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Chapter 1
INTRODUCTION

1.1 BACKGROUND

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

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

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

Keeping in view of this context, the Government of Nepal has already enacted and implemented National Urban Policy in the year 2007. The policy is conspicuous by prioritizing investment to the lagging regions of the country, while fostering development of regional cities and intermediate towns as well. The government prioritization of the development of Mid-Hill Highway (MHH) and the recent policy intention through its budget speech for the development of new towns along the MHH comprising of significant economic base must be seen from this perspective.

Hence, the Government of Nepal, Ministry of Urban Development, Department of Urban Development and Building Construction (DUDBC) initiated a mega project in the history of Urban Planning in Nepal. The project is termed as New Towns, developing along Pushpalal Mid-Hill Highways across the intersecting nodal point of North-South Corridor. The 10 selected new town project sites is a result of detailed study, screened from 54 pre-selected towns/market centers. The screening project is an outcome of extensive study over pre-defined criterion like availability of land, water supply, vicinity to nearest towns, hinterland zone of influence, and so. The New Town

project have grafted several stages like pre-feasibility study, feasibility study, preparation of urban base map, appraisal of land pooling, establishment of New Town project site, site development works and so. Government have recently restricted on land subdivision to regulate and control land speculation.

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

1.2 RATIONALE OF THE STUDY

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

● Effective use of scarce resources

● The IDP will help the town to focus on the most important needs of local communities taking into account the resources available at local level.

● The town must find the most cost-effective ways of providing services and money will be spent on the causes of problems in local areas.

● It helps to speed up delivery

● The IDP will identify the least serviced and most impoverished areas so as to do investment in a rational way. Implementation is made easier because the relevant stakeholders have been part of the process.

● The IDP will provide deadlock-breaking mechanisms to ensure that projects and programmes are efficiently implemented. The IDP helps to develop realistic project proposals based on the availability of resources.

● It helps to attract additional funds

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

1.3 OBJECTIVES OF THE WORK

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

- To set out Long-term Vision and overall Goal, Objective and Strategies for new town development.

- To prepare Physical development plan, Land Use Plan, Social, Cultural, Economic, Financial, and Institutional Development Plan; Environmental and Risk Sensitive Land use Plan, Climate Change Perspective Plan, Multi-Sectoral Investment Plan (MSIP) etc. on the basis of Sectoral Goal, Objectives, Output and Programs.

- To prepare building bye-laws to regulate development in the town integrating Land Use and road network plan and long-term vision of the town.

- To prepare detail feasibility report of different categorically prioritised sub-projects (3 in each NT which is not declared as municipality).

1.4 SCOPE OF WORKS

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

1. GIS based base maps of NTs , which are recently declared as municipality by GoN , are updated.

2. The Vision of the town has been set. The Vision articulates the desires of Town and its citizens, and provides the guiding principles and priorities for the Plan's implementation.

3. Integrated Development plan of entire area including existing and future (5, 10 and 20 years) land use plan will be prepared in cadastral maps. This will be based on land use plan and followed by narrative description, analysis, facts and figures.

4. Additional study on local economy will be conducted and its activities based on the study completed by NTPCO that may also change in demographics and migration trend for 5, 10 and 20 years period.

5. Potential areas for urban development, based on land suitability and other factors, are identified. Present and future (5, 10, 20 years) housing needs/market, stock, conditions will be analyzed and strategies for land acquisition, distribution of land and housing in future will be recommended.

6. Studies on present and future (5, 10 and 20 years) demand in infrastructures (such as transportation, communication, electricity, water supply and sewerage system) and their supply are conducted. Demand analysis will be for different scenarios with facts and figures. The recommended complete street pattern, major and minor roads, highways, arterial roads, traffic circulation, truck yard, bus bays and bus parks will be worked out in details. Based on land use and other factors, road network plan prepared by NTPCO will be revised. The network plan of infrastructures, both existing and proposed will be shown in cadastral maps with other detailed drawings and unit rate cost estimates. Landfill site, treatment plant location will be identified and their detail drawings and cost estimate will be prepared. A management scheme of both water supplies, solid waste management system and landfill site will also be worked out.

7. Existing social infrastructure such as health/ education/ sports/ communication/ security centers and other community facilities have been carried out by addressing present deficiencies and future (5, 10 and 20 years) demands. The location and area of land required for all these infrastructures will be identified in cadastral maps.

8. Critical, sensitive and other natural resources including parks, green belts, and recreational areas are identified and assessed along with strategies for their protection, preservation and community ship against the adverse impact of future development and land use changes. The cost estimate on unit rate basis will be calculated for their preservation and protection. Locations and future requirements of such resources will be calculated.

9. Government, Guthi and Public Land identified by NTPCO are verified and the area required for future development and expansion of the town will be assessed including land required for government and public purposes. Appropriate plan and policy will be produced to protect such land from private/public encroachment and others.

10. 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, will be identified and assessed , along with, strategies for avoidance/mitigation of such hazards in the course of future development and the cost estimate on unit rate basis will be calculated.

11. Proposed Land Use Plan for 5, 10 and 20 years will be prepared based on the existing cadastral maps (plans) . The plans are based on: i) The policies enunciated for different urban activities, ii) Population to accommodate minimum one hundred thousand; iii) Requirement of additional social and physical infrastructure, iv) Transportation and work centres, v) Parks, green belts, recreational areas, vi) Cultural and historic resources, vii) Others.

12. A detail study of following Land Use Zone will be provided and byelaws for the construction of building and other infrastructures will be recommended. The land use zones are i. Residential zone, ii. Institutional zone, iii. Industrial zone, iv Preserved zone, v. Airport zone, vi. Sport zone, vii. Urban expansion zone, viii. Stream/river banks zone, ix. Green zone, x. Apartment housing, xi. Petrol pump/ Electric line/Cinema theatres and xii. Others.

13. Building bye-laws that clearly spells minimum in the following areas regarding the construction of building will be prepared : (a) Minimum land area (b) maximum ground coverage (c) maximum floor area ratio (FAR) (d) maximum building height (e) maximum no. of floors (f) right of way of roads (g) set back in four sides of the building (h) minimum parking area (i) lift (j) minimum distance to be left in both sides of stream/river.

14. The building bye-laws of the towns will be prepared in accordance with "Bye-laws 2064, of Kathmandu valley" prepared by Kathmandu Valley Town Development Committee, model building bye-laws prepared by MoUD, NBC, Building Act and Apartment Act of Nepal.

15. 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 will be recommended. Separate report by volume each Integrated Development Plan, Building bye-laws, infrastructures etc for each town, also prepare investment and cost recovery Plan will be prepared.

Chapter 2
METHODOLOGY

2.1 STUDY METHOD

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

2.1.1 Field Survey and Study

Preparation of Field Programs

Appropriate plan to accomplish the job within the agreed time frame will be discussed within the team members to prepare the field work plan. The team will setup the field office as per the field work plan. This field work plan will include preparation of fieldwork plans, route plans and programs, arrangement of field equipment, staff logistics, arrangement of transportation, data collection methodology, survey methodology. This field work plan will be informed to the client.

Orientation and Formation of Sub-Steering Committee

The planning team consisting of the experts from the consultant and technical personnel from NTPCO/NTPO and local bodies will organize a one day orientation/ preliminary preparedness workshop at the TDC office of study NT about the Integrated Development Planning process. TDC representatives, representatives from line agencies and a number of invitees from different walks of life will be oriented on the role of TDC and line agencies in each phase of preparation of Integrated Development Plan.

A sub-steering committee will be formed at the orientation workshop, consisting of the representatives from TDC, bodies, government agencies and political parties/leaders, civil societies such as NGOs, CBOs, TLOs, intellectuals, prominent citizens, professional bodies, and the planning team. The Sub-Steering Committee will be formed by the election or nomination at workshop. Working sub-committees will also be formed in the same workshop. An orientation about the role and responsibilities of the Working sub-committees will also be clarified at the same workshop. Key informants will be identified.

Secondary Data Collection

Data & information related to the physical, socio-economic, Municipality/VDC revenue and expenditure, development budgets for the last five years will be extracted from the secondary sources, and published reports, VDC/ municipality yearly report etc. Physical and Socio-economic information of the study NT will also be collected from other line agencies and partner organizations working in the study area. Satellite image from the open source as well as maps from different agencies will be collected to update digital base map. Base map will be used to prepare the existing land use of the town. Land transaction and land value information will be collected from different related institutions

Primary Data Collection

Primary Data mainly related to the physical infrastructure, existing land use pattern, extent of newly opened roads, their standards and quality, prevailing land values and environmental sensitive areas and areas with existing environmental problems will be gathered during field survey through physical mapping using GIS/ cadastral map, on site observation, technical investigation/ test and interview. NT level problems and developmental issues will be identified through opinion survey and interviews of prominent citizens, officials of the local and government agencies (Key Informant Survey), and through NT level meetings which may include meetings of the TDC and Sub-committee meetings. VDC/NT level urban and rural problems and needs will also be identified through Participatory Rapid Appraisal (PRA) by holding citizens gatherings at the TDC offices or at the convenient location of the NT.

Government, Guthi and Public Land identified by NTPCO study of the same will be verified and the area required for future development and expansion of the town including land required for government and public purposes will be assessed. Appropriate plan and policy to protect such land from private/public encroachment and others will be formulated.

Community and Different level Consultation

Community and different level consultations will be carried out mainly for the collection of baseline information of the study area NTs, preparation of Town Profile, defining the development vision of the NTs and preparation of long term development plans. Participatory approach will constitute consultation from NT level to settlement level. Problems and potentials in the NT, major settlement level/ municipal level will be collected through different level of consultation. These consultations will also be used for collecting data and information in local level.

TDC of the study NTs will function as Sub-Steering Committees. It will be the key body to formulate policies and guidelines related to plan preparation. TDC will advise the consultant on various aspects of plan preparation including identifying problems and issues of the municipality, formulating and reviewing of NT vision, goals, objectives, and programs. Sub-Steering Committee will be the key forum to set the vision of the municipality.

Focal Group Discussions with different partner organizations working in the district will be organized for the identification of problems and potentials. Community consultations will be held for the special groups like indigenous, disadvantaged groups, Dalits, Janjatis and special groups such as women, children, disabled etc.

Output of Phase I and Phase II: Town Profile

The primary and secondary data collected from field survey and study and data and information collected from Community and different level consultations will help the consultant in preparation of an up-to date Town Profile, comprising of base-line information of the existing physical, social, economic, environment, financial, and organizational state of the NT. Apart from the key statistics, the baseline information will also include textual descriptions, maps, charts, diagrams and key problems prevailing in the settlements and the municipality/VDC. Baseline information of at least two time points- having minimum interval of (past) five years will be included.

2.1.2 Plan, Program and Project Formulation

Several meetings with sectoral committee members have been organizing in different phases for the plan preparation. One day workshop will be organized for the finalization of the plans and programs. Each committee will work out by themselves for plan preparation, which will be facilitated by the co-coordinator and member secretary of each committee. The plan of each sector will be presented by the coordinator and get comments from each committee. Logical Framework Approach will be used for plan formulation. Different subjective plans will be prepared

with separate plan, policies, projects and programs so to form a master plan and MSIP for each proposed project. The plan and programs will be located in the map with the help of GIS.

A seminar will be organized to finalize the plan and programs. The plan will have to be approved by the steering committee. Comments and suggestions will be received and incorporated in the preparation of draft final report. Integrated Plan with Land use plan, phase wise urban development plan, physical infrastructure plan, social infrastructure plan, cultural and tourism development plan, economic infrastructure plan, environment management plan, disaster management plan, climate change adaptation plan, financial development plan, institutional development plan are the standing outputs of this phase.

2.1.3 Project screening and TDC budget

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

B. Preparation and Updating of GIS-based Base Map of New Towns

The approach procedures for base map preparation will be from the followings.

- Acquisition of Data
- Digital compilation of secondary data
- Topograpical Maps
- Generation of Contours and Digital Elevation Model
- Satellite Imagery Orthopolo
- Updating from Satellite Imagery
- Field verification
- GIS Database Creation

Acquisition of Data

The data to be used for this project will be collected from both primary and secondary sources.

Primary Sources

A high resolution satellite image of Patan and Sanfebagar New Towns will be captured from open source software such as Google Earth, Bing Maps etc. and the captured images will be stitched together by doing mosaic through appropriate software. Topographical maps or digital data will be collected from Survey Department. GCPs for vertical control (topographical spot) will be collected from sprit leveling.

Secondary Sources

Existing analogue cadastral from respective NT Survey Offices and electricity network single line diagram will be obtained from NEA office within/ near the study area, if available. Telephone network design maps will be collected from NTC office within/near the study area, if available. Likewise, Water supply and sewerage network design drawings will be collected from DWSSC office within/near the study area, if available.

Digital Compilation of Secondary Sources Data

The secondary maps acquired in analogue format will be scanned using wide format scanner at 200 dpi resolutions. The scanned maps will be appropriately geo-referenced with geo-rectified high resolution satellite image captured and will be vectorized in GIS environment. Digital maps and design drawings acquired from various sources will be converted into compatible CAD and/or GIS formats.

Topographical Maps

The Sprit Levelling with double tertiary Survey was will be carried out connected from Benchmark established by Survey Department to determine the elevation of each GCP for vertical control point. Topographical spot level point will be collected with Auto Level or Total Station from these GCPs in the study area. These topographical spot point will be used to generate contours at 1m intervals in the study area.

Generation of Contours and Digital Elevation Model

From the above field surveyed spot levels, contours at 5 meter interval will be generated for core areas, and 10 meter interval for the rest of the areas will be generated using specialized DTM software compatible in AutoCAD or GIS environment. Contours generated will be used in generating the Digital Elevation Model (DEM) of the entire study area. This DEM will be used for ortho-rectification and generative other derivative terrain maps (slope, aspect etc.).

Updating Data from Satellite Image

The updating will be done using the latest high resolution satellite imagery, captured from free sources, by digitizing the features over the ortho-rectified imagery. Land use map will be prepared from high resolution satellite Imagery by digitizing the existing land cover. Proposed land use map will be prepared by interacting with the key stakeholders and through community meetings/ consultations.

Field Verification

During the field visit and plan making process of the IDP of the study NTs, updated data will also be verified field for completeness of data in the entire NT/ municipal area. The features which are not identified in the ortho-photo and ortho-images will be collected from field verification with Hand GPS survey. Attribute of data such as collection of road name and its categories, places, institutions will be collected from field survey. This collected information will be updated and linking attribute into relative data. Field verification will be done by the consultant during the field visit, in co-ordination with and in presence of the representatives from NTPCO.

GIS Database Creation

GIS database for all the base map features will be developed based on the data model in accordance with the "Specifications for Geographic Information Service and National Topographic Database" and the "Specification for National Urban Geographic Information Service in Nepal" prescribed by the Survey Department. The feature and attribute codes will be adopted as these standard specifications.

Database will be generated in ArcGIS software as file geo-database. All these data collected above will be incorporated into this geo-database. During the process of creating topologies, topological rules may be defined to remove the various errors such as overshoot, undershoot, pseudo node, misplaced or missing label such as id, name etc.

The prepared geo-database will be validated or updated with generated topological rules for error free data in geo-database so that the vectorized features will be cleaned to remove redundant The cleaned feature vectors will be used to create respective topologies (point, line or polygon). Attribute databases will be created for each feature class in the data model.

Updating of GIS based Base Map

GIS based base maps will be prepared at 1:2,500 scale for core areas and 1:5000 scale for remaining areas with appropriate cartographic representations using "database driven cartography" technique in ArcGIS 10 platform. The maps will be composed with appropriate legends, cartographic layouts and elements, symbology and descriptive notes. Maps will be composed following the national grid standards. The maps will be printed/ published in A1 size paper.

C. BLOCK PHYSICAL MODEL OF TOWN

The consultant will prepare a block physical model with 1:5,000 of the study area will be prepared 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 displayed in 1:5000 or higher scale. The base map prepared earlier will be used extensively for the preparation of physical block model. Thematic maps prepared for the long term development plan will be utilized to prepare the proposed land use, and proposed physical infrastructure in the study NT. The block physical model will be prepared using different materials, mainly wood/ cardboard and model making paper

Chapter 3 LITERATURE REVIEW

3.1 MODERN URBAN PLANNING PRACTICES- INTERNATIONAL CONTEXT

The one thing that is most notable in many of today's larger cities is that all of the styles described here are often all present together and co-existing. Certainly the "City Beautiful" movement admired several aspects of the "Grand Manner" - as well as having its roots in "The Gothic Revival" movement. Modernism has placed its stamp with a network of highways and system of graduated roads, along with forests of glass skyscrapers and odd-shaped cantilevered buildings. And once again, there is a 'gothic revival' of sorts going on with a popular movement towards preserving older buildings, building on a smaller or more 'human' scale and mixed-use zoning laws with less reliance (and favoritism) upon automobiles for inner city transportation. One thing is certain - large urban cities remain as popular as ever with major cities continuing to grow ever larger as more and more people are attracted to the bright lights of the big city.

Contemporary cities are post-modernist cities that seek to function on the base of innovation and technological advancement. These cities at one end seek to achieve technological and financial advancement and on the other end also seek to incorporate the sense of inclusiveness and social justice. These cities are focused more towards the efficient management of urban amenities and infrastructural services to its residents. The city managers/urban managers/ policy makers of contemporary cities acknowledge the shortcomings of earlier authoritarian and vehicle centric planning that had given rise to the problem of social segregation, loss of sense of place as well as massive destruction of built and cultural heritage in urban areas of these cities. The urban managers/policy makers are developing areas which are planned and managed with an aim of building living environments to its dwellers. These contemporary cities are more focused on the principles of sustainability, inclusiveness and social justice and create economic opportunities for development. These cities are developed with a conscious effort to being environment-friendly, based on good urban governance and with provision of recreational and environmental facilities to its inhabitants along with adequate urban infrastructure and services. These cities are developed as mega-urban areas that are created with the agglomeration of different metropolitan or sub-regional areas. Examples: New Delhi and NCR development through DDA, Delhi 2021 (with the agglomeration of Delhi and parts of Haryana, Uttar Pradesh and Rajasthan states), NENT-NDA Planning Study in Hong Kong SAR through Planning Department (with the agglomeration of North East New Territories: Ku Twung North, Fan Ling North and Ping Che/Ta Kwu Ling as suitable New Development Areas.

3.1.1 Urban Planning Practice in Hong Kong

Hong Kong's planning hierarchy has a three tiered system of plans consisting of

- Territorial / strategic planning
- Sub-regional planning
- District planning/local planning

The planning system comprises development strategies at the territorial level and various types of statutory and departmental plans at the district/local level. Guiding the preparation of these plans is the Hong Kong Planning Standards and Guidelines.

Territorial Development Strategy

The Territorial Development Strategy aims at providing a broad planning framework to guide future development and the provision of strategic infrastructure in Hong Kong. It also serves as a basis for the preparation of district plans.

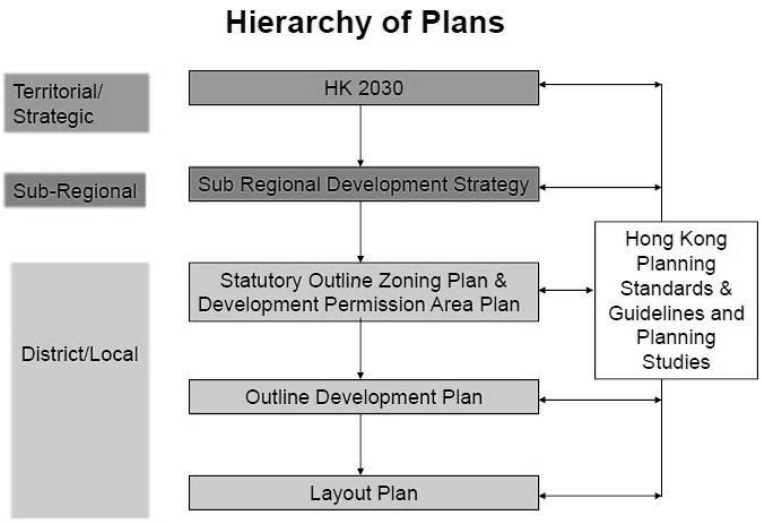


Figure 1 Hierarchy of Planning in Hong Kong

1984 TDS provides a long term planning framework for sub regional and district planning and for integrating other government policies including land, transport infrastructure and environment. The plan advocates integrated land use and transport model for development. TDS 1984 was reviewed in 1991-1998. The review document advocates sustainable development principles of integrated land use-transport-environment model for development. It also suggests the development strategy keeping in mind the Pearl River Delta factor, with the change in the status of HK and the change in the relationship with mainland and HK's hub function.

