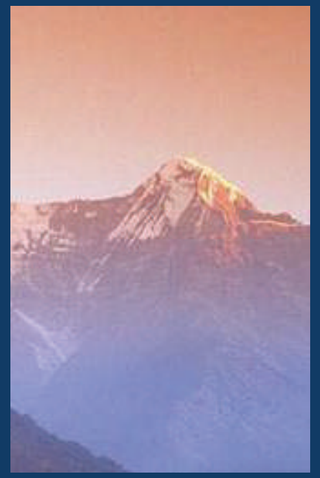
2035 BIDUR



INTEGRATED DEVELOPMENT PLANNING OF BIDUR (2017-2035)

INTEGRATED DEVELOPMENT PLANNING OF BIDUR (2017-2035)

WLSP

WPDI

I. Background

China put forwards the "Belt and Road Initiative" to join hands with the countries along the belt and road to develop together. In this context, invited by United Nations Human Settlements Programme (UN-HABITAT), Wuhan Land Use and Urban Spatial Planning Research Center (WLSP) and Wuhan Planning & Design Institute (WPDI) formed a joint design team to prepare the Integrated Development Planning of Bidur (2017-2035) of Nepal, a country along the belt and road.

Nepal is one of the less developed countries in the world. It has frequently changing political situation and lacks of complete urban planning system. The earthquake in Nepal in 2015 destroyed Zhangmu Port at the border between China and Nepal and led to rise of Gyirong Port in the north of Bidur. Therefore, as a bridge connecting Gyirong and Kathmandu, the capital of Nepal, Bidur will usher brand new development opportunities. The work goal this time is to complete the planning of three parts: integrated development strategy (2017-2035), spatial layout (2017-2035) and five-year action plan (2017-2022), and try to establish urban planning system of Nepal.

II. Working process

1. On July 21, 2016, WLSP and UN-HABITAT signed memorandum of understanding with a term of three years in Beijing, constituting a firmer and more stable basis for cooperation between both parties. UN-HABITAT invited WLSP to take part in the post-disaster reconstruction in international regions and promote the post-disaster reconstruction and economic recovery of the disaster-stricken areas, which is an important part of the cooperation.

Figure Meeting Photo of Integrated Development Planning of Bidur (2017-2035)

2. The joint design team formed by WLSP and WPDI has carried out 11-day field survey, investigation and interview in Nepal from April 29, 2017 to May 9, 2017. The team completed field survey of nearly hundred km^2, used the mobile phone positioning and manual mapping to complete the map of current land use in Bidur; have exchanges and discussion meeting with the government of Bidur and relevant management departments, the social organizations, communities and residents so that people of different class get involved into the planning; has collected more than 100 site data and more than 3000 field photos, and recorded about 300min videos and nearly 20h audios.

Figure the first field survey and data collection in Nepal

3. WLSP and UN-HABITAT reached an agreement on the planning work to be carried out in Bidur and made clear of the Term of Reference for Preparation of Integrated Urban Development Plan of Bidur (TOR) on May 16, 2017 and concluded Working Agreement on Comprehensive Development Plan of Bidur (2017-2035) on July 27, 2017.

TERMS OF REFERENCE *(TOR)*

FOR PREPARATION OF INTEGRATED URBAN DEVELOPMENT PLAN (IUDP) FOR BIDUR MUNICIPALITY

1. DESCRIPTION OF SERVICES:

BACKGROUND

Nepal's urbanization process is rapid and imbalance compared to regional context. This trend is concentrated mainly in Kathmandu Valley and other cities of *terai* or fertile Valleys. The result is that the large cities are failing to cope with the demand of infrastructure services and job opportunities and are increasingly reeling under the externalities of the haphazard urbanization. Environmental degradation, congestion, urban poverty, squatter settlements, unemployment and lagging provisions of infrastructure services have become increasingly visible phenomenon in these large cities. Hence, much of the economic gains acquired from urbanization have been eroded from its negative externalities. Despite non-agricultural sector being a major contributor to gross domestic product (GDP), urban centers in the country have yet to emerge as the engines of economic growth and contribute to reduction of urban or rural poverty alike.

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

Whatsoever, Nepal has experienced some settlement planning attempts since 1944; the first city Rajbiraj was planned to resettle people from Hanuman Nagar. In 1956; first National Periodic Plan (Economic Development Plan) was originated. At present, 14th Plan is in implementation. During 1960s, many people from hill and mountain (especially displaced from natural disaster, national parks etc.) were resettled in Terai plains. In 1969, Preparation of Physical Development Plan of Kathmandu Valley was a turning point in urban planning sector of Nepal. After this, so many development plans of Kathmandu Valley were prepared but never implemented due lack of institutional/ legal mechanism and financial resources. In 70s, Regional Development concept was initiated in Nepal; master plan of four regional headquarters (Dhankuta, Pokhara, Surkhet and Dipayal) was prepared and implemented in some extent. In the late 80s, structure plan of all designated urban centres was prepared. Similarly, IAP was popular in 1990s before the self-governance act enacted by government of Nepal. In 2000, long-term concept of Kathmandu Valley (vision 2020) was prepared. Currently, Periodic Planning of urban centres (municipalities) is in practice. Despite these attempts were made, it provided neither approved land use plan nor concrete physical plan implementation mechanism regarding the major urban centers in the country. Municipal plans prepared in the past employing *integrated action planning technique* or *structure planning* is found to focus mainly on physical aspects. Besides, IAP's overwhelming concentration on ward level problems has also led to neglect of municipal level vision and desires. As a result, though several municipalities show some improvement in physical aspects, progress is still found lagging in several critical urban areas such as education and health. Issues such as social exclusion or deprivation, urban poverty, environmental conservation, economic development, financial mobilization and municipal capacity building have remained largely unattended in the previous planning efforts.

