CHAPTER I

PROJECT BACKGROUND

1.1 Background

Smarter cities are essential if the world is to respond effectively to the critical challenges it faces. In the coming years, the more people will move to urban area or cities area in search of facilities and development. Yet cities increasingly need to be able to do more with less, to complete in a globally-interconnected economy, and to provide for the well-being of their citizens in a truly sustainable way. In short, to become smarter.

As a resuming program for "Master Plan" in municipalities and rural municipalities, assisting through technical and financial support, Government of Nepal has proposed urban planning project and others planning, which primarily focuses in identification of projects and its implementation, along with the fundamental components as:

I. Strengthening Municipal Planning Capacity for Urban Development;
II. Capacity Building for Municipal Infrastructure Development; and
III. Institutional Development.

The primary objective of the project is to enhance institutional and financial capacity of the participating municipalities in planning and implementation of local level infrastructures. The project also aims to come up with the municipal and ward wise projects bank which will guide the municipality's vision through indicative plan in longer term.

This study of municipality involves three primary stages: i) Indicative Plan and Program (IP) ii) Feasibility Study (FS) and iii) Detail Project Report (DPRs). This inception report comprises of indicative plan and programs along with the list of projects identified by the municipality and in ward wise level along with the screened/prioritized projects based on the prioritization criteria developed in series of consultation with client and fellow consultants. These stages are strongly backed up by the follow up field activities and desk studies which involves consultative workshops with stakeholders and study of plans and policies guided by national and local government.

This study is an outcome of series of field workshops and surveys carried out in the municipality in ward wise level. Information mentioned is derived from the primary focus group discussion surveys and key informants survey carried out in Chaitra, 2074.

1.2 Project objectives

The main objective of the study is to prepare a MASTER PLAN of physical Infrastructure development plan of Chandannath Municipality, Chandannath, Jumla which are to be carried out in different stages.

The specific objectives of the study are enumerated as below:

- To Study and analyze the linkage and correlation of Chandannath Municipality with neighboring market centers, rural areas, neighboring villages/communities and other places focusing on economic, social, natural resources and human resources along with cultural and traditional resource potential and opportunities.

- To Study and identify the major settlements, urbanization trend and urban expansion, market centers, industrial, Tourism, religious and cultural aspects of particular valley area,
- To prepare proposed physical infrastructures development of Master Plan.

1.3 Scope of study

Primary scope of the study is to prepare the master plan report of prioritized infrastructure projects. Besides the primary scope, different steps and methodological approaches are to be followed in achieving the task which will assure the accountability, credibility and effectiveness of the study. Some important scopes of the project study are listed in various stages as follows in brief where as detailed scopes are annexed in ToR.

- Study and analyze the socio-cultural aspects of the Chandannath Municipality Area.
- Study and analyze the linkage and relation of Valley with neighbouring market places, VDCs. Access inflow and outflow of agriculture products, movement of people, collecting and selling of commodities and rural products.
- Propose ways to protect and utilize public land and properties within the study area.
- Propose logically the geographical boundary of the proposed Chandannath Municipality area with proper reasons.
- Analyze the role of project area in between urban center and rural center and its future prospects to bridge the gap between rural and urban centers and complement each other's development.
- Detailed analysis of the existing situation of the Chandannath Municipality and surrounding area VDCs on the basis of field visit and discussion at local level.
- Visioning and collection of plans and programs in consultation with representative of Municipality, NGOs, GOs, local people and other stakeholders. The program identification and prioritization workshops will be recorded and minutes, photographs and other relevant documents are to be included in the report.
- The land -use classification will included; agriculture, forest, road, residential area, urban area, commercial area, institutional area, opens space, water bodies, religious places.
- Analyze existing condition of natural resources and their effects on development.
- Detailed Study of feasible Tourism development of valley.
- Detailed Study of Agriculture product and market analysis of valley area.
- The consultant will contact DCC, Municipality and wards offices while visiting to project area and representative office will participate in the project selection meetings.
- Summary of Report will be in Nepali and English both language.

1.4 Output Expected

As the outcome of the project is primarily guided by the scope of work mentioned in earlier section, brief outcomes of the projects are listed as below:

1. Concept of Chandannath Municipality Master Plan
2. Profile of Chandannath Municipality Area
3. Collection of basic information
4. Land-Use classification
5. Proposed physical infrastructure facilities
6. Working policy, programs and investment plan and Standard
7. Indicative plan along with the existing basic infrastructures and services.
8. Experts' analysis on thematic topics of the study such as social, economic, physical, financial, institutional, etc.
9. Final physical infrastructure projects along with the feasibility study of the project in perspective of social, physical, financial, institutional, etc.

CHAPTER II

METHODOLOGY

2.1 METHODOLOGY

Methodology adopted in the process of the preparation of this inception report is based on the proposed approach that consultant has offered in the proposal. As with the changes in local government and other political decisions, methodology has been altered in some instances like key stakeholders and data collection process (Based on the availability of resources and status of municipality after the restructuring) to adopt the changing scenario where as the fundamental aspect of planning process is kept intact with the participatory approach and accountability of local government. Different methodological steps adopted and to be adopted in other phases are explored and explained in different stages below.

Stage I: Inception Study: Indicative Plan and Program

Inception Task-I(A): Desk Study (Central and Local Level)

For desk study, consultant has collected all the relevant documents and Secondary data/information about project area including prevailing Act and Regulations, Norms and Standards, Code of Practice etc. The reviewed documents include Census,2011, Chandannath Profile, 2074 , MTMP (Municipal Transport Master Plan) , DTMP (District Transport Master Plan, 2073/2074 water supply, irrigation, Municipality profile, subjective offices etc. After the collection of base level data of the municipality, consultant prepared the data formats and questionnaire for collecting primary data through key informants in ward levels. Meanwhile, pertinent data from secondary sources were gathered and recorded for the analysis and mapping of the base maps.

Inception Task-I(B): Introductory Workshop

After the primary desk study about the site, a team of consultants visited the site for recce and as a pre-introductory workshop which was carried out during the first week of July. The time had overlapped with the date of local election in that region, hence pre-introductory workshop was basically extended to introduction of project to Chief Administrative Officer (then CEO) and engineers of the municipality, who provided us the basic glimpse of the problems and base information sources. The workshop was carried out in the municipality with elected officials, engineers, CAO and other stakeholders. The meeting was fruitful to share information and scope of the project and in formation of MCC (Municipal Coordination committee) and Contact group (CG) which are essential units to streamline the project through procedural aspect and to assist in conducting different workshops, data collection and verification process.

Inception Task-I(C): Data Collection and Map Preparation:

After the formation of contact group in introductory workshops, task of data collection was completed through checklists and questionnaire survey in ward wise level. The primary sections of the questionnaire comprised of base line information like social and physical infrastructures, issues & problems and expected projects in ward wise level. Along with the questionnaire survey, consultant also had focused group discussion and key informant survey with the stakeholders like officials and engineers regarding the physical and social issues, challenges and opportunities of the

municipalities. Through the collected information and other secondary information base maps and thematic maps were prepared.

Inception Task-I(D): Stakeholder Consultative Workshops- I

After the field verification of the information gathered in questionnaire survey and checklist, Stakeholder Consultative Workshop-1 (SCW) was organized in the municipality where elected officials, professionals, social workers /community leaders, women, teachers, etc. participated. During the workshop, consultant presented existing plans and program and all information gathered in earlier stages along with the prospective challenges and opportunities of infrastructure development. After the discussion, session focused on the vision and long-term plan of the municipality, which guided the formation of indicative plan. Finally, participants proposed the list of projects as the need and goal of their municipality which will help them to achieve their vision in longer run. At the end of the presentation the discussion was held to identify possible comprehensive and integrated program and projects in a participatory approach in line with the vision and conceptual Indicative Plans presented, which will address the larger and broader need of municipality.

Inception Task-I(E): Presentation and Discussion at PCO and Submission of Inception Report:

After the SCW-1, consultant prepared the draft inception report comprising of the base line information of municipality, list of proposed projects, relevant maps (Base maps, thematic maps and proposed indicative plan map), indicative plan and infrastructure prioritization criteria. Based on the suggestions and comment from PCO after series of discussion, consultant has made major alternation in the indicative plans and project prioritization criteria. Based on the prioritization criteria which strictly adheres to the Planning Norms and Standard 2015 and other relevant documents as NUPS & NUDS, consultant has concluded the prioritized projects like road, drainage, drinking water, etc. With the series of presentation carried out at PCO and with other experts, consultant revised the draft report and has submitted this final inception report with indicative plan and screened long list of programs and Projects.

PHASE II: Pre-Feasibility Study

The pre- feasibility study will help to eliminate unaligned alternatives in a situation where there are several possible methods to achieve the desired objectives, eliminate non-viable projects, eliminate unsuitable locations, decide whether modifications are required for a particular project to make it a viable one etc.

Pre-Feasibility Task-II(A): Stakeholder Consultation Workshop-II

The consultant shall conduct SCW-2 to finalize Indicative Plan and screened long list of programs and projects with total cost of approx. US$ 30-40 million based on the criteria developed by the consultant. The indicative plan shall be backed up by appropriate bye laws and guidelines with an objective to materialize the plan.

Pre-Feasibility Task-II(B): Reconnaissance survey and Verification of Screened projects

The consultant with team of multi-disciplinary experts including the support staffs of the field office shall visit the field and carryout necessary reconnaissance survey and collect required data and information. During this period the CG shall assist the team in all field level works. During this task

the team will collect additional data and information of the particular projects as screened above. The consultant shall devote another two weeks in the field for rapid assessment focusing on land and soil suitability, social, commercial, institutional, economic and environmental aspects of project analysis following the guidelines of GoN and potential future funding agencies. Based on the field data and information the consultant shall prepare the alternatives, tentative cost estimate and investment plan of each project.

Pre-Feasibility Task-II(C): Pre-feasibility study of all screened Projects

The consultant shall prepare location maps, conceptual plans, measurement drawings, thematic maps etc. and prepare draft Pre-Feasibility Report and submit to municipality and PCO. The prefeasibility report shall include the short list of programs and projects (with cost of approx. US$ 15-20 millions) which is found feasible from pre-feasibility study.

Pre-Feasibility Task-II(D): Presentation and Discussion at PCO and Submission of Pre-Feasibility Report:

The report shall be presented to representative of PCO, ERC and Municipalities for their feedback, comment and suggestions. The municipality and ERC at PCO shall provide necessary comments/feedbacks and suggestions and the consultant shall submit the Final Pre-Feasibility Report after incorporating those comments/feedbacks and suggestions to municipality and PCO. In this stage, all listed program and projects shall be assessed to examine whether or not these projects are worthwhile to conduct feasibility study and detailed project study.

PHASE III: Feasibility Study with Detailed Infrastructure Development:

a) Economic feasibility: The consultant shall analyze in detail the benefits that shall accrue from a particular project over a period of time and the cost/investment that needs to be made to implement such project through the indicators such as EIRR, Benefit-Cost ratio and others.

b) Social feasibility: The proposed project shall benefit the community lagging behind in the society especially children, single women, physically unable people. It shall also look into the displacement and resettlement issues and shall recommend the socially acceptable measures. The study will also address the participation aspect of the project.

c) Environmental feasibility: The proposed project shall address environmental, geological and disaster risk issues to analyze for likely negative impacts to assess the viable mitigating measures.

d) Financial feasibility: It involves the analysis and calculations like Financial Internal Rate of Return (IRR) and Net Present Value (NPV). Further, the consultant shall carry out relevant financial analysis deemed necessary for major infrastructures project in consultation with PCO. Financial analysis shall also cover institutional borrowing capacity, possible contribution by municipality and community etc. as an integral part of the study.

e) Institutional feasibility: The proposed projects shall be analyzed for role and responsibility of municipality, stakeholders and agencies directly or indirectly involved in the municipal development process and activities. It shall recommend the implementable institutional framework such as PPP and other viable modalities within the cluster municipalities. This shall include an assessment of the municipality human resources and their capacity building needs.

f) Technical feasibility: The proposed projects must be assessed for geo-seismological and hydrological soundness. Further, it needs to consider the availability of lands and its accessibility, availability of local skilled/unskilled labors, raw materials, appropriate technology etc., conduct detail engineering survey, design and cost estimate of alternative projects.

2.2 LITERATURE REVIEW

Literature review is carried out to understand the planning history of Nepal along with to understand some key terminology that are significant in this project to explore. Review of different planning practices in Nepal has helped consultant to understand the challenges that earlier planning process had to face and learnings from past to pass through the stages. Similarly, consultant have also intricately reviewed the new constitution of Nepal, especially exploring the authority and obligations of different level of governing bodies focusing on local government.

2.2.1 Planning Practices in Nepal

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

2.2.2 Master Planning approach and Structure Plan

One of the fundamental premise of the master plan is based on the western concept of 'zoning' which outlines a land use pattern by dividing the city into zones, where those traditional master plans had physical planning approach translated into spatial plans. Wapwera and Egpu (2013)defines master plan as a comprehensive long-range plan intended to guide growth and development of a community or region including analysis, recommendations, and proposals about the community's population, economy, housing and basic infrastructure as well as land use. P.B. Chhetri believes that new approaches of planning should be preceded by understanding of planning and development policy and programs after radical political change of 1950-51. Chhetri considers the coronation of King Mahendra (1955) and Queen Elizabeth's visit (1962) as introduction period of modern urban planning which was soon followed by UN Technical assistance program in 1962 for planning initiation Kathmandu Valley. The study resulted "The Physical Development Plan for the Kathmandu valley" in 1969 also called as Master Plan or the first comprehensive planning document in the country, commonly referred to as "1969 Plan" as well. Based on the "Survey-Analysis- Evaluation- Implementation", master plan approach of planning took enormous time in collection and analysis of data (Joshi, 2008, p. 95). Further on the analysis resulted on alternative solutions where best alternative was selected and developed into master plan (Joshi, 2008). One of the major criticism of master plan was that the plan was never realized of its full extent because of its extensive need of resources and limitation of project management.

Alternative to master plan, structure plan was introduced in 1988- 1991 for municipalities in support of Department of Housing and Urban Development (DHUD) in the name of Management Support of Urban Development (MSUD) (Irwin & Joshi, 1996). Structure plans were prepared for 33 municipalities but were limited to policy statements and details were not worked out (Joshi, 2008). Moreover, the approach continued to be physically biased and unrealistic. The plan basically lacked the consideration of realistic scenario of financial, institutional and other dimensions in the ground which could majorly affect the implementation strategy through municipalities (K C, 2015). Joshi (2008) explains the possibilities of structure plan to be successful than Master Plan on the basis of its

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

2.2.3 Integrated Action Plan

Integrated Action Planning was introduced at a time of decentralization of responsibilities and expected increases in funding for urban infrastructure to overcome deficits and serve rapid urbanization (MHPP, 1992) (Mattingly & Winarso, 1999). An alternative to conventional approaches of planning, it was more action oriented and realistic as it translated and implemented the goals of strategic planning within shorter time frame. (Irwin & Joshi, 1996). Joshi (2008) pushes the fact that IAP is more appropriate in case of Nepal where urbanization is rapid, resources are constraints, institutional capacities are inadequate and planning processes need to be simplified and less time taking. Joshi (2008) explains about the process adopted during the IAP, where professionals worked closely with municipal staff for about three months. Some of the steps carried out are explained as: Community consultation and problem identification with series of discussions and meetings were held where problems were identified in realistic way and people's expectations were not raised beyond affordability. Parallel to the community consultation, analysis of acquired information were conducted to determine and evaluate the opportunities and constraints existed in resources & institutional capacity of municipality, legislative framework and existing project (Irwin & Joshi, 1996). Likewise, physical and environmental analysis of the locality was done to conduct the SWOT analysis of site by preparing thematic maps, assessment of land use, identifying trends and patterns of growth, resource distribution and others (Joshi, 2008). Based on the previous collected information, problems were identified and prioritized, projects were formulated with solutions to each problem. Projects formulated were examined on the basis of their social, physical, topographical and financial feasibility, and applicable projects were set to implement.