Hong Kong 2030 is the latest addition to territorial development strategy. It envisions strengthening the position of Hong Kong as Asia's World City. The planning document has the goal of adhering to the principles of sustainable development to balance social, economic and environmental needs to achieve better quality of life for present and future generations.

Sub Regional Development Strategy

These strategies aim to develop long-term comprehensive land use, transport and environment plans to guide medium and long-term development. They also serve as a bridge between the TDS and district plans through the translation of long-term, broad-brush territorial development visions and themes into district planning objectives for the five sub-regions in Hong Kong. The five sub-regions are the Metro Area, North-East New Territories (NENT), North-West New Territories (NWNT), South-East New Territories (SENT) and South-West New Territories (SWNT).

Various Types of Town Plans

At the district level, statutory plans in the form of Outline Zoning Plans (OZP) and Development Permission Area Plans (DPA Plan) are prepared and gazette under the Town Planning Ordinance. These plans regulate development through specifying the types of permitted land-uses and in some cases development parameters on individual parcels of land within Hong Kong..

Outline zoning plans (OZP), DPA and URA Development Scheme Plans are the Statutory Plans and are enforceable by law. OZPs are prepared under sections 3(1) and 4(1) of the Town Planning Ordinance. OZPs consist of three components, the outline zoning plan, the notes attached to the plan and an explanatory note for the plan. The zoning plan shows the proposed land uses and major road systems of the individual planning scheme areas. The notes set out the uses which are always permitted and other uses for which the Town Planning Board's permission must be sought.

Development Permission Area Plans are implemented since the enactment of the Town Planning (Amendment) Ordinance 1991. They provide interim planning control and development guidance pending the preparation of OZPs. Any development not permitted in terms of the plan and without the necessary planning permission constitutes an unauthorized development (UD) and is subject to enforcement and prosecution by the Planning Authority. These plans are interim in nature and are effective for a period of three years from the date of first publication

Urban Renewal Authority (URA) Development Scheme Plans considered by the Town Planning Board under section 25(6) of the URA Ordinance as suitable for publication under the Town Planning Ordinance are deemed to be draft plans prepared by the Board. It Includes a Land-Use Diagram indicates broadly the types of planned uses, and a set of Notes setting out the permitted uses and the requirements for submitting a master layout plan to the Board.

Hong Kong Planning Standards and Guidelines

The Hong Kong Planning Standards and Guidelines is a government document of planning criteria and guidelines for determining the quantity, scale, location and site requirements of various land uses and facilities. It applies to planning studies, and the preparation or revision of town plans. The document is under constant review to take account of changes in government policies, demographic characteristics and social and economic trends. During the year, planning standards and guidelines for petrol filling stations, liquefied petroleum gas filling stations, electricity supply, telephone service and greening were revised or in the process of formulation.

3.1.2 Urban Planning Practice in India

Indian planning hierarchy has two tiered system of plans consisting of

- Socio-Economic Development Planning System
- Spatial Planning System

Socio-Economic Development Planning System

Socio-Economic Development planning system consists of National Five Year Plans that are prepared by National Planning Commission. These Five Year Plans provide policies and public programmes supported by outlays. Outlays include Central Assistance to states and union territories and also the own resources of the various states.

Within the framework of National Five Year Plan, State Five Year Plans are prepared by each state's State Planning Commission. Socio-economic Development Plans basically covers policy issues of economic sectors such as agriculture, industry, energy, transport, communication, rural development and urban development. It also covers

policy issues of social sectors such as health, education, employment and skill development, women and child development and social inclusion.

Spatial Planning System

Spatial Planning System focuses on judicious use of land. According to the constitution of India, land falls within the legislative competence of the states. Spatial planning, therefore, is the responsibility of various state governments in India. Spatial planning system has six tiers: National, Inter-state, State, Metropolitan Area, District, and Local level spatial plans.

Figure 2 Spatial Planning System Hierarchy in India

National Level Plans:

- Prepared by Central Government Agencies: National Planning Commission, Ministry of Urban Development and Ministry of Housing and Urban Poverty Alleviation along with the Town and Country Planning Organization in coordination with other central ministries and departments
- Limited to evolving policies, guidelines and model laws for adoption by the states; formulating development plans and policies for union territories.

Inter-State Level Plans:

- Prepared for the National Capital Region/ National Capital Territory and parts of Haryana, Rajasthan and Uttar Pradesh. It is prepared by High-powered National Capital Region Planning Board. Eg: Regional Plan 2021, Delhi Masterplan 2021.

State Level Plans:

- Prepared by the ministry in charge of urban development of each state in coordination with the department/directorate of Town and Country Planning, Urban and Regional Development Authorities and other specialized agencies. These plans consist of state level masterplans and development plans.

Metropolitan Area level Plans:

- Prepared by Metropolitan Development Authorities such as Mumbai Metropolitan Region Development Authority, Chennai Metropolitan Region Authority, Kolkata Metropolitan Region Development Authority. These plans are coordinated spatial plans of the metropolitan areas addressing issues such as sharing of water and other physical and natural issues, integrated development infrastructure and environmental considerations in those metropolitan areas.

District Level Plans:

- Prepared by Municipalities and District Panchayats. These are also coordinated spatial planning at district level. Out of 31 states, 26 states have implemented district level planning system.

Local Level Plans:

- Prepared by Department/Directorate of Town and Country Planning or City Development Authorities. These plans are basically master plans of urban centers. These plans are implemented through Urban Local Bodies (ULBs)/ municipalities. However, only a few states have devolved this power to ULBs. All over India, 7,935 urban centers have masterplans.

3.2 MODERN URBAN PLANNING PRACTICES- NATIONAL CONTEXT

Present approaches and initiatives in urban planning and development process are very much guided by the principal objectives of the Eighth Plan (1992-1997), which are: Sustainable economic growth; alleviation of poverty; and reduction of regional imbalance. The sectoral objectives related to housing and urban development are stated as: promotion of urban and rural complementary; positive linkages between planning and management of urban centers, and growth of local economy; development of small towns and market centers; integrating of infrastructure and urban development; participation of private sectors and NGO's strengthening the roles of the municipalities; local resource mobilization; development of urban financing mechanism.

An important initiative during this period was ADB's involvement which commenced in 1990, with a grant funded technical assistance study in collaboration with the Department of Housing and Urban Development (DHUD)/ MHPP. The study completed in 1991, came up with a comprehensive study – Kathmandu Valley Urban Development Plans for specific areas.

3.2.1 Current Planning Trends

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

- Master Plan
- Strategic Planning
- Integrated Action Plan

- Physical Development Plan
- Periodic Plan
- Land Use Plan and Building Bye Laws

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

Table 1 Chronology of planning efforts in Nepal

Timeline	Urban Planning efforts in Nepal
1944	Rajbiraj as first planned administrative town
1956	National level periodic planning started
1962	Kathmandu beautification Program: Visual Beautification of Kathmandu valley on the occasion of Royal Visit of Queen Elizabeth under UN technical Assistance
1963	Town Development Committee Act, 1963
1965	Third National Plan (1965-70) divided country into 3 watershed, namely, Koshi, Gandaki and Karnali River
1969	Physical Development Plan of Kathmandu Valley prepared under technical assistance from UNDP, led by Karl Pursha
1973	1969 PDP of Kathmandu Valley revised by national professionals and land use plan for Kathmandu valley prepared
1975	Construction of Ring Road in Kathmandu Valley without prior study and planning
1974-1984	Bhaktapur Development Project (Successfully Implemented) with German assistance
1976	Comprehensive general plan for Kathmandu 1969/73 revised again, provided minimum zoning proposal
1987-88	Structural plan for major urban centers including greater Kathmandu (20 years plan) was prepared with the support of GTZ/MSUD)
1990	Integrated Action Plan (IAP) preparation initiated
1991	Kathmandu Valley Urban Development plans and programs – Hal Crow Fox/ DHUD/ADB
1993	The study of Kathmandu Valley Urban Road Development –JICA
1999	Kathmandu Valley Mapping Program (KVMP)
2002	Long Term vision for Kathmandu Valley development, widely known as Vision 2020, Approved by Government of Nepal
2005 till date	Periodic Planning of Municipalities in Practice

As a follow-up of this study, a five year Kathmandu Urban Development Project (1994-99) was initiated in 1994 as a result of Loan Negotiation between HMG, ADB and Kathmandu Metropolitan City. The project comprising of several components (infrastructure and environment improvement works, link road and implementation assistance and institutional strengthening) is an important initiative towards implementation of the strategy plan for the Kathmandu Valley.

Since the first plan in 1956, Ten five-year plans have been implemented, with the Tenth five year plan implemented from 2002-2007. After 2007, due to political instability, a new five year plan has not been able to be formulated and

implemented in the country since 2007. The government has, however has now announced Three Year Interim Plan (2012-2015), known as the thirteenth three-year plan, for the interim period.

NPC's 13th three-year plan aims to transform Nepal into a developing country from least developed one. The proposed plan has a goal of reducing the number of people under the poverty line to 18 per cent from the existing 23.8 per cent. Development of hydropower and energy sectors, productivity growth of agro sector and its diversification and commercialization, basic education, health, drinking water and sanitation, good governance, expansion of roadways, development of physical infrastructures, tourism and trade are the priorities of the upcoming three-year development plan,

Reducing the existing trade deficit and attaining the higher economic growth rate are the main challenges of upcoming development plan that has a strategy of increasing the contributions of private, government and cooperate sectors, partners of three-pillar economic policy, to the sustainable, broad and inclusive economic development of country. Empowerment of targeted groups of people and minimization of negative impacts of climate change are other strategies of the 13th three-year development plan.

3.2.2 Some examples of Planning Efforts in Nepal

Kathmandu Valley Physical Development Plan 1969

The Physical Development Plan for the Kathmandu Valley was prepared by the Department of Housing, Building and Physical Planning, with the technical assistance from the United Nations. This was the first study that introduced the concept of physical planning for regional development and to undertake the comprehensive study of the Kathmandu Valley. The main objectives of the plan were the preservation of historical and cultural heritage, guided urban development through land use planning and densification of fringe areas. The plan was a guiding principle for ordered development in the Kathmandu valley and government promulgated a Town Development Implementation Act in 1972 to implement it. Kathmandu Valley Town Development Committee (KVTDC) was established under this Act and was entrusted with the overall responsibility of planning and regulating urban growth in Kathmandu valley. However, the 1969 plan was not formally adopted and implemented by the government (Burathoki, 2001).

Kathmandu Valley Urban Development Plans and Programs 1991

In 1991, the Kathmandu Valley Urban Development Plans and Programs were prepared, with assistance from the Asian Development Bank. It tried to envision the concept of Greater Kathmandu with Kathmandu and Lalitpur as a planning boundary, with the goal of developing Kathmandu Valley as a government center and a center of culture, tourism and historic conservation. The plan divided the area into 5 development zones with a proposal of a new Central Business District encompassing the areas of Durbar Marg, Jamal, Kamaladi, Bagbazarand Putalisadak, with an aim of relieving the pressure of business and commercial activities from the Kathmandu historic city core.

Unfortunately, this plan too was not endorsed officially, as a result of which, the 1976 Physical Development Plan is still the statutory plan for the development of Kathmandu Valley, which is supported by the building regulations to guide the development of the Kathmandu Valley (Ibid.).

Integrated Action Planning (IAP)

Against the backdrop of a series of planning initiatives of the past, the IAP approach is relatively a new introduction and has evolved through a process of application as training programs from 1989 to 1992; and operationalization in 22 municipalities.

The IAP as an alternative planning paradigm is defined as a community-driven, participatory planning process to facilitate development through the identification of realistic and affordable projects, integrated within a multi-sector development plan (MSIP) to support the goals of a physical and environmental development plan (PEDP).

Integrated Action Planning was expected to promote the use of spatial planning as well as to improve investment programming. This it had not succeeded in doing to any great extent. Efforts to use a fixed schedule of expenditures over 5 years as a guide were enormously weakened by the inabilities of municipalities to know the funds that would be available. The differences between the concept and practice of Integrated Action Planning, such as: Use of an MSIP without annual revisions, so that it remained a fixed schedule over 5 years; Closing of ward level meetings after cessation of the IAP exercise; Unsatisfactory participation of central government line agencies, perhaps the greatest obstacle to effective application of the IAP concept. Integrated Action planning focused on planning and development in local level. The plans and projects focused mainly on the development of local infrastructures and failed to address the development issues in a municipal or regional level (Mattingly et al.).

Long Term Development Concept for Kathmandu Valley (Vision 2020)

The Government of Nepal approved the Long Term Development Concept for Kathmandu Valley prepared by KVTDC in 2002**,** with an emphasis on consideration of a whole valley as single entity. It has highlighted that all development works should be carried out in context of the whole valley taking care of heritage, environment and ecology. The policies of the vision plan are:

- A valley-wide apex body to be formed with proportionate representation of local bodies;
- Job opportunities shall be decentralized so that people can settle in any location of the valley;
- Delineation of rural and urban boundaries so that separate planning standards can be enforced in rural and urban areas;
- Investments should be channelized to certain sectors only, so that densification, development of new towns, and allocation of future land can be delineated;
- A system of planning permits and environmental impact assessment shall be introduced;
- Tourism-related activities shall be promoted and polluting industries shall be relocated to other towns outside Kathmandu valley;
- Bhaktapur and other traditional settlements to be declared cultural towns, Kathmandu to be declared a single administrative entity;
- Protection of public parks and watershed areas;
- Development of cottage industries; and relocation of security establishments to fringe areas from urban core.

The plan (Vision 2020) has adopted the containment approach which mentions that urban development of Kathmandu valley should adopt compact urban form, conservation of heritage and protection of surrounding agricultural land for the ecological balance of the valley. If the concept is fully adopted and implemented by all sectors, the conservation of urban heritages and development of the valley could be achieved significantly.

Municipal Periodic Planning

Municipal plans based on integrated action planning technique have focused mostly on physical aspects only. The IAP's attention aimed towards ward level problems has become the cause of neglect in municipal level vision and desires. Although some municipalities have seen progress in physical aspects, issues such as social exclusion, urban poverty, environmental conservation, economic development, financial mobilization and municipal capacity building have almost been ignored in the previous planning efforts.

Local Self Governance Act (1998) has outlined the need of a participatory and comprehensive periodic plan for the municipalities, consisting sectoral goals and programs with a long-term vision and physical development plan of the municipality. As per the Local Self Government Regulations (1999), the periodic plan must propose activity schedule for five years as well as plan-making and approval procedures. The Municipal Periodic Planning Guideline 2002 prepared by Ministry of Local Development (current MoFALD) also requires and guides municipalities to prepare municipal periodic plans. Regarding the need of technical support to the municipalities, the Tenth Plan 2002-2007 has prioritized the preparation of periodic plans of municipalities. Nevertheless, none of the municipalities were found to have initiated the periodic plan as per the guidelines. Concerted efforts have been put by Department of Urban Development and Building Construction (DUDBC) in coordination with former Ministry of Local Development and the municipalities. The support includes preparation of municipal periodic plan, digital maps and profile of base line information. Organizations like GTZ/ UDLE and RUPP (Rural Urban Partnership Program) are also providing technical and financial assistance to municipalities in technical capacity building.

Long Term Development Planning

The concept of long term development planning has been derived from National Urban Policy 2007, which advocates the necessity of long term development plan through the strategy for balanced national urban structure: developing one regional economic center in development regions for the consolidation of industrial and trade related activities as well as social structure through infrastructure development.

Long term development plan is a planning document which not only consists of plans and programs for physical, social, economic and environment development of a particular region (generally an area with several VDCs and municipalities within same district, sharing a common resource base for development and livelihood)., but also a clear understanding of settlement network of those areas, transportation network, roles and function of the settlements. Likewise, a continuation to the earlier structure plans, land use and bye law framework for the settlements according to their identified roles and functions in the regional context is taken up in long term development plans.

Table 2 Brief comparision of planning approach in Nepal

Contents	**Master Plan/ Physical Development plan**	**Integreted Action plan**	**Municipal Periodic Plan**	**Long term Development Plan**
Plan Content	Vision, Goals, Policy, Maps-urban form	Maps-growth areas, Investment plan	Vision, goal, policy, map-growth plan, investment plan	Vision, Goals, Policy, Maps-urban form, urban growth as well as investment plan
Nature of Plan	Comprehensive	Strategic & incremental	Comprehensive	Comprehensive
Planning process	Rational-technocratic/ goal seeking	Participatory-need matching	Rational and participatory	Rational-technocratic/ goal seeking as well as participatory
Data collection and analysis	Extensive and lengthy	Rapid and short	Extensive	Extensive and comprehensive
Planning horizon	Long-range	Short-range	Short range on plans and programs, long range vision, goals and investment plan	Long-range

Link to implementation			Link to resource, program, & performance indicators	Link to resource, program, & performance indicators

3.3 CONCEPT OF INTEGRATED DEVELOPMENT PLAN

3.3.1 Introduction

In 1995 the Forum for Effective Planning and Development (FEPD) defined Integrated development planning as: "A participatory approach to integrate economic, sectoral, spatial, social, institutional, environmental and fiscal strategies in order to support the optimal allocation of scarce resources between sectors and geographical areas and across the population in a manner that provides sustainable growth, equity and the empowerment of the poor and the marginalized."

In order to ensure that available resources are optimally utilized towards the promotion of sustainable economic and social development, with the focus on viable service delivery, municipalities must implement the IDP process.

The value of integrated development planning for municipalities is embedded in the formulation of focused plans that are based on developmental priorities. This approach will assist with the curbing of wasteful expenditure and perpetual past spending patterns. Thus, the adoption of a more business-orientated approach is not aimed at running a municipality like a profit-bound company, but rather to ensure that scarce resources are allocated and spent effectively.

In addition to ensuring that all citizens have access to at least a minimum level of basic services, municipalities must now also take a leading role in addressing poverty and inherited inequities, and in promoting local economic and social development and democracy. Thus, service delivery should not merely be aimed at present demands, but municipalities are also required to make informed projections about and anticipate future demands in order to ensure effective, efficient and sustained service delivery over the short, medium and long term.

3.3.2 The purpose of Integrated Development Planning

Integrated Development Planning is a process through which municipalities and development regions prepare a strategic development plan which extends over a certain planning period, mostly long term period of 15-20 years. The Integrated Development Plan is a product of the IDP process. the IDP is the principal strategic planning instrument which guides and informs all planning, budgeting, management and decision-making process in a municipal area, or a development region.

Through Integrated development planning, which necessitates the involvement of all relevant stakeholders, a municipality/development region can :

- Identify its key development priorities;

- Formulate a clear vision, mission and values;
- Formulate appropriate strategies;
- Develop the appropriate organizational structure and systems to realize the vision and mission; and
- align resources with the development priorities.

IDP is a strategic planning tool in municipal, metropolitan, district and local level of plan that supersedes all other plans that guide development at local level. IDP is quintessentially a planning process that serves as a management tool that enables local bodies to determine the broad strategic view of its development requirements and address all key issues holistically.

3.3.3 The Core Planning components of the IDP

In a nutshell, the IDP process entails an assessment of the existing level of development and the identification of key development priorities. the Vision and mission statements for long term development flow from the aforesaid, with specific reference to critical developmental and internal transformational needs. the development strategies and objectives will be directed at bridging the gap between the existing level of development and the vision and mission. A very critical phase of the IDP process is to link planning to the municipal budget (i.e. allocation of internal or external funding to the identified projects), because this will ensure that the IDP directs the development and implementation of projects.

3.3.4 Benefits of integrated development planning

Focused and Proactive Management

Integrated development planning mobilizes a municipality to focus itself, develop a future- directed vision and proactively position itself in a changing environment. Furthermore, it enables a municipality to gain a better understanding of the changes it encounters and to identify effective methods to deal with such changes.

By analyzing the future, a municipality, its leaders, other stakeholders and civil society can anticipate future opportunities and threats. They can develop the ability to optimize opportunities, while controlling and minimizing the threats. By identifying problems before they occur, a municipality can avoid being trapped in a cycle of crises management, which consumes valuable financial and human resources – resources which could have been used to take advantage of opportunities.

Institutional Analysis

One of the key components of the IDP process is an internal organizational audit or analysis. Such an analysis allows the municipality to know and understand its own internal operations. On the basis of this understanding, the municipality is in a better position to manage the changes which will be required in order to bring about the desired future.

