रीस्थल मूलसडकमा नजोडिएको अवस्थामा यस्तो मूलसडकबाट बिक्रीस्थलसम्म पुग्ने प्रवेश मार्ग कम्तीमा ५.५ मिटर चौडाइको दोहोरो सवारी साधन चलनसक्ने हुनुपर्दछ ।
- ङ) साधारण बिक्रेताले प्रस्तावित बिक्रीस्थल निर्माण गर्दा सडकबाट छाड्नु पर्ने दुरी प्रवेश तथा निकासद्वारका लागि क्रमशः घटीमा पनि ६ मिटरको हुनुपर्नेछ ।

- च) पेट्रोलपम्प कुनै पनि सडक चोकमा निर्माण गर्न पाइने छैन र निर्माण आवश्यक भएमा यस्त चोकबाट कम्तीमा पनि १०० मिटर परमात्र निर्माण गर्न दिइनेछ ।
- छ) पेट्रोलपम्प र मूलसडकको बीचमा एउटा कम्तीमा १२ मी. लामो र २ मी. चौडाइ भएको मध्यवर्ती पट्टि (Buffer Strip) को निर्माण गर्नुपर्नेछ । यस्तो मध्यवर्ती पट्टि आफ्नै जग्गाको सिमानाभित्र बनाउनुपर्छ र यसको बाहिरी किनारा मूलसडकको तोकिएको अधिकार क्षेत्रको बाहिरी सिमानासम्म पाइनेछ । हल्का गाडीको प्रयोजनका लागि राखिने विक्रीस्थलका हकमा यस्तो मध्यवर्ती पट्टिको नाप कम्तीमा १० मी. लामो र ३ मी. चौडाइ भएको हुनुपर्दछ ।
- ज) पेट्रोलपम्पको कार्यालय, मोबिल भण्डारण तथा शौचालय आदि भवन वा निर्माणहरू पम्पदेखि न्यूनतम ४ मी.को दुरीमा बनाइनु पर्दछ ।

२.६.५ सिनेमा हल निर्माण (Cinema Hall Construction)

यो मापदण्ड विनियममा उल्लेख भएका सिनेमा हल भवन निर्माण सम्बन्धी मापदण्ड बाहेकका अन्य सिनेमा हलसम्बन्धी नियमनहरू (जस्तै चलचित्र निर्माण, प्रदर्शन तथा वितरण) चलचित्र नियमावली, २०४६ अनुसार हुनेछ ।

२.७ वास्तुशिल्पीय नियन्त्रण (Architectural Control)

वास्तुशिल्पीय नियन्त्रणको हकमा तल उल्लेख भए अनुसार मापदण्ड लागू हुनेछ । अन्य व्यवस्था Architectural Design Requirements, 206(Revised Version) अनुसार हुनेछ ।

२.७.१ प्लिन्थ (Plinth)

क) मुख्य भवन (पुरानो शहरी क्षेत्रमा बन्ने भवनहरूबाहेक) साइडमा पर्याप्तमात्रामा ढल निकासको सुविधा हुनेगरी जमिनको सतहभन्दा भवनको प्लिन्थको सतह कम्तीमा ४५ से. मी. हुनुपर्नेछ । भित्री चोक- कुनै पनि भित्री चोकहरू त्यस्तो चोकको नजिकैको बाटोको केन्द्रीय रेखाको सतहदेखि कम्तीमा १५ से. मी. माथि उठाइएको हुनुपर्दछ ।

२.७.२ आवासयोग्य कोठाहरू(Habitable rooms)

- क) उचाइ- प्रत्येक कोठाको उचाइ (भुइँको सतहदेखि सिलिडसम्म) २.३० मिटरभन्दा कम हुनुहुँदैन । भिरालो छाना भएको खण्डमा कोठाको उचाइ सालाखाला २.३ मिटरभन्दा कम हुनुहुँदैन । यो प्रावधान शैक्षिक र औद्योगिक भवनबाहेक सबै प्रकारका भवनहरूमा लागू हुनेछ ।
- ख) उचाइ- शैक्षिक भवनहरूका हकमा एक तलाको भुइँदेखि माथिल्लो तलाको भुइँको उचाइ कम्तीमा पनि २.७ मी. हुनुपर्नेछ । औद्योगिक भवनहरूको हकमा एक तलाको भुइँदेखि माथिल्लो तलाको भुइँको उचाइ ३.६ मी. हुनुपर्नेछ ।
- ग) उचाइसम्बन्धी छूटहरू- छानामा रहेको भ्याड छोप्ने भाग, पारापेट, ट्याङ्की र तिनीहरूलाई अड्याउने गाह्रो वा टेवा, भेन्टिलेशन, एयर कन्डिसन, लिफ्टको कोठा आदिसँग सम्बन्धित यन्त्र वा निर्माणकार्यहरूलाई भवन वा निर्माणको उचाइमा समावेश गरिने छैन ।
- घ) नाप- मानिसहरू बस्नका निमित्त प्रयोगमा आउने एउटामात्र कोठा भए न्यूनतम चौडाइ २.४ र कोठाको क्षेत्रफल ७.५ वर्ग मिटर हुनुपर्नेछ । यस्ता कोठाहरू दुई वा सोभन्दा धेरै भए एउटा कोठाको न्यूनतम क्षेत्रफल ७.५ वर्ग मिटर र अर्को कोठाको न्यूनतम क्षेत्रफल ७.० वर्ग मिटर हुनुपर्नेछ र चौडाइ कम्तीमा १.८ मिटर भए हुनेछ ।

२.७.३ भ्याड (Staircase)

भ्याडको न्यूनतम चौडाइ निम्न अनुसार हुनुपर्नेछ :

क) आवासीय भवन (घरहरू)	०.९ मी.
ख) आवासीय अपार्टमेण्टहरू	१.२ मी.
ग) होटल भवनहरू	१.२ मी.
ग) मानिसहरू जम्मा हुने (५०० जनासम्म अडिटोरियम, नाचघर आदि) भवन	१.५ मी.
५०० जनाभन्दा बढी क्षमताको भएको खण्डमा	२.५ मी.
घ) शैक्षिक भवनहरू	१.२ देखि १.५ मी.
ङ) संस्थागत भवनहरू	१.२ देखि १.५ मी.
च) अस्पताल	१.५ मी. देखि २.२ सम्म
छ) नोजिङ्गवाहेक खुड्किला ९त्वभवम० को चौडाइ- आवासीय भवनहरूका लागि खुड्किलाको चौडाइ २५ से. मी. र अन्य भवनहरूका लागि २८ से. मी. भन्दा कम हुनुहुँदैन ।	
ज) खुड्किलाको उचाइ ९च्छ्कभच०- आवासीय भवनहरूका लागि खुड्किलाको उचाइ १९ से. मी. र अन्य भवनहरूका लागि १५ से. मी. भन्दा बढी हुनुहुँदैन । भ्याडको प्रत्येक चढाइ (Flight) मा १५ वटासम्म मात्र खुड्किलाहरू राख्नु पर्नेछ ।	

२.७.४ ग्यारेज (Garage)

- क) उचाइ- यसको उचाइ २.१ मी. भन्दा कम हुनुहुँदैन ।
- ख) नाप- निजी ग्यारेजको हकमा साइज न्यूनतम २.५ मी. x ५ मी. हुनुपर्नेछ । सार्वजनिक ग्यारेजको साइज पार्किङ गर्ने वाहनहरूको संख्या आदिका आधारमा हुनुपर्नेछ ।

२.७.५ भूमिगत तला (Basement)

भूमिगत तलालाई आवासका निमित्त प्रयोग गर्न पाइनेछैन । भूमिगत तला आवश्यकता अनुसार दुई तलासम्म पनि निर्माण गर्न पाइनेछ । स्थानीय निर्माणसम्बन्धी व्यवस्थाहरू तथा जग्गा उपयोगसम्बन्धी व्यवस्थाहरूसँग मेलखानेगरी मात्र भूमिगत तला निर्माण गर्न सकिनेछ । विभिन्न क्षेत्र, उपक्षेत्र र बाटोहरूका लागि तोकिएको निर्माणरेखा र सेटब्याक छाडी बाँकी सम्पूर्ण जग्गामा बेसमेण्टको परिभाषाको उपयोगभित्र बनाउन पाउनेछ ।

२.७.६ मेजानिन फ्लोर (Mezzanine Floor)

- क) उचाइ- यसको उचाइ कम्तीमा २.१ मी. हुनुपर्नेछ ।
- ख) नाप- मेजानिन फ्लोरको नाप लिभिङ्ग रुम १ीष्वखलन चयफ० को रूपमा उपयोग गरिने भए ७.५ वर्ग मी. भन्दा कम हुनुहुँदैन । यस्तो मेजानिन फ्लोरको भुइँको भवनको प्लिनथको क्षेत्रफल १/२ भागभन्दा बढी हुनुहुँदैन ।

२.७.७ बुइँगल(Attic)

मानिस बस्नको निमित्त बुइँगललाई प्रयोग गरिने भएमा यसमा पर्याप्तमात्रामा भेन्टिलेशन र प्रकाशको व्यवस्था भएको हुनुपर्नेछ र यस्तो बुइँगलको उचाइ होचो भागमा १.२ मी. र धुरी वा माथिल्लो भागमा २.३ मी. भन्दा कम हुनुहुँदैन ।