ToR for Preparation of Integrated Urban Development Plan for Municipalities.

1

尼泊尔必都综合发展规划（2017—2035 年）

Comprehensive Development Plan of Bidur Municipality, Nepal (2017-2035)

工作协议

Working Agreement

一、工作背景

I. Background

"一带一路"发展战略的提出进一步加强了中国与尼泊尔之间的经贸与旅游文化合作。2015 年大地震后，随着重建工作展开和政局逐步稳定，尼泊尔也重回发展正轨迎来全新发展机遇。在此背景下，武汉市土地利用和城市空间规划研究中心受联合国人居署邀请，于 2017 年 4 月 29 日—5 月 9 日赴尼泊尔必都开展为期 11 天的现状踏勘及调研访谈工作，与尼泊尔城市发展部、联合国人居署充分沟通工作安排，初期技术研讨，与必都市取得及推完管理部门、社会民间团体和社区居民代表开展多场次座谈会，联合国人居署决定将武汉市土地利用和城市空间规划研究中心签订合作协议，开展《必都城市综合发展规划（2017—2035）》工作。

With the "Belt and Road" Initiative put forward, the cooperation in such sectors as economy, trade, tourism and culture between China and Nepal has been further enhanced. As the reconstruction had been carried out and the political situation had become gradually stable after the earthquake in 2015, Nepal has got back on track and thus ushered in brand-new opportunities for its development. Against such a background, invited by United Nations Human Settlements Programme, Wuhan Land Use and Urban Spatial Planning Research Center had dispatched personnel to Bidur Municipality, Nepal to carry out an 11-day site survey and investigation from April 29, 2017 to May 9, 2017. After the personnel had conducted full communications with the Ministry of Urban Development of Nepal and the United Nations Human Settlements Programme (UN-HABITAT) on work intention, preliminary technical discussions and several exchange forums attended by representatives from the government, relevant management departments, non-governmental organizations and communities of Bidur Municipality, United Nations Human Settlements Programme decided to sign a cooperation agreement with Wuhan Land Use and Urban Spatial Planning Research Center so as to carry out the work related to the *Comprehensive Urban Development Plan of Bidur Municipality (2017-2035)*.

二、工作目标

II. Objectives

开展必都战略发展规划。通过对必都现状进行评估，同时评价尼泊尔及必都面临的发展趋势，系统分析必都区域发展优势机遇和问题挑战，制定产业经济、综合交通、基础设施、公共服务、人口增长、文化旅游、综合防灾、生态绿官等 8 个专项发展策略。在此基础上制定空间结构规划，并重点针对上述 8 个专项创新提出特类规划建设标准。

To carry out strategic development planning for Bidur Municipality. Systematically analyze the development strengths, opportunities, problems and challenges of Bidur Municipality through evaluating the current situation of Bidur Municipality and development trends of Nepal and Bidur Municipality, and develop eight special development strategies with respect to industrial economy, comprehensive transportation,

1

Figure TOR of Integrated Development Plan of Bidur and the Working Agreement

4. The joint design team systematically organized the field survey data, carried out the status assessment and drew up the preliminary strategic research framework during middle May of 2017 to middle July of 2017. Sorted out and translated more than hundred English and Nepali documents, audios and videos, translated documents of more than 60,000 words, audios of more than 10 hours, organized about 300min videos and produced them into working documentaries; systematically analyzed the status data, formed the assessment ideas and methods, and drew up strategic research framework to form the research results at the earlier stage. On July 27, 2017, Mr. Bruno Dercon, senior

officer of UN-HABITAT Asia-Pacific Office and Mr. Zhang Zhenshan, representative of UN-HABITAT in China visited WLSP and discussed with the project team about the results at the earlier stage.