The aim of the analysis is to identify the municipality's strengths and weaknesses, including its structures, staff composition and deployment, financial situation and culture. The purpose is not to defend outdated and impractical structures, procedures and practices, but rather to establish an open-minded view of the organization, to recognize problems, shortcomings, limitations and imbalances and to identify ways to overcome it.

The institutional audit also focuses on exposing the vulnerability of the municipality in terms of identified threats. It highlights the capacity of the municipality to optimize opportunities, and be proactive and future-directed.

Matching Resources to Needs

Integrated development planning provides an opportunity to establish and prioritize the needs to be addressed by a municipality. It grants a municipality the opportunity to inform the community and all stakeholders about available resources, and to involve them in prioritizing services and service levels. It enables the municipality to allocate resources – human and financial – in order of priority. It also allows for the design of alternative service delivery mechanisms, such as public/private partnerships.

Project Management

The IDP may be defined as a holistic plan – the final product of the IDP process. It contains a range of projects, all designed to achieve specific development objectives. The IDP sets measurable development objectives and targets. For each of these objectives and targets a municipality assigns tasks – with set target dates – to specific persons or task teams. The municipality is then able to monitor the course of each action and make adjustments where necessary to ensure that the intended objective is achieved.

Performance Management

The IDP sets clear development objectives and targets, and provides direction to improve performance. It sets key performance indicators (KPI's) and the criteria for measuring performance – both for the overall IDP, and for specific projects. As such it enables management to align actions with set objectives.

"Customer satisfaction" also serves as a performance measure. External stakeholders (the "customers" of municipal services) are involved in identifying and prioritizing needs, they are able to judge whether the objectives and targets have been successfully achieved as planned. They are therefore an integral part of the monitoring process.

Realistic Planning

The community may set an idealistic vision for the future. However, by involving all stakeholders in the planning process and empowering them with knowledge about the municipality's weaknesses and strengths, and its resources and responsibilities, the municipality is able to develop a realistic, achievable plan for future development. Stakeholders are also more likely to prioritize their needs and expectations realistically when they are involved in the planning process.

Unification and Consensus Building

Integrated development planning provides an opportunity for stakeholders with different needs, priorities and agendas to learn from each other, and to negotiate and compromise around their established view points. The process is not without disagreement and conflict but, if well managed, it can promote consensus and allow compromises and agreements on common development objectives to be reached.

Through the process, councilors and officials also gain a better understanding of the municipality and the respective roles they must fulfill. This can enhance team work and promote commitment towards achieving the development and operational objectives contained in the IDP.

Empowerment of Stakeholders

Integrated development planning can also be termed "participative planning", because it involves the participation of all stakeholders. In terms of the Constitution, all spheres of government – national, provincial and local – are required to promote "co-operative governance" – that is, government which actively seeks to involve all those who have an interest in or a contribution to make. This is the corner stone of our new democracy and for municipalities, this means that the client base – the citizens and all affected stakeholders and groups – has to be involved in all decision-making which affects them.

However, meaningful participation entails that the community and stakeholders have to be empowered with the necessary information and knowledge about all the issues that have to be addressed. This will ensure constructive, practical and achievable objectives.

The IDP process is the medium through which such knowledge is channeled to stakeholders, and through which they are empowered to participate in planning for the future. Informed participation enables the community to take shared responsibility for the destiny of the municipality and provides the benefit of greater commitment by stakeholders towards the IDP.

3.3.5 Focused Budgeting

The IDP process facilitates budgeting in accordance with planning – it enables the budget to be linked to the IDP as required by the Systems Act. In particular, it provides for strategic management based on a budget, driven by the key development priorities. Stringent financial control and sound financial management are not possible unless there is a focused budget, based on specific objectives with no "fat reserves" (unallocated resources). Integrated development planning, if correctly carried out, ensures that realism dictates the budget.

3.3.6 Change Agent

Planning for future development also means planning for change. The IDP provides a tool for managing the change which automatically comes with development. Through the IDP process the mindsets of people are changed to

address the realities of the present and to embrace the opportunities the future holds. The process requires a new approach to management and planning, and determines the rules with which a municipality's structure and people must comply to develop a culture of change management.

3.4 REVIEW OF ACTS AND POLICIES

Planning Norms and Standards 2013 (2069 B.S.)

Planning Norms and Standards was prepared by DUDBC in 2013, after completing a comprehensive literature review of national and international planning documents, existing norms and standards and policy of urban development related agencies and after a series of discussions with experts from related planning agencies. The Planning Norms and Standards draft has been prepared in context of the lack of coherence between physical development plans and the need for providing appropriate norms and standards of urban infrastructure and services. It has been formulated to manage an urban environment, improve an economic efficiency and the quality of life of urban areas, and also to make built environment functional and desirable.

Town Development Act 1988 (2045 B.S.)

This Act authorized the government to establish as autonomous and corporate committee acting through a management board. According to this Act, town development committee can control, restrict any development work in its planning area. Without the permission of Town Planning Committee, nobody can use forests, natural resources, agricultural resources, animals, ancient monuments, pilgrim' rest houses and religious places, public land and any kind of new development. The act contains plan for integrated physical development of town, plan for renewal/redevelopment of towns, plans for extension and expansion of towns/conservation plans, plan of new towns and plan for land use/zoning. The approval of plans is done by TDC through MHPP.

National Urban Policy 2007 (2064)

National urban policy of Nepal has the objectives to promote a balanced urban structure, sustainable urban environment and effective urban management. The national urban policy views urban centers as catalysts for economic development and places the role of local governments at the core of urban development agenda, while recognizing that investments have not kept in pace with the urban growth.

The policy advocates the need for coordination and cooperation among the related central government agencies, local government bodies, non-government organizations, related private sectors and financial institutions responsible for planning, execution of physical infrastructures, provision of urban services and facilities and operation of urban economic activities. To achieve balanced national urban structure, the policy proposes the strategy of developing self-reliant development regions through planning and developing urban settlement systems in each region. The policy advocates for the development of infrastructure services and facilities along the north-south growth corridors to promote trade between Himalayan and Terai regions. The policy also proposes the development of at least one large urban center to serve as regional economic center for export promotion of industrial and consumption goods and to provide specialized services. The policy advocates the development of linkages of smaller and medium urban centers with regional economic centers.

To strive towards effective urban management, the policy proposes to strengthen the institutional capacity of local bodies for the implementation of urban plans and programs. The policy also proposes the development of urban management system based on integrated and collective approach for the urban centers bonded by geographical proximity, sharing common natural and physical resources and interlinked through similar activities.

National Urban Development Strategy 2015

National Urban Policy 2007 is the principal document for guiding urban development in Nepal. Endorsing all from NUD 2007, NUDS 2015 was formulated which aims to fulfill the existing necessity of a systematic approach for urban development. It provides a strategy for urban development for the next fifteen years (up to 2030) in various urban sectors such as infrastructure, finance, economy, investment, land, environment, transportation, solid waste management, water supply and sanitation and governance. It assesses the existing urban situation and proposes the intended urban system for the next fifteen years. Major milestones by 2031 include annual investment of 2 percent of GDP in urban infrastructure development, access to piped water and 100 lpcd in urban wards, sewerage in all urban core areas, total electrification in all urban areas with 80% of households with alternative sources, road density of 7.5km/sq.km and 80% paved road in existing municipalities, 50% of new residential housing through land readjustment, 100% solid waste collection, high speed internet availability in all large and medium towns, at least 2.5% of land as open space at ward level in old and 5% in new municipalities, disaster risk management plan and capability in all municipalities, and 70% contribution to GDP from urban areas.

The main objective of the National Urban Development Strategy (NUDS) is to develop medium and long term strategic vision of a desirable national and regional urban system based on existing trends and regional resource potentials. It assesses the existing conditions and establishes benchmarks and desirable standards and identifies prioritized strategic initiatives for investment in infrastructure and environment to realize the comparative advantages of urban areas. The objective of national urban development is also to achieve a balanced national and regional urban system that strengthens economic and functional base of urban centers through enhanced inter-urban and urban-rural linkages, establish effective and efficient infrastructure delivery system and maintain a healthy physical, natural and social environment. It also reviews the institutional framework to facilitate implementation and monitoring of National Urban Policy (2007) and proposed urban development strategies. The implementation of NUDS is also expected to complement Nepal's effort to graduate from Least Developed Country (LDC) to Developing Country (DC).

NUDS is guided by five basic principles, namely that urban centers should be sustainable, inclusive, resilient, green and efficient. Strategies have been conceived to achieve desirable condition in each major theme infrastructure, environment, economy and finance but also indicate the social, economic and cultural vision of urban areas reflecting the highest values of society. Each strategy is backed by a number of activities recommended for each lead and supportive agencies within the different levels of the government, NGOs and the private sector.

National Land Use Policy 2012 (2069 B.S)

Land and land resources had played a very important role in economy and people's livelihoods in Nepal. Agriculture, forestry and tourism are the major sectors contributing to the nation's GDP. Haphazard urbanization is putting pressure on agricultural lands as well as forest areas. Hence, National Land Use Policy was created in order to address the issues of land and land resources so that they can be utilized in environment friendly way.

Following are the divisions of land use as per the policy:

1. Agricultural area
2. Residential area
3. Commercial area
4. Industrial area
5. Forest Area
6. Area for public use
7. Other areas as needed

National Land Use Policy encourages management and conservation of land as per the division of land use. With an aim to regulate uncontrolled urban expansion, the policy has made several provisions such as, to restrict uncontrolled land fragmentation, and to promote settlement development and planned urban development at suitable and desired places. The policy also has provisions for minimum area for green and open spaces in urban areas.

The policy empowers the government to acquire land as needed for infrastructure development. There are also policies regarding conservation and development of various historic, religious and cultural areas. Land use zoning is proposed as per geography, capacity and suitability of land. The policy advocates the development of integrated urban development of settlements in mountain and hilly regions and proposes to develop agriculture, forest, mines and tourism areas according to land suitability and fertility. The policy also makes provision for the change is land use other than designated one as and when needed for public welfare and infrastructure development.

Guthi Corporation Act 1964

This act gives the definition of a Guthi (religious trust) and identifies the role and responsibilities of Guthi Sansthan (Corporation). This act gives exclusive power to the Guthi Corporation to manage properties under its ownership. The Act classifies Guthi into three categories: Private Guthi, State Guthi and Exempted Guthi. The Act provides continuity to the trusteeship corporation established under the Trusteeship Corporation of Guthi Sansthan. The Act also makes provision to use income from movable or immovable property, belonging to the Guthi for the performance of religious rites and festivals, preserve cultural heritage and monuments and other religious buildings, preserve ancient ornaments and articles of religious of and cultural importance. It prohibits registration of land belonging to temples or spaces for public festivals and worships.

Yet, the management of guthi land under this act has been unclear, and the Guthi Corporation has sold large amount of land under its ownership, to generate financial resources. The act has not been able to penalize individuals/institutions (tenants) who do not pay revenues. Due to the lack of proper management and record keeping, large amount of land and properties under its jurisdiction have been encroached upon and have been privatized through illegal means. This Corporation has been very much inefficient in taking care of the monuments and properties under its jurisdiction.

Environment Protection Act 1997 (2055 B.S.)

The government of Nepal published its first Environmental Protection Act on January 1997, mainly in order to maintain clean and healthy environment by minimizing, as far as possible, adverse impacts likely to be caused from environmental degradation on human beings, wildlife, plants, nature and physical objects. This Act is proponent to conduct Environmental Assessment of the prescribed plans and programsbefore implementation and Prohibits implementation of the proposal without approval. The Act empowers the government to give approval to the environmental assessment report.

The 4th, 5th and 6th provision of the act deals with submission and implementation of Proposal for approval. The 7th section includes rules for Prevention and Control of Pollution. Section 8, 9, 10, 11, and 12 includes provisions for environment inspector, Protection of National Heritage, Environment Protection Area, Establishment of a laboratory, Collection of Samples, respectively. In section 13, there is provision associated with the establishment and Operation of Environment Protection Fund. Similarly, provision regarding Power to Constitute Environment Protection Council, Concession and Facility, formation of committee, provision of compensation, Punishment, Appeal, Delegation of Power, are included in section 14, 15, 16, 17, 18, 19, 21, respectively. Conditions regarding Power to Frame Guidelines and Power to Frame Rules are elucidated in section 23 and 24. Section 3 mandates the proponents to conduct Environmental Assessment of the prescribed plans and programs before implementation.

Motor Vehicle and Transport management Act, 1993 (2050)

This act manages and regulates traffic management and development of convenient and effective transportation facilities to the public, prohibit driving of certain vehicles & in certain places for public security and welfare. The act necessitates the registration of vehicles and its withholding if the vehicles do not fulfill the required norms and standards. The act also Act constitutes a Transport management committee which regulates registration of vehicles based on set of criteria and guidelines and driving prohibition in certain areas regulated through the Department of Transportation and Transport management committee, chaired by the Chief District Officer. The Act also ensures the penalty provision of Rs. 200 - 15000 for any person using any vehicle in contravention to this Act.

Public Road Act 1974 (2031)

It prescribes rules for planned road construction with defined boundaries and road width as well as road construction with defined boundaries and road width. It prohibits any work on road without their prior approval and empowers the Department of roads. The act is specially to demolish house or structures built within road boundaries. This act prescribes rules for planned road construction with defined boundaries and road width. The Act prohibits any work on road without the prior approval from Department of Roads. This Act empowers the Department of Roads to demolish house or structures built within road boundaries. However the Act is silent over how to address the issue of a large number of unplanned roads being developed in urban and peri-urban areas and narrow roads, 1-3 m wide developing in dense residential areas.

Land Acquisition Act, 1977

Land acquisition through expropriation is governed chiefly by the land acquisition Act, 1977. This Act empowers the government, by notifying publicly in the specified places, to acquire private land for the well-being of the general public. This act provides legal basis in the acquisition of private land: for the development of public property and to cope with any other emergency situation. The authority of land acquisition has been entrusted to the Chief District Officer (CDO) of each district and compensation rates were fixed by a committee headed by CDO. As per the act. Compensation rates for land should be as per prevailing market rates.

The main limitation of this Act is due to the inadequacy on the amount of compensation to be paid to the land owner. Section 16 states that for the compensation to the land owner, the compensation committee must take into consideration the current land price, the value of improvement and crops, and potential losses incurred by the owner due to dislocation. In many cases, however, the law requires compensation to be equal to the fair market value or just value of the land. The Act also does not contain any requirement that compensation be paid within a certain time limit, due to which landowners can be harmed by long delays in receiving compensation, and development programs may be held up by legal and administrative disputes caused by the delays.

National Transport Policy 2001

Transport Policy was formulated in 2001 keeping in mind that it was the key component for the development activities for Nepal. It aims for development of sustainable urban transport system to improve social and economic development of Country. The principal objective of the National Transport Policy is to develop a reliable, cost effective, safe facility oriented and sustainable transport system that promotes and sustains the economic, social, cultural and tourism development of the Kingdom of Nepal as a whole.

The main strategy taken was by strengthening the local governance for the development and promotion of transport system and increasing the involvement of private sector for expansion and preservation of the transport system. It

has also indicated the limit and scope of work that will be done from the central level and taken responsibility of transport structure to be constructed from the central level.

This policy focus on short medium and long term master plan of construction and development of transportation infrastructure through central and local level. The necessity to connect all the district headquarter and east west mid hills highway and Cross border, regional and sub-regional transport and transit facilities led to formulation of this Policy. At the national level, the Policy emphasizes on North-South connectivity linking China and India—that may also serve as an important trade and transit corridor between China and India in the future. Apart from the present East-West Highway, the Policy proposes Mid-Hill Highway in the Hills and Hulaki Marg in the Southern Plains of Terai connecting east and west of the country. This policy also speaks about the safety and environmental aspect by introducing means of transport facility through solar power and electricity.

National Industrial Policy 2011

Industrial Policy, 2011 has been formulated with the objective of bringing positive changes in overall economic and social sectors of the country by means of sustainable and broad based industrial development. It aims in industrial productivity, local human and material resources, competitiveness and comparative advantages. It is expected that through this Policy, activities of industrial development will be increased; employment opportunities will be massively created and the level of income of people will be increased so that contribution of industrial sector in economy of the country will be at the forefront.

The policy proposed incentives for industrial investment along the least developed area, under developed area and un developed area, like Income taxes are exempted to industries that are established in these classified districts. This policy has been formulated in order to accelerate the pace of industrialization in response to the diversity in the service industry and opportunities arising out of them. In this policy, special provisions have been made for promotion of micro enterprises, cottage and small industries. Similarly, special policy provisions have been made for woman entrepreneurs, Dalit and disable workforce. Industrial policy is expected to have effect on influencing especially regional urban system as it encourages private investment to be channeled to underdeveloped regions.

According to National Industrial Policy 2011, Achham district is categorized under "Least Developed Area" and article 17.2 states, "Except in the case of an industry that produces all types of tobacco and liquors and kattha industries, the industries established in the least developed areas referred to in schedule-9 shall be entitled to ninety percent exemption in the income tax to be charged for ten years from the date of commencement of transaction."

Likewise, Baitadi district is categorized under "Undeveloped Area" as per National Industrial Policy 2011 and article 17.3 states "Except in the case of an industry that produces all types of tobacco and liquors and kattha industries, the industries established in the undeveloped areas referred to in schedule 10 shall be entitled to eighty percent exemption in the income tax to be charged for ten years from the date of commencement of transaction.

Therefore, it can be stated that through this policy, the government of Nepal encourages the socio-economic development of least and undeveloped areas of Nepal through the establishment of various industries in those areas, by giving substantial exemptions and subsidies in various government taxes to such industries established in least and undeveloped areas of Nepal.

Solid Waste Management act 2011

This act plays an important and beneficial part in management of the solid waste in a systematic and effective way. This act identifies the polluter as the main responsible for the management of the waste. In the various provisions in this SWMA 2011 the concept of 3R has been introduced like reducing the waste at its source, re-using the waste if

possible and Recycling and processing of the waste and finally disposal or discharge of the waste in Sanitary Land fill site. This act speaks about maintaining a clean and healthy environment through the reduction of adverse effects of waste to public health and environment. The provision of waste management council has also been created for effective management of the waste.

This act has outlined the duties of local government to take action against haphazard waste generation, disposal or collection of waste. The waste produced from the industries and Health sector are also considered as hazardous waste if not managed properly and the provision of penalty to the polluters has been included in this Act.

The main challenges of the act are no clear provision for small towns, and weaker enforcement. Solid waste Management have been major responsibility of the municipalities but it not on their top priority and lack of efficient resources mobilization has also hinder the effectiveness of managing the waste.

Ancient Monument Preservation Act (1956)

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

Motor Vehicle and Transport management Act (1993)

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

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

Public Road Act (1974)

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

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

National Road Standard (2070)

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

Nepal Urban Road Standard prepared by DUDBC (2071)

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

Nepal Urban Drain Standard prepared by DUDBC

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

Town Development Fund Act 2053

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

- To provide necessary economic and technical support to the body related with the development of town.

- To carry out or cause to carry out necessary functions to make the town neat and clean.

- To operate or cause to operate social service and income oriented project of various types.

- To carry out or cause to carry out functional research in order to identify the way of solution for the problems seen in respect of possible reforms to be made for the development of town.

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

Industrial Enterprise Act (1992)

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

Labor Act (1992)

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

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

National Transport Policy 2001

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

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

National Urban Policy (2064)

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

- To develop infrastructure services and direct investment to achieve balanced urban form

- To improve the livelihood of urban population through the creation of clean, secure and prosperous urban environment

- To make the local bodies capable of managing urban issues effectively through delegation of power, institutional strengthening and cooperation between agencies working in urban issues.

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

National Industrial Policy 2011

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

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

Land Use Policy (2069)

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

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

National Urban Development Strategy 2015

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

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

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

Building Bye-Laws

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

Model Building Bye Laws (2070)

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

Basic Building Byelaws for Settlement Development, Urban Planning and Building Construction (2072)

MoUD has published a basic building byelaw for guiding and regulating building construction and urban planning as well as reconstruction process in the country in the immediate aftermath of the recent Gorkha Earthquake. It tries to make the urban planning and building construction process more monitorable, holistic and disaster resilient. It has made provisions for the municipalities to implement risk sensitive land use planning mandatory. Likewise it has made provisions for resettlement of hazard prone areas, and reconstruction process more inclusive.