२.७.८ भान्सा कोठा (Kitchen)

- क) उचाइ- भान्सा कोठाको उचाइ (भुइँदेखि सिलिडसम्म) २.२ मी. भन्दा कम हुनुहुँदैन ।
- ख) नाप- खाना खाने छुट्टै ठाउँ भएमा भान्सा कोठा न्यूनतम १.८ मी. चौडाइ र क्षेत्रफल ६.० वर्ग मी. भन्दा कम हुनुहुँदैन । स्टोरको निमित्त छुट्टै व्यवस्था गरिएमा भान्सा कोठाको क्षेत्रफल ४.५ वर्ग मी. सम्म गर्न सकिनेछ ।

खाना खानको निमित्तसमेत उपयोग गर्ने भान्सा कोठा भए न्यूनतम चौडाइ २.१ मी. र क्षेत्रफल ७.५ वर्ग मी. हुनुपर्नेछ ।

२.७.९ सिमाना पर्खाल(Boundary Wall)

- क) कुनै पनि निजी जग्गामा (सार्वजनिक चौर वा पर्ती जग्गासँग जोडिएको समेत) सिमाना घेर्दा ९इयगलमबचथ धर्बाँ घरको नक्सा पास गरेसरह साइट प्लान र सिमाना पर्खालको नक्सा तथा अन्य आवश्यक कागजातहरू पेश गरी स्वीकृति लिनुपर्नेछ ।
- ख) कुनै पनि सिमाना पर्खालको उचाइ अगाडिको सडकको केन्द्ररेखाको सतहबाट बढीमा २ मिटरसम्म स्वीकृत गर्न सकिनेछ ।
- ग) २ मिटरभन्दा बढी उचाइको कम्पाउण्ड पर्खाल आवश्यक पर्ने अवस्थामा सोको प्रकृति र प्रयोजन हेरी नगरपालिकाले बढी उचाइका लागि विशेष स्वीकृति प्रदान गर्न सक्नेछ ।
- घ) सडक अधिकार क्षेत्रको किनाराबाट कम्पाउण्ड पर्खाल लगाउन पाइने छ तर यस्तो पर्खालसँग कुनै पनि किसिमको स्थायी/अस्थायी निर्माण गर्न वा जोड्न पाइने छैन ।

२.८ सेवा सुविधाहरू (Services and Facilities)

२.८.१ बाथरुम र शौचालय (Bathroom and Toilet)

- क) उचाइ- बाथरुम वा शौचालयका निमित्त कोठाको उचाइ २ मी. भन्दा कम हुनुहुँदैन ।
- ख) साइज- बाथरुमका लागि कोठाको साइज १.३ मी.ह १.० मी. भन्दा कम हुनुहुँदैन । शौचालयको निमित्त चौडाइ न्यूनतम ०.९ मी. र न्यूनतम क्षेत्रफल १.१ वर्ग मिटर हुनुपर्नेछ । बाथरुम र शौचालय एउटैमा भए त्यस्तो कोठाको साइज २.२ मी ह १.२ मी. भन्दा कम हुनुहुँदैन ।
- ग) कम्तीमा पनि एउटा गाह्रोमा बाहिरी हावाका लागि खुलाभाग भएको हुनुपर्नेछ । बाथरुम वा शौचालयका भुईँहरू पानीको निकास वा ढल भएतिर भिरालो पारिएको हुनुपर्नेछ । कोठा वा वरण्डातिर त्यस्तो बाथरुम वा शौचालयको पानी जानेगरी भिरालो पार्नु हुँदैन । कुनै शाफ्ट वा खुलाभागतर्फ खुलेको भ्याल वा भेन्टिलेशन हुनुपर्नेछ र त्यस्तो भ्याल वा भेन्टिलेशनको क्षेत्रफल कम्तीमा ०.३ वर्ग मी. र चौडाइ कम्तीमा ०.३ मी. हुनुपर्नेछ ।

२.८.२ सतह ढल (Surface Drain)

- क) प्रस्तावित प्लटबाट नगरपालिका वा सम्बन्धित निकायले तोकिदिएको दुरीभित्रमा सतह ढल छ भने प्लटभित्र वर्षाका कारणले जम्मा हुने आकासे पानी, “आकासे पानी संकलन (Rainwater Harvesting)” गर्ने व्यवस्था नभएको खण्डमा सतह ढलमा जोड्नु पर्दछ । यस्तो जडान गर्दा नगरपालिका वा सम्बन्धित निकायले तोकेबमोजिम जडान गर्नुपर्दछ ।
- ख) आवासिय तथा रेस्टरण्ट भवनहरूको भान्साबाट निस्कने प्रयोग भएको फोहर पानी निकासलाई म्यानहोलमा विसर्जन गर्नु अघि ग्रीज ट्राप (Grease Trap) मा जोडिएको हुनु पर्दछ । सतह ढलमा कुनै पनि किसिमको ठोस फोहरमैला एवं विषालु पदार्थ पठाउन पाइने छैन ।

२.८.३ ढल निकास र नाला व्यवस्थापन (Drainage and Sewerage System)

- क) चर्पी नभएको भवन निर्माणका लागि स्वीकृति दिइनेछैन ।
- ख) प्लटबाट ३० मी. सम्मको दुरीमा ढल निकास (Sewer line) छ भने चर्पी/सेप्टिक ट्याङ्कीबाट निस्कने निकास पाइप यसमा जडान गर्नुपर्नेछ । यदि सो दुरीसम्ममा Sewer line छैन भने सेप्टिक ट्याङ्की र सोकपिटको वा अन्य कुनै उचित व्यवस्था गर्नु पर्नेछ । Swer line मा जडान गर्दा सम्बन्धित निकायले तोकेबमोजिम गर्नुपर्दछ ।

ग) सडक अधिकार क्षेत्रभित्र सेप्टिक ट्याङ्की र सोकपिट निर्माणगर्न पाइनेछैन । यस्तो निर्माणका लागि प्लट-सिमानाबाट १.५ मिटर छाड्नु पर्दछ ।

२.८.४ खानेपानी(Water Supply)

क) जमिनमुनि खानेपानीको ट्याङ्की बनाउँदा सडक अधिकार क्षेत्रभित्र बनाउन पाइनेछैन ।

ख) मीटरसहितको खानेपानीको पाइप जडान गर्दा सम्बन्धित निकायले तोकेबमोजिम गर्नुपर्दछ ।

ग) खानेपानीको बैकल्पिक व्यवस्था (ईनार, बेरिड तथा आकासे पानी संकलन) गर्नु परेको खण्डमा त्यसको व्यवस्था नगरपालिकाको स्वीकृति लिई गर्न पाइनेछ ।

घ) ईनार, बेरिड तथा आकासे पानी संकलन गर्न भवनको साईड तथा पछाडिको सेटब्याक प्रयोग गर्न पाइनेछ तर यी सेटब्याक क्षेत्रमा छानो भएको कुनैपनी संरचना भने बनाउन पाइने छैन ।

२.८.५ विद्युत नियमावली र छाड्नु पर्ने दुरी (Electric Regulation and Setbacks)

निर्माणका लागि प्रस्तावित भवन/प्लटबाट विद्युतको तार नजिकै भएको अवस्थामा निर्माण/तला थप गर्नुपर्दा, कुनै पनि विद्युत प्रसारण वा विद्युत वितरण लाइनका तारहरूबाट विद्युत नियमावली- २०५० अनुसार नेपाल विद्युत प्राधिकरणले तोकेको दुरी छाडेरमात्र निर्माण गर्न पाइनेछ । यस सम्बन्धमा सोही विद्युत नियमावली अनुसार निम्न नियमन मापदण्डहरू लागू हुनेछन् ।

क) कुनैपनि भवन वा अन्य निर्माण गर्दा २५०र४४० भोल्टेजदेखि ११ हजार विद्युत भोल्टसम्मको नाङ्गो तार भएको अवस्थामा उक्त तारको छेउ (सिमाना) बाट कम्तीमा १.२५ मी. छाडेरमात्र निर्माण गर्न पाइनेछ ।

ख) कुनै पनि भवन वा अन्य निर्माण गर्दा ११ हजार भन्दामाथि देखि ३३ हजार विद्युत भोल्टको तार भएको अवस्थामा उक्त तारको छेउ (सिमाना) बाट कम्तीमा २ मिटर छाडेरमात्र निर्माण गर्न पाइनेछ । ३३ हजार भोल्टभन्दा बढी भोल्टको लाइन लैजानु आवश्यक भएमा ३३ हजार भोल्टका लागि तोकिएको न्यूनतम दुरीमा प्रत्येक ३३ हजार भोल्टका लागि ०.३०५ मी. का हिसाबले अतिरिक्त दुरी थप गर्दै लैजानु पर्नेछ ।

ग) विद्युत भोल्टेजको स्तर २५० र ४४० भोल्टेजदेखि ११ हजार विद्युत भोल्टसम्मको अवस्थामा तारदेखि भुइँसम्मको हुनु पर्ने न्यूनतम दुरी सडक वारपार गर्दा ५.८ मी., सडकको छेउ हुँदा ५.५ मी. र अन्य स्थानमा ४.६ मी. हुनुपर्नेछ ।