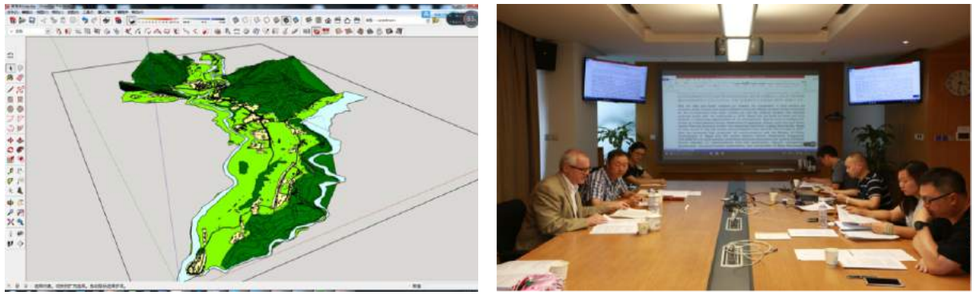


Figure Technical preparations at the earlier stage

5. The joint design team completed part of "Integrated Development Strategy (2017-2035)", reported the preliminary planning results to the Deputy Director of Wuhan Land Resource and Planning Bureau, Liu Qizhi, on September 18, 2017, and modified and improved the results after listening to the opinions of the leaders.

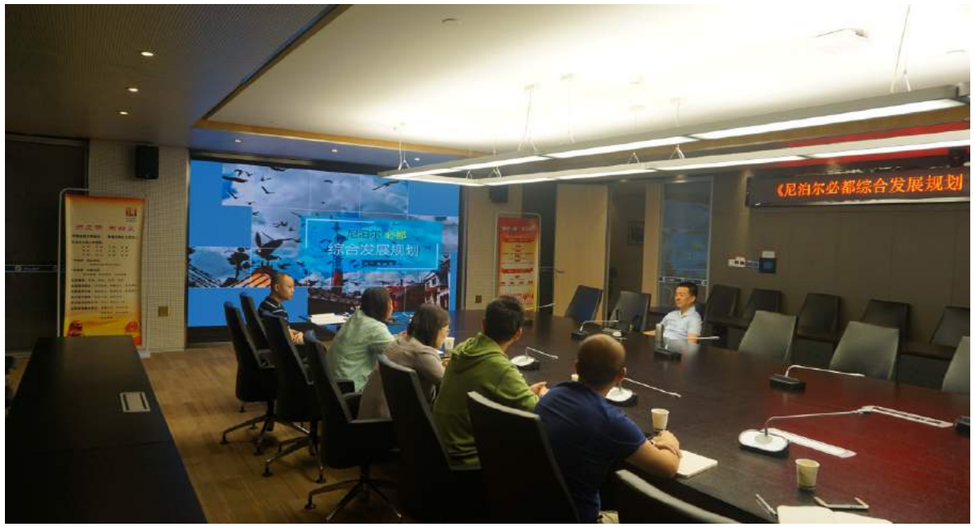


Figure Deputy Director Li Qizhi is listening to the report on preliminary results

6. From October 9, 2017 to October 18, 2017, the joint design team went to Nepal again to carry out 10-day integrated development strategy and planning report and supplementary survey. On October 16, the joint design team reported some results of "integrated development strategy (2017-2035)" of Integrated Development Planning of Bidur (2017-2035) to UN-HABITAT, Ministry of Urban Development of Nepal and Bidur Municipal Government in Himalaya Hotel of Kathmandu.

Figure The second report and supplementary survey in Nepal

7. During the period from end of October 2017 to April 2018, the joint design team focused on "spatial layout (2017-2035)" and "five-year action plan (2017-2022)" to form the medium-term planning results.

Figure Implementation of the medium-term planning

8. On May 2, 2018, the joint design team reported the medium-term planning results to the Deputy Director of Wuhan Land Resource and Planning Bureau, Liu Qizhi, and modified and improved the results after listening to the opinions of the leaders.

Figure Director Li Qizhi is listening to the report on medium-term results

9. From May 28, 2018 to June 1, 2018, eight people from Ministry of Urban Development of Nepal, Bidur Municipal Government and UN-HABITAT Nepal Office visited Wuhan and attended the exchange meeting on Integrated Development Planning of Bidur (2017-2035). The team reported the results of the medium-term planning to Nepali representatives and UN-HABITAT.

Figure The delegation of Nepal visited China to exchange opinions on the medium-term results

10. Based on the requirements agreed at the medium-term results exchange meeting, the joint design team plans to go to Nepal for the third time in early July 2018 to report the final results of Integrated Development Planning of Bidur in Nepal (2017-2035) to Nepal, Bidur Municipal Government and citizen representative.

III. Working ideas

(I) Task

After the Nepal earthquake in 2015, the UN-HABITAT chose Bidur, a city located in the city agglomeration area at valley of Kathmandu, to help it formulate its integrated development planning and lay a good foundation for the constitution of the municipal authorities, and planned to formulate long-term strategic objectives, land use and spatial development plans. After the new Bidur municipal government takes the power, it also hoped that it can make use of the advantages of Gyirong Port at the border between China and Nepal and Kathmandu to introduce the overall urban plan and focus on drawing up an action plan of the near future (five years) to help the city get on the right track of development as soon as possible.

(II) Planning scope and timeframe

Planning scope: the whole area of Bidur which has 13 districts and covers an land of about 130km^2; the key planning area is the original Bidur urban areas of 33.48km^2 covering six districts. The study scope covers the entire territory of Nepal and the border area between China and Nepal.

The planning timeframe: the near term planning is from 2017 to 2022 and the long-term planning is from 2023 to 2035.