Byelaws of other cities

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

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

Planning Norms and Standards

The planning norms and standards prepared by DUDBC was released in its website in 2013 whereas published recently in 2015. It has set the planning guideline for the urban area of different population size. The norms has set the urban area with population size 40,000 to 100,000 as a city, thus the proposed NT's fall under the category of city. There are several criteria mentioned in the standards varying from the size of road, water supply and sanitary measures, electric supply, waste management, educational institutions, health institutions, stadiums, university, public library and so on. The provision of all the services and infrastructures has to be made during preparing the IDP for new towns.

Chapter 4
STUDY AREA

4.1 ADMINISTRATIVE AND GEOGRAPHIC STATUS

Sanfebagar New Town lies in Achham District of Seti Zone of Far-Western Region of Nepal. Sanfebagar lies adjacent to Mangalsen Municipality, the district headquarter of Achham district. This Town comprises of the area of former Sidheswor, Jalpadevi, Baijanath, Ridikot, Mastamandu, Bhageswor, Chandika and Nabathana VDCs. The total area of new town covers 63.45 sq. Km including 12 wards. Sanfebagar NT has Nandegada VDC, Gajara VDC and Janalikot VDC to its East, Ghughurkot VDC, Hattikot VDC, Budhakot VDC to its North, Markhu VDC and Lungra VDC to its West and Payal VDC, Mangalsen Municipality and Oligaun VDC of Achham District to its South. There are 2 electoral constituencies in Achham District and Sanfebagar Municipality Lies in constituency no. 1. The spatial extent of Sanfebagar New town is between 81°10' East to 81° 16' East and 29°12' North and29°16'North. It has diversified geographical plane which varies from elevation 595m to 1545 m above MSL. It has low to high hill mountains, Rivers, fields and besi areas (flat areas).

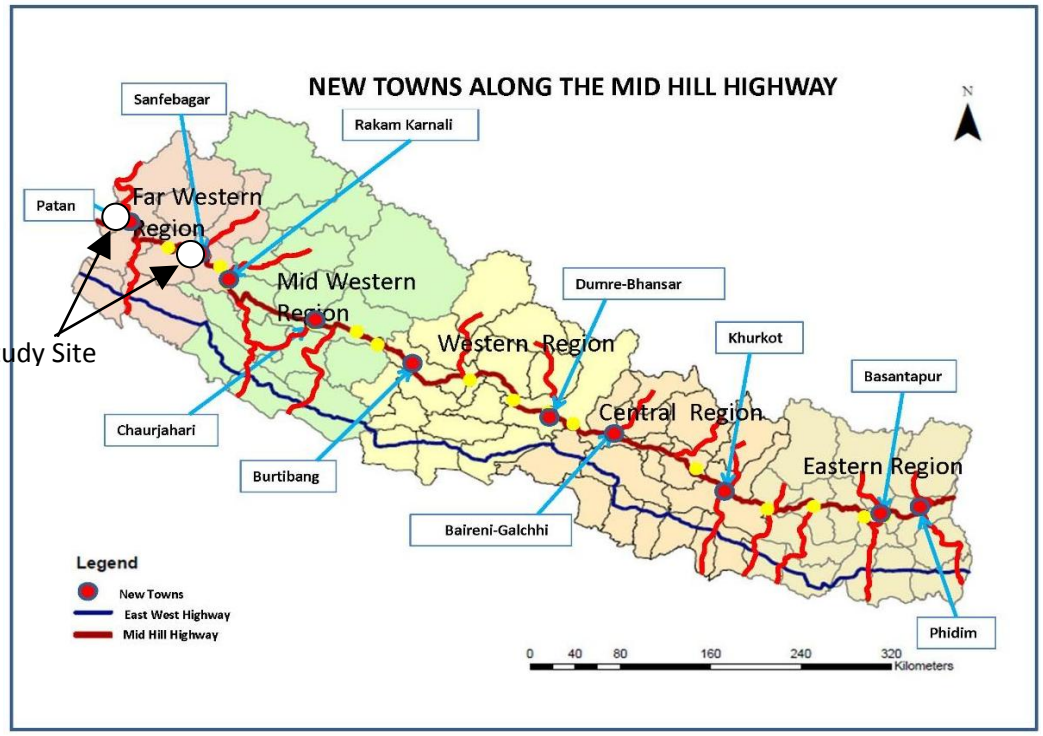


Figure 3: New Towns along the Mid-Hill Highway

4.1.1 Climate

Tropical to sub-tropical monsoon climate is found in Sanfebagar New town. It has varied temperature due to low and high hill mountains. Temperature of this area during winter season varied from 50 to 20 ° and 20° to 36° during summer season. The rainfall in rainy season in this area is due to its location on the sunny side of the Mahabharat Range. The average annual precipitation is 2000 mm and the rainy season is from late-May to early-October.

4.1.2 Water Shade and Water Bodies

Sanfebagar new town is rich in water sources. There is one major river, and many medium size riversand rivulets within New town. Budhiganga River is the major river of Sanfebagar New town which flows through the center of the town, north to south, delineating 6 of the 8 former VDCs that constitute the New Town (Siddheswor, Mastamandu,Jalpadevi, Ridikot, Baijanath and Chandika) . Other rivers flowing through the New town are Jijadigad, KailashKhola, ChepeKhola, Prabaligad andLungreligad, . These water sources are the primary sources of irrigation in New town. Jijadigad and Kailash khola flow at North and South boundary of New town. Besides, many rivulets and Arteries flow within new town. Arteries and rivers are the main source of drinking water of new town.

4.2 DEMOGRAPHY

4.2.1 Population Distribution

Altogether there are 12 wards in this newly formed municipality which is made from merging of 8 VDCs namely Baijinath, Bhageswor, Chandika, Jalpadevi, Mastamandu, Nawathana, Ridikot and Siddheswor. The total population of the New town is 18,239 as per the National Census 2011, of which the total male population is 8,291 and total female population is 9,948, such that the sex ratio is 833 i.e. the number of male in 1000 female. There are 3,829 households in Sanfebagar New Town. The population density of Sanfebagar New town is about 287 person per sq. km.

According to National Census 2011, there are 3,829 households living in Sanfebagar New town, and the average household size is 4.76 people per household. In terms of area, ward no. 12 is the largest ward with an area of about 12.8 sq. km, and ward no. 11 is the smallest ward with an area of about 1.6 sq. km. Similarly, in terms of population and household, ward no. 4 has the highest number of households and population, with total population of 2,476 people residing in ward no. 4 in 534 households. In terms of population density, ward no. 11 has the highest population density of 718 person per sq. km and ward no. 12 has the lowest population density of 75 person per sq. km.

Table 3 Sanfebagar-Population Density with Households

Municipality	Ward	Area	Households	Total population	Male	Percentage	Female	Percentage	Population Density
Sanfebagar	1	5.50	286	1,271	583	45.87	688	54.13	231
	2	4.55	302	1,409	573	40.67	836	59.33	310
	3	3.65	240	1,204	520	43.19	684	56.81	330
	4	3.75	534	2,476	1269	51.25	1207	48.75	338
	5	5.65	383	1,692	715	42.26	977	57.74	299
	6	4.30	439	2,104	1027	48.81	1077	51.19	489
	7	4.50	263	1,337	588	43.98	749	56.02	297
	8	5.85	372	2,005	956	47.68	1049	52.32	343
	9	3.65	243	1,091	461	42.25	630	57.75	299

Municipality	Ward	Area	Households	Total population	Male	Percentage	Female	Percentage	Population Density
	10	7.65	328	1,539	667	43.34	872	56.66	201
	11	1.60	234	1,148	515	44.86	633	55.14	718
	12	12.80	205	963	417	43.30	546	56.70	75
	Total	**63.450**	**3829**	**18239**	**8291**	**45.46**	**9948**	**54.54**	**287**

Source: CBS, 2011

4.2.2 Age-sex Composition

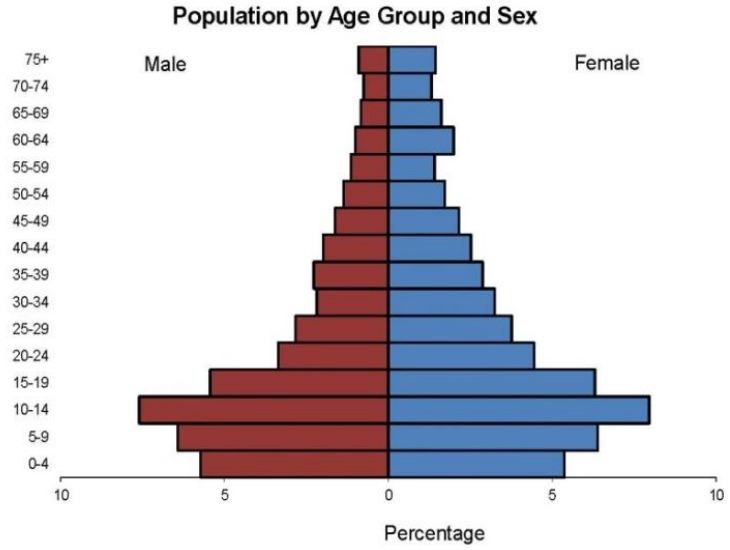
According to the National Census 2011, among the total population of Sanfebagar New Town, 9,238 people are in between the age of 0 to 15 years and 1,800 people are in between the age of 60 and 75+ years. We can see that larger part of the population belongs to economically active group followed by group of school going population. When we divide the total population according to various groups we can see that 50.65 percentage of population in Sanfebagar Municipality are from economically active group followed by 28.38 percentage of school going population, 11.10 percentages of children and 9.87 percentages of old aged people. Table below shows the details of population according to various age groups.

Table 4 Sanfebagar- Distribution of Population by Age Groups

Age Groups	Male		Female		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
0-4	1,044	51.58	980	48.42	2,024	11.10
5-14	2559	49.43	2618	50.57	5177	28.38
15-59	4050	43.84	5188	56.16	9238	50.65
60 and above	638	35.44	1162	64.56	1800	9.87
Total	8291	45.46	9,948	54.54	18,239	100.00

Source: CBS, 2011

Figure 4 Sanfebagar-Age-Sex Pyramid



4.2.3 Population by ethnicity

Chhetri is the highest population ethnic group in Sanfebagar New town, with almost 54 percent of the total population composition. Other Dalits and Kami are are the second and the third highest population group in Sanfebagar, with almost 19 percent and 11.6 percent respectively of the total population composition of the New town. As elsewhere in far-western region of Nepal, representation of janjatis in Sanfebagar New town are very few in numbers.

Table 5 Sanfebagar- Population by Caste Composition

Caste	Total No.	Percentage
Chhetri	9767	53.55
Brahman - Hill	948	5.20
Kami	2109	11.56
Damai/Dholi	745	4.08
Dalit Others	3441	18.87
Others	1229	6.74
Total	18239	100.00

Source CBS 2011

4.2.4 Population by mother tongue

The ethnic composition Sanfebagar New town shows presence of Chhetris to be more than half of the total population. Local Achhami language, a western dialect of Nepali language is the main language of communication in the New town, with more than 93 percent of the total population using it as the language of communication, followed by Nepali, which is used by about 4 percent of the total population and the rest 2.52 percent population have mother tongue of other languages like Doteli, Bajureli, Maithili, Tharu etc

Table 6 Sanfebagar-Population by mother tongue

S.N.	Mother Tongue	Number	Percentage
1	Achhami	17055	93.51
2	Nepali	724	3.97
3	Others	460	2.52
Total		**18239**	**100.00**

Source CBS, 2011

4.2.5 Population by Literacy

Based on the Census data 2011, out of total population, only 68.69 % are literate. Out of the total population composition, 74.43% male and 49.87% female are literate in Sanfebagar New town. The National Census data shows that literacy level of male population is satisfactory but that of female population is not adequate, as more than 50 percent of the total female population in the new town is still illiterate. Altogether 68.69 percentage of the population can read and write in this municipality while 28.47 percentage of the population can't read and write. Table 11 shows details of literacy status of both male and female in Sanfebagar municipality

Table 7 Sanfebagar-Literacy Status

	Can read & write	Percentage	Can read only	Percentage	Can't read & write	Percentage	Literacy not stated	Percentage	Total	Total Percentage
Male	6177	38.09	190	1.17	878	5.41	2	0.01	7247	
Female	4961	30.60	263	1.62	3739	23.06	5	0.03	8968	
Both Sex	11138	68.69	453	2.79	4617	28.47	7	0.04	16215	100.00

Source CBS 2011

4.2.6 Population by Education Level

As we can see in the following table, education attainment optimistic in Sanfebagar till secondary level. After that, number of person attending higher secondary level and above decreases rapidly, especially in case of female population. Early marriage of daughters is the main cause for shrink of female numbers while out flow of youth in search of jobs in India and other foreign countries are main causes for the decrease of male in higher education.

Table 8 Sanfebagar-Population by Educational Attainment

	Beginner	Primary (1-5)	Lower secondary (6 -8)	Secondary (9 -10)	S.L.C. & equiv.	Intermediate & equiv.	Graduate & equiv.	Graduate equiv. &	Others	Non-formal education	Level not stated	Total
Male	312	2,401	1,241	771	684	512	183	39	11	157	36	6,347
Female	244	2,187	1,060	616	394	269	37	3	3	310	23	5,146
Total	556	4,588	2,301	1,387	1,078	781	220	42	14	467	59	11,493

Source CBS 2011/12

4.2.7 Occupational Structure

Population in Sanfebagar are mainly concentrating in agriculture, services inside and outside country, domestic industries, laboring, health service, mechanics, tailoring, hotel and business activities. Agriculture is the main occupation where 58.18 percentage of working population engage themselves. After that comes service outside country where 30.46 percentage populations involve who mainly travel to different parts of India to make their living. Then comes other occupations like business, hotels, tailoring etc. Following table shows the details of occupation structures in Sanfebagar.

Table 9 Details of Occupational Structure in Sanfebagar

S.N.	Occupation Type	Population	Percentage	Remarks
1	Business	238	3.13	
2	Hotel	114	1.5	
3	Tailoring	87	1.14	
4	Mechanics	5	0.07	
5	Health service	13	0.17	
6	Labor	163	2.15	
7	Domestic Industry	118	1.55	
8	Service Within country	125	1.65	

9	Service Outside country	2313	30.46	
10	Agriculture	4418	58.18	

Source: District Profile Achham, 2011

4.2.8 Land Holding Pattern

In case of land holding there are 4.81 percentage of households which owns no land, 5.80 households owns less than 2 ropani, 19.40 percentage households owns between 2 and 4 ropanis, 31.47 percentage owns between 4 and 10 ropanis and 38.52 percentage own more than 10 ropanis of land. Households who own land have mostly two types of land viz. upland bari and low land khet. Upland bari is used to cultivate maize, millet, wheat, buckwheat, vegetables, pulses etc. as it lacks irrigation facility and low land khet is mostly used for paddy, potato, maize, vegetables, oilseeds, pulses etc because this area mostly near river stream or irrigated. Following tables shows the details of land holding pattern in Sanfebagar municipality.

Table 10 Sanfebagar- Landholding pattern

S.N.	Description	Households	Percentage	Remarks
1	No land	184	4.81	
2	Less than 2 Ropani	222	5.80	
3	Between 2 and 4 Ropani	743	19.40	
4	Between 4 and 10 Ropani	1205	31.47	
5	More than 10 Ropani	1475	38.52	
	Total	3829	100	

Source: District Profile Achham, 2011

4.3 REGIONAL CONTEXT

Mid Hill Highway section of Syaule-Sanfebagar (140 km) connects Sanfebagar new Town with Doti and Dadeldhura Districts. The Mahakali Highway connects Sanfebagar via Syaule to East West highway at Attariya (127 km). Likewise the Sanfe-Martadi Sadak links Achham with Bajura District which runs via Sanfebagar New town. Sanfebagar-Mangalsen Road connects the New town to the district headquarter Mangalsen. At present, Syaule Bazar Dadeldhura is the gateway to reaching Sanfebagar via road, and Sanfebagar is the gateway to Bajura District via road. The proposed SetiLokMarga would be connecting Sanfebagar to the western Terai region via Bauniya in Kailali district (Tikapur-Beni-Bauniya-Lodeghat-Sanfebagar Road), and would be connecting Sanfebagar New Town to Khaptad area, Bajhang District and to the Border with China at Taklakot (Sanfebagar-Khaptad-Chainpur-Urailek-Taklakot Road). Sanfebagar New town has 3 main market centers: ward no 4 Haatbazar, ward no 5 Airport Bazar, and waed no 11 Bayalpata bazar. These market centers are the centers of commerce and trade to the surrounding VDCs. The Hatbazar and Airport Bazars used to be the centers of trade and commerce to people from surrounding VDCs as well as to people as far as from Bajura, Humla, Kalikot etc. when the sanfebagar airport was in operation, there was no motorable road linkage to those districts the only linkage to Sanfebagar was via air transport.

4.4 PHYSICAL INFRASTRUCTURE

4.4.1 Road and Transportation

The under construction Mid-Hill Highway is the only highway that runs through Sanfebagar New Town. A part of Mid-Hill Highway (Sanfebagar to Mangalsen) of length 39 km is black-topped. There are three feeder roads running through the municipality. Mid-Hill Highway is foreseen to incorporate a district Road (Kailash khola to Bayalpata) that is planned to be upgraded to national highway.

There are about 70.82 km of all kinds of roads including Strategic Roads, District Core Roads and Municipality Roads within the New town. About 40.89 km of road is strategic road under the Department of Roads, 17.78 km road is District Core Road under District Development Committee Achham and Rural Access Program. About 12.15 km road is under Sanfebagar municipality, where most of the roads are fair weather in condition and needs upgrading.

Silgadhi-Sanfebagar Sadak(Chaukhutte Bazar-Sanfebagar Section) is the major strategic road for this municipality, which is about 26 km of black topped road, and it connects Achham District with Doti district via Sanfebagar. Sanfebagar–Martadi Sadak is a strategic road that links Bajura district to Achham district. Of the total 57 km, 14 km road lies within Achham district and has been black topped.

Table 11 National Highway and District Roads within the Sanfebagar New Town

Code	Description	Total Length	Black Topped	Gravel	Earthen
F051	Chaukhutte Bazar-Sanfebagar	26.0	26.0		
H18	Mangalsen-Sanfebagar	39.0	39.0		
F146	Sanfebagar-Rakse	14.0	14.0		
F195	Seti Lok Marga	15.0			15.0

Source: Achham District DTMP, 2013)

There is also an airport at Sanfebagar New town, at ward No 6. The airport is not in operation since 2056 B.S. Before the construction of Silgadhi-Sanfebagar Road, Achham district was connected to other parts of the country via air. The Maoist Insurgency and the opening of road linkage to Sanfebagar can be said to be the main reason for the airport to be out of operation. Though there has been some plans to reopen the airport by the government, so far the plans have not been materialized.

GoN has also proposed the construction of Seti Lokmarga from Tikapur via Bauniya, which will link Sanfebagar with the western Terai (via Tikapur-Beni-Lode-Sanfebagar), which will substantially minimize distance and travel time to reach Sanfebagar from the western terai, and strengthen its linkage with the rest of the country. At present, only about15 km of the road section has been constructed, mainly earthern track. With the construction of Seti Lokmarga, Sanfebagar will be connected to Khaptad National Park, Bajhang and Tibet (via Sanfebagar-Khaptad-Chainpur-Urailek-Taklakot road). Presently, the Department of Roads, Division Office Sanfebagar is opening an earthen track of 12.5 km road section of Sanfebagar-Budakot-Khaptad Sadak. Other roads that are going to be constructed in the new town by the Department of Roads, Division Division Office Sanfebagar are: Sanfe – Mastmandu-Nawathana-Nandegeda-Sodasa-Risidaha-Malika Sadak; Sanfe-Hattikot-Kuskot-Thanti-Rishidaha- Malika Sadak.