घ) विद्युत भोल्टेजको स्तर ११ हजार भन्दामाथि देखि ३३ हजार विद्युत भोल्टसम्म हुने अवस्थामा तारदेखि भुइँसम्म हुनुपर्ने न्यूनतम दुरी क्रमशः सडक वारपार गर्दा ६.१ मी., सडकको छेउ हुँदा ५.८ मी. र अन्य स्थानमा ५.२ मी. हुनुपर्नेछ । ३३ हजार भोल्टभन्दा बढी भोल्टको लाइन लैजानु आवश्यक भएमा ३३ हजार भोल्टका लागि तोकिएको न्यूनतम दुरीमा प्रत्येक ३३ हजार भोल्टका लागि ०.३०५ मी.को हिसाबले अतिरिक्त दुरी थप गर्दै लैजानु पर्नेछ ।

ङ) घरमाथिबाट कुनै किसिमको विद्युत लाइन लैजान पाइने छैन । तर, ग्यारेज, टहरा वा पर्खालमाथिबाट विद्युत लाइन लैजानु परेमा ४००(२३० भोल्टसम्मको लाइन लैजान सकिनेछ । यसरी लगाएको विद्युत लाइन ग्यारेज, टहरा वा पर्खालको सबैभन्दा अग्लो ठाउँबाट कम्तीमा ३ मिटरको दुरीमा पर्नेगरी लैजान पाइनेछ ।

च) घनाबस्ती भएको ठाउँमा ११ हजार भोल्टभन्दा बढी क्षमताको विद्युत लाइन सडकको वारपार गर्नुपर्दा दोहोरो रोधन (Double Insulation) प्रणालीको प्रयोग गर्नुपर्नेछ ।

छ) श्री फेज लाईन जोडदा तथा ट्रान्सफर्मर राख्दा पनि यहि नियमावलीमा उल्लेख भए अनुसार गर्नु पर्दछ ।

२.८.६ फोहरमैला (Solid Waste)

आफ्नो घरबाट निस्कने फोहरमैलाको व्यवस्थापन आफैले गर्नुपर्दछ । सम्बन्धित निकायले तोकिएको स्थानमा मात्र फोहरमैला फाल्नु पर्दछ । निर्माण सामाग्रीहरू सार्वजनिक बाटो, पेटी, चोक, गल्ली आदिमा राख्न पाइने छैन ।

२.८.७ अतिरिक्त प्रावधानहरू (Extra Provision)

- क) भवनको छानामा पर्ने वर्षातको पानी पाइपद्वारा जमिनको सतहसम्म ल्याउनु पर्नेछ ।
- ख) सार्वजनिक चोक वा सडक अधिकार क्षेत्रभित्र पर्नेगरी क्यान्टिलेभर, बालकोनी र घर अगाडिको भ्याड आदि बनाउन पाइने छैन ।
- ग) कायम रहेको ढल वा पानीको निकासालाई कुनै पनि किसिमको निर्माणकार्य गर्दा बन्द गर्न पाइनेछैन ।
- घ) भवन निर्माण कार्य सम्पन्न भएको भवन निर्माण सम्पन्न प्रमाणपत्र अनिवार्यरूपमा लिनुपर्नेछ ।
- ङ) यस मापदण्डले नसमेटेका प्रसङ्ग र बुँदाहरूमा व्याख्या र निर्णय दिनुपर्दा प्राविधिक सम्मिलित मापदण्ड कार्यान्वयन बोर्डको सिफारिसमा निर्णय गरिनेछ ।

२.८.८ अग्नि सुरक्षासम्बन्धी प्रावधानहरू (Fire Safety Provisions)

अग्नि सुरक्षासम्बन्धी प्रावधानहरू तथा व्यवस्थाहरू **राष्ट्रिय भवन संहिताको अनुसूची ५** मा उल्लेख गरिए अनुसार हुनेछ, जसका महत्वपूर्ण मापदण्डहरू तल दिइएका छन् ।

यसमा बहुतले भवनहरू (अग्ला भवनहरू), १५ मी. वा सोभन्दा बढी उचाइ भएका भवनहरू र तल दिइएका जस्ता ठूलो समूह जम्मा हुने स्थानहरूलाई आगलागीबाट बचाउन केही प्रावधान समावेश गरिएको छ ।

- क) सभा भवन, संस्थागत भवन र शैक्षिक भवन (दुई तलाभन्दा बढी र १००० व. मी. भन्दा बढी निर्मित क्षेत्र भएको)
- ख) व्यावसायिक उपयोग (प्लटको क्षेत्रफल ५०० व. मी. भन्दा बढी भएको)
- ग) व्यापारिक (कुल ढाकेको क्षेत्रफल ७५० व. मी. भन्दा बढी भएको)
- घ) होटल तथा अस्पताल र नर्सिङ होमहरू
- ङ) जमिनमुनिका भवनहरू
- च) औद्योगिक भण्डारण
- छ) बैठक/पार्टी प्यालेस/हलहरू
- ज) खतरापूर्ण उपयोगहरू

भवन निर्माण गर्ने प्रत्येक व्यक्तिले कुनै पनि बेला पहुँचको माध्यमका रूपमा छुट्टयाइएको क्षेत्रमा अतिक्रमण हुनेगरी कुनै भवन निर्माण गर्न/गराउन वा पुनःनिर्माण गर्न पाइने छैन । संयुक्त आवास/बहुतले (५ तलाभन्दा अग्ला) भवनहरूका लागि तल दिइएका प्रावधानहरू र पहुँचको माध्यम लागू हुनेछ ।

- (क) भवनतिर फर्केको मुख्य सडकको चौडाइ १२ मी. भन्दा कम हुनेछैन । पहुँचमार्गमा कुनै घुमाउरो (bends/curves) भएमा दमकलहरू फर्कनसक्ने गरी पर्याप्त चौडाइ हुनुपर्नेछ । (Turning circle) ९ मी. रेडियसभन्दा कमको हुनेछैन ।
- (ख) दमकलको बोझ लिनसक्नेगरी पहुँच तथा खुलाक्षेत्रहरूको जमिन कडा सतहको हुनुपर्नेछ । उपयुक्त खुला क्षेत्र कुनै अड्चन नभएको हुनुका साथै गाडी चलाउन सक्ने हुनुपर्नेछ ।

- (ग) दमकलको सहज पहुँच हुनेगरी भवन क्षेत्रको मुख्य प्रवेशद्वारा पर्याप्त चौडाइको हुनुपर्नेछ । चौडाइ कुनै हालतमा पनि ६ मी. भन्दा कमको हुनेछैन । प्रवेशद्वारा प्लटभित्रको बाहिरी पहुँचमार्ग दमकलहरू आउन जमिनमा बाधा नहुने गरी भवनक्षेत्रको कम्पाउण्डभित्रै फर्काएर राख्नमिल्ने हुनुपर्नेछ । मुख्य प्रवेश द्वारामा archway राखिएको भए सोको उचाइ ६ मी. भन्दा कम हुनेछैन ।
- (घ) एउटै योजना क्षेत्रमा निर्माण हुने बहुतले समूह आवास आयोजना (Group Apartment Housing Scheme) हरूका लागि पहुँचमार्ग २० मी. वा स्थानीय एरियाप्लान/विकास योजनामा व्यवस्था भए अनुसार हुनेछ । छुट्टाछुट्टै भवनहरूबीचको ठाउँ घटीमा ६ मी. चौडाइको हुनेछ ।

२.८.९ भवनवरिपरिको बाहिरी खुलाक्षेत्र (Open Spaces Around Building)

- (क) तोकिएका भवनहरूको सेटब्याकहरू लोकल एरिया प्लान, भू-उपयोग योजना, ले-आउट योजना, अधिल्ला परिच्छेदमा व्यवस्था भए अनुसार हुनेछ ।
- (ख) संयुक्त आवास/बहुतले अग्ला भवनका लागि तालिकामा लेखिए अनुसार खुला क्षेत्र राख्दा उपयुक्त हुन्छ ।

तालिका नं. १४ भवनवरिपरिको बाहिरी खुलाक्षेत्रहरूसम्बन्धी प्रावधानहरू		
सिं.नं.	अधिकतम भवनको उचाइ (मी.)	भवनको चारैतर्फ खुला छाड्नु पर्ने बाहिरी खुलाक्षेत्र मिटरमा (प्लट अगाडि र पछाडि दुवैतर्फ)
१.	१७ मिटरसम्म	तोकिएको सेटब्याक अनुसार
२.	१८-३३	६ मिटर
३.	३३-५५	१० मिटर
४.	५५ भन्दा बढी	१५ मिटर

२.८.१० निकाससम्बन्धी आवश्यकताहरू (Exit Needs)

निम्नलिखित सामान्य आवश्यकताहरू कुनै पनि निकासका लागि लागू हुनेछ :