Mattingly & Winarso (1999) claims that Integrated Action Planning was expected to promote the use of spatial planning as well as to improve investment programming. Different studies have proven the IAP concept is widely praised in Nepal but some of the steps are questionable. "Municipal residents and maybe some ward leaders and representatives have mistakenly thought IAP as a funding agency, probably because its introduction opened up access to the Town Development Fund and possibly some funds of the DHUD" (Mattingly & Winarso, 1999), which might be the similar case with UGDP/ UGIIP where the program is unanimously taken as the funding project rather than the essence of the planning process. Identifying the problems and prioritizing the projects at ward level meetings with extent of participation can be considered as good democratic process but often misguided by ill political will (Joshi, 2008). Mattingly & Winarso (1999) argue that changes to the sources of local government revenue have destroyed the foundation behind many investment plans and increased many times the difficulty of estimating future municipal incomes which showed the potentials that IAP was not fully realized. Irwin & Joshi (1996) further add that many municipalites find it difficult to implement urban projects as there is sever lack of manpower, resources and urban awareness.

2.2.4 Periodic Plan

Periodic plan is a long term plan of generally 5-7 years, picturing the future image of that locality comprising different disciplines of plan such as physical, social, environmental, financial, economical and institutional development. It consists of plan, policies & regulations related to the programs, investments and implementation of the program including budgeting and allocating tasks for responsible line agencies. According the guideline published by government, it can be taken as ' participatory and inclusive plan'. Periodic plans integrate different thematic plans according to social, economic, environment, physical, financial, and institutional aspects and ensure that the concerned stakeholders in the respective district authorities get due support in the overall periodic planning process in order to translate the legal provision into action (Ministry of Local development, 2059). It requires a municipal data profile and a participatory planning process with a log frame format that includes a rolling budget. Compared to Integrated Action Planning, comprhensive nature of periodic plan is considered as more realistic because of its legal status of Local self governance act and regulations (2058,2059), hence these are also considered as one of the performance indicators of municipalities (gtz: udle, 2006).

Periodic planning processes have been extremely slow due to endless data collection, lengthy public participation, the limited analytical capacity to utilise existing proxy data, the unwillingness to make decisions due to the changing political climate and the conflict within the country, the lack of local representation, weak insitutional capacity and other priorities that override periodic planning (gtz: udle, 2006). These are often viewed as tools that provide legitimacy or fulfil bureaucratic necessities rather than as management tools that actually organise the future development of municipalities according to agreed and balanced priorities voiced by local people. These are often argued as overloaded with a holistic planning approach, which is far beyond realistic implementation and service capacity (gtz: udle, 2006). But periodic plans have certain benefits over other sorts of planning because of its integrated nature of planning, legal and financial base for planning and budget allocation, foreign agencies in enhancing the institutional capacity building of municipalites and participatory appraoches.

2.2.5 Issues and Challenges

Nepal has started modern urban planning after 1960s with international expertise of UN, when country was freed from century of feudocracy of Ranas. Since then we have gone through series of new urban planning processes to control the haphazard urbanization, where the present doesn't shine as was planned in the past (K C, 2015). Many scholars like Dhakal (2004), Joshi (2008) and Irwin (1996) believe that plannings in Nepal were limited in papers without taking in consideration of ground reality and unexpected scenarios. So far the first kind of master plan for Nepal prepared by UN experts in 1969, covering a number of aspects in planning and conservation for next 20-30 years was not really well accepted by government in its policies (Dhakal, 2004). Dhakal blames that 'Kathmandu Valley Physical Development Plan, 1976' which consisted many subplans like urban design, residential development, zoning, etc always remained in the file and in reality greens were converting into greys.

Two major planning authorities of Nepal Town Development committees and Municipalities itself are merely 'Jaw-less bodies' (Dhakal, 2004), which is still the same as it basically lacks the required human resources and instituional support. According to new constitution Municipality are authorized to frame landuse, preapare housing plans, management plan for drainage and drinking

water, plan recreational space, and approve the construction of building and many more. Lack of coordination between private and public sector, national and international development agencies as well as among the sectorial line agencies in the implementation of urban projects has been a problem since long time. Technical competence for implementing the municipal projects is also severely lacking (Irwin & Joshi, 1996) where factors like privileged co-ordination of various actors, trend to violate laws, insufficient zoning regulations and improper planning consciousness are distorting the urban features (Dhakal, 2004).

Scarce supply of urban land, high cost and slow mechanism for land acquisition act is also considered as major challenges in implementation of big urban infrastructural project. Prolonged public participation and often misguided by ill political will are hindrances in implementation of many urban projects. As Roy (2009) describes about the situation of urban governance in India as 'regime is itself an informalized entity, one that is a state of deregulation, ambiguity, and exception'. She further ads on that 'incontrovertible argument about the failure of planning in India: that informality and insurgence together undermine the possibilities of rational planning, and that therefore India cannot plan its cities,' which is exactly the similar ground reality of Nepal. Law rendered as unrestricted and subject to multiple elucidations and interests can be positioned as, 'law as social process is as idiosyncratic and arbitrary as that which is illegal' (Berry, 1993; Holston, 2007, Roy, 2009).

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

Joshi (2008) explains that many attempts have been made to make planning more comprehensive. Mechanism to integrate different aspects are either not in place or very weak where such failures to integrate these sectors explain why planning has failed in Nepal. Plans in Nepal have always lacked the 'harmony withinn and among the organization' (Joshi, 2008). Kelly & Becker, (2000) explain that success in planning is determined by the effort of its leadership, that can be governing body or planning commission or working together, which is one of the major drawbacks of planning institutions in Nepal. Joshi (2008) adds that institutional incapabilities of planners or implementing agencies to consider the unexpected scenario caused due to external factors is making planning incompetative in Nepal. He highlights the implementation as ultimate goal of any plan hence it should be strategically ready to cope up with situations due to changes in environment, both internal and external.

2.2.6 Legal Frameworks

Infrastructure development has remained a priority of the government right from the beginning of first five year plan. With a view to facilitate and to create enabling environment many legislations have been enacted since then. Rules, Regulations and Guidelines have been developed and put to use. Policy documents have been passed and practiced so as to streamline the direction of the

development. In these connections the following Acts, Regulations, policy frameworks etc. have been brought in place:

1. National Urban Policy, 2007
2. National Urban Development Strategy, 2017
3. Planning Norms and Standard, 2015
4. National Land Use Policy, 2012
5. Local Self-Governance Act 2054 and Regulations 2055
6. Town Development Act 2045
7. Land Acquisition Act (1977)
8. Land Survey and Measurement Act
9. Environment Protection Act (2055 B.S)
10. Solid Waste Management and Resource Mobilization Act (1987 A.D)
11. Public Road Act (1974)
12. National Road Standard (2070)
13. Nepal Urban Road Standard prepared by DUDBC (2071)
14. Nepal Urban Drain Standard prepared by DUDBC
15. Town Development Fund Act 2053
16. Industrial Enterprise Act (1992)
17. Building Bye-Laws
18. Land Use Policy (2069)
19. Public Procurement Acts 2063 and Regulations 2064
20. Public Roads Act, 2031
21. Contract Act, 2023 and 2058
22. Construction Industry Acts 2055
23. BOOT Acts 2063 and Regulations 2064
24. Public Infrastructure Build, Operate and Transfer Policy 2057
25. National Transport Policy, 2001
26. National Agriculture Policy, 2004
27. Tourism Policy, 2008
28. National Industrial Policy, 2011
29. Planning Norms and Standard, 2013
30. Constitution of Nepal, 2015
31. Local Level Act, 2074

For carrying out the study, above mentioned policy documents, acts and legislations are very important to consider. Consultant is well aware of growing number of legal challenges in the planning process hence has considered all other legislations apart from mentioned here in the planning process. Few of the important planning legislations are elaborated below:

2.2.7 Constitution of Nepal and Local Government Operation Act (2074)

In order to develop Nepal as a welfare state, government has established a number of fundamental directive principles and policies of the state espousing equitable distribution of resources, opportunities and benefits to all citizens, removing social and economic inequalities across regions and social groups, maximum involvement of citizens in the governance process through decentralization (Paudyal, 2001). Decentralized system of governance is one of the fundamental policies to achieve those objectives outlined in the constitution. The constitution and operation act has provisioned broad based organizational structure, devolution of authorities, special provision to

promote disadvantaged communities, planned development process and judicial authorities to local bodies, where the Act has provided enough legal basis for the development of a capable, responsive and accountable local self-governance system.

The Constitution of Nepal has provisioned the main structure of the federal democratic republic of Nepal into three levels namely the federation, the state and the local level and three levels shall exercise the power of state pursuant to this Constitution and law. The exclusive powers of the federation, states and local level have been included in the Schedule 5, 6, and 8 respectively and the concurrent powers of the Federation, and local level have been included in the schedule 7 and 9 of the Constitution of Nepal.

Revised from Local Self Governance Act (2054), constitution has devolved sets of authority and responsibility in schedule 8 of constitution and further elaborated in the Local Government Operation Act (2074) and explored in "Unbundling/Detailing of List of Exclusive and Concurrent Powers of the Federation, the State and the Local Level Provisioned in the Schedule 5,6,7,8,9 of the Constitution of Nepal" prepared by Federalism Implementation and Administration Restructuring Coordination Committee.

Land use policies, human settlement development policies, environment adaptation, aviation policy and national taxes are few lists of rights mentioned in schedule 5 as the authority of central government whereas state government is prioritized in resource management like land, river and forest and mines. Similarly, there are various scopes like land management, agriculture, disaster management, social security, etc. which concurrently occur in the authoritarian scope of federal, state and local government.

Primarily focusing on this project and as key stakeholder for many local level projects, some relevant list of rights of local government directly relevant to urban development are enlisted below:

1. Local taxes (wealth tax, house rent tax, land and building registration fee, motor vehicle tax), service charge, fee, tourism fee, advertisement tax, business tax, land tax (land revenue), penalty, entertainment tax, land revenue collection
2. Local level development plans and projects: Formulation, implementation, monitoring and evaluation of necessary plan and projects for economic, social, cultural, environmental technology and infrastructure related development along with formulation and implementation of necessary urban policies/ standards, bye-laws and building codes.
3. Basic and secondary education
4. Basic health and sanitation
5. Local market management, environment protection and bio-diversity
6. Local roads, rural roads, agro-roads, irrigation
7. Water supply, small hydropower projects, alternative energy
8. Disaster management

2.2.8 The Land Acquisition Act, 2034 [1977]

It is common knowledge that urban planning involves large-scale acquisition of land as they lack public land and public space has different values in urban area. The Land Acquisition Act, 2034 [1977] empowers the Government to acquire any land, on the payment of compensation, for public purposes or for the operation of any development project by government institutions or other institutions.

- Preliminary actions, conditions and decision provision for acquiring land (Section 4,5,6,8,9,10)
- Provision of land acquisition in emergency condition (section 25)
- Provision of compensation of land, property and other losses (Section 7, 13, 14, 15, 16, 17,18, 19, 20, 21)
- Allocates authority to officers for different acquisition procedure (Section 5, 13, 40)
- Provision of Land ownership transfer (Section 22, 23)
- Provision of giving information and notices (Section 6, 9, 10, 18, 19)
- Ensures right to complain file (Section 11, 18)

Land acquisition act has empowered government to acquire land for development work. Although it has incorporated many aspects like assign authorities, compensation, time allocation, procedures etc., it fails to include issues like time frame of compensation, guideline for amount of compensation, social and cultural aspects. With integration of these issues, land acquisition can be much freer of disputes and urban development can be more effective. With the changing and imposing political system where loopholes are widely experienced, there are lots of possibilities of turning the act into individuals' will which needs to be monitored with good intention.

2.2.9 National Urban Policy, 2007 & National Urban Development Strategy 2015

The National Urban Policy (NUP), 2007 and National Urban Development Strategy is formulated through incorporation of: the views put forth by the urban sector related institutions, intellectuals and experts at the several consultation meetings and interaction programs organized at different phases and the written comments and suggestions from the concerned professionals. The NUP has put forward mainly three objectives:

a) to achieve a balanced national urban structure through proper guidance to development of and investment in the infrastructural facilities
b) to raise the living standard of the urban residents through development of clean, secure and economically vibrant urban development;
c) to achieve effective urban management through institutional strengthening and legal empowerment of the local bodies, as well as through promotion of proper cooperation and coordination among the different institutions involved in urban development.

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

a) Develop local bodies as prime institutions implementation of plan and programs by strengthening their institutional capacity.
b) To build necessary legal and institutional mechanism to set up an integrated urban planning and monitory system.
c) Execute special programs for conservation and protection of cultural heritage and sensitive natural resources.
d) Develop plans related to land development, housing, and regularize land market.
e) Develop sustainable public transportation system.
f) Prepare disaster-management plan
g) Redefining the designation of municipalities.

National urban policy is found to be more integrated, updated and comprehensive document addressing the major issues of urban planning and its implementation. It basically focuses on the problems related with urban planning and come up with solutions expressed by different institutions, intellectuals and experts. It admits the existence of policy level confusion of local body and central government agency due to lack of integrated approach in urban development. Lack of national vision in urban development and institutional or policy coordination, have made ineffective contribution for economic development as well as poverty reduction. NUP identifies unbalanced urban structure, weak rural-urban linkages, environmental deterioration due to haphazard urbanization, lack of clarity in national policy, weak municipal institutions, urban poverty as major issues related to urban sector. It further adds that weak institutional capacity and lack of coordination between local bodies and other agencies related to urban development, are the reasons behind local governments' lacking in plan and execute urban plans and programs as per the expectations. NUP adds the need of 'close cooperation and coordination between the central agencies and local bodies; and the areas which can be left solely to the local bodies.'

Despite having very exciting strategies and policies involved, it basically lacks any incorporation in the national policy. Present haphazard designation of municipalities without any proper consideration of population, infrastructure and revenue is one of the examples. Long term vision of any municipal area backed up by the legislations and public participation is one of the major point to be addressed in the policy. Generalization of the policy into strategies tries to address most of the urban issues such as land, housing, infrastructure, services, road, open spaces and all others but it doesn't consider restructuring the agencies, authorized body and local bodies along with legislations associated with them. National Urban Policy can be taken as good framework of addressing many challenges related to urban development where with minor additions like long term vision, regular upgrading and policy reforms could make the policy more effective, none the less it lacks implementation portion which needs lot of analysis, evaluation and recommendations as per the local problems.

Because of slow pace of NUP implementation and its internalization— especially policy activities pursuant to objectives of urban environment and management; the National Urban Development Strategy (NUDS), 2015 has been formulated. On the other hand, fast pace of changing urban dynamics—that included, emergence of new growth factors and context (international and national), changing urban and metropolitan form, and establishment of MoUD—required expedited response. The objectives of NUDS, therefore is not to replace NUP, but to complement and expedite its implementation. It includes 8 thematic areas, which includes 4 themes and 4 mechanisms. The Themes are urban system, urban infrastructure, urban environment and urban economy. Similarly, the Mechanisms are urban investment, urban finance, urban governance and urban land management. NUDS, 2015 includes 41 desirable conditions or milestones envisaged for different themes, 65 indicators to measure the desirable conditions, 86 thematic strategies to achieve the desirable conditions or milestones, 164 activities identified to operationalize the strategies. It is prepared considering the 15 years Planning Horizon, Planning Norms and Standards.