Phase I:Comprehensive development strategy (2017-2035)

It is the content of our cooperation at present, which is including the status quo, SWOT analysis and positioning vision and others. The plan combined with the development situation of Nepal's home and abroad, interpreted all social and economic, municipal facilities, public services, ecological climate and other present situation. On the basis of this analysis, we will analyze the advantages, shortcomings and external opportunities, challenges. We will comprehensively combine development priorities and carry out case studies, and put forward the future development vision and conceptual spatial layout.

Phase II: spatial layout (2017-2035)

Base on the integrated development strategy to forecast the urban population and scale of land use development, make clear of the urban spatial development structure, formulate the spatial layout planning, and carry out special planning in light of population distribution, integrated transport, public service, infrastructure, cultural protection, ecological tourism and urban design and so on.

Phase III: five-year action plan (2017-2022)

Based on the long-term spatial layout to make clear of the urban development goal, spatial layout plan and special action plans of the recent five years and form project database and estimate the funds required. Carry out policy design of the land use implementation and planning system suggestions from the perspective of planning implementation.

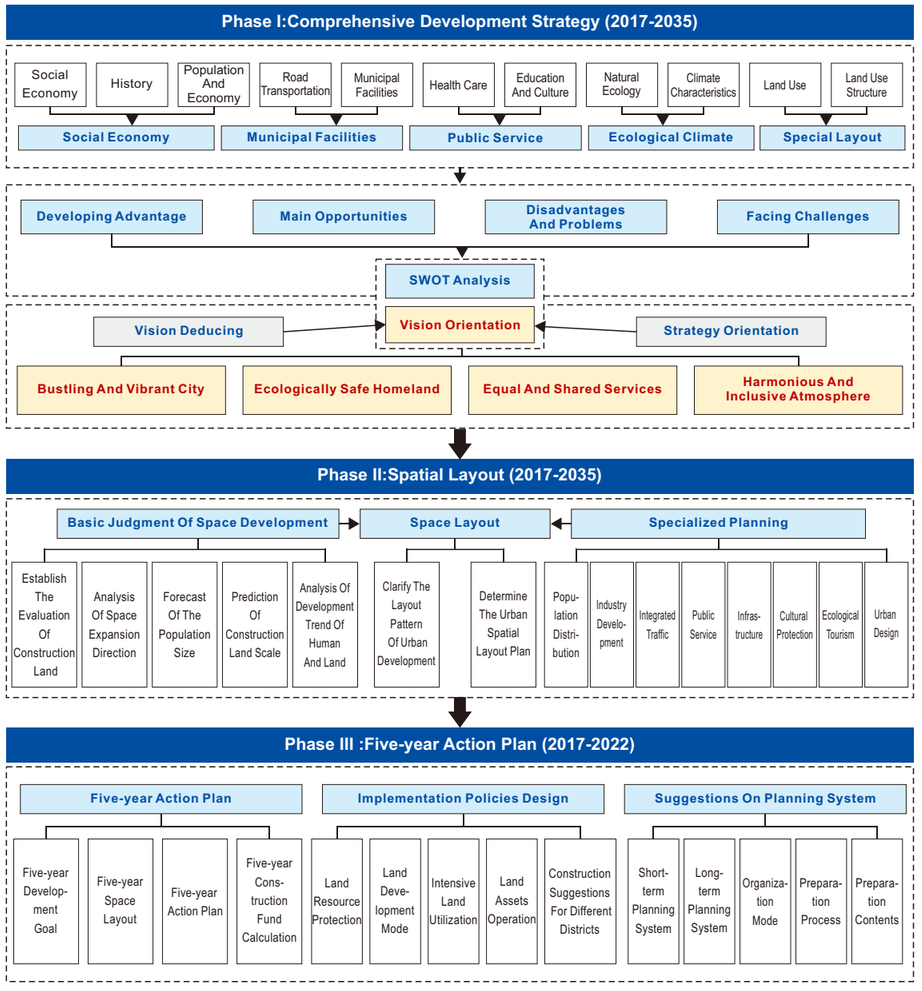


Figure Technical Route

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1 Interpretation of the Status Quo of Bidur