- (क) आगलागी वा अन्य आकस्मिक अवस्था आइपरेमा भवनभित्रका व्यक्तिहरूलाई सुरक्षितरूपमा बाहिर ल्याउन मिल्नेगरी प्रत्येक भवनमानिकासको व्यवस्था गरिएको हुनुपर्दछ ।
- (ख) प्रत्येक भवनमा निकासको व्यवस्था यस मापदण्ड अनुसार गर्नुपर्नेछ ।
- (ग) सबै निकासहरू बाधा-अड्चनबाट मुक्त हुनुपर्दछ ।
- (घ) न्यूनतम आवश्यकताभन्दा कम हुनेगरी निकासहरूको संख्या चौडाइ आदिमा कमी आउनेगरी कुनै पनि भवनमा परिवर्तन गर्न पाइनेछैन ।
- (ङ) निकासहरू राम्ररी प्रष्ट देखिने हुनुपर्दछ र त्यहाँसम्म पुग्ने मार्गहरू उपयुक्त चिन्हहरू राखी प्रष्टरूपमा देखाइएको हुनुपर्नेछ ।
- (च) सबै निकास पुग्ने बाटाहरू राम्ररी उज्यालो पारिएको हुनुपर्नेछ ।

- (छ) आगलागी प्रतिरोधक औजारहरू निकाससँगै राखिएको भए प्रष्टरूपमा देखिनेगरी राख्नुपर्नेछ र तिनले निकासमार्गमा अवरोध पुऱ्याउन दिनुहुँदैन । निकासमार्गको दुवैतर्फबाट यिनको अवस्थिति प्रष्टरूपले देखिने हुनुपर्दछ ।
- (ज) आवश्यकता अनुसार तत्काल भवनभित्र बस्नेहरूलाई भवन खाली गराउन Alarm संयन्त्रहरू जडान गर्नुपर्नेछ ।
- (झ) घर कम्पाउण्डबाहिर वा सडकसम्म पुग्न निर्वाधरूपमा निकास हुनुपर्नेछ ।

२.८.११ निकासका प्रकारहरू (Exit Types)

- (क) निकासहरू तेर्सो वा ठाडो प्रकारका हुनेछन् । निकास भित्री भन्ड्याड, बाहिरी भन्ड्याड, च्याम्प बरण्डा वा टेरेस पुग्नसक्ने ढोकाको बाटो, करिडर आदि हुनसक्छ । सडक वा भवनको छानासम्म पहुँच भएको निकासमा त्यहीसरहको अर्को जोडिएको भवनसम्म पुग्ने तेर्सो निकास पनि समावेश हुनसक्छ ।
- (ख) लिफ्ट, भ्कअबवितयच र घुम्ने ढोकाहरूलाई निकास मान्नसकिने छैन ।

नोट : आपत्कालीन निकाससम्बन्धी अन्य व्यवस्थाहरू **राष्ट्रिय भवन संहिताको अनुसूची** ..मा उल्लेख गरिए अनुसार हुनेछ ।

२.८.१२ जमिनमुनिको तला (Basement)

भू-उपयोग योजना/जोनिङ्ग योजना अन्तर्गत तोकिएका भू-उपयोग तथा अन्य प्रावधानहरू अनुसार नगर विकास समिति/प्राधिकरण/नगरपालिकाले बेसमेन्ट निर्माणका लागि अनुमति दिनसक्नेछ । बेसमेन्टका लागि निम्न आवश्यकताहरू हुनेछन् :

- (क) प्रत्येक बेसमेन्ट सबै भागमा भुइँदेखि सिलिङ्गसम्म २.५ मी. भन्दा कम उचाइको वा ४.५ मी. भन्दा बढी उचाइको हुनेछैन ।
- (ख) बेसमेन्टमा पर्याप्त भेन्टिलेसनको व्यवस्था बेसमेन्टगरिनेछ । भवन मापदण्ड अनुसार खास उपयोगका लागि आवश्यक पर्ने मापदण्ड बेसमेन्टका लागि पनि लागू हुनेछ । कुनै कमी भएमा blower, exhaust पंखा (५० वर्ग मी. का लागि एउटाका दरले), एयर कण्डिसनिङ्ग सिस्टम आदिबाट सो कमी पूर्ति गर्न सकिनेछ ।
- (ग) सतह ढल बेसमेन्टभित्र नछिरोस् भन्नाका लागि आवश्यक व्यवस्थाहरू गरिनेछ । यस प्रयोजनका लागि पानी बाहिर फ्याँक्ने पम्प (Dewatering Pump) को व्यवस्था गरिने छ ।
- (घ) बेसमेन्टका गारोहरू र भुइँ पानी नपस्ने हुनुपर्दछ । यिनको डिजाइनमा वरिपरिको माटो तथा moisture को असरलाई समावेश गरिएको हुन्छ र पर्याप्त damp proofing को व्यवस्था गरिएको हुन्छ ।
- (ङ) बेसमेन्टसम्मको पहुँच भवनमा पहुँच दिने वैकल्पिक भन्ड्याडबाट हुनेछ । सडकबाट सोभै प्रवेशको अनुमति दिइने छैन । बेसमेन्टको भन्ड्याड २ घन्टाभन्दा कम नहुने अग्नि प्रतिरोधक क्षमता भएको निर्माण प्रविधि प्रयोगगरी निर्माण गरिनेछ ।
- (च) बेसमेन्टको पार्टिसनलाई अनुमति दिइएको भए कुनै पनि भाग ५० व. मी. भन्दा कमको हुनेछैन र प्रत्येक भागमा ventilation सम्बन्धी मापदण्ड पालना भएको हुनुपर्नेछ । साथै अग्नि प्रतिरोधकका नर्म्सहरू पनि लागू हुनेछन् ।

२.८.१३ सर्भिस डक्ट रिफ्यूज सुट (Service Ducts/Refuge Chute)

(क) Service duct हरू २ घण्टा अग्नि प्रतिरोधक क्षमता भएको गारो तथा ढोकाले घेरिएको हुनुपर्दछ । यदि duct हरू १० व. मी. भन्दा ठूला छन् भने भुइँले तिनलाई seal गर्नुपर्नेछ तर पाइपहरू छिराउन उपयुक्त opening हरू राखिएको हुनुपर्नेछ । खाली ठाउँहरू सबै सिल हुनुपर्दछ ।

(ख) च्भागनभ अजगतभ २ घण्टाभन्दा बढी अग्नि प्रतिरोधक क्षमता भएको आगोले नखाने सामग्रीबाट बनेको हुनुपर्नेछ । Chute हरू निकासबाट सकेसम्म टाढा राखिनु पर्दछ ।

(ग) सर्भिस डक्ट तथा रिफ्यूज सुटहरूलाई भन्याडको गारो र एयरकन्डिसनिङ आदिमा राखिने छैन ।

२.८.१४ अग्नि प्रतिरोधक यन्त्र जडानसम्बन्धी (Fire Resistant Equipment Installation)

यस नगरपालिका अधिकृतले उल्लिखित जडानहरू आवश्यक ठाउँमा उपयोग अनुसारको उपयुक्त स्पेसिफिकेसन अनुसार अग्नि प्रतिरोधक यन्त्र जडानहरू राखिने छ । यस्ता यन्त्र Fixed CO2/Foam/Water Spray Extinguishing System आदि जस्ता व्यवस्था भएको हुनेछन् ।

२.८.१५ अग्नि सूचक यन्त्र (Fire Alarm system)

आवासीय भवनहरूका साथै १५ मी. वा सोभन्दा बढी उचाइ भएका सबै भवनहरूमा ञ्चभ बबिच कथकतभ ९०० जडान गरिएको हुनुपर्दछ ।

(क) आवास एकाइहरू वा प्लान्टहरू भएको बोर्डिङ्ग छात्रावास जस्ता सबै आवासीय भवनहरूमा प्रत्येक तलामा एक वा बढी call box हरू राखी हातबाट बल्ने विद्युतीय FAS जडान भएको हुनेछ । २२.५ मी. भन्दा बढी हिड्नु नपर्नेगरी आ-आफ्ना तला अनुसार call box राख्ने ठाउँ यकिन गरिनेछ ।

(ख) Call box हरू कुनै चल्ने भाग भएको break glass type बाट बनाइएको हुनेछ । Call box सञ्चालन गर्ने व्यक्तिले केही नगरी कुनै नियन्त्रण कक्षबाट स्वतः अर्बार्नी प्रसारण गर्न सक्नेछ ।

(ग) कुनै पनि call box क्रियाशील हुँदा तलामा रहेका सबैले सुनून् भन्नका लागि एक वा बढी साउन्डरहरूबाट आवाज आउनेगरी कल बक्सहरू मिलाइएको हुनेछ ।

(घ) बहिर्गमनका बाटाहरूमा बाधा नहुने गरिनुका साथै दुवै दिशाबाट तिनीहरू राखिएको ठाउँ देखिनेगरी call box हरू जडान गरिएको हुनेछ । Call boxको base भुइँ सतहबाट १.५ मी. उचाइको हुनेछ ।

(ङ) माथि लेखिएका बाहेक सबै भवनहरूमा हातले सञ्चालन हुने विद्युतीय ञ्च का साथै स्वचालित ञ्च पनि जडान गरिएको हुनेछ ।

पुनश्च : बजारमा धेरै प्रकारका fire detector उपलब्ध छन् । प्रत्येकको उपयोग सिमित छ । त्यसकारण खतराको प्रकार तथा भवनको स्ट्रक्चर हेरी उपयुक्त डिटेक्टरको छनोट गर्नुपर्ने हुनेछ ।