Department of Urban Development and Building Construction intends to prepare a single Planning Norms and Standards to use as a tool for standardizing the planning of urban development projects. The complete Planning Norms and Standards will have three broad headings: infrastructure norms and standards, land use norms and standards and urban form norms and

standards. The objective of planning norms and standard is to facilitate urban designers, planners and policy makers to identify and forecast essential infrastructure needs of urban areas as well as help prepare urban plans and programs, to enrich understanding of urban form and land use and ensure balance between them and to guide the development and management of physical, social and economic infrastructure services in a planned manner.

Others

Many other acts, directives and legislations related to urban planned development have been approved by Nepal government to authorize, guide and promote local bodies in urban development programs, but result doesn't seem to be very effective in most of the urban areas. Some of the major policies as: National Shelter Policy, Apartment Act 1997 and Build Operate Transfer Policy (2000) were proposed for promoting public private partnership whereas directives for municipality in guiding urban development plans like: Environment and Child Friendly Governance, and monitoring guidelines or policies like MCPM (Minimum Condition and Performance Measures) have not brought real impact in ground apart from fulfilling the bureaucratic directions. Building bye laws prepared by municipality can also be taken as one of the important legislation for urban form management, which can have larger impact for longer term. Shelter policy 1996 seems to have undertaken important policy initiatives in the housing sector of country where Local Government Operation Act has entitled local bodies for planning and promoting public participation and optimum resource mobilization. MCPM assessment of planning has made local bodies more attentive towards different aspects of planning including financial success, participatory approach, good governance, project implementation, community empowerment for backward group and women and many more. MCPM has also made local bodies more conscious over the performance in response to local development with community participation, as it is directly linked with the conditional and unconditional grants provided by central government to them. With start from Decentralization act 1982 of which preamble suggests the goals and objectives of:

- Wider mobilization of people in resource allocation and distribution
- Formulation and implementation of medium terms and annual plans
- Involving local people in decision making and development

Many upcoming plans have tried to make the urban development issues more devolved and participatory. Paudyal (1994) has pointed major points like limited institutional capacity, lack of support from central government, informal power structure, attitude amongst the local administrator, excessive political intrusion and unrealistic scenario analysis on planning as the reason behind result being far short of expectation in local level development. Contradictory policies like periodic plans for 3-7 years and yearly plan making for fulfilling MCPM are more tedious in coordination amongst the legislations. Different urban planning legislations, policies and programs are prepared by government and NGOs in order to support balanced and planned urban development but it is not reflected in national decision making nor in the implementation at ground level. Policies and legislations are also not fully equipped with implementation resources and good governance which lead to the ultimate chaos and ineffectiveness of overall system.

2.2.10 Infrastructure Planning

Infrastructure, in the developmental perspective, is the base, upon which society and societal activities rest. It is the sector in which public welfare activities are executed by public (or private) enterprises. Merriam Webster Dictionary has defined "Infrastructure" as "The underlying foundations or basic framework" (as of system or organization). Single definition of infrastructure is difficult to make, yet infrastructure can be defined by its characters.

- It is accessible to large groups of people
- It provides crucial services for the functioning of an organization or society
- It helps to achieve economic and social objectives
- Examples of infrastructure are waterways, Roads, Education Institutions, etc.

Infrastructure supports societal objectives that range from basic amenities like increased housing provisions, economic growth, transport, schools, health and leisure services to other services like green energy, utility services, open space, community, thriving and sustainable communities and mitigating climate change (I and Dea, 2009). World Bank (Telford, 1999) has made it even clearer that, Infrastructure may be deemed to include facilities and processes in following areas:

- Public utilities- power, telecommunications, piped water supply, sanitation and sewerage, solid waste collection and disposal, and piped gas.
- Public works- roads and major dam and canal works for irrigation and drainage.
- Other transport sectors- urban and interurban railways, urban transport, ports and waterways, and airports.

These constitute the physical infrastructures. However, there are other sectors of infrastructure apart from this definition. They are the social, cultural and so on.

> Infrastructure planning is a continuous process and a valuable tool for managing infrastructure delivery. Monitoring, review and taking action to deliver will require an ongoing partnership governance arrangement. (Planning Officers Society, 2009). With Infrastructure Planning, infrastructure needs are identified and planned for addressing those needs. They also cover the task of planning for how infrastructure establishment will come about, underpinned by organizational investment regardless of sector (2009, p. 5).
>
> All organizations must invest in their future if they can, in order to improve, expand or maintain their services. The integration of these individual processes and programs will enable service providers to more effectively target areas of need with the potential to achieve greater efficiencies and savings. Good infrastructure planning and delivery is important at both local and regional levels (2009, p. 5).

Infrastructure and services are provided by a range of organizations and they need to be integrated for progression as planned. The preparation of an Infrastructure Delivery Plan or Schedule will help that integration and is essential if local authorities and their partners – especially the LSP – are to fulfill their place shaping role. Where investment for development can be identified, the capacity of existing services to accommodate new population growth should be captured and where possible quantified and any gaps in provision clearly set out. If the plan is done with the involvement of all relevant parties, it helps to:

- Direct the right level of growth and infrastructure development in the right place

- Bid for funding from other infrastructure agencies, and
- Engage with infrastructure funding providers and deliver the right levels of infrastructure for growth.

(2009, p. 5)

Thus, Infrastructure Planning includes tasks of identifying infrastructure needs, designing the process of infrastructural project identification and planning for their implementations, predicting the outcomes that synchronize the project with infrastructure needs and budget envelope, integrating various sectors and investors and analyzing the individual contributions of the stakeholders.

2.2.11 Indicative Plan

Various key performance indicators of development are taken as the conditions based upon with development plans are formulated. They are Employment, sufficient income, adequate shelter, access to safe water, access to medical services and education, environmental safeties and personal security. By definition, infrastructures that assign those indicators are usually invested by the state or government. According to World Bank working paper from 1990,

"Indicative plans include establishment for sectorial targets which are not necessary for private sectors and are imbedded in macroeconomic projections that pertain to a period of several years" (Belassa, 1990).

Followings are the postulate of Indicative planning (Moisseev, 2010) .

- Resource assessment for safe, secure and sustainable development
- Flexible and reliable form of cooperation, partnerships and participation
- Coordination mechanisms for safe flows of investments for capacity building and infrastructure development using innovative techniques and technologies
- Collaboration in identification strategic goals and development priorities

Indicative plans are usually persuasive ones. That is they are not imperative plans but are suggestive ones that are directed to promote faster and more stable growth thereby encouraging more efficient investment. According to (Turner & Collis, 1977) , Indicative plans contain 'a forecast or target rate of growth for the economy as a whole for specified future time period and a consistent set of microeconomic forecasts or targets. The planning exercise involves raising the overall level of demand expectations and removing the uncertainty with which expectations are held'.

Indeed, in the context of this project, Indicative planning is employed so as to set target population of planning and targeted growth and direction of urban form.

2.2.12 Infrastructure Project Prioritizations

Project selection is one of the major tasks of Infrastructure Development Planning. Especially when large number of projects are floated during the planning process, it is important to prioritize those in order to ensure the proper use of funds on the most needed infrastructure. This process is known Infrastructure Project Prioritization. Various models are under practice for project prioritizations. Social Cost Benefit Analysis (SCBA) is one of the most comprehensive and sound project appraisal process, when systematically applied, provides a basis for project's prioritization (Marcelo, Mandri-Perrott, House, & Schwartz, 16-04-23-Infrastructure-Prioritization-Framework-Final-Version, 2016). But in most of the cases, in developing countries, the data and even the budget for infrastructure

may not be sufficient as required and also the planning has to be carried out in less time with relatively even lesser timeframes. SCBA incorporates extensive economic analysis and is time consuming on the one hand, on the other, processes with in depth data and information regarding the cases. For such instances, various other models are already practiced and have been proven to be effective. Infrastructure Prioritization Framework (IPF) is one of them. 'It is a multi-criteria decision support tool that considers project outcomes along two dimensions- social-environmental and financial-economic' (Marcelo, Mandri-Perrott, House, & Schwartz, 16-04-23-Infrastructure-Prioritization-Framework-Final-Version, 2016). As IPF is based upon Multi-Criteria Decision Analysis, it allows for two critical policy choices, the selection of criteria by which alternatives will be assessed and the weighting of criteria. And both of these choices are performed with the active consultation to expert guidance. As per the World Bank PPP Group (Marcelo, Mandri-Perrott, House, & Schwartz, 16-04-23-Infrastructure-Prioritization-Framework-Final-Version, 2016) which has already used this model for project selection, the first step of IPF is to identify the set of indicators that will be combined to construct the social-environmental (SEI) and financial-economic indices (FEI) in term of application context based upon government policy goals and stakeholder consultations. Next step is to combine the quantitative and qualitative variables via an additive model. The following step is to condense dissimilar data types and scales of measurement into indices. For that, qualitative data and ordinal quantitative data are transformed into usable scalar data, wherein the intervals between values reflect degrees of difference. The criteria measurement, as such, are standardized into common scale and weights for each criterion in the additive models are established (2016, p. 11). Thus, standardized indicators are multiplied by weights to create the index score. Weighting, on one hand helps to structure the discussions on relative importance of component indicators and policy goals, on the other, could be a way of manipulation of selection process in pursuit of prevailing interests. As such, experts' consultation is important with the critical discourse of indicators importance, weightage for each indicator is figured out. This has to be a transparent process and the weightage, as such is fixed with the expert's guidance, already set Policy goals and the contextual project appropriateness identified in advance of analysis (p. 12).

In case of Vietnam five indicators were figured out under SEI: Direct jobs Created (DJ), Number of Beneficiaries (NB), People Affected by Repurposing Land Use (PA), Cultural and Environmental Risks (CER) and Pollutions in term of CO2 equivalent emission (CO2).

Similarly, for FEI, indicators used were Financial Internal Rate of Return (IRR), Multiplier Effects (ME), Categorical score indicating the project's locus in designated Priority Economic Zones (PEZ), a qualitative measure of Complementarity/ Competition effects (CC). The indicators further prioritized with the weightage were extrapolated to the budget envelope with a Cartesian matrix and as such, 268 projects were selected out of approximately 3000 projects. Thus, the pilot project in Vietnam was executed successfully with some lessons to learn. One was the sensitivity of the composite indices. Another was about Technical or even political problems that could be created by subjective weightage. Third was the role of proper definition of the metrics to avoid the possible biases. Fourth was the appropriate use of financial and economic indicators in low information conditions. Fifth lesson being the success of the IPF to monitor the efficacy and efficiency consideration and final lesson was the appropriateness in using IPF to strengthen data weaknesses (p. 22).

CHAPTER III

BRIEF PROFILE OF CHANDANNATH MUNICIPLAITY

3.1 Project Location Introduction

According to Constitution of Nepal 2062, Chandannath Municipality is located in Karnali Provision. This Chandannath Municipality was established on 18 May 2014 by merging the existing Mahat Gaun, Talium, Kartik Swami, and Chandannath village development committees (VDCs).The name of this municipal name has been named after the name of spiritual in the temple of Chandan Nath Baba, famous goddess in Jumla district of Chandan Nath.

Jumla is considered as remote and less developed area of the country. In Jumla district, Chandannath is the one and only municipality. So, the Chandannath municipality has the responsibility of working on sustainable city. Government has highly prioritized the development issues of these high Himalayan district along with their natural resources management, towards that Chandannath Municipality is dedicated and is working for the smart city. In this regard other government and non-government offices have widely acknowledged the planning project done by the municipality.

It is the district headquarters of Jumla, and the only newly developed municipality of Karnali Zone in the district headquarters of Karnali Zone.

During the rule of historical backgrounds Kalikal dynasty, this area was famous as the capital of Jammla (Chinasim Rajasthan). The Temple of Shri Chandan Nath Bhairavnath Baba has its own importance as the work of the Shyamal Valley is the work of the Thyamal valley, which is situated in the neighboring kingdom of Penalty, which is situated under the slums of Zamanni, Tilundi, Jaguad and Umgad Khola. Tila, as a sacred pilgrimage to the river Dan river of Zaw, has been celebrated as a sanctuary for local citizens as well as newcomers. Similarly, others historical importance places are Panchaywal and Sikhamba. If this historical places are preserved and conserved, religious visitors from different locality can be attracted in order to increase the income of the Municipality.

Chandannath Municipality lies in Himalayan region with range of mountains. Chandannath municipality lies in Far development region, Karnali zone, Jumla District. After the federal restructuring the municipality lies in Province No. 6, **Karnali** Provision. Jumla district shares boundary with Mugu, Jajarkot, Dolpa and Kalikot on northern, southern, eastern and western direction respectively. Chandannath Municipality is connected to Patarashi and Kankasundari Gaupalika on northern direction, Tatopani Gaupalika on the southern direction, Guthichor and Patarashi Gaupalika on eastern direction and Sinja Gaupalika on the western direction. Chandannath Municipality is only about 951.2 km from the Kathmandu via Karnali Highway. In flight, 30 minutes from Nepalgunj

airport. The total area of Chandannath Municipality is 102.04 sq km. Tila river pass between the boarder of Chandannath Municipality and Patarasi rural municiapality,.Whereas, Jugard river through the centre of Chandannath Municipality.

Table3.1: New and Old Wards

S. No.	New Ward No.	Inclusive VDCs / Municipalities
1	1	Chandan Nath (1,2)
2	2	Chandan Nath (3)
3	3	Chandan Nath (4)
4	4	Chandan Nath (5)
5	5	Chandan Nath (6)
6	6	Chandan Nath (7)
7	7	Chandan Nath (8, 9)
8	8	Chandan Nath (10,11)
9	9	Chandan Nath (12,13)
10	10	Chandan Nath (14,15)

3.2 Climate

Jumla has a highland oceanic climate that is cooled down by its elevation. As a result, the climate retains strong diurnal temperature variation in winter and the moderation is from subtropical influence as opposed to maritime.

The climate in Jumla is warm and temperate. The summers are much rainier than the winters in Jumla. According to Köppen and Geiger, this climate is classified as Cwb. The average annual temperature is 13.5 °C in Jumla. In a year, the average rainfall is 766 mm.

The highest temperature ever recorded in Jumla was 33.3 °C (91.9 °F) on the 24th May 1998, while the lowest temperature ever recorded was −15.0 °C (5.0 °F) on the 2nd February 1975.

3.3 Demography

As per census 2011, the total population of Chandannath Municipality is 19,047. The population density of Chandannath Municipality is denser in ward no. 1 with 1208 person per sq km. whereas ward no,3 and 7has low density of 82 and 85 respectively. The total number of households in Chandannath Municipality is 3996 with total population of 19,047.

Table 3.2 The total ward wise population of Chandannath Municipality

S.No.	New Vide	Population	Area (sq km)	Household	population density
1	1	1,885	1.56	375	1208
2	2	1,388	5.63	296	247
3	3	1,677	20.47	328	82

4	4	1,465	2.9 4	500	732
5	5	2,076	0.65	340	2135
6	6	183 9	3.74	432	492
7	7	1,786	21.07	375	85
8	8	25 9 6	23.75	462	109
9	9	214 9	6.62	434	325
10	10	2,186	15.61	454	140
		19 047	**102.04**		

The population density of Chandannath Municipality is 187 person per sq km.

Figure *3.1:* shows Ward number 5 have highest population density of 2135 person per sq km and ward number 3 is least densely populated with density of only 82 person per sq km. Ward number 7,8,10,2,9 and 6 have low population density. Ward no 1 and 5 are the densest as the market center-Jumla bazar lies in this ward. The region is also the core area of Chandannath municipality. Looking at the trend of urbanization, ward no 1,4,5 and 6 will get denser in coming years. The proposed urban expansion zone can accommodate the projected population with desirable population density of 300ppha. Most of the houses in the area are either commercial or under mixed land use with upper floor as residential and ground floor as commercial. The prevailing road width and other infrastructure along with institutional establishment's reveal that the area will develop as commercial zone while the residential land use will be further pushed towards existing fringe.