Table 12 Road Density per 1000 population within Sanfebagar New Town

Ward No	Total length km	Total Population	Population/1000	Road density km/1000
1	9.208	1,271	1.271	7.245
2	17.987	1,409	1.409	12.765
3	10.970	1,204	1.204	9.111
4	12.525	2,476	2.476	5.058
5	10.585	1,692	1.692	6.256
6	9.196	2,104	2.104	4.371

Ward No	Total length km	Total Population	Population/1000	Road density km/1000
7	8.027	1,337	1.337	6.003
8	14.355	2,005	2.005	7.160
9	10.403	1,091	1.091	9.535
10	17.688	1,539	1.539	11.493
11	11.153	1,148	1.148	9.715
12	18.773	963	0.963	19.494
Total	**150.869**	**18,239**		**8.272**

4.4.2 Water Supply

According to Planning norms and standard, 80% of household should have metered connected water supply system and treatment plant for water supply is necessary. Every Public service buildings should have facilities of Rain water harvesting. The minimum quantity of water is 80-100 lpcd i.e total of 10mld for a city and storage capacity should be 25% of treatment capacity. In the context of Sanfebagar New town safe and adequate drinking water supply is grossly insufficient and not well managed. According to the local inhabitants, availability of drinking water is the main problem they face in the New town. The New Town does not have municipal level water supply line; neither does it have any water treatment plant. However, in comparison to other District VDCs, water supply system in Sanfebagar new town is relatively good, but still water supply system is in its rudimentary stage. Service is not provided to whole of municipality areas. In the bazar areas such as Hat Bazar, Airport Bazar and Bayalpata Bazar, the shortage of water supply is critically felt. So there is an urgent need to extend its supply in order to meet the present and future demand of water. Department of Urban Development and Building Construction, Division Office Doti has constructed a number of Water supply projects to cater to the bazar areas in Siddheswor and Mastamandu VDCs. These are:

Table 13 Water Supply Projects by DUDBC Division Office, Doti

Name of Project	Name of Intake	Reservoir Tank Capacity	Reservoir Tank Location	Proposed No. of Taps	No. of Taps Constructed
Siddheswor WS Project	Sugarkhet-Badakhet	5 cu. m	Bastigaun (Proposed)	22	8
		20 cu. m	Goligaun (Existing)		
		20 cu. m	Haat Bazar (Construction completed)		
Mastamandu WS Project	Rakse Mul	5 cu m	Mastamandu (Construction Completed)	20	8
		20 cu m	Jankalyantol (Existing)		
Shitalpani WS Project	Budhiganga River Bank (Boring)	5 cu. m	Dhoden (Construction Completed)		5

Source: New Town Field Office, Sanfebagar, 2015

Apart from the WS projects constructed by DUDBC Doti Division office, the Water Supply and Sanitation Sub-Division office has also been constructing a number of water supply projects within the municipality. These WS projects are:

Table 14 Water Supply Projects in Sanfebagar New Town

Name of Project	Project Area	Start Year	Completion Year	Population served	Total Population to be served
Chandika WS Project	Sanfebagar NP Ward No 11, 12	2067/68	2073/74	2,040	2,871
Sanfebagar Hat Bazar WS Project	Sanfebagar NP Ward No. 4,5	2068/69	2073/74	321	2,833
Markhola-Nawathana WS Project	Sanfebagar NP Ward No. 8	2071/72	2073/74	284	855
Mastamandu 6, 9 Puranokot WS Project	Sanfebagar NP Ward No. 6,7	2071/72	2074/75	440	1,238
Shreekot-Jalpadevi WS Project	Sanfebagar NP Ward No. 2,3	2071/72	2074/75		1,765
Ridikot 6,9 WS Project	Sanfebagar NP	2071/72	2074/75	200	1,765
Chapami Rajigaun Nawathana WS Project	Sanfebagar NP Ward No 8	2068/69	2073/74	3280	3280
Tutemagra-Bayalpata WS Project	Sanfebagar NP	2072/73	2075/76		

Source: Water Supply and Sanitation Sub-Division Office, Achham

4.4.3 Sanitation / Sewerage System

There is no sewerage and proper drainage network in Sanfebagar. Side drain is constructed only alongside of the Sanfebagar– Mangalsen Road, mainly in Hat Bazar area and Airport Bazar area. Due to lack of side drain as well as proper management of existing side drain, roads generally could not function properly during all seasons.

Most of the residences on bazar areas have safety tank and soak pits for sewage disposal. In the other areas of the municipality, people use pit latrine for sewage disposal. The municipality does not have any provision for solid waste management, nor does it have provision for waste water treatment facility. Waste water from the residences near to the river tributaries is directly disposed to Budiganga, ChipeKhola and Prabaligad.

More than half (53.8 %) of the households in Sanfebagar have modern flush toilets in their houses but nearly half (41.58 %) still have not toilet facilities in their houses. They still defecate in open spaces which is an alarming signal in this newly developing urban area.

Table 15 Households with Toilet Facilities in Sanfebagar New Town

Municipality	Total households	Households without toilet facility	Households with toilet facility of		Toilet facility not stated
			Flush toilet	Ordinary toilet	
Sanfebagar	3,829	1,592	2,060	151	26
Percentage	100	41.58	53.80	3.94	0.68

Source: CBS 2011

With expansion of settlement, quantity of waste increases which may pollute the River and it may directly affect the environment of the New Town. Therefore, keeping in view of the targeted population for New town, the need for a land fill site and a waste water treatment plant is urgently felt in the New Town.

4.4.4 Electricity Supply System

Electricity service for Sanfebagar New town is governed by Nepal Electricity authority, Attariya sub-station. Nepal Electricity office Achham Division Office is located at Sanfebagar WN. 6. All wards of Sanfebagar new town is facilitated with electricity, but some areas of the municipality do not have electricity supply lines. Within the municipality, 3,500 metered electricity lines are presently distributed. Both 2 phase and 3 phase lines are available for household and for Small Scale Industry (1 line of two phase and 3 line of 3 phase distributed in the municipality).However, the main problem of electricity supply within the New town is the problem of voltage drop. Mostly during the morning and evening peak hours, voltage is fluctuating and there is unannounced load shedding on regular basis. Another major problem of electricity supply in the New town is the worn-out conditions of electric poles and electric transformers, which need immediate maintenance and upgrading. According to NEA officials, a sub-station (132KV/33KV) is also proposed at Dadeldhura, and another one (33KV/11 KV) sub-station proposed at Kamalbazar, which would be largely solving the electricity related problems within the municipality.

There is also a micro-hydro project from Kailash Khola, of the capacity of 400 kilowatt, which used to supply electricity to the New Town and surrounding VDCs earlier, but due to the lack of maintenance, the hydropower has not been in operation for a few years. At present, a hydro power project, Budiganga Hydropower Project is being constructed by the Ministry of Energy, Department of Electricity Development, at Ghugurkot VDC near Thanti Bazar, on the outskirts of the New Town. The hydropower project has proposed to build its reservoir at Babla VDC W.N. 3. The capacity of the Hydropower project is proposed to be 20 MW. There have also been feasibility studies of other small hydro power projects by private sector in Budiganga River, of capacities 8.5 MW and 6.5 MW respectively. Besides Budiganga, other major streams of Sanfebagar also have potential of many Micro Hydropower Project.

4.4.5 Information and Communication

Almost all household of Sanfebagar New town uses some means of communication. Most common means are Mobile Phone, television and Radio. There is a facility of PSTN line only within Ridikot, Chandika, Siddheswor and Mastamandu. According to Nepal Telecom office, Sanfebagar, 159 PSTN lines and 58 ADSL internet lines are distributed within the New town. There is mobile network service of NCELL, GSM mobile of Nepal Telecom and CDMA within all area of new town but network signal of NTC is very low in the Sanfebagar New town area. So, network towers of NTC needs to be extended for Sanfebagar. There is a presence of Telecom tower in ward no 6. Internet service of web surfer and ADSL is available only within Siddheswor and Mastamandu.

Table 16 Number of PSTN and ADSL Lines distributed in Sanfebagar New Town

Ward No	Former VDC	PSTN Number	ADSL Number
11	Bayalpata/Chandika	25	1
10	Ridikot	12	4
6	Mastamandu	72	43
4	Siddheswor	50	10
Total		159	58

Source: Nepal Telecom Sanfebagar, 2015

There are a few local FM stations Ramaroshan FM , Baijanath FM and a local TV station, Ramaroshan TV in the New town. Private cable television networks such as Dish Home TV lines are distributed mainly on Hatbazar and Airport

bazaar areas. Local newspapers are also available in the New Town, most of which are published from Mangalsen. There are Ilaka Hulak Offices at former Chandika and Jalpadevi VDCs, and Atirikta Hulak offices at Siddheswor, Mastamandu, Baijanath and Nawathana VDCs. These postal offices have been planned to be developed as Tele centers, but due to the lack of manpower and resources, the plan has not materialized yet.

4.5 SOCIAL INFRASTRUCTURE

4.5.1 Education

There are 2 campuses, 4 higher secondary schools (two private), 7 secondary schools (three private), 3lower secondary school (One private) and 27 primary schools in Sanfebagar New Town. Details of schools, numbers of students, location are shown in annex.

Presently, a secondary school, Janakalyan Ma Vi at ward no 5 is being upgraded to higher secondary school and a CTEVT Technical School is being constructed within the premises of the school. There are a number of primary schools in the New town, with a total of 27 primary schools established in different wards. However, the distribution of Lower Secondary, Secondary and Higher Secondary schools in different wards is unproportioned. Ward no. 2 has 2 primary schools for a population of 1,409 but other than the primary schools, there are no other educational institutions in ward no. 2. Likewise, there are no other educational institutions in wards 9, 10 and 12 except for primary schools. Relatively, the number of Secondary and Higher Secondary Schools in Sanfebagar is less as compared to primary schools. It shows that the students from those wards have to travel longer distance to go to secondary and higher secondary schools. Higher level educational institutions are located near to the bazar areas and main roads, so the students from rural areas of the municipality have to travel longer distances.

Table 17 Number of Schools in Sanfebagar New Town

Ward	Number of school					Ward Population (CBS:2068)
	Primary	Lower Secondary	Secondary	Higher Secondary	Campus	
1	2	1		1		1,271
2	2					1,409
3	3		1	1	1	1,204
4	2		1			2,476
5	3			1		1,692
6			1	1		2,104
7	1	1				1,337
8	5		1			2,005
9	2					1,091
10	3					1,539
11	1	1		1	1	1,148
12	3					963
Total	**27**	**3**	**4**	**5**	**2**	

Source: Flash Report, District Education Office Achham, 2071 B.S

4.5.2 Health Institution

At Present, there are two heath posts (Siddheswor HP and Shreekot HP) and five sub-health posts (Nawathana, Jalpadevi, Chandika, Baijanath, Mastamandu Sub-HP) in Sanfebagar New town and one community health center at ward no. 4. There are 3 medical shops in ward no. 7 and one each in ward nos. 4, 11 and 1. There is one hospital with 27 bed capacity (20 general beds, 7 ICU beds) at ward no 10, Bayalpata Hospital which is run by an American NGO "Possible Health" via a public-private partnership with the Nepali government's Ministry of Health and Population. The Hospital has a total number of about 104 staff constituting of 13 doctors, 19 nurses, 7 CMA, 14 HA, 4 Lab Assistants, 3 in Pharmacy, 2 in X-Ray Department and the rest are administrative staff. According to a hospital staff, the hospital provides free medical service to all its patients, thus the flow of patients from not only the New town and surrounding VDCs, but also from other districts such as Dadeldhura, Bajura, Humla and Bajhang is increasing per year. According to the latest record (071/72) of patients, the hospital provides service to an average of 70,000 patients per year.

The Health posts and sub-health posts however lack both medical facilities and manpower. The health posts do not have appointment of Doctors in health posts; they lack medical equipment and services, mostly being delivery services, medical cases requiring operations to name a few. Likewise, the accessibility to the health posts and sub-health posts is difficult from major settlement areas within the New town. For quality medical services, the inhabitants of New Town go either to Bayalpata Hospital, to Dhangadi/Nepalgunj or to Kathmandu. Besides, people still believe in traditional health care technique like dhami and jhakri due to lack of quality health service and awareness in people in rural areas of the New town.

Table 18 Top Ten Diseases in Sanfebagar New Town

S. No	Diseases	Percentage (%)
1.	Acute upper respiratory infections	10.3
2.	Gastritis and duodenitis	8.5
3.	Headache	6.9
4.	Unspecified acute lower respiratory infections	6.5
5.	Scabies	4.2
6.	Diarrhoea	4.0
7.	Dysentery	3.9
8.	Falls/Injuries/Fractures	3.7
9.	Intestinal Worms	2.8
10.	Lower Abdominal Pain	2.7

Source: District Health Office, Achham

4.5.3 Open Space

According to WHO standard, there should be a provision of 1.5 to 3 hectares of open spaces per thousand population. Open space refers to the areas of land without human built structures which are left open for the use of public, such as parks, courtyards, swimming pools etc. In Sanfebagar New Town, apart from small to medium scale school playgrounds, there are no public open spaces or play grounds in the New town. There is a barren land at ward no 4, on the river banks of Budiganga River, which is being used as a playground by local children. Apart from that, there are no neighborhood parks, local parks, community parks within the New town. At present, school ground of Janakalyan Secondary School is also used for community gatherings and other social occasions mainly by the people living the proximity of Haat Bazar and Airport Bazar (Ward no. 4. 5 and 6). According to the locals, there is a possibility of construction of a stadium/playground at Piranha, ward no. 4. The need of provision of open spaces for future population can be justified in

the New town. There is also the possibility of development of a sports ground on the banks of Budiganga River, at ward no 1 Baijanath, with the provision of embankment structures on Budiganga River.

4.5.4 Community Buildings (Library, community halls etc.)

Community buildings are the public buildings where members of a community tend to gather for group activities, social support, public information, and other purposes. In context of the New Town there are no community facilities within the municipality. The communities at present gather either at the school grounds, or at open fields/barren lands for social gatherings. Institutions within the New towns conduct public meetings at seminar/meeting halls of private hotels. There is no community library within new town. In context of the future population, there is a need for provision of community hall with library and information facility in the New town.

4.5.5 Fire Stations

There is no fire brigade/station in Sanfebagar New town. The newly formed Sanfebagar Municipality office also does not have a fire brigade.

4.5.6 Religious Institutions

There are many religious temples Sanfebagar New town. Among them Baijanath Mandir at ward no. 1, Prabha Madi (Dharmashala) at Ward no. 4, Tripurasundari temple and Jalpadevi temple at Jalpadevi VDC are famous. Jimradi area, the confluence of Budiganga and Kailash Khola is also famous amongst locals as well as to people from neighboring VDCs. Every temple have its own religious significance and are a source for touristic attraction. Such religious places may be developed as the major attraction for internal tourists from neighboring VDC's and promote internal tourism.

At present, the areas near the banks of Budiganga, Prabaligad and Kailash Khola are used as cremation areas. Different places are being used by different castes and cultures for incineration/cremation. But, managed and fixed cremation area is not identified yet.

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

There are no recreational buildings and facilities in Sanfebagar New town.

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

According to National Census 2011, 333 people in Sanfebagar New town have some or other type of disabilities. The Sanfebagar Municipality since the last year has been providing those people with disability identification card and some amount of money per month as disability allowance. However, there are no social welfare centers such as elderly homes, orphanage or centers for disabled persons. Likewise, there are no provisions for elderly or disable-friendly physical infrastructure in the schools or public institutions in the New town.

4.5.9 Security

There is also police station in Sanfebagar New town ward no 1 and police station at ward no. 7. There is also Ilaka Police Station at ward no 10 which provide security services to Sanfebagar New town. There is also an Armed Police Force Base Camp (Khaptad Gulma) at Ward No. 11, and a Traffic Police Office at ward no. 6. Compared to other VDCs, Sanfebagar New town is considered as safe and secure place. Except general conflict, and occasional incidences of theft, and minor scuffles, there is no serious type of criminal activities in Sanfebagar new town. Most of the conflicts are solved within community level.

4.5.10 Travel Time

Main market are situated in ward no 4 and 6 of the municipality which they call hat bazaar and airport bazaar respectively. These markets are within walking distance of 10-15 minutes from mastamandu, siddheswor and

chandika villages, 30-45 minutes from baijanath village, 45-60 minutes from nawathana village and 1-2 hrs from ridikot and bhageswor village. Different types of health centers are available in different parts of Sanfebagar new town. One hospital, two health-posts, 5 sub-health posts and one community center are available here. People have access to these but in varying time frame. Hospital is within 10 minutes to 3 hrs of walking distance while health post is within 30 minutes of walking distance. Sub health-posts are scattered around the area which are within 10 to 120 minutes of walking distance. Primary schools are available in all but one ward that is why it is within 10 to 20 minutes of walking distance. Secondary schools are only 4 which are situated in ward no. 3, 4, 6, and 8 which is why some students may have to walk for almost an hour to reach. Higher secondary schools are also within 1 hr. of walking distance from all areas. Two public colleges are available which teaches science, management, humanities and education which are situated in ward no. 3 and 11. These colleges are within 10 minutes to 3 hrs of walking distance. So some students may have to stay away from their house for higher education. Table no 32 below shows details of different services and travel time to reach their by foot from different parts of the Sanfebagar.

Table 19 Travel Time to Service Areas within Sanfebagar New Town

S. N	Particualrs	Description	Travel Time		Place of Services
			Min	Max	
1	Main Market		10	120	Ward no 4 and 6
2	Health centers	Hospital	10	180	Chandika
		Health post	10	30	Siddheswor and Srikot
		Sub Health post	10	120	Nawathana, Jalpadevi, Chandika, Baijanath, Mastamandu
		Community Health Center	10	30	Siddheswor ward no 4
3	School	Primary	10	20	Ward no 1,2,3,4,5,7,8,9,10,11, and 12
		Secondary	10	60	ward no. 3,4,6, and 8
		Higher Secondary	10	60	Ward no. 1,3,5,6, and 11
4	College		10	180	Ward no. 3 and 11
5	Road Heads		10	30	All VDCs

Source: Sample Survey 2015

4.5.11 Disability Status

There are number of people who are physically disabled and having other disability. Altogether there are 223 physically disabled people, 162 having blindness or low vision, 8 are deaf, 60 have speech problem, 34 are mentally disable, 8 are intellectual disable, and 73 have multiple disability. These people are having assistance from local NGOs and some government assistance is also available. Social security allowance is also available for those who are partially or fully disabled.

Table 20 Population having disability in Sanfebagar New town

Population having disability Type							
Physical	Blindness/ low vision	Deaf / hard to hearing	Deaf – blind	Speech problem	Mental disability	Intellectual disability	Multiple disability
223	162	61	8	60	34	8	73

Source: CBS, 2011

4.6 ECONOMIC SERVICES AND INFRASTRUCTURE

4.6.1 Land Holding Pattern

In case of land holding there are 4.81 percentage of households which owns no land, 5.80 households owns less than 2 ropani, 19.40 percentage households owns between 2 and 4 ropanis, 31.47 percentage owns between 4 and 10 ropanis and 38.52 percentage own more than 10 ropanis of land. Households who own land have mostly two types of land viz. upland Bari and low land khet. Upland bari is used to cultivate maize, millet, wheat, buckwheat, vegetables, pulses etc. as it lacks irrigation facility and low land khet is mostly used for paddy, potato, maize, vegetables, oilseeds, pulses etc because this area mostly near river stream or irrigated. Following tables shows the details of land holding pattern in Sanfebagar municipality.

Table 21 Landholding pattern in Sanfebagar

S.N.	Description	Households	Percentage	Remarks
1	No land	184	4.81	
2	Less than 2 Ropani	222	5.80	
3	Between 2 and 4 Ropani	743	19.40	
4	Between 4 and 10 Ropani	1205	31.47	
5	More than 10 Ropani	1475	38.52	
	Total	3829	100	

Source: District Profile Achham, 2011

4.6.2 Major Crops

All the major crops which are cultivated around the Achham districts are also cultivated in Sanfebagar. Like other areas of Nepal there are two systems of cultivation based on lowland/khet and upland Bari. Khet is cultivated with mostly paddy in one season and other crops like wheat, vegetables, potato, pulses, beans and oilseeds in other seasons. Bari is used for mostly maize in one season and other crops like mustard, millet, wheat, barley, oilseeds, beans, and pulses in other seasons. Following table shows the types of major crops cultivated in Sanfebagar.

Table 22 Major crops and cultivation system in Sanfebagar

Cultivation system based on Lowland/Khet	Cultivation System Based On upland/bari
Paddy-Wheat	Maize-mustard
Paddy-Vegetables	maize-wheat-mustard
Paddy-Potato	maize-pulses-mustard
Paddy-fallow	maize-wheat
Paddy-Ghaiya rice-Mustard-Cheakpeas	maize-millet-barley
Ghaiya rice-paddy-soyabean-Horse gram-Mustard-peas	maize-cheakpeas
	potato-fallow
	millet-fallow
	Horse gram-black gram-wheat
	wheat-barley-Uwa-fallow

Source: District Profile Achham, 2011

4.6.3 Institutional Effort for Agricultural Development

Achham district has provided agricultural services to farmers through 7 different places. In Sanfebagar there is an agricultural service center which provides agricultural services to farmers from mastamandau, siddheswor, jalpadevi

and other parts of this municipality as well as other nearing parts like ghughurkot, hattikot, kuskot, khaptad etc. Apart from that district agriculture development office, Achham has selected some pocket areas to develop agriculture sector in the district. In Sanfebagar there are two pocket areas for vegetables and soybean cultivation.