२.८.१६ नियन्त्रण कक्ष (Control Room)

विभिन्न तलाहरूबाट सन्देशहरू पाउन भवनको प्रवेश तलामा सबै तलाहरू र सबै सुविधाहरूको सञ्चार व्यवस्था भएको नियन्त्रण कक्ष राखिने छ । यस कक्षमा fire fighting औजारहरू र तिनका जडानहरूबारे विस्तृत जानकारीका साथै फ्लोर प्लानहरूको विस्तृत विवरणहरू राखिएको हुन्छ । सबै तलाहरूमा fire detection र अलार्म सिस्टमसँग जोडिएका सूचना बोर्डहरूमाफर्त कुनै पनि तलामा भएको आगलागीको जानकारी थाहा पाउने सुविधा पनि नियन्त्रण कक्षमै राखिनेछ । नियन्त्रण कक्षमा कार्यरत कर्मचारी सबै प्रकारका सेवाहरू, fire fighting औजारहरू तथा जडानहरूप्रति जवाफदेही रहनेछन् । तालिम प्राप्त fire fighting कर्मचारीहरूबाट नियन्त्रण कक्ष २४ सै घण्टा सञ्चालन गरिएको हुन्छ ।

२.८.१७ भवन निर्माणमा प्रयोग हुने सामग्री (Building Materials)

- (क) पार्टिसन, गारो प्यानल, फल्स सिलिङ्ग आदिका लागि प्रज्वलनशील सामग्रीहरू प्रयोग गरिने छैन । आगो लागेमा तयहृष ग्याँस/धुँवा निकाल्ने कुनै पनि सामग्री पार्टिसन, गारो प्यानल, फल्स सिलिङ्गका लागि प्रयोग गरिने छैन । सम्पूर्ण फल्स सिलिङ्गमा फ्रेमवर्क धातुको हुनेछ र यसका लागि काठको प्रयोग गरिने छैन ।
- (ख) स्ट्रक्चरको निर्माण तत्वहरू राष्ट्रिय भवन संहिता अनुसारको हुनेछ ।

२.८.१८ विज्ञापन बोर्डसम्बन्धी (Hoarding Boards)

विज्ञापनसम्बन्धी वा अन्य कुनै पनि होर्डिङ्गबोर्डहरू राख्नु पर्दा नगरपालिकाको स्वीकृति लिएरमात्र राख्न पाइनेछ ।

२.८.१९ दण्ड सजाय(Penalty)

यस मापदण्डमा उल्लेख भएका प्रबधानको उल्लङ्घन भएमा स्थानीय स्वायत्त शासन ऐन- २०५५ र २०५६ को नियमावली तथा अन्य प्रचलित कानूनबमोजिम आवश्यक कारवाही गर्न सकिनेछ ।

सडक अधिकार क्षेत्रसम्बन्धी मापदण्ड (Bylaws for Right of Way)

३.१ सडक अधिकार क्षेत्र (Road Right of Way)

सडकहरूलाई सडक विभाग र शहरी विकास तथा भवन निर्माण विभागले निर्धारण गरे अनुरूप निम्नानुसार वर्गीकरण गरिनेछ ।

- क) राजमार्ग (Highway)
- ख) शाखा सडक (Arterial road)
- ग) प्रशाखा सडक (Connector road)
- घ) सहायक सडक (Feeder road)
- ङ) प्रवेशमार्ग (Access road)

३.२ नगरस्तरीय सडक अधिकार क्षेत्र (Urban Road Right of Way)

- क) नगरस्तरीय सडक : क श्रेणी (Class A) - १४ मिटरभन्दा माथिका सडक अधिकार क्षेत्र
- ख) नगरस्तरीय सडक : ख श्रेणी (Class B)- १० मिटर सडक अधिकार क्षेत्र
- ग) नगरस्तरीय सडक : ग श्रेणी (Class C)- ८ मिटर सडक अधिकार क्षेत्र
- घ) नगरस्तरीय सडक : घ श्रेणी (Class D)- ६ मिटर देखि ८ मिटरसम्म सडक अधिकार क्षेत्र

नयाँशहर मा रहेका सडकहरू मध्ये मुख्य सडकहरूका सडक अधिकार क्षेत्र र सेट व्याकहरू तल उल्लेखित तालिकामा दिएबमोजिम रहनेछ ।

क) नगरस्तरीय सडक : क श्रेणी (Class A)- २२ मिटर सडक अधिकार क्षेत्र

सिं.नं.	च्यबम ऋयमभ९सडक कोड)	विवरण	हालको चौडाइ (मी.)	प्रस्तावित सडक अधिकार क्षेत्र	केन्द्र रेखाबाट छोडने दुरी		सेट व्याक		कैफियत
				मापदण्ड (मी.)	दायाँ	बायाँ	दायाँ	बायाँ	
1	A01	Ring Road	० देखि १२	14	७ मी.	७ मी.	१.५ मी.	१.५ मी.	

ख) नगरस्तरीय सडक : ख श्रेणी (Class B)- १४ मिटर सडक अधिकार क्षेत्र

सिं.नं.	च्यबम ऋयमभ	विवरण	हालको चौडाइ	प्रस्तावित सडक अधिकार क्षेत्र	केन्द्र रेखाबाट छोडने दुरी		सेट व्याक		कैफियत
				मापदण्ड	दायाँ	बायाँ	दायाँ	बायाँ	
1	B01	Nimayal- Sigaudi	८ मी.	१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
2	B02	Basundhara Road	८ मी.	१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
3	B03	Belatadi -Khada	८ मी.	१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
4	B04	Belatadi – Pipalbot	८ मी.	१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
5	B05	Budha – Agra	८ मी.	१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
6	B06	Hospital- Kundada-Nainabadu	१० मी.	१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	

सिं.नं.	च्यबम ऋयमभ	विवरण	हालको चौडाइ	प्रस्तावित सडक अधिकार क्षेत्र	केन्द्र रेखाबाट छोडने दुरी		सेट व्याक		कैफियत
7	B07	Kanegad Road	८ मी.	१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
8	B08	Pokhara khal - Kalika Mandir	६ मी.	१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
9	B09	Roatomatya Road	६ मी.	१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
10	B10	Saddhu Road	६ मी.	१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
	B11	Serebada Road		१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
	B12	Sima - Salgau Raod		१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
	B13	Tara Bazzar - Hospital Road		१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
	B14	Tara Pani - Budha Agra		१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	
	B15	Tunibagar Road		१० मी.	५ मी.	५ मी.	१.५ मी.	१.५ मी.	

ग) नगरस्तरीय सडक : ग श्रेणी (Class C)- १० मिटर सडक अधिकार क्षेत्र

सिं.नं.	Road Code	विवरण	प्रस्तावित सडक अधिकार क्षेत्र	केन्द्र रेखाबाट छोडने दुरी		सेट व्याक		कैफियत
			मापदण्ड	दायाँ	बायाँ	दायाँ	बायाँ	
1	C01	Dadagaun Road	८ मी.	४ मी.	४ मी.	१.५ मी.	१.५ मी.	

सिं.नं.	Road Code	विवरण	प्रस्तावित सडक अधिकार क्षेत्र	केन्द्र रेखाबाट छोडने दुरी		सेट व्याक		कैफियत
2	C02	Dharapani - Sigaudi Road	८ मी.	४ मी.	४ मी.	१.५ मी.	१.५ मी.	
3	C03	Hulak danda - Bhatgaun Road	८ मी.	४ मी.	४ मी.	१.५ मी.	१.५ मी.	
4	C04	Hulak danda- Dharapani Road	८ मी.	४ मी.	४ मी.	१.५ मी.	१.५ मी.	
5	C05	Tarabazzar - Talighat Road	८ मी.	४ मी.	४ मी.	१.५ मी.	१.५ मी.	

घ) नगरस्तरीय सडक : घ श्रेणी (Class D)- ६ देखि ८ मिटर सडक अधिकार क्षेत्र

सिं.नं.	Road Code	विवरण	हालको चौडाइ	प्रस्तावित सडक अधिकार क्षेत्र	केन्द्र रेखाबाट छोडने दुरी		सेट व्याक		कैफियत
				मापदण्ड	दायाँ	बायाँ	दायाँ	बायाँ	
1	D01	Foot Trail	१.५ मी.	६ मी.	३ मी.	३ मी.	१.५ मी.	१.५ मी.	

Building Bye laws

ANNEX D- LFA

ANNEX E- MSIP

ANNEX F- Minutes

ANNEX G- Photographs

ANNEX H-

REFERENCES

Asian Development Bank. (n.d.). Retrieved from <http://www.adb.org/countries/nepal/economy>

City of Glendale, CA. (2011). *Comprehensive Design Guidelines*. City of Glendale, CA.

Climate-Data.Org. (2015, December 5). Retrieved December 5, 2015, from <http://en.climate-data.org/location/27830/>

Devkota, K. (2012). Dynamics of Urbanization in Nepal: The Role and Response of Local Government. *POLICY DISCUSSION PAPER - 6/2012*. Alliance for Social Dialogue.

Dhakal, R. (2004). Urban Land Development Planning Effort in Kathmandu Valley. Tokyo: Asian Area Studies of City Planning.