The population bar graph shown in

Figure *3.1:* is constructed as per the population of different age group. The total population of young people (0-14) is 28.03% and elderly group (60+) is 6.5% respectively. This shows that the percentage of dependent group is 34.53 %. The percentage of working group is 65.47 %. The shape of population bar graph shows that there is uniform distribution of male and female in Chandannath municipality.

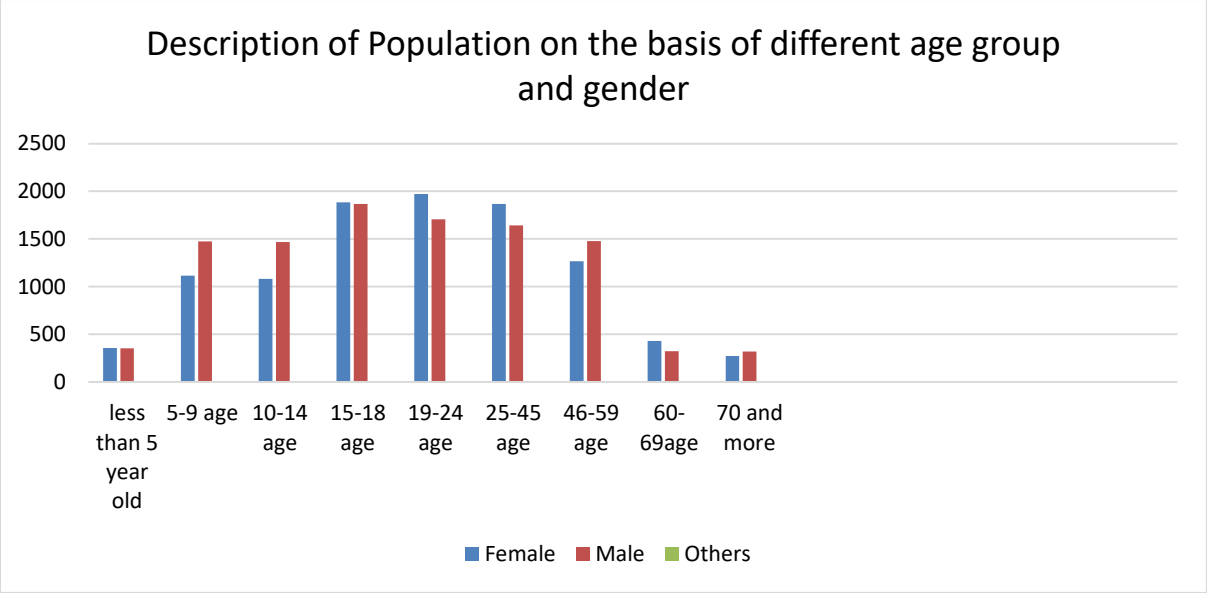


Figure 3.1: Description of Population on the basis of different age group and gender

3.3.1 Population projection

The population of Chandannath municipality was 20884 in 2011. The population and growth rate in different census year is shown in **Error! Reference source not found.**. Population projection is done by using geometric formula. The population projection using different growth rate as shown below.

Table 3.3: Population projection

Years	
2011	19047
2020	22547
2025	24762
2030	27190
2035	29859

With the existing growth rate of around 1.89, the population is expected to reach around 29,859 by 2035. There are other marker centers developing at high rate in the Chandannath and looking at the trend of migration it can be predicted that the growth rate would not exceed the present growth rate.

3.4 Infrastructure

3.4.1 Social Infrastructure

A. Education

Chandannath has become an educational hub for districts like Mugu, Dolpa, Humla, Kalikot and for Jumla itself. Many people migrate to Jumla for quality education. There are numbers of private and governmental institutions for good education. Still many people migrate to Kathmandu and others countries to pursue higher education.

Karnali Academy of Health Sciences (KAHS) has been established in 2011, by an Act of parliament of Nepal, in Jumla, to provide health services in easy way in backward areas, to produce

skilled health professionals & conduct research, especially targeting to those who reside in backward and rural area as well as those who are socially marginalized.

Karnali Technical School (KTS) has been established on 5th shrawan 2037 with the joint effort of Government of Nepal and United mission to Nepal. And now it is run under the CTEVT. KTS mission is to produce a competent and confident workforce by providing accessible TVET services to the doors of the community people. KTS is providing the following courses: ISc. Agriculture, JTA, Civil overseer, Civil sub-overseer, ANM and CMA programs with student of 2144 male, 999 female students per batch.

Jumla Multiple Campus (estb. 2030 BS.) is providing education for Master level, Bachelor, PCL, A and B level.

Sanskrit school in ward no 5 provides Sanskrit education for about 80 students yearly.

As per,2068 BS. CBS census the overall literacy rate is 59.33, which was increased by 11.83% than 2058 B.S. data. Out of this, male and female literacy percentage is 75.03% and 66.76% respectively. The table 6 shows the details of municipality literacy growth.

Table 3.4: Literacy data on the basis of male and female (Source: Census 2011)

S. No.	Description	2058 data (%)	2068 data (%)
1	Male	62.03	75.03
2	Female	49.97	66.76
3	Total	47.5	59.33

Table 3.5: Gender wise literacy rate of 5 and higher year (Source: Census 2011)

Gender	Total			Description of education level							
		General	Lower	Lower sec.	Sec.	SLC	+2	Bachelor	Master	Others	Non formal
male	9867	156	1994	645	720	1632	570	2513	85	1476	135
female	10297	194	1931	992	585	1943	780	1988	56	1224	604
total	20173	350	3875	1637	1305	3575	1350	4501	141	2700	739

According to CBS 2011 BS data, the ward no. 6 has high literacy rate of male and female with percentage of 91.35 and 85.48 respectively. The least literacy of male and female data is in ward no. 1 which has the percentage of 28 and 46.53 respectively.

The detail record of ward wise literacy is as:

Table3.6: Ward wise literacy data of male and female (Source: Census 2011)

Ward no.	Particular	Literacy percentage
1	Female	28
	Male	46.56
2	Female	47.69
	Male	52.30
3	Female	46.59
	Male	53.40
4	Female	48.01
	Male	51.98
5	Female	77.90
	Male	88
6	Female	85.48
	Male	91.35
7	Female	75.90
	Male	79.77
8	Female	49.20
	Male	55.10
9	Female	52.4
	Male	57.14
10	Female	49.46
	Male	50.54

Table 3.7: List of Education Institution in Chandannath Municipality.

SN	Name of school	School type	Subcategory	Ward	Toal name
1	Malia Lower Secondary School	Public School	Lower Secondary School (Class 1-8)	1	Aachryabada
2	Nava Pravat basic school	Public School	Primary School (Class 1-5)	1	Talichur
3	Early Child Development Center-4	Public School		1	Talichur
4	Karnali Health Council	Government School:	Collage / Campus	2	Ananmnagar
5	Bhagawati Basic School	Public School	Primary School (Class 1-5)	2	Bhandaribada
6	Jumla multipul Campus	Government School:	Collage / Campus	2	Anamnagar
7	Early Child Development Center-1	Government School:		2	Anamnagar
8	Karnali Technical School	Government School:	Technical and Vocational School	3	Kotheshaghu
9	Saraswati Basic School	Public School	Primary School (Class 1-5)	3	Kotheshaghu
10	Karnali Secondry School	Public School	Secondary School (Class 1-10)	3	Anamnagar
11	Early Child Development Center-4	Government School:		3	Anamnagar
12	Shidibinayak Basic School	Public School	Primary School (Class 1-5)	4	Malabhid
13	Ashok Basic School	Public School	Primary School (Class 1-5)	4	Bharatibada

14	KartikiSwami Basic School	Public School	Primary School (Class 1-5)	4	Gairangau
15	G.M D boarding School	Private School	Lower Secondary School (Class 1-8)	4	Bharatibada
16	Early Child Development Center -2	Government School:		4	Bharatibada
17	J. R karnali School	Private School	Primary School (Class 1-5)	5	Bazer
18	Chandannath Secondary school	Public School	Secondary School (Class 1-10)	5	Bazer
19	Asia international Sechool	Private School	Secondary School (Class 1-10)	5	Bazer
20	Chandannath HSS	Public School	Higher Secondary School (Class 10+2)	5	Bazer
21	Chandannath Gurukul Basic School	Government School:	Primary School (Class 1-5)	5	Bazer
22	Ball mender Basic School	Public School	Primary School (Class 1-5)	5	Bazer
23	Early Child Development Center -3	Government School:		5	Bazer
24	Kanikanisha HSS	Private School	Higher Secondary School (Class 10+2)	6	Chhina
25	Senpal English Mediam School.	Private School	Lower Secondary School (Class 1-8)	6	Chhina
26	Early Child Development Center-2	Government School:		6	Chhina
27	Janata HSS	Public School	Higher Secondary School (Class 10+2)	7	Mahatgaun
28	Janta Techincal School	Public School	Technical and Vocational School	7	Mahatgaun
29	Early Child Development Center -5	Government School:		7	Mahatgaun
30	Deuti Basic School	Public School	Primary School (Class 1-5)	8	Shlagau
31	Bhairab Secondari School	Public School	Secondary School (Class 1-10)	8	Dhupidsuk
32	Bhagawati Basic School	Public School	Primary School (Class 1-5)	8	Jatibhid
33	Early Child Development Center-6	Government School:		8	Jatibhid
34	Gayankunja Secondary School	Public School	Secondary School (Class 1-10)	9	Shreeduska
35	Early Child Development Center -3	Government School:		9	Shreeduska
36	Ratna chandeswor HSS	Public School	Higher Secondary School (Class 10+2)	10	Bohoragaun
37	Jana Joti Secondary school	Public School	Secondary School (Class 1-10)	10	Barkothebada
38	Early Child Development Center -3	Government School:		10	Boharagaun

As per Planning Norms and standard,2013 there should be primary school at distance between 500 and 800m. **Error! Reference source not found.** shows the accessibility of primary school within 500m. The primary schools are concentrated in the Bijaynagar and along highway. There is lack of accessibility of primary school in municipality. **Error! Reference source not found.** also indicates that ward 1 is least literate among merged VDC. People have to rely on the main market center even for basic education.

As per planning norms and standard, 2013 (population 1 lakh-4 lakh) there should be at least 1 Graduate/Post-graduate collage for 25,000 population at a distance of 45min in public transportation. There is no campus offering Master's degree in Chandannath municipality. Also, there should be 1 university (specialties) per 40,000 population at distance of 1hr in public transportation and there is none in Chandannath. Chandannath does not meet criteria mentioned in the norms for educational institution.

B Health

There are renowned hospitals in Chandannath Municipality which attract lots of people from Humla, Jumla, Mugu, Dolpa, Kalikot district. Many people come here for medical education as well. The major hospitals include Karnali Academy of Health Science, T.B treatment Centre, District health Office and others.

The list of health institutes are listed below:

SN	Name of health institution	Type	If Government institution	Ward	place name
1	Karnali Academy of Health Science (Council)	Government Hospital:	Zonal Hospital	2	Hospital line
2	T.B treatment Centre - 2	Government Hospital:	District Hospital	2	Hospital line
3	Distict health Office	Government Hospital:	District Hospital	2	Hospital line
4	Private clinic 6 medical store	Clinics		2	Hospital line
5	Iberdequac hospital -1	Government Hospital:	District Hospital	4	Bharatibada
6	Marie stopes centre	Private hospital		4	Todikhel
7	Pirvate Eye Care center	Private hospital		4	Todikhel
8	Private clinic -5 medical store	Clinics		5	Bazar
9	Chirayou hospital Pvt.Ltd. (Now not on operational	Private hospital		5	Bazar
10	T.B treatment Centre - 2	Government Hospital:	District Hospital	2	Hospital line
11	Health post	Government Hospital:	Health Post	7	Mahatgau
12	Health post	Government Hospital:	Health Post	9	Talium
13	Health post	Government Hospital:	Health Post	10	Kathikeshwami

As per the Planning Norms and standard, 2013 there needs to be one 25-50 bed hospital for population of 50,000 and one (50-100) bed hospital per 1 lakh. 700 bedded, Karnali Academy of Health Science has got affiliation as medical and teaching hospital. Karnali Academy of Health Science although meets the criteria mentioned in the Planning Norms and Standard.

Karnali Academy of Health Sciences										
Teaching Hospital, Jumla.										
Yearly Technical Report 074/075										
		Month/ FY : 074/075								
Particular		**Shrawan**	**Bhadra**	**Ashoj**	**Kartik**	**Margha**	**Paush**	**Magh**	**Falgun**	**Total clients**
OPD	**New clients**	3047	2518	1203	1566	1733	1471	1330	1518	**14386**
	F/U clients	351	81	298	395	287	329	356	576	**2673**
	Insurance OPD/IPD	0	435	285	385	463	687	611	703	**3569**
	Total clients	3398	3034	1786	2346	2483	2487	2297	2797	20628
Total ER case		423	399	347	363	267	232	223		**2254**
Total LAB Services	**Hematology**	4382	3948	3143	2344	3224	2850	3660	3730	**27281**
	Immunology	209	197	172	321	141	145	287	277	**1749**
	Biochemistry	2280	2057	1500	650	1043	1628	1534	1768	**12460**
	Bacteriology	95	78	63	44	67	81	93	106	**627**
	virology	398	361	202	504	394	497	328	506	**3190**
	Parasitology	736	670	482	629	702	447	679	730	**5075**
	Hormones	0	0	0	0	0	0	0	0	**0**
Total No of Lab Test		8100	7311	5562	4492	5571	5648	6581	7117	**50382**
No of Patient at LAB		1531	1278	756	829	810	995	946	1149	**8294**
MA (Medical Abortion)	**Total**	0	0	6	1	10	12	6	7	**42**
	< 20 yrs	0	0	2	0	2	1	1	1	**7**
	> 20 yrs	0	0	4	1	8	11	5	6	**35**
Total CAC	**Total**	1	0	0	0	0	1	0	0	**2**
	< 20 yrs	1	0	o	0	0	0	0	0	**1**
	> 20 yrs	0	0	o	0	0	1	0	0	**1**
Total PAC	**Total**	9	3	o	2	5	7	4	1	**26**
	< 20 yrs	1	0	o	2	2	0	1	0	**5**
	> 20 yrs	8	3	o	0	3	7	3	1	**21**
Maternity	**Normal Delivary**	47	39	37	39	38	36	44	39	**319**
	Forcep/Vaccum delivary	15	2	2	3	2	3	1	2	**30**
	C/S Delivary	3	5	7	2	10	12	7	6	**52**
	Total Delivary	65	46	46	44	50	51	52	47	**401**
	C /S Rate	4.83%	11%	15%	4.76%	20%	23%	13.46	12.76	**27.0045**
Death	**Parinatal**	2	0	1	1	3	5	0	1	**13**
	Neonatal								0	
	Maternal	0	0	0	0	0	0	0	0	**0**
	Still Birth	1	0	0	3	1	3	0	1	**8**
	Other Death	4	6	3	4	2	1	2	0	**22**
Total Death		7	6	5	5	6	9	2	1	**41**
Surgery	**Major OT at OT**	40	34	27	21	27	39	22	35	**245**
	Minor OT at OT	52	47	21	43	29	61	54	51	**358**
	minor OT at ER	104	176	240	200	187	149	117	119	**1292**
	Plaster at ER/OPD(Cast/Slab)	10	37	82	103	41	46	48	51	**418**
Post op infection Major Surgery		0	0	0	0	0	0	0	0	**0**
Post op infection minor Surgery		0	0	0	0	0	0	0	0	**0**
X-RAY		910	985	765	593	658	935	830	1247	**6923**

USG	635	508	246	429	498	425	422	509	**3672**
ECG	160	148	80	117	114	124	193	105	**1041**
Admission	308	263	229	233	186	202	219	228	**1868**
Discharge	269	233	145	171	150	179	194	198	**1539**
Refer In ER/IPD	0	2	3	3	4	10	6	6	**34**
Refer Out / ER/IPD	7	17	20	21	26	12	24	20	**147**
Refer Out OPD	3	3	8	10	8	39	16	12	**99**
Free Service	6	3	2	4	10	22	40	51	**138**
Free service Amount	4600	11405	2290	12800	16695	55725	48095	81435	**233045**
Blood tranfusion No.	8	4	1	2	1	8	**11**	**5**	**40**
Blood tranfusion Unit	13	14	3	4	2	13	**14**	**5**	**68**
Immunization no.of session .	0	0	0	8	8	8	**4**	**4**	**32**
Immunization No.of clint Served	0	0	0	83	81	84	**97**	**127**	**472**
Post Morterm done	2	6	0	4	5	2	**1**	**12**	**32**
Total Hospital Services									**333533**

C. Recreational Facility

Chandannath Municipality lacks proper recreational facility. Some recreational facilities include covered hall and open grounds like Tudikhel ground, and other school ground which is used for sports events. Karnali Technical School has also become place for fun and picnics. Gidi daha, Sancha daha, Bista daha, Thakurji Mandir, Bhirabnath, Chandannath and so on are some of the traditional ponds and religious places which has potential to attract many tourists. This can be developed as the religious recreational center. This municipality lack big cinema or complex for the refreshment and enjoyment.