Table 23 Pocket areas for agriculture development in Sanfebagar New Town

S.N.	Description of Pocket Area	Parts included in Pocket Area	Beneficiary Household	Annual Production MT	Import Area
1	Professional Vegetable Cultivation Development Project Pocket Area Sanfbagar	Mastamandau, Jalpadevi, Siddheswor, Nawathana	675	233	Mangalsen, Jayagadh, Bayalpata
2	Soybean Cultivation Development Project Pocket Area, Bayalpata	Chandika, Bhageswor, Ridikot	450	128	Dhangadhi

Source: District Profile Achham, 2011

4.6.4 Livestock Holding

District livestock service office (DLSO) Achham has declared some pocket areas around the district to promote livestock and poultry farming. Some of the parts in Sanfebagar are under such pocket area like Jalpadevi for buffalo farming, Jalpadevi, Siddheswor, Baijanath, Mastamandau, Ridikot, and Chandika for cow farming, Jalpadevi for goat farming, Jalpadevi, Mastamandau, and Baijanath for pig farming, Baijanath, Jalpadevi, Mastamandau, Ridikot, and Siddheswor for poultry farming. Table 35 shows the details of livestock and poultry farming in Sanfebagar municipality. Despite some efforts of DLSO, interest of people in this region is not that much encouraging in livestock holding because there are not large number of hybrid cows, buffaloes, goats, and ships. In spite of this, people are gradually starting to keep hybrid hens and pigs. There are two large poultry farming in Sanfebagar in which more than 2500 hens are kept.

Table 24 Number of livestock and poultry in Sanfebagar New Town

S.N.	Cattle Type	Local	Hybrid	Projected	Remarks
1	Cow	7460	8	7468	
2	Buffalo	2895	6	2901	
3	Goat	1101	85	1186	
4	Ship	244		244	
5	Pig		70	70	
6	Poultry	1312	7000	8312	

Source: DLSO, 2014

According to DLSO, average productivity of cow is just 1.2 L per day and that of buffalo is 3.5L per day which is too below. It shows that farmers are keeping animals for just domestic consumption and for farming utilities. This is because of the lack of market for dairy products. Nearest dairy industry from Sanfebagar is in Jaikot which is more than 15 km away. Development of new town and increasing number of population around will help people to consider livestock holding as profession.

4.6.5 Industry

At present, there are no large scale or middle scale industries in Sanfebagar new town. There is a gradual increase of aggregate making industry in the banks of Budiganga River and its tributaries. At present, the aggregate industry is

not organized and there is no standardization in pricing of aggregate per trip. Though the locals say that there is availability of mines and minerals in the new town, there has not been any initiative to make commercial use of such mines and minerals yet. Likewise, there is a potential of Non timber forest based product processing industry as well as agro-forestry based industry of products such as amala, ritha, bojho, kurilo, cinamon, lokta etc in the new town, but due to the lack of commercial farming as well as collection and processing infrastructure in the new town, processing industries of such products have not been established in the new town yet. Likewise, the new town has a good potential for commercial vegetables and fruit farming and processing industries of such products, but mainly due to the lack of commercial farming, collection and processing infrastructure, such industries also have not been established in the new town.

At present, there are only small scale industries in the new town that are registered in the office of Department of Cottage and Small Industries, Mangalsen. The records of the Mangalsen office shows that there are a number of agriculture and poultry based industries/farms in Sanfebagar New town, commercial farming of goats, Bee keeping, wax and candle making industry, a small scale brick factory and a veneer making industry, few timber and steel furniture making establishments etc within Sanfebagar New town. Therefore, as Sanfebagar is being proposed to be developed as new town, the economic growth potential of the new town needs to be identified and propagated.

4.6.6 Trade & Services

Sanfebagar New town is a trade and business center for the surrounding VDCs. Former VDCs, Siddheswor and Mastamandu were the market centers for people from other VDCs of Achham, as well as to people from the surrounding districts of Bajura and Humla, when Sanfebagar Airport was in operation. Locals still recall the times when Sanfebagar airport used to be the only mode of transport to and from Achham, Bajura and Humla. Airport Bazar at former Mastamandu VDC and Hat Bazar at former Siddheswor VDC used to be the main market centers for trade and commerce for people within Achham and also for people from the surrounding districts such as Bajura and Humla. With the construction of connecting roads from Silgadhi via Sanfebagar to Mangalsen and Sanfebagar-Martadi road and the discontinuation of flights to and from Sanfebagar, the trade and services in the markets of Sanfebagar have declined. However, Sanfebagar is still a transit point to district headquarter Mangalsen and to Bajura. Supplies from the major trade centers of Nepal such as Nepalgunj, Dhangadi and Mahendranagar get to Sanfebagar via road transportation and from Sanfebagar to the markets in the neighbouring VDCs, and neighbouring districts. The main transactions seen are items of daily consumption such as fruits and vegetables, cereal crops etc. Most of the items for daily consumption, clothing, fuel and construction meterial supplies are brought from the bigger markets of western Terai, and to the surrounding VDCs, Mangalsen and to Bajura district. Other market centers within Sanfebagar New town such as Shrikot Bazar and Bayalpata Bazar are also dependent on Hat Bazar and Airport Bazar for their supplies. Linkage of trade and services with hinterland is mainly based on exchange of agricultural products from surroundings to Sanfebagar and urban services from Sanfebafar to surroundings. Poultry product outlets, hotels and lodges, restaurants, grocery and tea shops are major business trade established in Sanfebagar New town and schools, colleges, Bayalpata hospital, health post, agricultual and veterinary service center, Police Station, Armed Police Force Barrack, post office, Banks, co-operatives, NGO offices, etc are the major service affiliated institutions in New town.

The main market centers in Sanfebagar municipality are in ward no. 4 and 6. Major business activities of this newly formed municipality are conducted in these two areas. There are numerous shops and business enterprises in these two wards which are shown in tables below.

In ward no. 6 the most number of shops are retail followed by hotels, tailors and fancies. Instead of these there are agro vets, arts, auto service, cosmetics, and dairy, hospital, garage, jewelries, meat, and furniture etc. shops in this

area. Lack of financial institutions, less number of hospitals, hardware, auto related enterprises shows that this is the newly developing town area which is focusing on the daily requirements of the people around the area rather than more sophistication.

Table 25 Current Business Enterprises in Sanfebagar MP, Ward No. 6

S.N.	Types Of Business	Number	Remarks
1	Agro Vet	2	
2	Arts	1	
3	Auto Service	1	
4	Cosmetics	5	
5	Dairy	1	
6	Dealer/Wholesale	2	
7	Electronics	3	
8	Fancy	12	
9	Furniture	1	
10	Garage	1	
11	General Store	1	
12	Hardware	2	
13	Hospital	1	
14	Hotel	14	
15	Jewelry	4	
16	Meat	2	
17	Medical	3	
18	Mobile	1	
19	Photo Studio	2	
20	Restaurant	2	
21	Tea Store	7	
22	Retail	22	
23	Retail And Vegetable	3	
24	Shoes Center	1	
25	Stationary	2	
26	Tailor	13	
27	Vegetables	1	

Source: Field Study, 2015

Apart from those business enterprises which are present in ward no. 6, there is a bank and some barber shop in ward no. 4. Interestingly there is large number of beverage shops situated in this area. Otherwise this area also has retail stores, tailors, and fancy stores in vast numbers followed by cosmetics, meat shops, hotels, tea shops, restaurant and other business enterprises like transport, agro vet, electronics, general store, hardware, jewelry, parlor, photo studio, stationary etc.

Table 26 : Current Business Enterprises in Sanfebagar MP, Ward No. 4

S.N.	Types Of Business	Number	Remarks
1	Agrovet	2	
2	Bank	1	
3	Barber	1	
4	Beverage	2	
5	Cosmetic	11	
6	Transport	1	
7	Electronics	7	
8	Fancy	30	
9	General Store/Kitchen Appliances	5	
10	Hardware	1	
11	Hotel	12	
12	Jewellery	6	
13	Meat	4	
14	Medical	3	
15	Mobile/Electronics	3	
16	Parlour	1	
17	Photo Studio	2	
18	Plastics	1	
19	Restaurant (Nastapasal)	9	
20	Retail	30	
21	Retail (Nastapasal)	1	
22	Retail/Beverage	1	
23	Retail/Vegetables	2	
24	Retail/Wholesale	4	
25	Shoe	6	
26	Sirak/Dasna	2	
27	Stationary	5	
28	Tailor	19	
29	Vegetables	2	

Source: Field Study 2015

With the declaration of Sanfebagar as a potential New town, the market areas of Sanfebagar have a potential of transforming into a regional market center in the future. With the strengthened road linkage to the Terai plains (via (Tikapur-Beni-Lode-Sanfebagar) through the construction of Seti Lokmarg, which will substantially minimize distance and travel time to reach Sanfebagar from the western Terai, and strengthen its linkage with the rest of the country.

GoN has also proposed the construction of Seti Lokmarga from Tikapur via Bauniya, which will link Sanfebagar with the western Terai (via Tikapur-Beni-Lode-Sanfebagar), which will substantially minimize distance and travel time to reach Sanfebagar from the western terai, and strengthen its linkage with the rest of the country. With the construction of Seti Lokmarga, the strategic importance of Sanfebagar will be substantially increased as it will be the easiest and the shortest gateway to Bajura district, district headquarter Mangalsen, to Khaptad National Park and Ramaroshan

Area. The linkage of Seti Lokmarga to Tibet via Sanfebagar-Khaptad-Chainpur-Urailek-Taklakot road will further increase strategic importance of Sanfebagar as it will put Sanfebagar New town on the cross-roads of trade route between India, Nepal and China.

4.6.7 Banking & Finance

There are one commercial bank, one agricultural development bank, and five co-operatives in Sanfebagar New town. Most of these financial institutions are focused on agriculture, business and other personal loans. Almost all the banks and financial institutions in the new town are located in former Siddheswor and Mastamandu VDCs.

Table 27: Sanfebagar- Banks and Financial Institutions

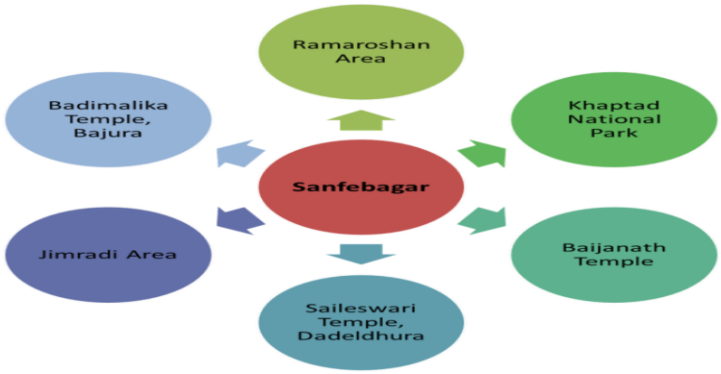
S.N.	Name	Location	Purpose
1	Mega Bank	Siddheswor	Business Loan, Small Entrepreneur Loan, Education Loan, Hire Purchase etc
2	Agricultural Development Bank	Siddheswor	Business Loan, Small Entrepreneur Loan
3	Barahadevi Cooperative	Bayalpata	Cooperative
4	Malika Multipurpose Cooperative	Mastamandu	Cooperative, Micro Finance etc.
5	Suru Kunwar Multipurpose Cooperative	Siddheswor	Cooperative, Micro Finance etc
6	Bachat Tatha Rin Sahakari	Bhageswor 9	Cooperative

Source: Achham District Profile, 2071

4.6.8 Tourism

Sanfebagar has huge potentiality of tourism development. The strongest tourism link the new town has is its linkage to Khaptad National Park. Presently a road network is being constructed to connect Sanfebagar to Khaptad National Park via Budakot, which will strengthen road and transportation connection of the new town with the national park, and will also bring more visitors. Khaptad National Park is a nature conservation area which is famous for its natural landscape, open areas, lakes and religious structures. The national park is also an important area that is rich in mountain ecology. Apart from Khaptad National Park, there are also a number of other destinations that are either within the new town, or are linked with the new town through road and transportation network, like Ramaroshan Area, Baijanth Temple, Tripurasundari Temple, Jimradi etc. Ramaroshan Area is a natural landscape area which has altogether 12 lakes, and open areas. It is a place not only of tourism attraction but also of ecological importance. People from and around the district come to visit Baijath temple, Tripurasundari temple, and Jimradi in large numbers to worship their gods and goddesses. If promoted and managed properly, Sanfebagar could be the popular destination for not only domestic visitor but also for international tourists because of its strategic location and beautiful landscapes.

Figure 5 Tourism Linkage to and from Sanfebagar New Town



4.7 Environmental and Ecological Status

4.7.1 Forest

Almost 40 percent (2468.26 Ha) of the total land in Sanfebagar New town is covered by forest. There is availability of different types of forest in the new town, depending on the altitude of the forest, such as: Coniferous forest, Hardwood forest and mixed coniferous and hardwood forest. Different types of herbs such as Amala(Emblica officinalis), ritha(Sapindus mukorosse), chiuri(Aesandra butyracea), Simmal(Bombax ceiba), allo, orchid(Phalaenopsis amabilis) and rhododendron(Rhododendron indicum), fungi(Hypholoma capnoides), timur(Zanthoxylum alatum), bojho(Acorus calamus), Chiraito(Swertia chirayita), kurilo(Asparagus racemosus), jatamasi(Nardostachys grandiflora) and lokta(Nardostachys grandiflora), and timberwood trees such as Sal(Shorea robusta), Khair(Acacia catechu), Sisau(Delbergia sissoo), Jamun(Syzygium cumini), Saj(Terminalia tomentosa), GobreSalla(Pinus wallichiana), and Deodar(Cedrus deodara) is found in these forests.. These forests are habitat of different species of rabbit, deer, porcupine, fox, monkey, leopard, black eagle, white vulture etc. The forest is handed over to different communities which regulate the use of forest products within the community.

There are numerous types of forest in Sanfebagar like leasehold, community and government but no private forest is registered. Total area of community forest and leasehold forest is 1332.83 and the remaining is government forest. There are 20 leasehold forests with total area of 71.89 ha benefitting 181 households. Following table shows the details of leasehold forest in Sanfebagar.

Table 28 Leasehold Forests in Sanfebagar New Town

S.N.	Name	Address	Area(ha)	HH Benefitted
1	Chinesalla	Sanfe 8	3.95	7
2	KotdadaKa	Sanfe 10	1.25	5
3	KotdadaKha	Sanfe 10	1.76	5
4	Malika	Sanfe 8	4.56	6
5	Ratakatiya	sanfe 9	2.30	5
6	Kholta	Sanfe 10	1.00	8
7	MaduRidikot	Sanfe 10	1.47	13
8	Pharkapada	Sanfe 11	7.70	11
9	Ratimata	Sanfe 6	0.60	7
10	Amar Nagar	Sanfe 8	4.36	7
11	Mastamandau	sanfe 2	2.41	7

S.N.	Name	Address	Area(ha)	HH Benefitted
12	Dudhepani	Sanfe 2	1.75	5
13	Sigamastau	Sanfe 2	2.32	5
14	Lalikot	Sanfe 2	0.67	10
15	Kalikadevi	Sanfe 2	2.04	10
16	Saileswori	Sanfe 2	0.49	10
17	Jaikalika	Sanfe 2	7.65	15
18	Sukatola	Sanfe 2	7.87	15
19	Aamjahdi	Sanfe 2	8.24	15
20	Mahakali	Sanfe 2	9.50	15
	Total		**71.89**	**181**

Source: District Forest Office, Achham, 2072

Apart from lease hold forest, there are 33 community forests with total area of 1260.94 ha benefitting 3215 householdss. The details of community forests are shown below:

Table 29 Community Forests in Sanfebagar New Town

S.N.	Name of Community Forest	Location	Area (Ha)	Population Benefitted
1	Dandakhalsain	Ward No. 6, Khalsain	20.45	189
2	Patechada	Ward No. 7	20	63
3	Khatikot	Ward No. 7	35.5	83
4	Saldanda	Ward No. 7	5.5	34
5	Tarekuna	Ward No. 6	11.14	62
6	Dhamitola	Ward No. 6	10.72	113
7	Dobbalo	Ward No. 7	10.75	57
8	Ayademela Mahila	Ward No. 7	2.1	20
9	Batthala	Ward No. 8	27.76	68
10	Bramhadev	Ward No. 8	6	136
11	Kalikadevi	Ward No. 8	6.3	36
12	Thakuriwada	Ward No. 10, Ridikot	9.6	15
13	Ratimata Saldanda	Ward No. 10	50.51	93
14	Kharigada	Ward No. 10	15.68	46
15	Paleban Mahila	Ward No. 10	20	35
16	Badalgada	Ward No. 10	1.87	14
17	Kumalgaun	Ward No. 10, Kumalgaun	82.2	126
18	Jalpadevi Mahila	Ward No. 10	11.4	106
19	Banstola Brikshyaropan	Ward No. 9	7.49	8
20	Kalapatal	Ward No. 9	42.75	14
21	Nayabhid	Ward No. 9	8.37	44
22	Rithagaun	Ward No. 9	9.3	42
23	Dobatopipal	Ward No. 11	56.46	89
24	Chorpani Palesal	Ward No. 12	97.57	58

S.N.	Name of Community Forest	Location	Area (Ha)	Population Benefitted
25	Sarani	Ward No. 12	198.99	101
26	Biurapani	Ward No. 12	146	283
27	Lotikhelna Mahila	Ward No. 11	9.6	35
28	Jukepani Narpata	Ward No. 11	80.5	131
29	Gurumkhola	Ward No. 5	27.04	79
30	Bhageswor	Ward No. 4, 5	135.25	560
31	Banasekhola	Ward No. 4, 5	75.97	310
32	Paridanda	Ward No. 5	15	119
33	Duwadi	Ward No. 5	3.17	46
	Total		**1260.94**	**3215**

Source: District Forest Office, Achham, 2072

4.7.2 Climate Change

According to local people production is decreasing gradually decreasing because of disturbances in climate. Rainfall is regular in some years while irregular in others due to which farmers who depend upon sky water for cultivating their land are heavily affected. They are not aware of the term climate change as experts use around the world but they are directly sensing the changes in climate which is starting to threaten their livelihood. Apart from that temperature is gradually increasing, water resources are decreasing, fodders are less, disaster rate high is very high due to unpredictability of climate, rivers are changing their paths which ultimately threatens the agriculture area near the riverbanks. Peoples are now feeling the threat of drought in their area. Drought because rainfall is not happening when people needs in time of cultivation but high precipitation when people are harvesting their crops. This kind of unpredictable weather is threatening their daily lives.

4.7.3 Air Pollution

Sanfebagar New town at present does not have large settlements and heavy vehicular movement to cause air pollution. Likewise, the new town also does not have major industrial establishments within the new town boundary that cause any air pollution However, frequent incidents of forest fires and wind during dry seasons sometimes cause air pollution, mostly in urban areas and market centers within the new town. Human activities that result in air pollution like smoke caused due to burning of wood and other forms of fuel, vehicular smoke, clearing of forest by causing forest fire etc are the major causes of air pollution in the new town. Air pollution is relatively more within the highway due to the movement of vehicle (burning of fossil fuel), which needs to be taken into consideration while planning for future population and projected traffic volume.

4.7.4 Water Pollution

Due to the fact that most of the household waste in disposed near river banks, there is a likely chance of water pollution in the new town in the near future. Likewise, majority of the population in the new town wash clothes and bathe in the river banks, mainly in Kailash Khola, Budiganga River and Prabaligad River. Prabaligad River is seen to be polluted due to excessive use of the river for washing and bathing purposes. If the current situation prevails, water pollution is going to be a major issue in the New town with the implementation of New town project and anticipated population.

4.7.5 Noise Pollution

Roadway noise emanating from motor vehicles is one of the predominant sources of noise pollution in Sanfebagar New town. Noise Pollution is concentrated mainly in the areas that are near to the main highways, or motorable roads. Noise and nuisance can be felt mainly in bazaar areas, mainly in wards 3,4,5,6, along Hat Bazaar and Airport Bazaar.