Goh, L. E. (2006). Planning That Works: Housing Policy and Economic Development in Singapore. *Journal of Planning Education and Research*, 7 (3), 147-162.

GoN, MoPPW. (2009). *National Urban Water Supply and Sanitation Sector Policy - Final Draft*. GoN, MOPPW.

gtz: udle. (2006). *Responding to Urban Development Needs in Nepal*. Kathmandu: Format Printing Press.

Gunder, M. (2010). Planning as the ideology of (Neoliberal) space. *Planning Theory*, 9, 298-314.

Hardy, D. (2011). Garden Cities: Practical Concept, Elusive Reality. *Journal of Planning History* .

Healey, P. (1992). Planning through Debate: The Communicative Turn in Planning Theory. *The Town Planning Review*, 63 (2), 143-162 .

Heritage Foundation: Letchworth Garden City. (2015, 10 29). Retrieved from <http://www.letchworth.com/heritage-foundation/altering-your-home>

Hudson, B. M. (1979). Comparison of Current Planning Theories: Counterparts and Contradictions. *American Planning Association* (October), 387-398.

Irwin, D. M., & Joshi, J. (1996). Integrated Action Planning: The experience in Nepal. In K. Singh, F. Steinberg, & N. v. Einsiedal (Eds.), *Integrated Urban Infrastructure Development in Asia* (pp. 193-211). New Delhi: Oxford & IBH Publishing Co. Pvt. Ltd.

Joshi, J. (2008). *Planning Approaches in Nepal* (1st ed.). Kathmandu: Lajmina Joshi.

- K C, A. (2015). Role of Good Urban Governance for Comprehensive Planning in Nepal: Actors and Participation. *Unpublished Master Thesis*. Lalitpur: Tribhuwan University.
- Kelly, E. D., & Becker, B. (2000). *Community Planning: An Introduction to the Comprehensive Plan* (1st ed.). Washington DC: Island Press.
- Khalil, M. A. (n.d.). *Small towns between Globalization and Sustainability*. Retrieved 7 05, 2014, from http://www.cpas-egypt.com/ENG/Mohamed_A_M_Khalil_eng.html
- Lehigh Valley Planning Commission. (2008). *Steep Slopes; [OBJ:OBJ]Guide: Model Regulations*. Lehigh Valley Planning Commission.
- LSGA. (1977). *Local Self Governance Act, 2055*. Kathmandu: Government of Nepal.
- Mattingly, M., & Winarso, H. (1999, August 19). *INTEGRATED ACTION PLANNING IN NEPAL: SPATIAL AND INVESTMENT PLANNING IN URBAN AREAS*. Retrieved 8 2, 2014, from http://www.ucl.ac.uk/dpu-projects/drivers_urb_change/urb_infrastructure/pdf_city_planning/DPU_Mattingly_Nepal_Spatial_Planning.pdf
- Messerschmidt, D. A. (1980). Gateway-Hinter Relations in Changing Nepal . *CNAS Journal*, VIII.
- Ministry of Local development. (2059). *Nagarpalikaka lagi aawadik yojana tarjuma nirdeshika [Antim Masyauda]*. Kathmandu.
- North Hertfordshire District Council. (2007). *Letchworth Garden City Town Centre Strategy : Supplementary Planning Document*.
- Paudyal, D. P. (1994). *Strategies for local level planned development in Nepal : An Evaluation of the decentralization act 1982 from the local perspective* (1st ed.). Kathmandu: Prabesh & Pratik.
- Paudyal, D. P. (2001). *The Concept of Decentralized System of Governance in the Context of Balanced Development of Nepal* . Retrieved 9 15, 2014, from http://www.nepaldemocracy.org/institutions/concept_decentralization.htm
- Reid, E. O. (1997). Strategic Utilization of Internet: Singapore's IT2000 and Library 2000 Plans. *IFLA Journal*, 23 (3), 203-210.
- Roberts, T. (2002). The seven lamps of planning. *Town Planning Review*, 73, 1-15.
- School of Planning and Architecture. (2010). *Alternative Approaches to Master Plan*. Delhi: THESIS (Unpublished).
- Singapore Government. (2015, February 12). *Urban Redevelopment Authority*. Retrieved February 12, 2015, from <http://www.ura.gov.sg/uol/concept-plan.aspx?p1=View-Concept-Plan&p2=introduction-to-concept-plan>
- STEERING COMMITTEE FOR NATIONAL SANITATION ACTION. (2011). *SANITATION AND HYGIENE MASTER PLAN*. GoN.
- The World Bank. (2013, April 1). *Managing Nepal's Urban Transition*. Retrieved 10 25, 2015, from <http://www.worldbank.org/en/news/feature/2013/04/01/managing-nepals-urban-transition>

- Tiwari, S. R. (1999). Kathmandu Valley Urban Capital Region and Historical Urbanism, Historical Environment Management : Lessons from History1. Bankok.
- Town and Country Planning Association. (2007). *Best Practice in Urban Extensions and New Settlements : A report on emerging good practice*. London: RAP Spiderweb Ltd.
- Visvaldisa, V., Ainhua, G., & Ralfs, P. (2013). Selecting indicators for sustainable development of small towns: The case of Valmiera New Town. *Procedia Computer Science*, 26, 21-32.
- Wapwera, S., & Egbu, C. (2013). Master Planning System: Constraints for Planning Authorities in Jos Metropolis, Nigeria. *The Built & Human Environment Review*, 6.
- Wildavsky, A. (1973). If Planning is Everything, Maybe It's Nothing. *Policy Science*, 4, 127-153.
- Wildavsky, A. (1973). If Planning is Everything, Maybe It's Nothing. *Policy Science*, 4, 127-153.
- Yuen, B. (1996). Creating the Garden City: The Singapore Experience. *Urban Studies*, 33 (6), 955-966.
- Zhang, T. (2006). Planning Theory as an Institutional Innovation: Diverse Approaches and Nonlinear Trajectory of the Evolution of Planning Theory. *CITY PLANNING REVIEW*, 30 (8), 9-1

ANNEX B- Calculation Tables

Public land and Guthi land, Rakam

SN	Type of Land	Area	Parcel No	Ownership	VDC/Ward No/Sheet no
1	Road	304	48	GoN	Rakam 1
2	Temple	946	22	GoN	Rakam 1
3	Gaucharan	1550	31	GoN	Rakam 1
4	River/Rivulets	1781	2	GoN	Rakam 1
5	Gaucharan	3500	3	GoN	Rakam 1
6	Parti/Public	8170	30	GoN	Rakam 1
7	Gaucharan	49578	19	GoN	Rakam 1
8	Gaucharan	66619	25	GoN	Rakam 1
9	River/Rivulets	215859	1	GoN	Rakam 1
10	River/Rivulets	56	52	GoN	Rakam 2
11	Road	99	198	GoN	Rakam 2
12	Road	139	38	GoN	Rakam 2
13	Road	234	188	GoN	Rakam 2
14	Road	250	196	GoN	Rakam 2
15	River/Rivulets	386	226	GoN	Rakam 2
16	River/Rivulets	409	55	GoN	Rakam 2
17	Road	475	32	GoN	Rakam 2
18	Road	485	225	GoN	Rakam 2
19	Gaucharan	521	147	GoN	Rakam 2
20	River/Rivulets	541	50	GoN	Rakam 2
21	Road	545	6	GoN	Rakam 2

SN	Type of Land	Area	Parcel No	Ownership	VDC/Ward No/Sheet no
22	River/Rivulets	656	63	GoN	Rakam 2
23	Road	703	106	GoN	Rakam 2
24	Temple	791	144	GoN	Rakam 2
25	Temple	1079	167	GoN	Rakam 2
26	Gaucharan	1101	112	GoN	Rakam 2
27	Road	1174	163	GoN	Rakam 2
28	Gaucharan	1590	173	GoN	Rakam 2
29	River/Rivulets	1930	36	GoN	Rakam 2
30	Parti/Public	2051	190	GoN	Rakam 2
31	Gaucharan	2895	71	GoN	Rakam 2
32	Parti/Public	4169	161	GoN	Rakam 2
33	Gaucharan	4597	94	GoN	Rakam 2
34	River/Rivulets	5713	110	GoN	Rakam 2
35	River/Rivulets	7792	7	GoN	Rakam 2
36	Gaucharan	8150	31	GoN	Rakam 2
37	River/Rivulets	12110	80	GoN	Rakam 2
38	Gaucharan	15083	127	GoN	Rakam 2
39	Gaucharan	18460	65	GoN	Rakam 2
40	River/Rivulets	88819	114	GoN	Rakam 2
41	Forest	163550	69	GoN	Rakam 2
42	River/Rivulets	218550	1	GoN	Rakam 2
43	Gaucharan	99	112	GoN	Rakam 3