As per Planning Norms and Standard,2013 there should be 1 Local park per 10000, 1 community park for 20,000 and 1 zoo park. Although there are vacant unbuilt plots in the urban area, the municipality lacks designated open spaces. At present situation, lack of open space doesn't seem to be big problem but with the current rate of development, the commercial area will lack the open space in future.

D. Security

Police beat at different wards provide security to the people. The District Police station is located at Bijaynagar ward no-6. Apart from that, there is only one fire vehicle in Chandannath municipality. With large area to serve through one vehicle, the place is also vulnerable to fire. As per Planning Norms and Standard there should be at least one fire station in the municipality. Municipality does not meet criteria for the fire safety. In present condition, there is no separate fire station in the municipality. Municipality itself operates the fire vehicle.

3.5 Physical Infrastructure

3.5.1 Road

Chandannath municipality is one and only municipality in the Karnali zone, Jumla district with a growing infrastructure and population. The central market area is developed on the old settlement locality with is nearby the zero km of Karnali highway. The airport road leads to the market area. The major road linkage includes the Karnali Highway (National Highway), airport lane, Surket to Jumla road. Although urbanization has already taken place in the nodes, proper road widths and network

of hierarchy is not developed. One of the major problems of Chandannath municipality includes the narrow road without parking and proper sewage system in the built-up settlement.

The major road connection through Chandannath municipality is shown in **Error! Reference source not found.**.

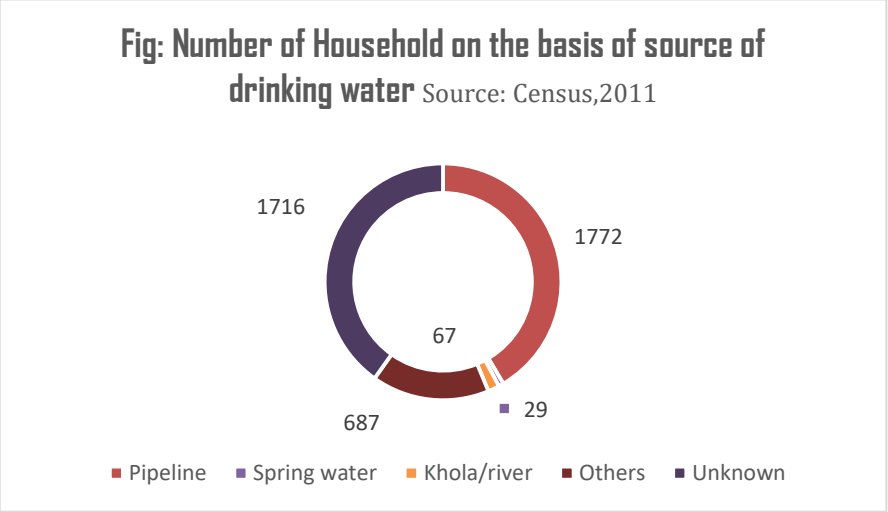
3.5.2 Drinking Water supply

The major source of water supply is tube well and the tap water. About 71% of people rely on tube well for water. Chandannath piped distribution is supplied by the Water Users and Sanitation Committee, formed in 2000 by the local community in the Chandannath Small Towns Water Supply and Sanitation Sector Project supported by ADF. Today, the Chandannath Water Users and Sanitation Committee has three water tanks that supply safe drinking water to the population of the growing town. The committee has also installed public drinking-water taps and public toilets in various locations, including public schools.

Table3.8 Source of Water supply (Source: Census 2011)

Household Survey on the basis of Drinking Water Source

S. No.	Drinking Water Source	House No.	Percentage
1	Public Water Pipeline	1772	41.49
2	Tube Well/Hand Pump	0	0
3	Well / Pond	0	0
4	Spring water	29	0.68
5	Khloe / River	67	1.57
6	Others	687	16.09
7	Unknown Sources	1716	40.18
	Total	**4271**	**100**



As per Planning Norms and Standard, 2013 the quantity of water required per person is 120lpcd and minimum diameter of distribution pipe needs to be 80mm with total storage capacity of 25%. The projected population of 2035 will require 14 lakhs liter water per day. At present condition, community drinking water supply is distributing the water in ward no. 1, 4, 5, 6 &7 through piped

distribution system for 2 hours at morning and evening. To meet the demand of the water additional water source need to be identify and proper distribution system should be made.

3.5.3 Drainage and Sanitation System

The problem of drainage can be observed in most of the municipality region. During the ward level discussion, almost all wards stated the problem of drainage. Although attempt has been made to drain out the rain water but the municipality lacks the master plan for drainage making the whole work ineffective. Overflow of Jugard khola is another major problem which occurs every year. This is due to the urban encroachment of habitat along the river.

About 16.16% of total household don't have toilet, 0.07% of household is connected to public sewer line, 16.23% connected to septic tank and 67.55% use normal system during census 2068.

Lack of proper sewer treatment plant is major problem in municipality area. Even not periodic maintenance of drainage system, causes blockage of the drainage and overflow during monsoon as a result.

S. No.	Ward No.	Septic tank	Public toilet
1	1	100 nos.	No
2	2		No
3	3	25%	No
4	4		Near Ashok namuna primary school (2 Nos.)
5	5	100 %	kamitole
6	6	250 nos.	
7	7	300 Nos.	
8	8	100 %	
9	9	100%	
10	10	20%	

One of the major problems is lack of land fill site for proper solid waste management. People of the municipality are looking for suitable land fill site but that needs to be evaluated with environmental perspective as well as land use planning. At present, municipality is collecting wastage from ward no. 1,2,4,5 &6 only. Municipality tends to dump solid waste collected on landfill site at ward no. 5 temporarily.

Figure3.2: Solid Waste Dumping in Jugard khola and solid waste dumped on road.

3.5.4 Electricity and communication

Micro hydro was inugrauated by HMG king Birendra in 2040 Magh 20th. Micro hydro of capacity 200KV is providing the electricity in the municipality presently. Electricity supply is the big problem facing by the municipality. The major problem in the electricity are the insufficient supply, no connection with the NEA grid line, the frequent power cut during the rainy season and old equipment in the power house.

New turbine has been delivered to the power house to increase the capacity and hope that this will solve the electric demand in somewhat. Municipality is working out to add connection with Nation Grid line.

Photo: New turbine delivered to the site; power house

The people of Chandannath Municipality are served by Nepal Telecom office through different service like GSM, CDMA and landline. ASDL is providing the internet service in some locality and even the mobile internet is available. Nepal telecom is providing the service through Microwave Radio Link. So, the demand of the people can't be fulfill and managed properly.

Nepal Telecom had connected all the 684 landline connection and need to increase 1000 capacity line for serving people.

Table3.9: Service provided by Nepal Telecom till 2074 Paush.

S. No.	Descriptions	Numbers	Remarks
1	Landline	684	
2	ADSL service	288	
3	GSM mobile / CDMA mobile	59919	

As per planning norms and Standard, there should be 100% coverage for electricity and telecommunication. Ward no. 9 is still not connected to electricity.

3.5.5 Irrigation

Irrigation Development Sub-Division with a mandate to plan, develop, maintain, operate, manage and monitor different modes of environmentally sustainable and socially acceptable irrigation schemes. Its ultimate aim is to provide year round irrigation facilities and increase the irrigable area. This giving a primary input in increasing the productivity of the land and providing a major input to the GDP and eventually improve the standard of living of the beneficiary farmers.

As per information provided by Irrigation Sub-Division:

- Annual planning and budget:
- Silam irrigation project with budget of Rs. 6,00,000.
- Annual development progress:
- 80%

Table 3.10: Area of cultivable and irrigated land

S. No.	Descriptions	Area (hector)	percentage
1	Cultivable land	50	70%
2	Irrigated Land	80	90%

70% (50 hector) of total area of Chandannath Municipality is only cultivable. Among which 90% (80 hector) land is irrigated.

Photo: Irrigation canal, irrigated cultivated land

3.5.6 Disaster and Water Induced Disaster Management

Nepal suffers from various types of water-induced disasters such as soil erosion, landslides, debris flow, flood, bank erosion etc. due to its rugged topographically weak geological formations, active seismic conditions, occasional glacier lake outburst floods, concentrated monsoon rains associated with unscientific land utilization. These phenomena induce severe impacts on the vital infrastructures of the nation such as roads, houses, hydro power, irrigation and drinking water facilities, cause loss of agricultural lands, properties and human lives posing a severe threat to the sustainable development of the country.

Apart from that, there is only one fire vehicle in Chandannath municipality. With large area to serve through one vehicle, the place is also vulnerable to fire. As per Planning Norms and Standard there should be at least one fire station in the municipality. Municipality does not meet criteria for the fire safety. In present condition, there is no separate fire station in the municipality. Municipality itself operates the fire vehicle.

3.6 Economic

Khalanga Bazar is known as a commercial center of Chandannath Municipality. It is located nearby the Karnali National Highway. The market has facilities for government and non-government offices, banking and cooperatives, education (Boarding, schools, colleges, technical institutes), telephone/mobile, public water supply, nursing homes and medical shops, security office, access to sewerage disposal, agro based industries, hotels and lodges, and others. It has possibility for commercial expansion. and capacity to absorb settlement expansion.

Bijaynagar Bazar is located in ward no. 6 of Chandannath Municipality, which is walking distance from the Karnali Highway. Facilities like educational institutes, medical clinics and pharmacy, government and non-government offices, banking and co-operatives, growing of town planning and settlement expansion, hotels ledges and restaurant and others are available in this bazar. This ward no. 6 is also facilitated with bus park. So, lots of shops and market area is developing along the Karnali highway.

Airport lane of ward no. 1 is also famous for market and development. This region is facilitated with shops and other offices.

Development of residential area along the Karnali Highway, bus park and other utilities within the municipality. Other subjective related offices as Nepal army, Zonal office of Nepal Police, Airport, Appellate court, Karnali Academy of Health Sciences, Public Service Welfare, Micro Hydro Power office, District Soil Conservation office, Agricultural Research station, Central Bureau of Statistics and others Zonal offices are located within the municipality.

Description of business occupation is enlisted below:

S. No.	Description of business occupation	Total
1	Dairy Occupation	5
2	Tailors	19
3	Gold and silver	15
4	Sheep	20
5	Hotel	29
6	Fancy	42
7	Clinic and Medical	13
8	Fruits and	18
9	Electronic	5
10	Fish and meat shop	7
11	Hair salon and beauty parlor	6
12	Industrial	12
13	Art	4
14	Bakery and Sweets	9
15	Child	0
16	Pig farming	1

17	Boarding School	7
18	Construction contractor	35
19	Shoes Shop	9
20	Photo studio	8
21	Furniture	10
22	Kirana shop occupation	115
23	C.D. Shop	7
24	Pool House	4
25	Auto Work Shop	2
26	Cotton Shop	0
27	Rice Mill	7
28	Electronic repair	7
29	Petrol Pump	2
30	Optic shop	1
31	Research Center	1
32	Tea Shop	136
33	Transport service	1
34	Tuition center	10
35	Carpet shop	10
36	Nursery and Fruits Occupation	8
37	Currier	3
38	Alcohol Occupation	8
39	Gas Dealer	5
40	Dance and song training center	1
41	Law Firm	1
42	Gym	1
43	Nirman Sewa	1
44	Suppliers	14
45	Kawadi Babasaiya	1
46	Seed production	2
47	Computer training center	3
48	Mirror shop	2
49	Book occupation and photocopy	25
50	Money transfer	4
51	Co-operative	56
52	Bank	10
53	Advertise ,media and cable	1
54	Paper factory and press	27
55	Drinking Water plant	1
56	Veterinary	1

Natural Resource

Cultivable land is the major resource of Chandannath Municipality. In Chandannath Municipality, about 500 Hector of total land is cultivable, 11,300 hector area is covered with forest and pastures region. Rivers and watershed area is about 918 hector and 190 hectors is of residential area. Rice plant, corn, millet and wheat is planted in 500 hectors, 50 hectors, 130 hectors and 150 hectors respectively with the production of 4000 quintal, 95 quintal, 265 quintal and 150 quintal. Pulses are planted in 300 ropani which produces 3000 quintal.

Tila river is one of the most important rivers in this municipality. Alluvial soil deposited in the bank of river, plays the vital role in agricultural productions. Water bodies covers about 5% of total area of the municipality.

3.7 Urban form

In Chandannath, the major built up is concentrated along the both side of Karnali highway, airport lane, Khalanga bazar, Bijaynagar and Jugard khola river bank. New market place has also developed in the junction of Karnali highway and other region.

Ribbon development along the road is predominant in Chandannath municipality. The development usually takes place along the main road and then along the roads connected to the main road. Ribbon development is seen in the district road, feeder road and national highway. Khalanga bazar was original market place in the municipality. But after the development of Karnali highway the market also establishes along the road sides.

Without much controlled intervention of urban planning, the town is intervened with land brokers leading to the urban deformation. Haphazard land fragmentation can be observed in the municipality. Most of the housing is concentrated in ward no 4, 5 & 6. and some in Tallo Mahat gau. Small scale industries are established around the Municipality in few numbers.

In the market centers, the houses are predominantly RCC with pillars and some cement load bearing. But as we move towards the semi-urban area, the houses are either wooden pillar or mud bonded. In the present context, many people tend to make RCC buildings leaving vernacular architecture behind.

Although market areas, road served region have great potential for planning, growth of Chandannath municipality does not show any definite pattern and direction. Apart from the market center, the area is predominantly rural with untouched virgin land which provides great opportunity for planned development.

The land cover of Chandannath municipality is given below. Almost 500 Sq.km. of area of Chandannath consists of cultivable land and around 190 Sq.km. is built-up. The major portion of built-up is concentrated in the junction of ward no 4, 5 and 6. The water bodies covers 918 Sq.km. includes Tila river, Jugard khola along with ponds and wetlands. Large portion of forest is located in the municipality which occupies about 11300 Sq.km. of total area. There is great possibility of medicinal herbs in the municipality because of high range altitude.