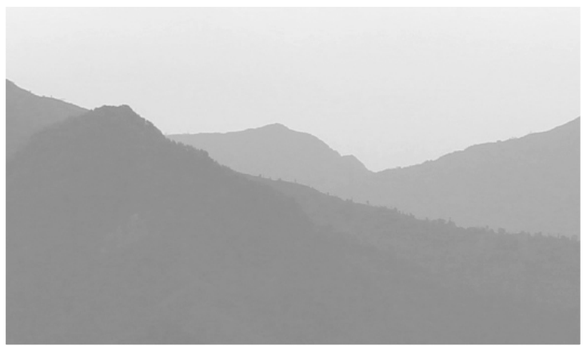
2 Development Strategy

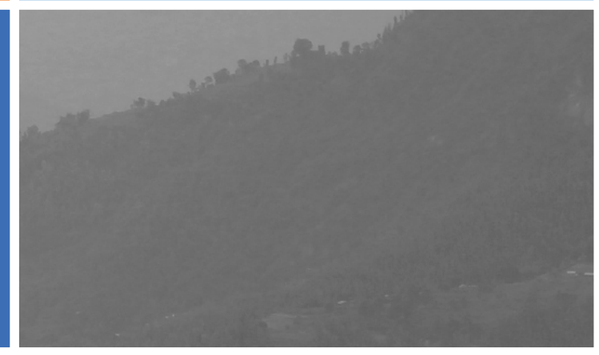
3 Spatial Planning

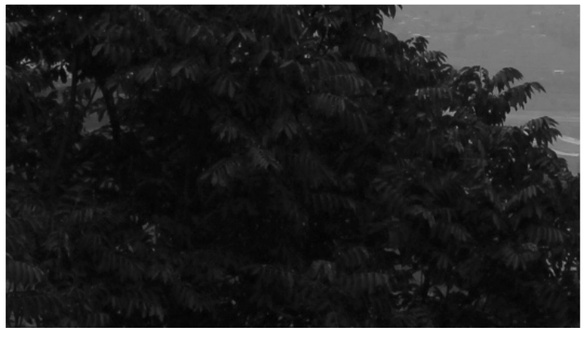
4 Five-year Action Plan

5 Implementation Policies

6 Suggestions on Planning System







Chapter I

Interpretation of the Status Quo of Bidur

- Impression of Nepal 015
- Bidur Status Quo 019
- Bidur Status Quo Evaluation 033
- Conclusion 045

I. Impression of Nepal

Nepal is an inland country in the mountainous region of South Asia. It is located in the southern foothills of the Himalayas (the southern bottom of Qinghai-Tibet Plateau) and connected with China in the north. The other three sides of Nepal border at India. The east-west border of Nepal is about 885 km long and the south-north wide of the border is about 144 to 256 km. The country covers an area of 147,000 km^2, and has a population of about 28.5 million, more than 30 ethnic groups which speak more than 90 languages. 80.6% of the citizens are Hindus.

Figure Folk culture and religious characteristics of Nepal

(I) Social economy

The gross domestic product of Nepal in the FY 2014/2015 was USD 21.526 Billion, with agriculture as its main industry and nearly 80% of its population engaged in agricultural production. Its industry is underdeveloped and the industrial output value accounts for only 14.5% of the GDP. The consumer goods and raw materials for production are mainly imported from other countries and the industrial products rely heavily on imports. One third of Nepal's budget expenditure comes from international donations and loans.

Figure Agriculture and handicrafts of Nepal

(II) Topography

The terrain in Nepal is high in the north and low in the south, and can be divided into three regions according to geographical features:

Himalaya region in the north: the region accounts for 15% of Nepal's land area, with an average altitude of 4,877 to 8,844m. Among them, 8 peaks are over 8,000m above the sea level, accounting for more than half of the total peaks of above 8,000m in the world. They are truly "the backbone of the world".

Figure Features of plateau in northern Nepal

Mountainous area in central Nepal: the area accounts for 68% of Nepal's land area and is mainly composed of Mahabukhara mountain system with the highest peak reaching 4877m and Qiuri mountain system with relatively low topography.

Figure Features of hills in central Nepal

Terai plain in the south: the area accounts for 17% of Nepal's land area and is most distributed with hills and nearly half of land has altitude of more than 1000m. There are many high mountains on the east, west and north sides of the area, with valley areas in the middle and alluvial plains in the south where has a large number of forests and grasslands.

Figure Features of plain in southern Nepal

(III) Climate resources

There are basically two season in Nepal: the period from October to March of the following year is the dry season (winter) with little rainfall and temperature of 10-25℃; the period from April to September is the rainy season (summer) with highest temperature up to above 36℃ and abundant rainfall which often leads to flooding of different level.

Nepal is endowed with superior water and mineral resources due to its unique topographical features and altitude differences. Nepal has up to 83,000 watts of water and electricity reserves, accounting for 2.3% of the world's water and electricity reserves, of which 43 million kilowatts can be used for hydropower development. Nepal's main mineral resources are copper, iron, aluminum, zinc and so on. At present, only a small amount of them have been mined.

Figure Resources of Nepal

II. Bidur Status Quo

(I) Geographical Location

Bidur is in the middle of Nepal and located about 69 km northwest of the Kathmandu Valley, east longitude 85 ° 09'36 ", latitude 27 ° 53'24". It is the capital city of Nuwakot.

Figure Nepal's location in Asia

Figure Nuwackett's location in Nepal

Figure BIDUR's location in Nuwackett

Bidur is located in north-central Nepal. It is the capital of Nuwakot Province, which is 30 km to the southeast from Bidur to Kathmandu, the capital of Nepal, and 60 km to the north from Bidur can reach Jilong County, Shigatse city, Tibet Autonomous Region, China via China's Jilong Port. Historically, it was the major economic and cultural exchanges and traditional border trade market between China and Nepal. In April 2015 Nepal suffered a magnitude 8.1 earthquake. Jilong is the only open port between China and Nepal, and it has become an international port permitted by Chinese State Council in April 2017. With "the Belt and Road" strategy implemented, Bidur—the trade town between China and Nepal in the history, will usher in new development opportunities with the aid of the 21st century "Silk Road" construction.