4.7.6 Integrated Waste Management System

4.7.6.1Waste water management

At present, Sanfebagar New town does not have integrated waste management system. Most of the residences on bazar areas have safety tank and soak pits for sewage disposal. In the other areas of the municipality, people use pit latrine for sewage disposal. The municipality does not have any provision for waste water treatment facility. Waste water from the residences near to the river tributaries is directly disposed to Budiganga, ChipeKhola and Prabaligad.

4.7.6.2 Solid waste management

The municipality has not been able to provide soild waste management services within the municipal area. The municipality does not have vehicle or manpower to collect and manage municipal solid waste. Households living near bazar areas either burn their household waste, or dump/dispose household waste in the bazaar areas or near the river banks. There is also no provision of land fill site within Sanfebagar New town.

With expansion of settlement, quantity of solid waste and sewage increases which may pollute the rivers and open spaces within the new town, and it may directly affect the environment of the new town. Therefore, keeping in view of the targeted population for New town, the need for a land fill site and a waste water treatment plant is urgently felt in the New Town.

4.8 DISASTER STATUS

4.8.1 Landslide

Some of the settlements of Sanfebagar New town, which are situated in steep slope are prone to natural hazards such as landslides. Likewise, landslide and soil erosion is also caused by the major rivers/rivulets and seasonal springs in the new town. Major cause of land loss due to soil erosion and landslide are rivers like Budiganga River, Chipe Khola, Lungreligad, Prabaligad, Kailash khola etc. Other rivers that are causing landslide and soil erosion are Madu khola is causing soil erosion in Nawathana, Toparekhola in Tinthana and Bathar khola in Simali. Likewise In ward no. 8 Wad khola is causing landslide in Dahapata and Ratimata. Similarly small rivers like Golke gad and others are causing heavy landslide in different areas of Sanfebagar.

4.8.2 Drought

Drought is another disaster causing food shortages and water scarcity in this area. According to local people they have faced long drought in recent years. Rainfall is not happening from 2071 rainy season to 2072 Mangsir. Even though, precipitation happens it is much irregular and unpredictable. People who depend upon rainwater for cultivating their crops suffer heavy problem because of this situation. Many have fled from their birthplace to terai region in search of more food security and other opportunities.

4.8.3 Flood

Settlements of Sanfebagar New town, that are within the vicinity of large/ perennial rivers and seasonal rivulets are prone to floods, mostly during the monsoon season. Flooding is the main natural disaster hitting Sanfebagar frequently in large scale. Budiganga, Kailash khola, Chipe khola, Prabaligad, Jijadigad, and Lungreligad are causing

flooding in different areas on Sanfebagar. People of Different areas of Mastamandu, Siddheswor, Jalpadevi, Baijanath, Ridikot, Chandika, Hadelukhet, Madukhet, Chiurinawa, have lost thousands of ropanis of their land due to flooding which caused land erosion in the riverbanks. Many people from Golkegad and Golyana area have lost their land and houses and fled to terai region due to flooding.

During discussion with the locals, most of the people state that flooding and soil erosion is the major disaster they face in the new town and demand river embankment in major rivers of the new town like Budiganga, Kailash khola, Chipekhola, Prabaligad, annJijadigad etc.

4.8.4 Fire and Earthquake.

Fire is another disaster causing many damages in this new town. Almost every year from Falgun to Asar there is fire which destroys many properties and life in Sanfebagar municipality. Recenlty, in December of 2016, a heavy fire destroyed 11 houses displacing families and causing damage of Rs. 13,576,000 according to DDC, Achham. Great Earthquake of last year also caused some damages in sanfebagar partially damaging 55 houses.

Table 30 : Status of Damages Caused by fire and earthquake in Sanfebagar New town

SN	District	VDC/Muni	Incident	Incident Date	Total death	Affected family	Estimated loss	Govt houses fully/partially damaged	Private houses fully/ partially damaged
1	Achhaam	Sanfebagar	Earthquake	4/25/2015	0	0	0	0	55
2	Achhaam	Sanfebagar	Fire	4/12/2016	0	11	13576000	0	0

Source: Nepal Disaster Risk Reduction Portal, 2016

4.9 LAND USE

The existing land use pattern of Sanfebagar New town is varied, mainly due to varied land topography, features and land uses. The present land use can be classified into different categories such as forest, barren land, cultivated area, built-up area, shrubs, river etc. Built-up area along the highway and major roads are expanding and increasing in a linear growth pattern. The low lying areas along the river banks, which were either cultivable area or sand beds, are also being converted into built-up areas, as squatter settlements are increasing along the river banks. The development pattern of the urban areas is also increasing along the growth centers, i.e. the bazaar areas of the new town.

The land distribution pattern of Sanfebagar New town shows that nearly 51 percent of the total land is cultivated. Around 42 percent of the total land of the new town is covered by forest, bushes and water bodies. Around 2 percent of the total area is covered by settlement area and the rest of the area is covered by airport and road networks. Due to present legislation and rules, forest can't be destroyed so as to provide settlement. Similarly, water bodies are also non-buildable area, i.e. can't be used for settlement development. Hence, only option that exists is built up area that can be used as the areas of cultivable land in future.

Table 31 Land Use Composition of Sanfebagar New town

Land Cover	Area (ha)	Area (%)
Airport	4.14	0.067
Barren Land	10.27	0.166
Built-up	133.07	2.146
Bush	677.66	10.930

Land Cover	Area (ha)	Area (%)
Cliff	1.03	0.017
Cultivation	3154.97	50.887
Forest	1560.28	25.166
Grass	230.32	3.715
Pond or Lake	0.08	0.001
Runway	1.68	0.027
Sand	353.33	5.699
Waterbody	73.19	1.180
Total	**6200**	**100**

Source: GIS Based Base map, 2016

4.10 URBANIZATION TREND

The urban areas of Sanfebagar along the highway and major roads are expanding at a rapid pace. Settlements along the Hat Bazar and Airport Bazar are sprawling along the Mid-Hill highway, along the river banks of Budiganga River. Hat Bazaar, Airport Bazaar along with Shrikot and Bayalpata Bazar are the growth nodes in the new town, which are developing as market center for surrounding settlements and VDCs. Most of the people from remote VDCs migrate to Bazar areas or to places in the vicinity, or with easy access to market areas for better socio-economic opportunities. . Because of all service center and infrastructure being centrally located alongside the highway, urbanization trend in Bazar area is rapid but is in unbalanced condition as urbanization is concentrated mainly in Bazar areas. As a result bazar areas are failing to cope the demand of infrastructure services and job opportunities, and are increasingly reeling under the externalities of the haphazard urbanization. Environmental degradation, congestion, squatter settlements along the river banks, unemployment and lagging provision of infrastructure services have become increasingly visible phenomenon in Sanfebagar New town. With the development of New town, the rate of urbanization is inevitable to increase, making need of the proportionate development of urban infrastructure, services and facilities in the new town accordingly.

Chapter 5 ANALYSIS

5.1 TREND ANALYSIS

5.1.1 Migration Pattern

Traditionally, popular destination for the Achhami people for migration has been the centers of Terai region likes Tikapur, Nepalgunj, Dhangadhi, and Mahendrangar which also applies to this municipality. But this area because of availability of rather good physical, financial, and educational facilities than other parts of the district and neighboring district like Bajura has been centre for in migration for the people from those parts which are more developed and exposed than Sanfebagar. It shows the potentiality of this newly proposed town for the people of this area as well as from those from its hinterland.

District administration office data shows that application number for passport is increasing rapidly in recent years. It indicates that people are not only migrating to India and other developed areas of the country but youths from this area are also going abroad in search of better jobs and better income.

Table 32 Number of Passports Issued by the District Administrative Office Mangalsen

S.N.	Fiscal Year	Passport recommended to Department of Passport	Passport Distributed From DAO	Total
1	067/068	253	N/A	253
2	068/069	400	236	636
3	069/070	621	333	954
4	070/071	1447	454	1901
5	071/072	1423	562	1985

Source: District administration office

5.1.2 Population Projection

As per population census data of 2001 and 2011, the population growth rate in Sanfebagar New town is mostly negative. Only the population growth rate two former VDCs, Mastamandu and Nawathana show a positive growth in population, though the growth rate is minimum. This trend of growth decline has been mostly due to migration of the inhabitants of the new town to Terai plains, or to other parts of the country, including the capital. The ongoing trend of youth and working population leaving Sanfebagar in search of economic opportunities, to different cities of India, or to other foreign employment destinations can be termed as the main cause of the population growth decline in the new town. If the current trend of decline in the population growth rate is allowed, the projected population for the new town in 2030 is going to decline to almost 16,600, which is even lesser than the current population of the New town.

With the declaration of Sanfebagar as a new town, it is anticipated that there will be development of physical and social infrastructure in the new town, thereby creating new opportunities in service, trade and business, and there will

be a gradual influx of population from the other areas of the country. For the positive growth scenario, minimum positive growth rate has been used for population projection of the New town.

Table 33 Population Projection in Sanfebagar New Town

VDC/Municipality	Population (CBS & VDC Profile)			Growth Rate (%)	Present Year Population (2015)	Population Projection		
	2001	2011	2015			2020	2025	2030
Baijinath	1,345	1,271	1,243	-0.56%	1,372	1,552	1,756	1,987
Bhagyaswori	1,321	1,091	1,011	-1.89%	1,206	1,503	1,873	2,334
Chandika(Bayalpata)	2,383	2,111	2,011	-1.20%	2,444	3,119	3,981	5,081
Jalapadevi	2,637	2,613	2,603	-0.09%	2,987	3,548	4,214	5,005
Mastamandau	3,411	3,441	3,453	0.09%	3,738	4,127	4,557	5,031
Nawathana	1,974	2,005	2,018	0.16%	2,453	3,131	3,996	5,100
Ridikot	1,599	1,539	1,516	-0.38%	1,641	1,812	2,001	2,209
Siddheswor	4,355	4,168	4,095	-0.44%	4,433	4,894	5,403	5,965
Total	**19,025**	**18,239**	**17,950**		**20,274**	**23,686**	**27,781**	**32,712**

5.2 GAP ANALYSIS

5.2.1 Social Infrastructure

5.2.1.1 Educational Institutions

As per Planning Norms and Standards (DUDBC, 2013), there should be 1 primary school in each neighborhood (assuming a neighborhood has a population of 3,000) within a distance of 0.4-0.8 km 1 higher secondary school per 7500 population within a distance of 30 minutes by public vehicles within the town of population from 40,000 to 100,000. Similarly, there should be at least 1 Campus per 25000 population within a distance of 45 minutes by public vehicles and 1 University per 40,000 population should be within distance of 1 hour by Public Vehicles.

Sanfebagar New town is expected to reach a population of 100,000 within 20 to 30 years. Therefore, as per the requirement set by Planning Norms and Standards, the new town demands for 34 primary schools, 13 higher secondary Schools, 4 Campus and 2 to 3 universities.

Table 34 Gap Analysis of Educational Institutions in Sanfebagar and Patan New Towns

Education Level	Number of Schools at Present		Required Number Within 20-30 years
	At Sanfebagar	At Patan	
Primary School	27	22	34
Higher Secondary	5	5	13
Bachelors	2	1	4
University	0	0	2-3

5.2.1.2 Health Institution

As per Planning Norms and Standards, there should be 1 Primary Health Center (PHC) with 5-15 bed capacity per 20,000 population, and 1 district level hospital with 25-50 bed capacity within the town of population from 40,000 to

100,000. As the new town is expecting population of 100,000 within 20 to 30 years, so there must be at least 5 PHC and 2 Hospitals within the new town. Hospitals should be within easy access of people.

In Sanfebagar New town, at present there is a 27-bed community hospital, Bayalpata Hospital at ward no. 10. Apart from two health posts, five sub-health posts and a community health center, there are no other health institutions like Primary Health Centers and District Hospital within the new town.

Apart from educational and health institutions, Sanfebagar New town also lacks other necessary provision of social infrastructures such as open space, fire brigade, exhibition center, regional level museum, regional level art center, old age homes, orphanage and rehabilitation centers for physically disabled people.

5.2.2 Economic Infrastructure

As per Planning Norms and Standards, there should be a provision of 1 City hall (multipurpose) per 10,000 populations, a sports complex per 50,000 populations and a transportation system consisting of Intra City Bus terminal with parking spaces for 100 buses and 100 trucks and Inter City Bus terminal with parking spaces for 100 buses. As the new town is expecting population of 100,000 within 20 to 30 years, there must be a provision for such economic infrastructures. As per Planning Norms and Standards, there must be the provision of at least 10 multipurpose city halls, two sports complexes and two cinema halls (with 250 seating capacities each). At present, Sanfebagar lacks such economic infrastructure provisions. There is a bus park at ward no 4 and a bus/jeep park at ward no 6, but the present bus parks and parking spaces are grossly inadequate to be considered for being upgraded into inter and intra city bus terminals in the future. Sanfebagar New town at present also lacks the provision of other economic infrastructures recommended by Planning Norms and Standards, such as cinema hall, and vegetables market.

5.2.3 Physical Infrastructure

5.2.3.1 Road

As per Planning Norms and Standards, there should be provision of different class of roads within the town of population from 40,000 to 100,000. Likewise, all or 90% of household should be within the distance of 1km from motorable road. At present, Sanfebagar New town does not have such provisions. The new town has a highway section, 3 feeder roads, and district roads but such roads do not maintain the ROW as recommended by Planning Norms and Standards. The new town also does not meet the criteria of having 90% of the total household within the distance of 1 km from motorable road, except in urban areas like wards 4, 5, 6 and 13. At present, the average distance of a household from motorable road is 3 km.

5.2.3.2 Water Supply

At present, drinking water supply is one of the major problems in Sanfebagar New town. The new town does not have adequate water sources to address the water supply demand of even the present population. Observing the current trend of drinking water scarcity, it is going to be major problems for the development of the new town. Though the new town has abundance of water sources within the new town in the form of major and minor rivers that traverse the new town, there has not been any initiative from the locals as well as from local agencies to make use of the water sources through pump-lift system and the implementation of integrated water supply project in the new town. There is a need for the construction of such an integrated water supply project in the new town, including filtration and treatment plants. According to Planning Norms and Standards, the per capita demand of water supply in average 80-100 liters. At present, the water supply to the new town is not regular and the water sources are not regulated, therefore, the quantification of the present water supply within the new town has not been possible, therefore, the

present deficit in water supply as per the Planning Norms and Standards cannot be deduced. However, as per the standard requirement, the water demand in the projected years can be deduced keeping the per capita demand constant.

Table 35 Gap Analysis of Water Supply in Sanfebagar New town

	Population		Water Demand (Litres per day)			
VDC	**2001**	**2011**	**2015**	**2020**	**2025**	**2030**
Baijinath	1345	1,271	111,870	139,680	158,040	178,830
Bhagyaswori	1321	1,091	90,990	135,270	168,570	210,060
Chandika(Bayalpata)	2383	2,111	180,990	280,710	358,290	457,290
Jalapadevi	2637	2,613	234,270	319,320	379,260	450,450
Mastamandau	3411	3,441	310,770	371,430	410,130	452,790
Nawathana	1974	2,005	181,620	281,790	359,640	459,000
Ridikot	1599	1,539	136,440	163,080	180,090	198,810
Siddheswor	4355	4,168	368,550	440,460	486,270	536,850
Total	**2024**	**2298**	**1,615,500**	**2,133,760**	**2,502,315**	**2,946,110**

5.3 SWOT ANALYSIS

5.3.1 Strength

Sanfebagar new town is strategically located along Mid Hill Highway that connects Doti district with Achham District. The new town is connected with the district headquarter Mangalsen via Sanfebagar-Mangalsen road (28 km). Sanfebagar New town is also the gateway to Bajura district, which makes it a major market and urban service center in the south western hills of the country. It has 34 km of motorable road within the new town and It is connected with the district headquarters and the rest of the country via transportation network through Dhangadi-Syaule-Dipayal Silgadi-Sanfe-Mangalsen and through Dhangadi-Syaule-dipayal silgadi-Sanfe-Martadi road network.

It has abundance of bagar (low lying land along Budiganga River and its tributaries) and gentle sloping areas that can be developed for urban development purpose within short term and mid-term periods. Within the New town, there is availability of about 3732 hectare of land for development.

Besides, social infrastructures such as 2 campuses, 27 bed community hospital, open space on the bank of Budiganga river and school grounds are available within the new town. There is active participation of INGO/NGOs and CBOs within the new town, which has facilitated in uplifting the socio-economic status of the residents of Sanfebagar new town.

There is a potential of commercial vegetable farming and commercial production of cash crops such as soybean. According to the district agriculture office, there is also the potential of commercial production of citrus and sub-tropical fruits in the new town.

There is abundance of water resources in the new town. The main source of water in the new town is Budiganga River and its tributaries. Though there has not been much substantial effort in the utilization of water from Budiganga River and other small rivers within the new town, for the development of the new town and for the fulfillment of water supply demand and irrigation purpose, these river networks are the long term solutions to the new town. About 40 percent of the new town is covered by forest. Therefore, the new town is rich in forest based natural resources.

Besides, due to the current trend of a large section of its population going for foreign employment, its local economy is more or less sustained by remittance. Therefore, besides other socio-economic factors, remittance, forest and water resource, healthy environment and strategic location are some of the major strengths of Sanfebagar new town.

5.3.2 Opportunity

Sanfebagar municipality has been proposed to be developed as one of the ten new towns along the mid hill highway because of its strategic importance along the highway and its development potential. Mid-Hill highway runs through Sanfebagar to district headquarter Mangalsen and other feeder roads connect Sanfebagar to Bajura and Doti districts. Due to the linkage of the new town to other districts and market centers via road and transportation network, the new town possesses remarkable development opportunities. The existence of an airport within the new town, at ward no. 6, though it is not in operation at present, would bring more opportunities of tourism and boot economic activities within the new town once/if the airport is brought in operation in the near future.

The proposed Seti Lokmarga from Tikapur via Bauniya will link Sanfebagar with the western Terai (via Tikapur-Beni-Lode-Sanfebagar road), which will substantially minimize distance and travel time to reach Sanfebagar from the western terai, and strengthen its linkage with the rest of the country. Sanfebagar will be connected by the Seti Lok Marga to Khaptad National Park, Bajhang and Tibet (via Sanfebagar-Khaptad-Chainpur-Urailek-Taklakot road). The construction of Seti Lokmarga will further increase strategic importance of Sanfebagar as it will put Sanfebagar New town on the cross-roads of trade route between India, Nepal and China.

Presently, there is ongoing construction of Budiganga Hydropower project by GoN and feasibility studies by private sector. The construction of Budiganga Hydropower project will generate more than 20 MW of electricity to national grid, and Sanfebagar New town is sure to benefit from it. It will bring newer opportunities for manufacture and electricity-related industries (forward-backward linkage industries) in the New town. It will also support water supply and irrigation projects in the new town.

The construction of CTEVT College at ward no. 6 is going to increase the technical manpower within the new town. It is going to create more employment and is going to support in the physical and social infrastructure development of the new town through local manpower. Besides, there are opportunities for commercial vegetable farming, cash crop production, agricultural processing and forest resource based industry in the new town, which is going to strengthen the economic base of the new town, and uplift living standard of its inhabitants.

5.3.3 Weakness

The main weakness of Sanfebagar New town is the lack of institutional setup within the new town. Sanfebagar New town, being situated in the far west region and in Achham district, one of the underdeveloped districts of Nepal in terms of physical, social, educational and institutional capacity. Other factors also play important role in the overall scenario of the new town, such as low financial capabilities of institutions, lack of road and transport connectivity to all wards within the new town, development of limited urban infrastructures such as water supply for drinking purpose and irrigation are the weak factors that hinder the development of Sanfebagar New town.

5.3.4 Threat

Some of the major threats to development of Sanfebagar New town are flood and soil erosion caused by the major rivers that run through the new town. Similarly, some wards of the new town face threat the problem of landslide. Sanfebagar New town faces another major health threat in the form of HIV Aids infected population due to the fact that a major portion of its population have family members working in different cities in India. Social stigma such as Chaupadi, social evils and superstitions and caste based social discrimination and untouchablity etc. are other

factors that threaten the development of Sanfebagar New town. Urban infrastructure and demographic issues such as lack of solid waste management system, lack of integrated water supply and sanitation system to cope with the demand of population, negative population growth in the last decade aggravated by high level of migration from the new town to the Terai Plains, and for foreign employment have been the major threats for the development of Sanfebagar New town.