Table 3.11 Land uses of Chandannath Municipality area

Land uses	
Land uses	**Area(Sq. km)**
Cultivation	500
Built up	190
Forest	11,300
River and water shed	918
Total	**12,908**

Linkage

Chandannath is connected with other parts of country through the Karnali highway. The Karnali highway is the national highway and airport lane, Karnali health science institute and technical institute road, road along the bank of jugard khola, bus park to shyu and others are the feeder roads in Chandannath. Chandannath has become common hub for education, health, trade and commerce for Humla, Mugu, Kalikot and others. Exchange of goods and services are common amongst nearby districts or within district.

Intra-Linkage

Chandannath bazar is first ranked market place in Karnali district. Road connectivity within the municipalities gives easy flow of goods and services to many other VDC and municipalities in the district.

Jumla bazar is the market center of the municipality. The market center has big range which attracts costumers not only from the municipality but also from the surrounding rural municipalities and municipalities. The other market centers are Arrayawada, Kulal wada, Thyate, Simkhada, dandakot, Bijay nagar bazar, Khalanga, Dhapawada, Buspark. Mahat gau, Kohila, Taleum, Silana and so on are common along municipality for selling and buying of daily consumables.

Inter-linkage

Chandannath main market center is developed in the core area, which is in the walking distance from the Karnali highway. This has developed as the market center not only for Jumla but for other districts like Humla, Mugu, Kalikot and Doti. The range of the market itself has become the major pull factor for the people of other districts. Chandannath has developed itself as the break of bulk for far western districts.

Due to good private and governmental schools, people from different districts come here for quality education. And people of Chandannath go to Kathmandu or India for higher and quality education. Chandannath is also famous for good health facility. Karnali Health Institute has become attraction for many people of other districts.

3.8 Institutional Capacity of Municipality

3.8.1 Organizational Structure

As per the Constitution of Nepal,2015 Nepal administration is divided into three levels- Central, provincial and Local level. Power is vested to each levels. The projects that lie within the jurisdiction of local level shall be selected in the MP.

After federalization, Local Government Operation Act, 2017 was formulated to in cooperate the new system of Nepalese Government. Local Government Operation Act, 2017 gives legal framework to the local government to operate. The act describes the duty, function and responsibilities of local government.

Local government needs good organizational setup to exercise the power given by the constitution. Chandannath municipality already has its organogram. The existing organogram cannot cater to all the functions listed in the constitution and local government operation act. The sections and subsections of the current structure is itself questionable. Under the Planning and Urban

Development division, there is no approved post for urban planner. The organogram also lacks the ward co-ordination section, work evaluation and capacity development section which is necessary to implement projects of bigger scale. The existing organogram of municipality is shown in Figure .

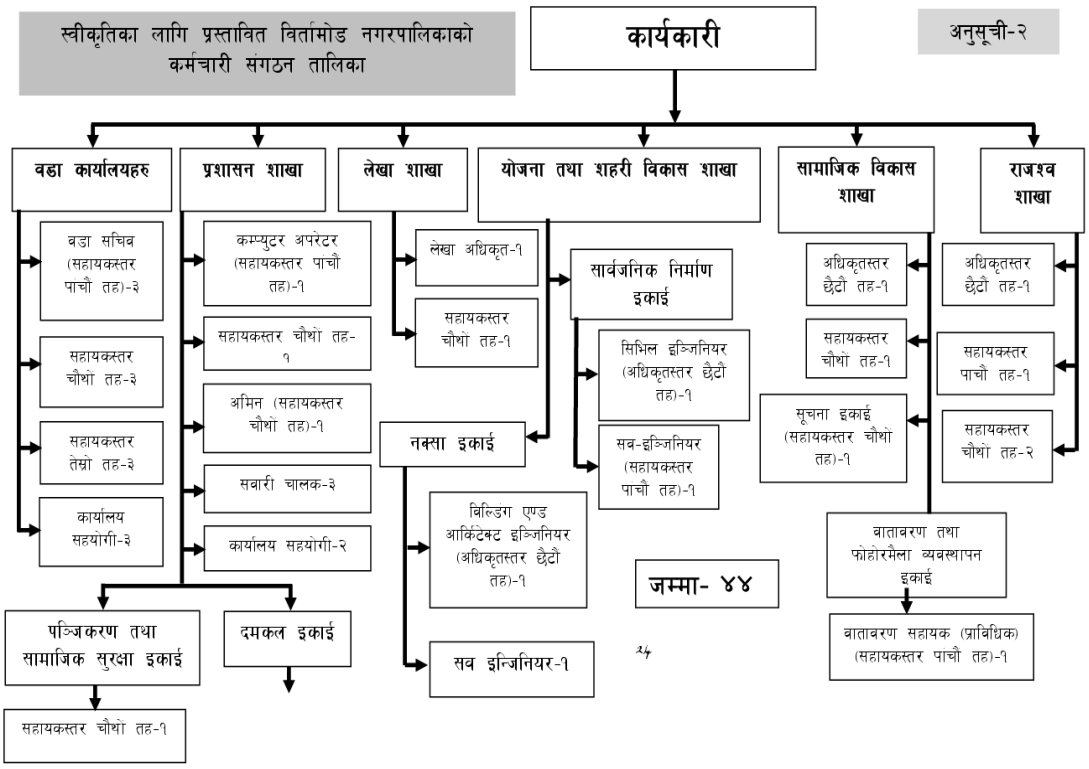


Figure 3.3 Existing organogram of Chandannath Municipality

3.8.2 Human Resource of Municipality

With recently held local level election, there is 1 mayor, 1 Deputy Mayor and 10 Ward chairman in Chandannath. In each ward, there are 5 ward representatives. Apart from local representatives, there are 32 employees in municipal office. However, the municipality has proposed organogram with 42 number of employees which needs to be approved from the municipal council. The level and designation of the proposed employee is shown in the above organogram of municipality.

There are only one engineer and two sub-engineers and 3 sub-overseer working in the municipality but there is no architect in the municipality. For the infrastructure development and building permit section, the municipality needs to hire structural engineer, architect, electrical engineer, sanitary expert and overseers. The municipality needs to upgrade its quality to look after big projects. Under the urban planning and design section, there is no approved position for urban planner. Civil engineer has been looking after the planning work of municipality. Mostly consultancy is preferred for undertaking the planning work. The municipality needs to hire urban planner, urban designer and environment engineer under the planning division. Municipality also needs to increase its capacity for land and survey department.

Although there is financial department in the municipality, the post for internal auditor is vacant. Municipality has to rely on the external auditor. The plan and budget is accessible to all through official website or in municipality office. Audit of previous year was done by District Development

Committee. Municipality has been submitting the annual audit report to Financial General Comptroller Office.

Infrastructural Strength

The municipality office is located on Hospital road. Currently, the municipality office is located in a 1 story new building. The municipality office has open space for parking and other purpose. This office building lack seminar hall and not enough room for all the department of municipality. After the completion of the office building, the municipality can accommodate all the sections required for the implementation. The municipality has 2 bikes,1 four wheeler, 1 JCB, 1 tipper and 1 firefighting vehicle. Municipality has basic infrastructures like furniture, lockers, computers, printers, generators and others. At current condition, municipality cannot perform large scale projects with the existing infrastructure.

3.8.3 Functional and Technical Capacities

The municipality was established on 18 May 2014 by merging the existing Mahat Gau, Talium, Kartik Swami (Jumla), and Chandannath village development committees (VDCs). The MTMP has been prepared which is about to get completed. New municipality profile is being prepared a year before. The municipality has not prepared the land use plan yet.

Chandannath municipality runs its own official website. The site is updated with profiles, municipal maps, plans, programs, budgets, news, staff and municipal decisions. Yet, the prepared reports are not uploaded in the website timely. The municipal plan and budget book is prepared and published every year. This ensures the transparency of spent budget and program, which is another prime indicator for good governance. Also, the audit report is accessible to all through website.

There are some projects which are done in collaboration with other institution. Mostly the collaboration is done with Building Division, Water and Sanitary Division, District Education Board, CDO and Road Board. INGO and NGO offices are also collaborating with municipality in the development works. The role of municipality is to coordinate in the site and the institution. For the approval of school and hospital buildings, the design is referred to building division. The municipality does the supervision of the approved buildings in the site. Also, the regular maintenance of the internal road within the municipality is done by the municipality officials. The new constructed building of the municipality was designed by outer consultancy but the supervision was done by the municipality.

There is a suggestion box in the front door of municipality where people can easily suggest and complain about the municipal performance. There is also the same provision in the official website. The municipality in current situation does not have enough physical resources in terms of land and building and it also lacks in technical capacity to enforce building code and regulation in absence of enough technical manpower on one hand and on other they could not implement projects of big scale. The municipality does not have enough capacity in procurement to hire consultant of construction companies necessary to design and implement big projects. Municipality is also deprived of basic financial section without internal auditor and has to depend on external auditor and District Development Committee. Similarly, the urban planning section does not have a single urban planner who can take up or even supervise the urban planning and land management activities. Alternative ways of resource mobilization will become inevitable for the financing of urban infrastructure and therefore the municipality will need to have an economist. In this context, it is pertinent to note that the project could not be implemented with the existing institutional capacity of the municipality. Further, the new institutional framework under the new constitution is under making and still not clear about the human resources. A project implementation unit has been proposed with a senior divisional engineer, one construction management expert with procurement ability along with a civil engineer and two junior engineers and support staff. Accordingly, other resources need to be supported for functioning of the office. The project implementation unit will

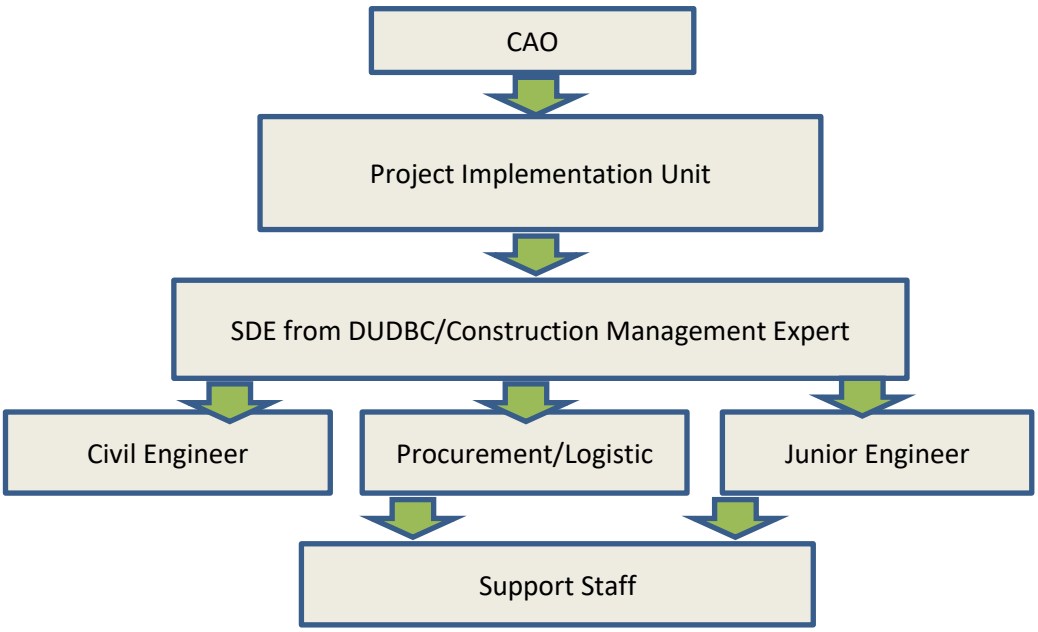


Figure 1 Proposed Institutional Structure for Implementation of UGIIP

function directly under CAO of municipality. These professionals can either be sent on deputation from the DUDBC or can be hired directly from the market. Directly hired human resources can be internalized in long run after the implementation of the project.

3.8.4 Municipal Financial Capacity

In 1999, the World Bank reported that out of the 75 developing countries with more than five million people, 63 are pursuing decentralization policies that devolve functions and responsibilities to local governments. The report further indicated that the process of decentralization was severely constrained in many countries by lack of institutional capacity among local governments, limited

resources, mobilization of local people and limited access to long-term financing for investment programs.

With the adaptation of federal system, the local government will receive fund directly from the central government. With the introduction of the new policy on public finance management, local bodies, for instance, will not have to rely on the Ministry of Federal Affairs and Local Development to receive block grants.

Municipalities get their revenue from two sources. First, they raise some of the revenue on their own by charging local tax, service charge, municipal charge (*dastur)* and other internal resources. Strong municipalities can generate lot of revenue in this way. Another way is the revenue/grant from the outer sources. The outer source includes central governmental grant, grant obtained from NGO/INGO, District Development Committee and others.

With the newly drafted Local Governmental Operation Act, 2074, municipality within the provincial policies are allowed to fix house tax, registration tax, advertisements tax, local infrastructure cost, resource cost and many others. This act has also given right to the local government to fix tax as per the land use. With this act, the municipalities are given more range to collect tax and use the local resources. So, the internal source can also be expected to grow.

As per the budget of 2074/75, Chandannath municipality is expected to get grant of Rs 30,91,45,000 (Thirty crore Ninety-one Lakh Forty-five thousand only.) from the central government. The grant has never been this high previously. For municipality to spend this grant, municipality needs strong financial and technical manpower. The government is also looking forward to adjust the central governmental employees to provincial and local level. This can also be taken as positive step for increasing the capacity of the local level.

Budgeting detail of 2074/75

S. No.	Description	Amount (Rs.)
1	Municipality self-income source	20,00,000.00
2	Taxation	30,00,000.00
3	Central budget	17,17,47,000.00
4	Fixed budget	6,47,01,000.00
5	Karnali employment	2,77,00,000.00
6	Social security	4,00,00,000.00

Local tax and municipal charge are the major sources of the internal income of the municipality. The

S. No.	Fiscal Year	Total Internal Tax collection	In words

local taxes collected are business tax, land tax, recreational tax, advertisement tax, vehicle tax and others. The municipal charge includes the registration and renewal charge, building permit charge, relationship verification charge and other. The other sources are selling of tender document and other forms and punishment charge.

1	069/70	One lakh twenty thousands only.	1,20,000.00
2	070/71	One lakh fifty thousands only.	1,50,000.00
3	071/72	One lakh seventy five thousands only.	1,75,000.00
4	072/73	One lakh eighty thousands only.	1,80,000.00

Detail of Internal Tax collection:

Details of Income and Expenditure of last five years.