SN	Type of Land	Area	Parcel No	Ownership	VDC/Ward No/Sheet no
44	Road	181	25	GoN	Rakam 3
45	Road	221	57	GoN	Rakam 3
46	River/Rivulets	244	104	GoN	Rakam 3
47	Parti/Public	310	144	GoN	Rakam 3
48	River/Rivulets	491	145	GoN	Rakam 3
49	Road	554	68	GoN	Rakam 3
50	River/Rivulets	660	138	GoN	Rakam 3
51	River/Rivulets	769	119	GoN	Rakam 3
52	Road	1510	150	GoN	Rakam 3
53	Forest	60502	155	GoN	Rakam 3
54	Forest	70594	156	GoN	Rakam 3
55	River/Rivulets	295079	1	GoN	Rakam 3
56	Road	231	170	GoN	Rakam 4
57	River/Rivulets	419	4	GoN	Rakam 4
58	River/Rivulets	455	190	GoN	Rakam 4
59	Gaucharan	455	2	GoN	Rakam 4
60	River/Rivulets	501	116	GoN	Rakam 4
61	Parti/Public	739	143	GoN	Rakam 4
62	River/Rivulets	775	44	GoN	Rakam 4
63	Parti/Public	855	40	GoN	Rakam 4
64	Parti/Public	1127	9	GoN	Rakam 4
65	Road	1530	180	GoN	Rakam 4

SN	Type of Land	Area	Parcel No	Ownership	VDC/Ward No/Sheet no
66	Parti/Public	1530	14	GoN	Rakam 4
67	River/Rivulets	1900	8	GoN	Rakam 4
68	River/Rivulets	1989	62	GoN	Rakam 4
69	River/Rivulets	2520	133	GoN	Rakam 4
70	River/Rivulets	3199	216	GoN	Rakam 4
71	Parti/Public	4632	12	GoN	Rakam 4
72	River/Rivulets	37855	1	GoN	Rakam 4
73	Gaucharan	112626	55	GoN	Rakam 4
74	River/Rivulets	46	200	GoN	Rakam 5
75	Road	320	179	GoN	Rakam 5
76	Parti/Public	729	161	GoN	Rakam 5
77	River/Rivulets	1791	154	GoN	Rakam 5
78	River/Rivulets	2170	92	GoN	Rakam 5
79	Parti/Public	2500	140	GoN	Rakam 5
80	River/Rivulets	56259	1	GoN	Rakam 5
81	River/Rivulets	72718	157	GoN	Rakam 5
82	Road	356	272	GoN	Rakam 6
83	River/Rivulets	584	293	GoN	Rakam 6
84	River/Rivulets	670	287	GoN	Rakam 6
85	River/Rivulets	878	130	GoN	Rakam 6
86	River/Rivulets	1300	238	GoN	Rakam 6
87	Road	1467	194	GoN	Rakam 6

SN	Type of Land	Area	Parcel No	Ownership	VDC/Ward No/Sheet no
88	River/Rivulets	1570	10	GoN	Rakam 6
89	River/Rivulets	2840	190	GoN	Rakam 6
90	River/Rivulets	3168	60	GoN	Rakam 6
91	Forest	6560	214	GoN	Rakam 6
92	River/Rivulets	16121	296	GoN	Rakam 6
93	Forest	951201	199	GoN	Rakam 6
94	Temple	20	71	GoN	Rakam 7
95	Road	50	31	GoN	Rakam 7
96	River/Rivulets	415	85	GoN	Rakam 7
97	Temple	541	121	GoN	Rakam 7
98	Temple	686	177	GoN	Rakam 7
99	Road	805	170	GoN	Rakam 7
100	River/Rivulets	960	231	GoN	Rakam 7
101	River/Rivulets	1039	61	GoN	Rakam 7
102	River/Rivulets	1471	24	GoN	Rakam 7
103	River/Rivulets	1520	118	GoN	Rakam 7
104	River/Rivulets	5982	264	GoN	Rakam 7
105	Gaucharan	9100	260	GoN	Rakam 7
106	River/Rivulets	25940	262	GoN	Rakam 7
107	Gaucharan	116853	263	GoN	Rakam 7
108	Forest	215088	280	GoN	Rakam 7
109	River/Rivulets	345880	1	GoN	Rakam 7

SN	Type of Land	Area	Parcel No	Ownership	VDC/Ward No/Sheet no
110	Road	135	445	GoN	Rakam 8
111	River/Rivulets	185	189	GoN	Rakam 8
112	River/Rivulets	244	370	GoN	Rakam 8
113	Road	370	34	GoN	Rakam 8
114	Road	940	433	GoN	Rakam 8
115	Road	990	368	GoN	Rakam 8
116	Parti/Public	1131	281	GoN	Rakam 8
117	River/Rivulets	1190	222	GoN	Rakam 8
118	River/Rivulets	1757	122	GoN	Rakam 8
119	Road	2150	174	GoN	Rakam 8
120	River/Rivulets	2649	32	GoN	Rakam 8
121	Gaucharan	2929	351	GoN	Rakam 8
122	Gaucharan	5930	357	GoN	Rakam 8
123	River/Rivulets	6270	331	GoN	Rakam 8
124	Gaucharan	8631	413	GoN	Rakam 8
125	River/Rivulets	11920	393	GoN	Rakam 8
126	River/Rivulets	14211	220	GoN	Rakam 8
127	Gaucharan	19024	385	GoN	Rakam 8
128	Gaucharan	28559	373	GoN	Rakam 8
129	Gaucharan	29429	411	GoN	Rakam 8
130	Gaucharan	51430	348	GoN	Rakam 8
131	Forest	117700	350	GoN	Rakam 8

SN	Type of Land	Area	Parcel No	Ownership	VDC/Ward No/Sheet no
132	Forest	267170	420	GoN	Rakam 8
133	Forest	584	131	GoN	Rakam 9
134	Forest	755	1	GoN	Rakam 9
135	River/Rivulets	2041	118	GoN	Rakam 9
136	River/Rivulets	2500	102	GoN	Rakam 9
137	River/Rivulets	16411	122	GoN	Rakam 9
138	Gaucharan	30699	119	GoN	Rakam 9
139	Gaucharan	36319	23	GoN	Rakam 9
140	Forest	148518	128	GoN	Rakam 9
141	River/Rivulets	227454	92	GoN	Rakam 9

Public land and Guthi land, Sigaudi VDC

S.N	Type of land	Area Sq Meter	Parcel No	Ownership	VDC/Ward no/Sheet no
1	Gaucharan	6430	56	GoN	Singaudi-1
2	Gaucharan	27865	81	GoN	Singaudi-1
3	Gaucharan	31465	113	GoN	Singaudi-1
4	Gaucharan	43110	200	GoN	Singaudi-1
5	Gaucharan	4810	277	GoN	Singaudi-1
6	Gaucharan	14600	433	GoN	Singaudi-1
7	Gaucharan	1505	441	GoN	Singaudi-1
8	Gaucharan	2355	453	GoN	Singaudi-1
9	Temple	755	467	GoN	Singaudi-1

S.N	Type of land	Area Meter	Sq	Parcel No	Ownership	VDC/Ward no/Sheet no
10	Gaucharan	5245		476	GoN	Singaudi-1
11	Gaucharan	14160		36	GoN	Singaudi-2
12	Gaucharan	4520		38	GoN	Singaudi-2
13	Gaucharan	955		55	GoN	Singaudi-2
14	Gaucharan	2450		65	GoN	Singaudi-2
15	Gaucharan	26920		76	GoN	Singaudi-2
16	Gaucharan	975		183	GoN	Singaudi-2
17	Gaucharan	320		223	GoN	Singaudi-2
18	Gaucharan	3535		277	GoN	Singaudi-2
19	Gaucharan	1260		322	GoN	Singaudi-2
20	Gaucharan	3560		370	GoN	Singaudi-2
21	Gaucharan	65700		288	GoN	Singaudi-3
22	Gaucharan	26375		350	GoN	Singaudi-3
23	Gaucharan	8375		363	GoN	Singaudi-3
24	Gaucharan	3375		440	GoN	Singaudi-3
25	Gaucharan	8480		468	GoN	Singaudi-3
26	Gaucharan	9420		486	GoN	Singaudi-3
27	Gaucharan	28175		496	GoN	Singaudi-3
28	Gaucharan	50630		531	GoN	Singaudi-3
29	Gaucharan	22185		557	GoN	Singaudi-3
30	Gaucharan	15700		568	GoN	Singaudi-3
31	Parti	760		307	GoN	Singaudi-5

S.N	Type of land	Area Meter	Sq	Parcel No	Ownership	VDC/Ward no/Sheet no
32	Parti	1345		310	GoN	Singaudi-5
33	Parti	3010		334	GoN	Singaudi-5
34	Parti	2895		372	GoN	Singaudi-5
35	Parti	905		376	GoN	Singaudi-5
36	Gaucharan	26060		415	GoN	Singaudi-5
37	Parti	1050		429	GoN	Singaudi-5
38	Parti	980		435	GoN	Singaudi-5
39	Parti	9460		444	GoN	Singaudi-5
40	Parti	8435		503	GoN	Singaudi-5
41	Parti	4815		509	GoN	Singaudi-6
42	Gaucharan	10240		99	GoN	Singaudi-6
43	Gaucharan	27640		220	GoN	Singaudi-6
44	Gaucharan	3025		251	GoN	Singaudi-6
45	Gaucharan	15965		309	GoN	Singaudi-6
46	Gaucharan	29462		362	GoN	Singaudi-6
47	Gaucharan			394	GoN	Singaudi-6
48	Gaucharan	9770		475	GoN	Singaudi-6
49	Gaucharan	5335		489	GoN	Singaudi-6
50	Gaucharan	192635		512	GoN	Singaudi-6
51	Gaucharan	546295		1	GoN	Singaudi-7
52	Gaucharan	17735		100	GoN	Singaudi-7
53	Public Land	2040		231	GoN	Singaudi-7