The status quo of Nuwakot administrative Region basically forms a radial-type road network centered on Bidur. Among them, there are 3 roads to Kathmandu, F021, F082, F069-F076, and can reach the China Jilong international port through F021. The roads in Bidur is mostly mountain road, most of roads are 2-lane, two-way roads, and the road conditions are generally poor.

The Trisuli and Tadi rivers passing through Bidur, but the water flow is turbulent, and there is no shipping condition.

Figure Bidur external traffic situation map (source: self-painting)

(II) History

In the history of Bidur originated form the high mountains, in 18th century, King of the Gorkha military kingdom in order to expand the territory and control the Kathmandu import and export, the king moved the capital from Gorkha to Nuwakot, and built the Sutta Tula Durbar Square (now located in Eastern mountain of Bidur City), and the original scattered residents gradually migrated to Sutta Tula Durbar Square to form a city.

Figure Sutta Tula Durbar Square

Nowadays Bidur is moved from the mountains to the foot of the mountain, and the urban development has moved to the valley at both sides of the Trishuli River, and the city form presents a striped layout, and gradually formed Trishuli, Bidur, Batter and other groups. In 2015, Bidur expanded from the original 11 administrative districts to 13 administrative districts.

(III) Administrative districts

According to “Strategic Urban Planning: Bidur municipality & surrounding areas” in 2017, Bidur has 11 districts by a total area of 33.48 square kilometers, then extended to 13 districts with a total area of 130 square kilometers.

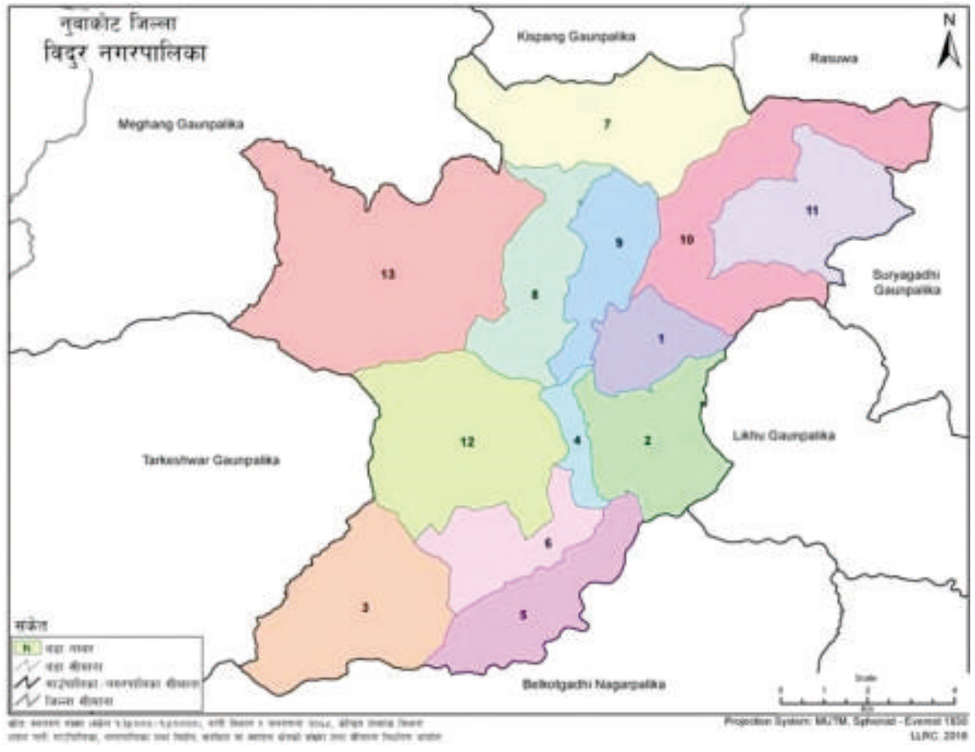


Figure Bidur's administrative division

(Coming from “Strategic Urban Planning: Bidur municipality & surrounding areas”)

Bidur’s present administrative jurisdiction is showing "1+5" pattern. “1” is Bidur municipality.”5” is Charghare, Tupche, Gerkhu, Kalyanpur VDCs and some areas of Khadga Bhanjayang.

Figure "1+5" pattern of Bidur's administrative jurisdiction

(Coming from "Strategic Urban Planning: Bidur municipality & surrounding areas")

(IV) Population and Society

The following data are all from the "population and housing census of the Nuwakot administrative of Nepal in 2011".

1. Population size and spatial distribution

In 2011, the total population of the Bidur is 54,351, and the total population of Bidur Municipality is 26,750. Specific statistics are shown in the following table:

Tab. the census and statistics of Bidur Of 2011

Administrative region name	Population quantity (Number)
Bidur Municipality	26750
Charghare	5419
Kalyanpur	5722
Tupche	5286
Gerkhu	6382
Khadag Bhanjyang	4792(Region's population 6166)

(Note: Khadag Bhanjyang district has a total population of 6,166, but not the whole district belongs to the Bidur city,4,792 people are included in the Bidur city of the statistical population).