Fiscal year	Description of Income	Amount (Rs.)	Description of Expenses	Amount (Rs.)
069/070	26320	22,52,000.00	26321	85,58,000.00
070/071	26320	41,75,000.00	26321	95,00,000.00
071/072	26320	15,95,000.00	26321	1,47,00,000.00
072/073	26320	1,70,00,000.00	26321	71,00,000.00
073/074	26320	2,54,00,000.00	26321	82,00,000.00

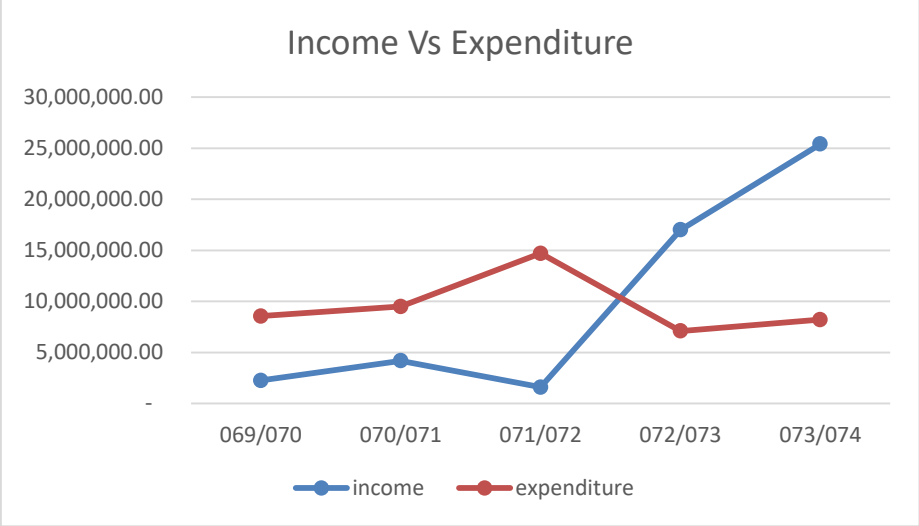


Figure 2 Total income VS Total Expenditure chart

As per the Local Governance Operation Act, 2017 municipality has to prepare the annual report of budget and plans. The priority of plan needs to be included. Municipality also needs to prepare the report of the income and expenditure every year. The income and expenditure need to be clearly separated into different subsections.

Before the formulation of the LGOA 2017 act, LSGA, 1999 provided the legal framework for the municipality. LSGA, 1999 clearly states municipality needs to do internal audit itself of its income and expenditure. Although there is financial department in the municipality, there is no internal auditor currently and municipality relies on the external auditor. The plan and budget is accessible to all through official website or in municipality office. Municipality has been submitting the annual audit report to Financial General Comptroller Office.

3.9 SWOT Analysis

SWOT Analysis is a useful technique for understanding Strengths and Weaknesses of town, and for identifying both the Opportunities open to town development and the Threats that it may face in future.

With some minor reframing of SWOT Matrix with different aspect, we've presented analysis as follows:

Table 3.12 SWOT analysis of Chandannath municipality

	PHYSICAL	SOCIAL-ECONOMIC	ENVIRONMENTAL	INSTITUTIONAL	TOURISM
STRENGTH	• Chances of Electricity production in Jawa river • Land available for future vehicle parking area • Construction of educational organization, health organization, water supply system and Public toilet/ toilet • Transit point for Dolpa and Mugu district. • Horticulture with refine center and ware house. • Unseasonal vegetable agriculture can be upgraded	• Production of good quality vegetables, seeds, fruits and herbs • Production of Herbs business. • Many available empty pockets of lands can be used for recreational purposes like playgrounds • Market for agriculture sector in by properly organizing at Open place. • Local Skill training is possible as local are enthusiast about it for employment opportunities. • Chances of market places like "Kosheli	• Jawa and Tilla river could increae Jumla's identity • Plantation for increasing forestation could lead to safe environmental approach for future programs • Extraction of stone for construction purposes can be properly maintained	• Production of popular Jumla apples in institutional/industrial level • Refinery center.	• Tourism attraction at Dansagu temple • View tower possibilities • Promotional activities for development in Tourism sector • Management of Hilly market will be attractive for tourist. • Possibility of promotion of Hotels • Tourism in religious and agricultural sector.

		Ghar" to promote local products • Possibility of recreational sports like Snow skating, Paragliding and rafting.			
WEAKNESS	• No separate ward office for wards situated more towards rural area, which makes general people difficult to get government services. • Health problems are still in issue due to lack of health posts near vicinity of rural wards. • Water supply and Sanitary, sewages and drainage problems are not properly managed. • Road problems for transportation as most of the roads are not	• Little been done for the action against deforestation. • No regular supply of electricity • Market for Local agriculture product is not properly addressed • Regulations and bylaws for buildings are not authorized by Municipals. Especially residence buildings are constructed without any guidance of local authority. • Less employment opportunities • Future planning for vehicle parking is not addressed. • Few wards are not supplied with	• Some wards are devoid of green vegetation. • Lack of Landfill site • Land sliding issues arises often • Irrigation problems due to uneven terrain in most of the wards.	• Poor financial and institutional capacity of the local government • Education problems for due to lack of educational institute for rural wards	• Protection and promotion for the social heritage are not properly addressed.

	properly black toped and lack of sufficient roads in rural wards. Road networks does not cater most of the households. • Lack of Recreational area in most of the ward. Tundikhel only cannot cater all the residents of Chandannath for recreation.	telecommunication. • Lack of recreational facility • No Public toilets available in all of the wards. Some residences are even devoid of private toilets.			
OPPORTUNITY	• Land available for easy access points for Transportation • Abundant empty lands available for local market management • Water supply management • It is possible to expand market when construction of road up to sanigau	• Employment opportunity through tourism sector and export industries • Abundant local human resources • Construction of Picnic sport	• Foreign currency income Opportunity through agricultural industry • Rafting in Tilla River. • Paragliding. • Snow skating and summer camp • Plantation for forestation	• Motivational programs for Youth self-employment. • Bawa region can be established as local business hub •	• Foreign currency income Opportunity through tourism industry • Transportation link between Bhandarigau to Rara station will increase international and domestic tourist influx. • Construction of view towers in each possible wards will also add merit for the tourism

					sector.
THREAT	• Mismanagement of Government public schools are can result in down grading of educational services. • As the area/land in-between bhandari gau and kholikor gau of ward no 2 is occupied by Nepal Army, connecting route cannot be constructed. So issues may arise between the authorities • Construction of roads are sometime obstructed to shape of terrains. • Narrow roads at	• Lack of awareness for obeying Rules and Regulations from the authorities could lead to delay of development programs • Poor Financial status of locals abstain them from participating in local development • Lack of skillful workers • Lack of health posts has substantially affected local active residents • Lack of electricity has affected the establishment of many industries	• Lack of building codes and bylaws can delay construction programs • Budget distribution process could affect timeline for development • Planning for Irrigation channels are difficult due to shapes of terrain and existing channels are not properly managed.	• Unmanaged residences can affect policy making • No telecom services could lead to miscommunication or delay in communication.	• Lack of awareness about religious historical area could lead to ignorance of any development.

	some places has created bottle neck problems in local transportation. • Lack of social land lead to land pooling policy which could lead to communal disagreement on programs at present or future.	• High rate of Illiteracy and semi-illiteracy community. • Un-guarantee of market for fruits agriculture could lead to discouragement in future			

CHAPTER IV

PLAN AND PROGRAM

4.1 Planning Concept

The vision of municipality is set with the identification of lead sector. The vision is set for at least 20 years' timeframe which is the time frame of NUDS itself. One of the major objectives of the NUDS is to develop and elaborate the medium/long term strategic vision of a desirable and realistic urban system. To develop the vision, the existing trends and resource potential was identified which was done during the vision setting exercise. NUDS suggest new approaches to urbanization and urban development in light of existing and emerging challenges of sustainability, increased resiliency and mitigation and adaptation to the effects of climate change. The urbanizing trend, disaster issues, urban sprawl issues are well studied before proposing the land use plan which is one of the major components of the indicative plan.

4.2 Vision Setting

Long term strategic vision planning will basically form the structural guide for the development of the municipality. It is expected that long term vision set during the project will be considered as the basic development strategy for next 20-30 years' development plan. The questionnaire sets were provided to authorities to inquire how they envisioned their city in next 20 years. The lead sector of Chandannath were identified as:

- Trade and Commerce
- Health
- Education
- Agriculture

4.3 Plans and Programs

In course of making indicative plan, various projects were identified as Ward level project.

The meeting with 10 ward in charge were organized in the presence of Municipal Mayor. The projects were discussed among those stakeholders. The list of identified issues alone with opportunities and solutions are listed below and the letter of approved project from the municipality is attached in Annex.

Project Code	Project Description
	TRANSPORTATION SECTOR
	To form a Municipal Transport Master plan stating road norms
	Construction of Bus park at major entry/exit points to connect Chandannath to its neighbor
	To construct and upgrade the roads in all ward with black topping with proper drainage system.

	To upgrade connecting roads to periphery districts
	Construction of Bridge over Tila river for easy access and connectivity for wards
	Construction and provision of parking for vehicles at necessary nodes
	Priority to the already proposed ring road, necessary details in MTMP
	Construction of corridor road along Juwa and Tilla river.
	EDUCATIONAL SECTOR
	Construction of at least one primary school in each ward
	Construction and maintenance of Government Schools
	Provision of proper schooling tools and equipment for students, teachers and staffs
	INFRASTRUCTURE SECTOR
	Construction of river retaining (Embankment) to control flooding from river.
	Construction of a modern commercial complex
	Provision of building for each ward
	Necessary study and research for the construction of new Hydro power
	Connection of Nepal Electricity Authority gridlines to Chandannath
	Construction of Horticulture with refine center and ware house.
	HEALTH SECTOR
	Construction of Health post in each ward
	WATER, DRAINAGE AND IRRIGATION MANAGEMENT
	Construction of Irrigation facility all over the ward
	Drainage construction all over ward
	Drainage Management in old Chandannath
	Safe Drinking Water Supply in all wards
	INFORMATION TECHNOLOGY AND TELECOMMUNICATION
	Connection of electricity distribution line with National Grid line to be launched so that load-shedding problem can be solved.
	Provision of Nepal telecommunication grid all over the ward

	AGRICULTURAL SECTOR
	To prioritize and encourage local farming and agriculture like local apples in the municipality with cold store, food laboratory etc.
	Upgrade and market the unseasonal vegetable agriculture
	TOURISM INDUSTRY
	Preparation of master plan to manage, preserve and promote all places of historical and religious importance.
	Promoting Community forest and Wetland area as tourist attraction
	Promoting heritage sites for tourism development
	RECREATIONAL FACILITIES
	To construct View Tower
	Construction of cinema halls
	Provision for the recreational sports like paragliding and water sports like rafting
	Provision of one more big green park and few small parks within walking distances among wards.

4.4 Land use Plan

Land use planning provides the prerequisites for achieving a sustainable form of land use which is acceptable as far as the social and environmental contexts are concerned and is desired by the society while making sound economic sense. Land use planning creates the prerequisites required to achieve a type of land use, which is sustainable, socially and environmentally compatible, socially desirable and economically sound. It sets in motion social processes of decision making and consensus building concerning the use and protection of private, communal or public areas. (Deutsche Gesellschaft für (GTZ), 1999) The land use plan of Chandannath is prepared considering the topography, urban expansion trend and the current land cover. The zones proposed in the land use plan of Chandannath are described below.

Commercial zone/ CBD:

A central business district (CBD) is the commercial and business center of a city. Geographically, it often coincides with the "city center". The main commercial zone lies along the Karnali highway and Kalanga bazar and Bijaynagar. The commercial zone is stretched in airport lane and along highway.

This Khalanga bazar is one of the oldest market and core city of Chandannath. Other market centers include, Arrayawada, Sakri wada, Kulal wada, Simkhada, Burthabada, Dhapawada, Sahuwada, Abelwada, Buspark, mahat gau and so on.

Urban Expansion Zone / Residential zone:

A residential zone is a land use in which housing predominates, as opposed to industrial and commercial areas. Housing may vary significantly between, and through, residential areas. These include single-family housing, multi-family residential, or mobile homes. This zone is proposed to accommodate the additional population due to migration and population increment. The major chunk of residential zone lies in ward no 1-3-4-5-6. The residential zone is proposed around the commercial zone.

Conservation zone:

This zone includes the built restricted area. River, forest area, tea estate and wetland areas are the conservation zone. The forest areas are the green conservation zone. The blue conservation zone includes the river and 100m buffer from the main river. The buffer of 10m around all the wet land, 3m buffer from main canal & 1.5m buffer from side canal on either side is also considered as the buffer area.

Industrial zone:

In the present condition, there are some small scale factories scattered around the municipality. This area connected to the highway is proposed as the industrial zone. the road connects to the main the Karnali highway. This road will serve as the main linkage between the industrial zone and The Karnali highway. The zone is surrounded by agricultural land. This will provide the buffer from the residential and institutional zone.

Institutional zone:

Institutional land uses are generally defined as land uses developed which serve a community's social, educational, health, cultural and recreational needs. They may include government owned and operated facilities or be privately owned and operated. There is hospital, other institutional areas in ward no 2 & 3. This area is proposed as the institutional zone. This zone is already hub for hospitals and schools.

4.5 Project (Infrastructure) Prioritization Criteria

From regular meeting and consultation with the ward members, local stakeholders and elected members in municipality, various types of projects are identified and enlisted as the important list of projects. Almost 100s of projects are identified in ward level where as in the stakeholder consultative workshop 15-20 number of projects are identified. It is well accepted that all the projects are not possible to implement with the limited available resources and time frame that we have. It is also important to consider that some projects which are enlisted by the stakeholders might not be very effective in terms of its investment. It is obvious that some projects have larger

impact in the municipal level where as some are very important for a single community. As referring to different documents related with infrastructure prioritization, (Alexendar, 2006) (Marcelo, Mandri-Perrott, House, & Schwar, An Alternative Approach to Project Selection: The Infrastructure Prioritization Framework) (Gosenheimer, 2012), most of them have suggested to have a prioritization matrix which would assist in decision making process with more scientific manner. Such decision-making process is backed up by the evidence-based process of indicators plotted into the matrix of such prioritization criteria. As mentioned in World Bank's working paper (Marcelo, Mandri-Perrott, House, & Schwar, An Alternative Approach to Project Selection: The Infrastructure Prioritization Framework), "Infrastructure Prioritization Framework (IPF) is a multi-criteria decision support tool that considers project outcomes along two dimensions – social- environmental and financial-economic". Referring some other practical references as well the basic consideration of physical, social, economic and environmental aspect has been at the center. Primarily guided by the limitation of resources and allocation of resources in most effective manner, such prioritization criteria framework can be considered as important tools in decision making process and ranking the projects as per the hierarchy of their importance and effectiveness.

In consultation with the experts involved in the project, consultant has proposed an infrastructure prioritization matrix which can be considered as the tool for the prioritizing projects in municipal level. Reviewing the different types of projects representing various sectors such as social, physical and environmental, indicators are finalized. All such indicators are presented in Column of the matrix where as it is followed by the scoring values and weightage. Scoring value is provided as in rank of Zero to Five (0-5) where 0 being the least prioritized and 5 being highly prioritized. In order to check the errors encountered in the scoring values and importance of different indicators as per the directive principle and planning strategies, weightage is provided in rank of Zero to One, where Zero being no weightage and one being the hundred percentiles. Likewise, all the prioritized list of projects will be listed in all rows of first column whereas the scoring will be done as per their indicators score. Finally, the total score of each project will be calculated as follows.

SC= W1Z1+W2Z2+……+WnZn

SC= Total Score

W1= Weightage of the indicator ($0< W \leq 1$)

Z1= Score of the indicator ($0\leq Z \leq 5$)

Finally, the score of each project is normalized and rescaled to score of 0-100 and ranking of each project is to be done based on the score.

$$\text{Rescaled SCn} = \frac{SCn - SCmin}{SCmax - SCmin} x100$$

The project with maximum rescale value will be selected for the DFR. For the scoring of the project various indices are proposed which represent the various sector of the evaluation criteria. The indices are briefly discussed below and are floored for the discussion.

1. Location

Location defines the accessibility and the effectiveness of the project in larger population. Commercial complex or health post in the rural region with less population is expected to receive lesser scores where as such complex or bus park in city core is economically and socially important, hence receiving the maximum score. The location index may vary according to the project, for example: bridge proposed in the remote areas makes more sense than the bridge proposed nearby the existing bridge. Hence the location of the project is considered of pivotal importance.

Most commonly followed scoring pattern from 0 to 5 for this index is as follows:

0: Location farther than 5 Km from the city center or the settlement cluster which directly impacts the population.