S.N	Type of land	Area Meter	Sq	Parcel No	Ownership	VDC/Ward no/Sheet no
54	Gaucharan	1295		342	GoN	Singaudi-7
55	Gaucharan	305765		370	GoN	Singaudi-7
56	Gaucharan	205765		377	GoN	Singaudi-7
57	Public Land	400		445	GoN	Singaudi-7
58	Gaucharan	738790		485	GoN	Singaudi-7
59	Gaucharan	30850		502	GoN	Singaudi-7
60	Public Land	13805		504	GoN	Singaudi-7
61	Public Land	345		576	GoN	Singaudi-7
62	Gaucharan	11130		598	GoN	Singaudi-7
63	Gaucharan	3830		650	GoN	Singaudi-7
64	Public Land	625		670	GoN	Singaudi-7
65	Gaucharan	71550		724	GoN	Singaudi-7
66	Public Land	4170		839	GoN	Singaudi-7
67	Parti	2715		976	GoN	Singaudi-7
68	Gaucharan	1625		4	GoN	Singaudi-8
69	Gaucharan	3265		6	GoN	Singaudi-8
70	Gaucharan	2595		120	GoN	Singaudi-8
71	Gaucharan	2140		121	GoN	Singaudi-8
72	Gaucharan	27655		138	GoN	Singaudi-8
73	Gaucharan	2370		140	GoN	Singaudi-8
74	Kuwa	115		291	GoN	Singaudi-8
75	Batoko Than	175		260	GoN	Singaudi-8

S.N	Type of land	Area Meter	Sq	Parcel No	Ownership	VDC/Ward no/Sheet no
76	Gaucharan	7005		598	GoN	Singaudi-8
77	Batoko Than	560		297	GoN	Singaudi-8
78	Kalika Than	635		698	GoN	Singaudi-8
79	Gaucharan	44320		746	GoN	Singaudi-8
80	Gaucharan	1465		762	GoN	Singaudi-8
81	Gaucharan	31015		850	GoN	Singaudi-8
82	Gaucharan	26550		1114	GoN	Singaudi-8
83	Parti	5660		1126	GoN	Singaudi-8
84	Gaucharan	59415		2	GoN	Singaudi-9
85	Gaucharan	2890		33	GoN	Singaudi-9
86	Gaucharan	970		98	GoN	Singaudi-9
87	Gaucharan	27930		216	GoN	Singaudi-9
88	Gaucharan	8270		445	GoN	Singaudi-9
89	Chautari	200		510	GoN	Singaudi-9
90	Gaucharan	4200		546	GoN	Singaudi-9
91	Gaucharan	13570		559	GoN	Singaudi-9
92	Gaucharan	25010		561	GoN	Singaudi-9
93	Gaucharan	1565		674	GoN	Singaudi-9
94	Gaucharan	7870		543	GoN	Singaudi-9
95	Gaucharan	20445		693	GoN	Singaudi-9
	Total	2994457				

Business

Bakhrikot Bajar			Tar Bajar	
Shop	NO	Economic transation(Rs.)	NO	Economic transation(Rs.)
Kirana Shop	25	1000000	5	500000
Fruits and vegetable shop	2	200000	2	200000
Cloth Shop	7	800000	4	800000
Medicine shop	5	500000	3	500000
Redimade and cosmetic shop	5	300000	3	300000
Utensil shop	1		-	
Stationary	3	500000	1	500000
Mixed of kirana pasal and cloth shop	1	800000	2	1000000
Tea shop	40	200000	5	200000
Hotel and lagge	5	300000	3	400000
Electrical shop	7	500000	-	-
Watch maintainance shop	2	200000	-	-
Photocopy nd computer shop	2	200000	-	-
Silai	3	200000	-	-

HHs by type of HHs Facilities

VDC	Total	Without Facilities	Atleast one	Radio	TV	Cable TV	Comp	Intern et	phone	Mob ile	Motor	Mot orcycle	Cycle	Other Vehicl es	Refrig enator	Not Stated
Rakam Karnali	556	159	394	302	22	3	1	1	13	298	0	4	2	0	2	3
Sigaudi	1104	562	537	368	4	1	1	1	1	395	0	3	6	0	1	5
Total	1660	721	931	670	26	4	2	2	14	693	0	7	8	0	3	8

Religious and Cultural Important Locations in the Project Are

SN	Location	Name	Importance
1	Rakam karnali-3	Shiva Temple	Religious
2	Rakam karnali-3	Kalika Devi Temple	Religious
3	Rakam karnali-2	BasundharaPati	Historical
4	Rakam karnali-2	Saat Okhal	Historical
5	Rakam karnali-6	AttuniaKaro	Natural sceneries
6	Rakam karnali-8	Nainal Temple	Religious

Health Institution in the Project VDCs

VDC	Hospital	HP/SHP	Private Clinic	Total
Rakam Karnali	1	2	3	6
Sigaudi	1	0	1	2

Existing Schools and College

Institutional Buildings	Ward	Settlements/bazaar
Nepal Rastriya Lower Secondary School	1	Jakshi-Chimmne
Himal Primary School	2	Simtol, Selgaun, Gadeabata
Bloomoon Primary School Janachetana Lower Secondary School	4	Bakhrekotbazar, Khulibazar
Janajyati Higher Secondary School	7	Serabada
Dipendra Primary School	8	Bheltadi, Dhategairegaun, BudhaAagra, Tarapani
Ganodaya Primary School	9	Saddu, KhidkiJyula

Table: Household by construction Type

Rakam VDC	No	Sigaudi VDC	No
Mud bonded brick/ stone foundation	530	Mud bonded brick/ stone foundation	1091
Wooden Pillar foundation	21	Wooden Pillar foundation	5
Cement bouned foundation	-	Cement bouned foundation	1
Bamboo wall	19	Bamboo wall	20

Mud Brick/ stone walls	526	Mud Brick/ stone walls	1074
Cement brick/stone walls	4	Cement brick/stone walls	3

Source : CBS :2011

Household by Roof Type

Rakam VDC	No	Sigaudi VDC	No
Thatch Roof	21	Thatch Roof	304
CGI roof	44	CGI roof	80
Tile Slate	401	Tile Slate	622
RCC	6	RCC	18
Wood Planks	0	Wood Planks	4
Mud	79	Mud	68

Source : CBS :2011

Table : Population by Literacy

Description	Male	Female	Total
Can read & write	296	51	347
Can't read & write	364	643	1007
Can read only	22	37	59
Not stated	-	12	12
Total	682	743	1425

Table: HHs by type of toilet

VDC	Total	Without Toilet	Flush	Ordinary	Not Stated
Rakam Karnali	556	246	301	5	4
Sigaudi	1104	878	128	96	2
Total	1660	1124	429	101	6

Table : HHs by usual source of Lighting

VDC	Total	Electricity	Kerosene	Bio-Gas	Solar	Others	Not stated
Rakam Karnali	556	279	0	0	140	133	4
Sigaudi	1104	5	3	0	498	596	2 ¹⁹⁵
Total	1660	284	3	0	638	729	6

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Table: HHs by usual type of fuel used for cooking

VDC	Total	Wood	Kerosene	LPG	Guitha	Bio-Gas	Electricity	Others	Not stated
Rakam Karnali	556	538	0	12	0	2	0	0	4
Sigaudi	1104	1101	1	0	0	0	0	0	2
Total	1660	1639	1	12	0	2	0	0	6

Table : Household and Population of Rakam

Ward no.	Household no.	Population		
		Total	Male	Female
Rakam Karnali VDC				
1	36	183	83	100
2	83	447	202	245
3	36	181	91	90
4	110	538	271	267
5	69	269	136	133
6	66	317	149	168
7	35	190	86	104
8	79	450	211	239
9	42	239	115	124
Total	556	2814	1344	1470
Sigaudi VDC				
1	108	614	310	304
2	107	618	325	293
3	109	551	277	274
4	29	156	85	71
5	96	561	291	270

Ward no.	Household no.	Population		
		Total	Male	Female
6	208	1082	539	543
7	109	719	349	370
8	203	1048	510	543
9	135	683	301	382
Total	1104	6032	2987	3045

Source: National Population Census, 2011

Table : Population by Caste

Ward no.	Dalit				Janajati				Others			
	HH	Male	Female	Total	HH	Male	Female	Total	HH	Male	Female	Total
1	14	33	28	61	0	0	0	0	18	43	39	82
2	35	82	78	160	0	0	0	0	44	103	97	200
3	19	44	41	85	0	0	0	0	7	15	14	29
4	41	96	90	186	0	0	0	0	27	63	60	123
5	15	35	33	68	0	0	0	0	33	74	73	147
6	37	87	85	172	0	0	0	0	27	62	60	122
7	0	0	0	0	0	0	0	0	38	89	85	174
8	31	73	69	142	0	0	0	0	44	103	100	203
9	1	4	3	7	0	0	0	0	32	75	72	147
Total	193	454	427	881	0	0	0	0	270	627	600	1227

Source: National Population Census, 2011