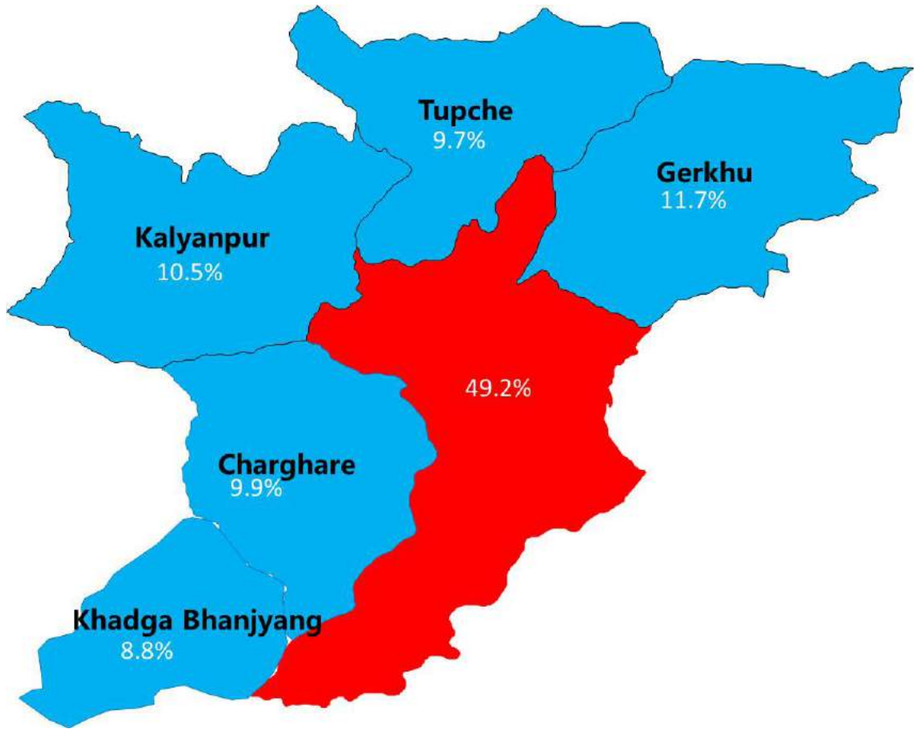


Figure proportion of population spatial distribution in Bidur

Table Bidur 2011 Urban Population Forecast

New Ward No	Meraged VDC/Municpality	Population 2011	Population 2017	Area (Sq.km)	Population Density/Ha
1	Bidur (1,10,11)	3219	3957	4.69	8.44
2	Bidur (2,3)	4362	5362	8.44	6.35
3	Khadkabhan jyang (4 to 9)	4792	5891	12.56	4.69
4	Bidur (4)	4418	5431	1.92	28.29
5	Bidur (5,7)	4624	5684	7.44	7.64
6	Bidur (6), Charghare (1,2)	3628	4460	5.98	7.46
7	Tupche (1 to 5,7)	3897	4790	13.46	3.56
8	Bidur (8), Tupche (6,9)	3793	4663	7.91	5.89
9	Bidur (9), Tupche (9)	5443	6691	6.16	10.86
10	Gerkhu (3,4,7,9)	3567	4385	13.58	3.23
11	Gerkhu(1,2,5,6,8)	2815	3460	9.03	3.83
12	Charghare(3 to 9)	4071	5004	14.84	3.37
13	Kalyanpur (1 to 9)	5722	7034	24	2.93
Total		**54351**	**66811**	**130.01**	**5.14**

According to mofaga, CBS (2011), DUDBC documents, it is predicted that the urban population of Bidur will reach 66,811 in 2011, with an average annual growth rate of 1.35%.

From 2001 to 2011, the total population of Bidur Municipality increased from 21,193 to 26,750, an increase of 5,557 (an average annual growth of 555.7). In 2011, the population of Bidur City was 43,210, in 2017 the administrative division were adjusted. After the adding of Charghare and Kalyanpur districts, the total population of the Bidur will rise to 54,351.

2. Population structure

In the proportion of male and female sex, the number of males in Bidur was 12,712, and the number of females was 14,038, and the proportion of men and women was about 90.55: 100, which was in line with the international sex safety standard 102: 107.