2 to 3: Location closer to the city center and having positive impact to the development of the town.

5: Location of the project being in closest proximity to the city.

Disclaimer: As not all projects are of similar character, scoring is to be done understanding the basic essence of the index. As projects like hospitals and schools may follow above explained scoring pattern but for the case of Solid waste management, pattern may reverse.

2. Development Need:

As already explained in the planning strategies, one of the prime considerations of project selection would be the basic development needs. Connectivity of remote settlements with the strategic roads and water supply facility are obvious to get more scores under this index than the projects of urban amenities like view tower and recreational park.

Most commonly followed scoring pattern from 0 to 5 for this index is as follows:

0: Urban Luxury amenities as swimming pool or fun park may be essential part of urban need but are not part of fundamental needs in many project cities.

2-3: Urban Amenities as Open spaces, park may come under this index.

5: Urban infrastructures such as water supply, drainage come under this category.

3. Development Catalyst

It is very important to consider some projects which can contribute in the urbanization trend and act as the drivers of urban economy. Some projects as agriculture market, cold storage are most likely to get full score under this index than the conservation of wetlands and other socially driven projects.

Most commonly followed scoring pattern from 0 to 5 for this index is as follows:

1: Low Impact on Economy

3: Triggers land use change

5: Triggers Industrial/Commercial/ Service sector Development and Land use change.

4. Urban / Rural Connectivity

One of the important considerations for the project is that if the project in some way assisting in the trade or service connectivity promotion. Such projects could assist in promoting the trade and employment opportunity values to the town. Projects like strategic roads, bridge and industries are likely to receive good scores under this index.

Most commonly followed scoring pattern from 0 to 5 for this index is as follows:

1: Low Impact on Linkage

3: Enhance Market Center-Hinterland Linkage

5: Export/Consumption Potential (Promote export)

5. Beneficiaries (Size and GESI):

As of the basic criteria of the project is the coverage of the larger population and larger area. While saying so, it is important that the project addresses the issues of gender equity and social inclusion. This index is important to consider as some projects could be very important in terms of wards or community but in the larger context, such projects don't carry enough weightage.

0: up to 30% of total HH

2: 30-50% of total HH

3: 50-70% of total HH

5: More than 70% of total HH

As this index also covers the aspect of GESI, project dedicated for the promotion of back ward society or scheduled group needs not cover the larger section of ward rather important section of group.

6. Impact on Environment

Sustainability is not an option in 21st century but the integral part of the development. One of the most important aspects of the sustainable development is the consideration of environmental aspect in development. There might be some projects which are projected by the stakeholders as the financial need of the town but with the cost of environmental loss, where as some projects might be equally important in terms of environment conservation and are aiding to the economic aspect of the city development. Conservation of wetland areas and developing them as the touristic destination will bear good score under the index.

Most commonly followed scoring pattern from 0 to 5 for this index is as follows:

5: Positive impact to environment

3: Neutral to environment

0: Negative impact to environment

7. Land Availability

As already explained in the strategies, the project assignment is basically focusing in the implementation aspect of the project as well. There have been some important projects in the past which were designed with all the consideration but the acquisition of the land was never ending task involved. In most of the cases, acquisition of the land from the private sector or even intra-governmental agencies is a tiresome job and almost unachievable within given framework of time. Hence, the consultant has taken the issue of land availability within the authority of municipality as the utmost requirement of the project selection.

Most commonly followed scoring pattern from 0 to 5 for this index is as follows:

1: Private Land

3: National/ Guthi/ Federal Land

5: Municipal Land.

8. Strategic Alignment

Development of each town or cities is guided by the national goal and vision envisioned by the regional strategies. After the local election, the elected bodies in the municipalities have their own agenda and vision to develop their town in next five years, which must be considered as the mandate of the public. Hence, strategic alignment of the projects to the national development goal and the vision projected by elected officials is important index to consider as the basics of democracy.

Most commonly followed scoring pattern from 0 to 5 for this index is as follows:

0: Eccentric projects

1: Readiness of the Implementation

3: Aligned with Manifesto and Municipal Council approved project

5: Aligned with lead sector and Vision

9. Municipal Capacity Development

UGIIP project does not only address the infrastructure need but also the governance issues. So the project which will increase the financial and institutional capacity of the municipality will get the highest score. The project which will increase the revenue and institutional capacity will get the score of 3 and 1 respectively. The project which do not contribute to municipal capacity development will get 0 score.

0: Contribute to None

1: Contribute to Institutional Capacity

3: Contribute to Revenue

5: Contribute to Institutional and Revenue

10. Disaster and Climate Change Aspect

With the changing global scenario, resilience of the city is of the utmost priorities. In the project area as well, flooding has been one of the major threats to the urban development. Along with the natural disaster, man made things have paced the climate change aspect and it has some serious impacts in day to day life. Shortage of water resources, cold wave/hot wave are some of the effects

of climate change. As it is very clear about the importance of disaster risk reduction and management project: river dams, watershed conservation, pond construction can be taken as of importance. Such project will assist in building the municipality as more resilient.

Most commonly followed scoring pattern from 0 to 5 for this index is as follows:

0: Negative impact on climate change and Disaster Resilience

3: Climate change and Disaster Resilience neutral

5: Positive impact on climate change and Disaster Resilience

In above mentioned list of projects, ward and municipal level projects are identified from different sectors as physical, social, economic and environmental. The prioritization criteria have incorporated all the strong and weak features of such projects and have endeavored to address the scenario in comprehensive manner. In the PCO meeting, it is expected to have revision and we expect to have comprehensive discussion in this manner.

Table 4.1 Project Selection Criteria

S. No	Infrastructure Prioritization Matrix			
	Indicators	**Scoring Values**	**Weightage**	**Remarks**
1	**Location**	0: >5km away from city center 2/3: from 1 to 4 km from City Center 5: Within 1km from city center	0.5	Some project will get reverse marks like land fill site
2	**Development Need**	0: Luxurious Amenities 2/3: Urban Amenities 5: Basic Urban Infrastructure	0.8	Luxurious means fun park, swimming pool while basic are like WS, Drainage
3	**Development Catalyst**	1: Low Impact on Economy 3: Triggers land use change 5: Triggers Industrial/Commercial/ Service sector Development and a Land use change	0.5	
4	**Urban/Rural Linkage**	1: Low Impact on Linkage 3: Enhance Market Center-Hinterland Linkage 5: Export/Consumption Potential (Promote export)	0.5	
5	**Beneficiaries (Size and GESI)**	0: up to 30% of total HH 2: 30-50% of total HH 3: 50-70% of total HH 5: More than 70% of total HH	0.8	
6	**Impact on Environment**	5: Positive impact to environment 3: Neutral to environment 0: Negative impact to environment	0.7	
7	**Land Availability**	1: Private Land 3: National/ Guthi/ Federal Land 5: Municipal Land	0.8	
8	**Strategic Alignment**	0: Eccentric projects 1: Readiness of the Implementation 3: Aligned with Manifesto and Municipal Council approved project 5: Aligned with lead sector and Vision	0.7	
9	**Municipal Capacity Development**	0: Contribute to None 1: Contribute to Institutional Capacity 3: Contribute to Revenue 5: Contribute to Institutional and Revenue	0.5	
10	**Disaster Resilience and Climate Change**	0: Negative impact on climate change and Disaster Resilience 3: Climate change and Disaster Resilience neutral 5: Positive impact on climate change and Disaster Resilience	0.7	

Municipal Projects identified in the stakeholder consultative workshops are listed in the attached sheet and are prioritized as per the indicators mentioned above.

CHAPTER V

DEVELOPMENT PLANS

5.1 Directive Principles

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

Robert E. Park, The City (1925)

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

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

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

Develop people friendly human scale neighborhoods

No city should be utopian in its aspect. House should look and responses like the house. It is important to consider the scale of buildings (regarding their height), and width of the road, which should be humane in scale. One should feel the city with the sense of space and own the development of city in individual level. First step towards people friendly city and inclusive city would be planning city in humane scale, either that be the height of building or width of roads or the distances between two important interconnected land uses.

Walkability and Connectivity

Communities should be pedestrian-oriented, with daily needs situated within easy and enjoyable walking distance of each other. Important land uses within the perimeter of 2Km radius would make the ideal concept of walkable city, which is beneficial not only in terms of energy and easiness, but in broader social coherence. To promote this access, residential, commercial, recreational, and civic uses should be connected by both public and private transportation options. Promoting cycle tracks along the road and widening the pedestrians should be prioritized in the planning process.

Sustainable water sources

The current and long-term availability of water should be treated as the vital starting point of any decision making in urban issues. Community planning must include the provision and protection of local water supply. One of the major problems in present cities is lack of water supply for daily purpose and for other city purpose. Good water recharge system and conservation of ground water is going to be another challenge in case of Chandannath Municipality, as in every city in Nepal, "boring" culture is booming. With increase in hard surfaces hindering the natural water recharge system, it might create problem in regional or sub-regional level, hence it is incorporated in earlier plans and policies of this design.

Support high-quality transit

As being the economic hub interconnected regionally and sub-regionally, it is necessary to make each town to be connected. No city can be complete with its infrastructure but high quality transit system will definitely help to increase the fringe of the city. With its linkage with nearby other Gaunpalika's, it is important to Chandannath Municipality to broaden the linkage and upgrade with high quality transit system. Within the city as well, high quality transit is must to stimulate the local economy.

Sustainable land use zoning

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

Another important consideration to be provided in the city zoning would be the flexibility of the city. No one can predict the cities of 21st century, the best we can do is make near to perfect predictions. Economic zones designated could be turned into residential plots or could be into recreational zone for the greater good. It is important to plan for flexible city as the exponential growth in technology has fostered the new city as changing dynamics every another year.

Zone for mixed-use neighborhoods

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

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

Create compact regions with short commutes

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

Opportunistic city

A town of merely 30 thousand scattered populations with decreasing population growth rate needs something reviving to make it compact city of 100 thousand populations in next 20 years. Chandannath Municipality lies in important strategic location with greater population of hinterland, making it possible destination for in-migration. We must understand the basic fact that city which is expected to cater population must have opportunity for people. Such opportunities are to be provided in terms of job opportunities, urban amenities, goods or any other urban services. To hold population, we need to have at least 20 thousand populations with direct job opportunities, which could be service based or industry based or entrepreneurship. It is obvious to create some secondary job opportunities in the longer run and expected to follow the trend of trickle down effect of economy. To hold the economy and keep the city moving, we must facilitate the economic booster and advance some of the important decision to make the city economically viable.

City for all

One of the major guiding principles of our planning derives from the concept of “City for All”.

Referring to the “Goal 11” of Sustainable Development Goals’ UN 2015, we’ve focused on inclusive and sustainable urbanization (11.3). We primarily focus on safe, inclusive, accessible and affordable city, with special attention provided to children, senior citizens and persons with disabilities. We have to understand the principle behind inclusive city that is not physical but has social and broader political meaning as well. Right to the city is well advocated term in western academia, in recent years, with the developing nation like Nepal, we have ignored the importance of this. Right provided to pedestrians, opens spaces, emphasis given to public vehicles than private, disabled friendly urban design and all others aspect, which considers all these aspects to make city for all gender, age group and physical abilities.

5.2 Planning Strategies:

We had some basic guidelines and principles that we set as the baseline. All the guidelines are explained in earlier chapter. For the next step, accordingly with the lead sectors and long term vision of the town, we set on developing projects and make the comprehensive planning framework. It was an important part to identify the spatial strategic intervention to start with in terms of strategic roads

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

With the linkages of existing highways, further feeder and district roads were developed to promote the linkage. Another important aspect of planning was commenced with the land use zoning of the site. With the base of separation of land into conflicting and non-conflicting zone, we identified some of the major land use classifications as residential, institutional, commercial, CBD (Center business district), Special conservation zones, industrial zone and others. We were aware of conservation of natural resources which were strictly identified as conservation zone, i.e. forests and water resources. It was also important for agriculture field to be protected hence is promoted for agriculture and built up activities are discouraged. While identifying the built up and non-built up zones, in each built up zones, different bye-laws are proposed, which will serve as the development control tool in terms of height, built up area and others. Another important aspect of this strategy was consideration of mixed use land use planning. Mixed land use concept allows for compact settlement with reduction in commute and increase in social cohesion. It is equally considered about the conflicting land use while planning the mixed land use. Apart from that, new urban expansion zones are proposed which are to be further developed after land-pooling and planned development.

Hence, starting with some strategic spatial infrastructure like physical linkages and connections with inter and intra region, we've further explored the land use potential as per our previous study. Accordingly, we proceeded with the land use planning and had some potential interventions with projects which could have positive impact for development of town in longer run.

5.3 Land-Use Plan:

We know land is scarce. With no supply from nature and continuous consumption from the urbanization trend, it is very important to utilize the land use. The regulation of land use is a primary function of local governments. These local planning departments oversee and shape much of the regulation related to land use as they address issues such as infill development, neighbourhood master plans, transportation, housing, economic development, and zoning. To start with the basic framework of planning and set out the by-laws within the site, we've propose a land use plan for the Chandannath Municipality, based on the existing characteristics of site, natural setting, potential and ownership, linkage with other cities and availability of developable land. Hence, to guide specific purpose of planning and promote the efficient utilization of land use, we've proposed some basic zones like residential, commercial, natural conservation, industrial and others. Land Use is the most visible of the sustainability topics. Cities with sustainable land use create anobvious balance of environmental preservation, commerce and liability. To promote the sustainability in land use development some of the basic aspects are followed which are briefed below:

Open space: ample supply of open green spaces designed to encourage consistent active and passive use.

Sustainable water sources

The current and long-term availability of water is treated as the vital starting point of any land use decision. Community planning will include the provision and protection of local water supply.

Walkability & connectivity

Communities are developed pedestrian-oriented, with daily needs situated within easy and enjoyable walking distance of each other. To promote this access, residential, commercial, recreational, and civic uses are connected by both public and private transportation options, if not in walkable distance.

Strong sense of place

The design of geographic spaces and structures should reflect and celebrate what is unique about a community's people, culture, heritage, and natural history. Increase in high density low rise residential or business hub will develop people friendly setting.

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

5.4 Multi-sector Investment Plan (MSIP):

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

With total estimated budget of around 2953 crores for 20 years' plan, Around 35 percent of the total budget is to be spent from the local government over the range of 20 years. Remaining investments are to be expected from private sectors followed

by NGO/INGOs and other community sectors. It is expected that around more than 590 crores are to be spent every year where in earlier year more investment is to be done in short term goals (0-3 years) where in longer goal are to be spent on improving quality and standards of the town.

Highest investment is done under the education sector rather than the infrastructures like road and sanitations and others. The infrastructures like medical educations and technical education is typically distorting the data presented. Apart from the education, road is the most prioritized sector to increase the connectivity within city and between the cities. In yearly basis, budget will be spent on training and awareness campaigns on various issues. It is also important to consider that large amount of investment put under the recreation, where as that will be spent on buying chunk of lands on urban areas, as the city is already grown or cost is very high. Good investment is allocated on improving the institutional capacity of the different service oriented institutions in the form of institutional development plan, financial plan or in terms of security as well by making citizen friendly city. Large investment is expected from private sectors as well, especially in the field of housing, job opportunities, entertainments, recreations and others. Private sectors are obvious to focus on profit oriented investment such as in industries, economic field along with some well-known field like education and health. In the field of solid waste management, disaster risk mitigation plan, environment conservation plan or in the field of climate change, non-governmental organizations are expected to be in good part. Such national and international organizations will help to improve the institutional capacity as well as promote the awareness regarding the topic.

Finally, it is expected that more participatory model of investment is promoted which not only eases the investment burden of central government but also helps to build the ownership among the resident of that city.

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