5.4 SPATIAL ANALYSIS

5.4.1 Land suitability Analysis

The land with high degree slope is considerably less in overall town. In the new town, about 20 % of the total area has a slope more than 30 degree, and about 3 percent of the total land has slope that is less than or equal to 2 degree slope. Both slopes greater than 30 degrees and less than or equal to 2 degree slope are considered unsuitable for urban development, as the areas with more than 30 degree slope are under the risk of hazards such as landslide, and the areas with slopes less than or equal to 2 degrees is under the risk of flood and inundation.

Less than 2 degree slope and more than 30 degree slope areas are considered development restricted areas. Likewise the areas covered by forest and river are also considered development restricted areas. Developable area is calculated after subtracting forest and river areas, and the buffer areas of 100 m and 50 m from the edges of forest and river banks. The analysis of the study area in terms of availability of developable and development restriction area shows that the new town has about 60 percent of the total land that is developable. The rest 40 percent of the land are covered by natural features such as forest, river, barren land, cliff etc, and areas with more than 30 degree slope or areas with less than or equal to 2 degree slope.

Table 36 Slope and its area for Sanfebagar New Town

Slope (Degree)	Area (Ha)	Area(%)
<2	184.872	2.982
2 to 5	424.44	6.846
5 to 10	619.082	9.986
10 to 15	839.65	13.544
15 to 30	2891.572	46.643
>30	1239.758	19.998
Total	**6199.374**	**100.000**

Source: GIS Based Basemap, 2016

Table 37 Developable and restricted area for Sanfebagar New Town

Ward No	Category	Area	Total Area	Area (%)
1	Developable	247.145	548.902	45.025
	Restricted	301.757		54.975
2	Developable	321.628	453.154	70.975
	Restricted	131.526		29.025
3	Developable	217.381	331.722	65.531
	Restricted	114.341		34.469
4	Developable	137.474	371.174	37.038

Ward No	Category	Area	Total Area	Area (%)
	Restricted	233.7		62.962
	Developable	291.593	563.661	51.732
5	Restricted	272.068		48.268
	Developable	258.636	423.701	61.042
6	Restricted	165.065		38.958
	Developable	216.4	453.641	47.703
7	Restricted	237.241		52.297
	Developable	300.656	484.916	62.002
8	Restricted	184.26		37.998
	Developable	284.678	365.754	77.833
9	Restricted	81.076		22.167
	Developable	338.456	764.093	44.295
10	Restricted	425.637		55.705
	Developable	127.992	158.146	80.933
11	Restricted	30.154		19.067
	Developable	319.122	1280.671	24.918
12	Restricted	961.549		75.082

5.5 INSTITUTIONAL ANALYSIS

5.5.1 Institutional Strength Assessment of New Towns

During the field study at both Sanfebagar New town, the consultant institutional expert did an assessment of the institutional strength of mainly 3 institutions that are the primary stakeholders for the planning, implementing and management of the new town projects, i.e. The New Town Office, The Town Development Committee Office and the Municipality Office of Sanfebagar New Town. The organizational structure of the New town offices shows that there is an adequate deputation of manpower and responsibilities. However, in reality, there are no officers working under the deputed responsibilities. The New town offices in Sanfebagar are currently being run by sub-engineer, computer operator and office assistant.

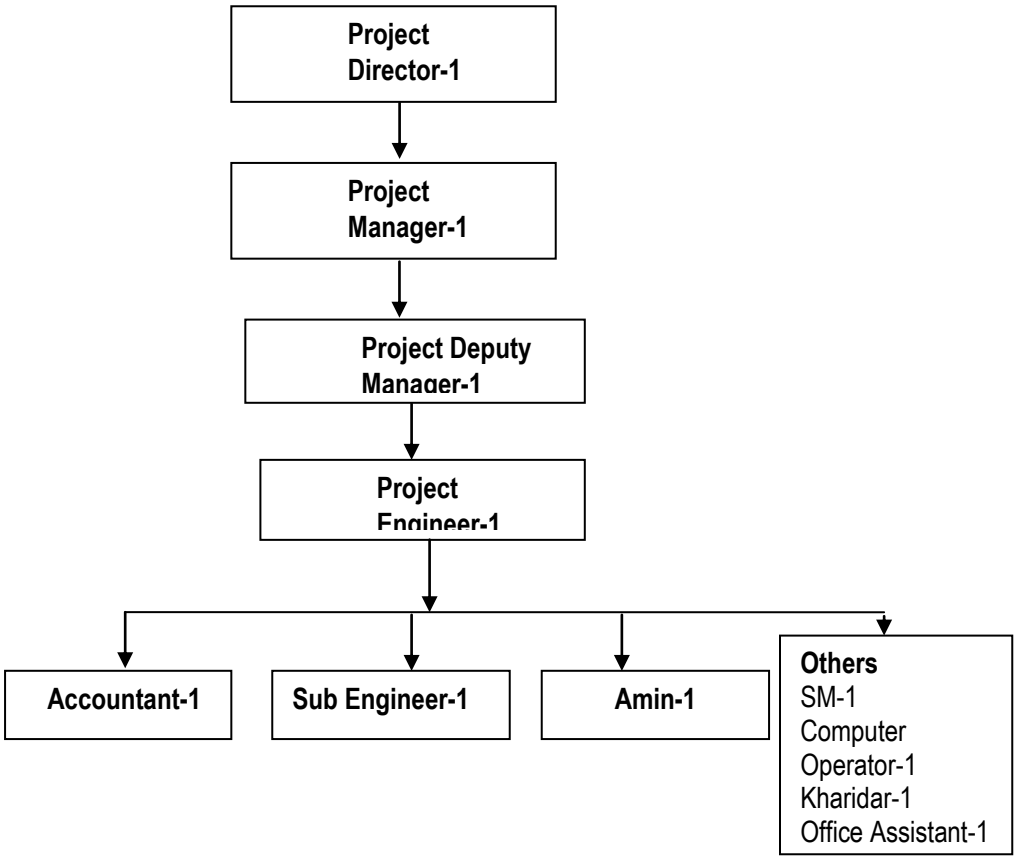


Figure 6: Existing Organization Structure of New Town Offices in Sanfebagar New Town

5.5.2 Organization Structure of Town Development Committees in New towns

The organization structure of Town Development Committees shows the strength and representation from district level line agencies. Town Development Committee is the primary stakeholder for the integrated development plan study of New town. It has been envisaged to be the implementing and management agency of the physical and social infrastructure projects identified by the integrated development plan study. However, in reality the Town Development Committee in both New towns have not been able to function properly and are present for the sake of establishment only. The Town Development Committee in both New towns are grossly understaffed, underfinanced and so much so that don't have a proper office space. In case of Sanfebagar Town Development Committee, there has been no committee meeting held even once till now, as per the information given by the current Town Development Committee chairman.

Table 38 Organization Structure of Town Development Committee of Sanfebagar

SN	Type of Representative/ Member	Number	Remarks
1	Chairperson	1	Nominated by Government
2	Members	5	Nominated by Government
3	CDO or Representative from CDO office	1	
4	Representatives from 5 Line Agency Present in the district	5	
5	Member Secretary	1	Chief of New Town Office (DE of DUDBC Doti Division Office)

5.5.3 Organization Structure of Municipalities of Sanfebagar New town

Sanfebagar Municipality is the recently declared municipality. This municipality was declared almost 2 years ago by joining numerous old Village Development Committees (VDCs). Due to the fact that this is a new municipality, they lack institutional strength, financial capabilities, infrastructure and resources. The consultant team had series of meetings with personnel from Sanfebagar municipality to discuss the institutional strength and shortcomings of the municipality. Based on that, the consultant has proposed the institutional strengthening of both municipalities by adding manpower, resources and services. The consultant has suggested the restructuring of municipality structure and addition of new sections and units as illustrated below.

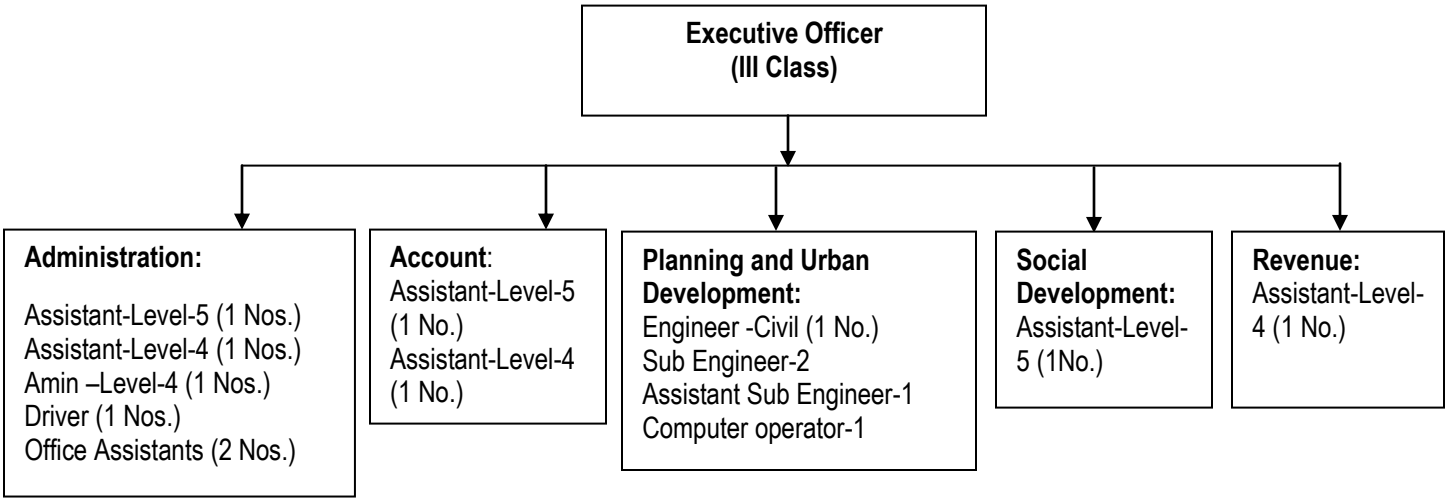


Figure 7: Existing Organizational Structure of Sanfebagar Municipality

5.5.5 Required Organization Structure of Municipalities

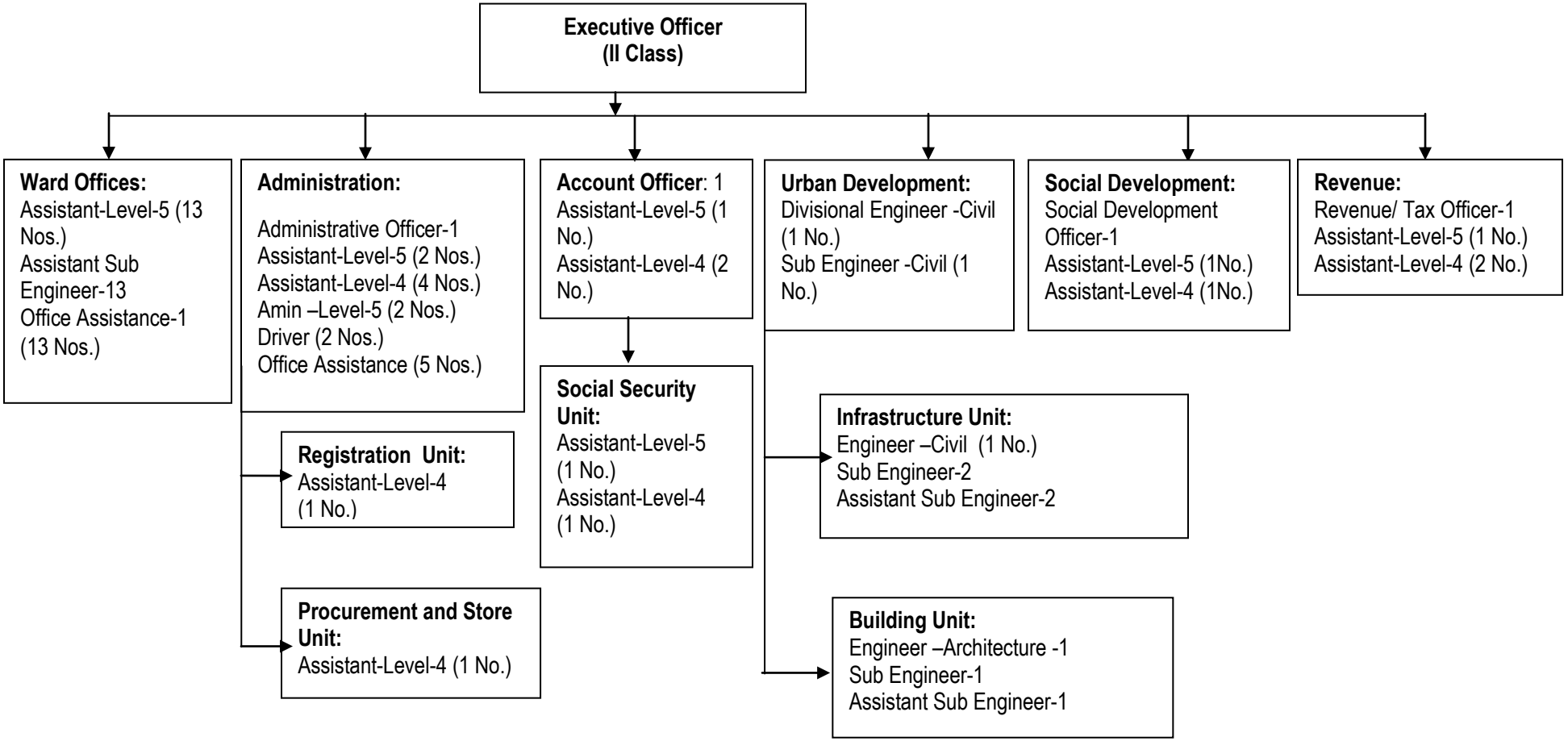


Figure 8: Proposed Organizational Structure for Sanfebagar Municipality

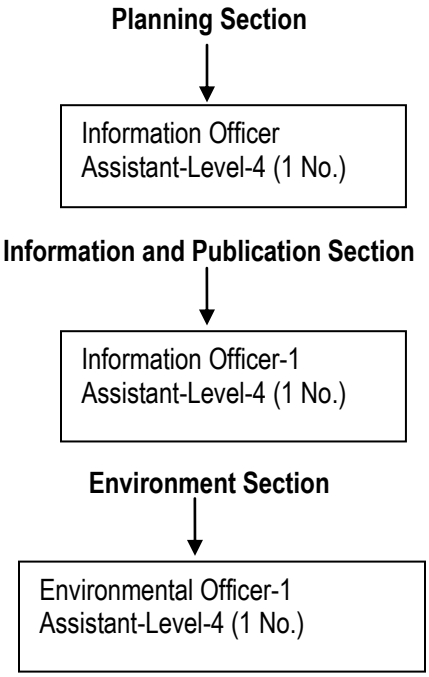


Figure 9: Proposed addition of new sections

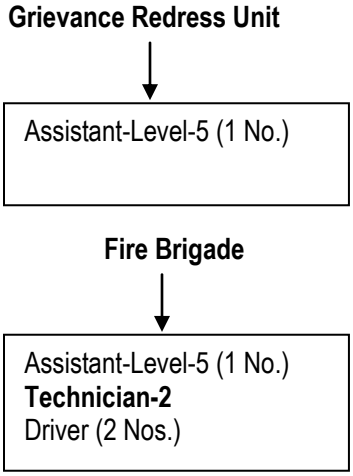


Figure 10: Proposed addition of new units

Table 39: Institutional Strength and Status of Plan/Profile of Municipality

SN	Type of Document	Source of information	Status	Remarks
Sanfe Municipality (Formation Date: 2071-01-25				
1	Municipality Profile	Demography, occupation, agricultural, business, cooperative, Government offices, NGOs, land use etc.	Not prepared	
2	Municipality Periodic Plan	5 years development plan of municipality with possible financial sources	Not prepared	
3	Municipality Transport	Detail plan of construction of urban road	Draft Report	

	Master Plan	within the municipality with possible financial sources (long term perspective plan and 5 years plan)	under preparation	
4	Organizational Development (OD) Plan	Detail about existing institutional structure, required institutional structure, HR planning with capacity development plan and required budget	Not prepared	
5	Annual Development Plan	Detail about one year activity with budget sources	Prepared	Only 3 Municipality Council is held up to this fiscal year (2072/073)

5.5.5 Concept of Proposed Institutional Structure of New Town Implementation Office

At present, the Integrated Development Plan of New Towns study is being coordinated by New Town Project Coordination Office, DUDBC and is being carried out under the guidance of New Town Office and Town Development Committee Office in Sanfebagar New Town. As aforementioned, the institutional strength and resources of both the Town Development Committees and the New Town Offices is lagging. The New Town Project Offices/Field Offices fall under the jurisdiction of District Division Offices of DUDBC. In case of Sanfebagar New Town, the New Town Project office is overseen by DUDBC Doti Division Office. The project offices in Sanfebagar new town are understaffed and under resourced. There seem to be no coordination between the New Town Project office and the respective DUDBC Division Offices.

Likewise, the Integrated Development Plan study of New Town Project area overlaps with the existing municipalities' jurisdiction. Though the municipality office in the proposed new town is anticipated to be one of the main stakeholder agencies for IDP study. However, there is no clarity in the role of respective municipalities in terms of the implementation of strategic projects identified/ proposed by the IDP study. Likewise, there is no clarity in the role of the Town Development Committees of the New Towns in the implementation and management of the strategic projects. It is evident that the current structure of Town Development Committee Office, New Town Project Office and Municipality Office do not have the technical, financial and managerial capacity to implement the strategic projects, plans and programs that will be identified by the Integrated Development Study of New Town. As the strategic plans, programs and projects need financial resources, coordination and implementation from different line agencies, it is plausible that a new institutional structure with representation from the Town Development Committee Offices, Municipality Offices, New Town Project Offices, Line Agencies, Political Parties and Civil Societies be formulated, which has the jurisdiction of the whole New Town, has adequate financial resources, technical manpower and managerial capabilities.

Table 40: List of Person Consulted for Institutional Analysis of New Towns

SN	Name	Organization	Position	Remarks
1	Mohan Kuwar	Town Development Committee	Chairperson	Sanfebagar
2	Laxmi Adhikari	Sanfebagar Municipality	Executive Officer	Sanfebagar
3	Purna Kunwar	Sanfebagar Municipality	Engineer	Sanfebagar
4	Nripa BK	Sanfebagar Municipality	Assistant 4th level	Sanfebagar
5	Jaya Yaske	New Town Project Office	Computer Operator	Sanfebagar

6	Gita Regmi	New Town Project Office	Supervisor	Sanfebagar
7	Hikmat Kunbar	Business Person	Proprietor	Sanfebagar
8	Lakman Bohara	Civil Society	Social Worker	Sanfebagar
9	Tapendra Swanr	Civil Society	Social Worker	Sanfebagar
10	Binod BK		Social Mobilizer	Sanfebagar
11	Ramesh Rawal	NGO	General Member	Sanfebagar
12	Mina Kunwar	Cooperative	Member	Sanfebagar

Model Preparation

The consultant team has completed the preparation of physical block model of Sanfebagar and Patan New towns in 1:10, 000. The block models have been prepared with the primary use of ethaflex (eva) sheets of 2 mm thickness, and at the contour interval of 20 m. The block model of Patan New town has dimensions of 5'-0" X 5'-0" and that of Sanfebagar New town has dimensions of 4'-6"X 4"-0". Since the scale in which the physical models have been prepared in a small scale, the details of the existing infrastructure such as roads, schools, colleges, hospitals and administrative buildings cannot be dispayed in the model. As per the ToR, the physical models of the new towns have to be prepared in 1:5000 scale showing the details of locations of strategic projects in the new town. Since the consultaht has just completed the Vision Workshop, the consultant has not started the block physical model of Sanfebagar and Patan New towns, as the strategic projects have just been identified. Likewise, as the study area of Patan New town consists of 6 former VDCs and Sanfebagar New Town consists of 8 former VDCs, the approximate area for the models of the new towns in 1:5000 scale would be 10'-0"X 10'-0" for Patan New town, and 9'-6"X 8'-0" for Sanfebagar New town. As the models for both new towns would be out of workable scale in 1:5000, the consultant has proposed to prepare model of the new towns as per the earlier new town areas, i.e former Siddheswor and Mastamandu VDCs for Sanfebagar New town, and former Patan VDC for Patan New town. The consultant proposes to prepare physical Model of the new towns in 1:5000 scale with the location of strategic projects that are proposed in the aforesaid areas of the new towns. The Consultant is preparing the block physical models of both towns, which will be submitted to DUDBC/NTPCO after finishing, coloring and final inspection from the Client.

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