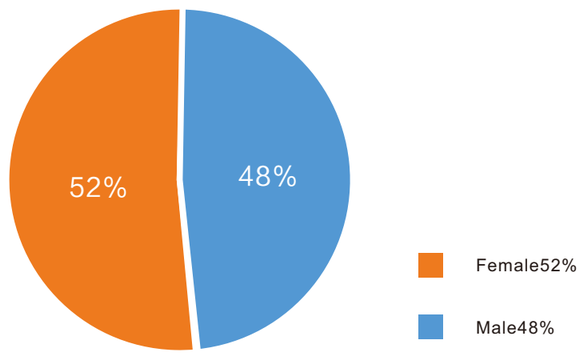
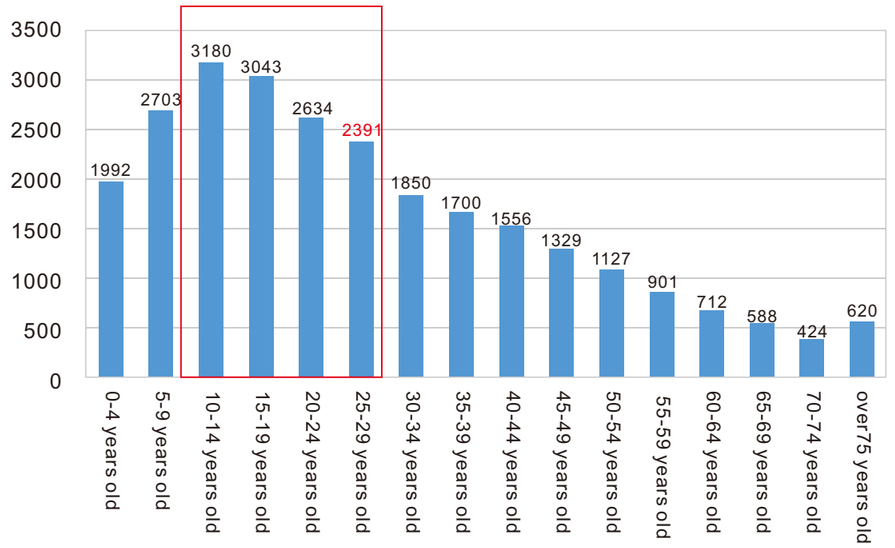


Figure Population ratio in Bidur 2011

In terms of the age structure of the population, the population aged between 10 and 30 years old occupies the main body of the age structure, about 42 percent, and the age structure of the urban population is younger.

Tab. Population statistics of all ages in Bidur



On the structure of population employment, Nuwakot province is mainly engaged in agriculture, compare with this, the proportion of people engaged in agricultural work in Bidur is 15%, rely on independent employment population accounted for 33%, rely on the working for others population accounted for 32%, other occupation accounted for 20%.

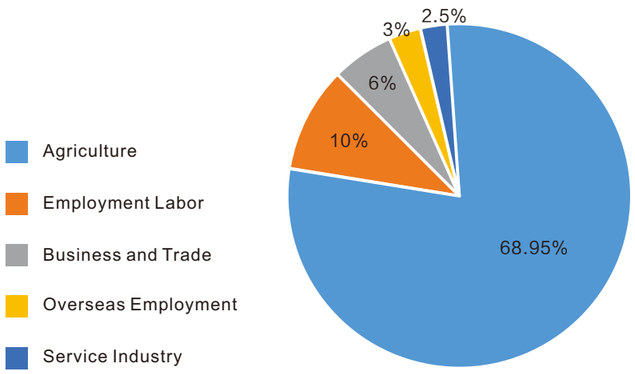


Figure Employment structure in Nuwakot province

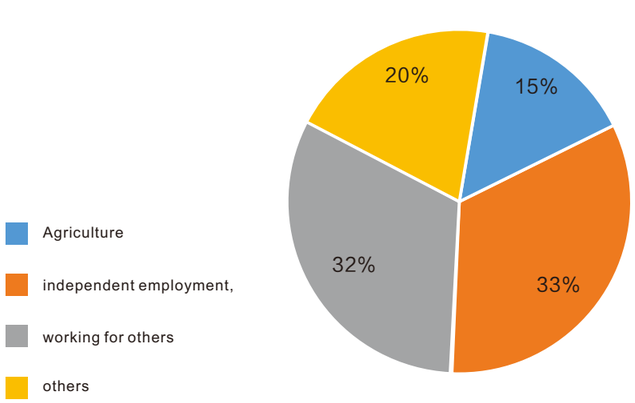


Figure Employment structure in Bidur

In the structure of the population of education, the proportion of education population in Bidur is 70.41%, with 18,834 people. Among them, the proportion of medium education (primary education and above) accounted for 39.27%, while the proportion of education (undergraduate and above) accounted for 3.25%. The education level of population in Bidur is higher than the average level in Nepal's 65.94%.

Education and health care

【Education】 Nepal has 10 years of compulsory education, and its education system is: pre-school education; primary education (1-5th grade); primary secondary education (6-8th grade); intermediate secondary education (9-10th grade); advanced secondary education (11-12th grade), higher education (13-17th grade), in addition, there are vocational education, girls' education, teacher training, special education and so on. Currently, Nepal has nine comprehensive universities, the total population education rate is 65.94%

Source: "Nepal Foreign Investment Cooperation Country (Region) Guide”

Tab.Statistics of the Education Level of Bidur in 2011

Schooling		Number
Education level	kindergarten	795
	Primary school (5 years)	5606
	Primary education (3years)	3322
	Secondary education (2years)	2309
	Middle period education (2years)	2336
	University prep, education (2years)	1667
	undergraduate	673
	graduate student	184
	others	13
Improper education		1778
Level of uncertainty		141
total		18834

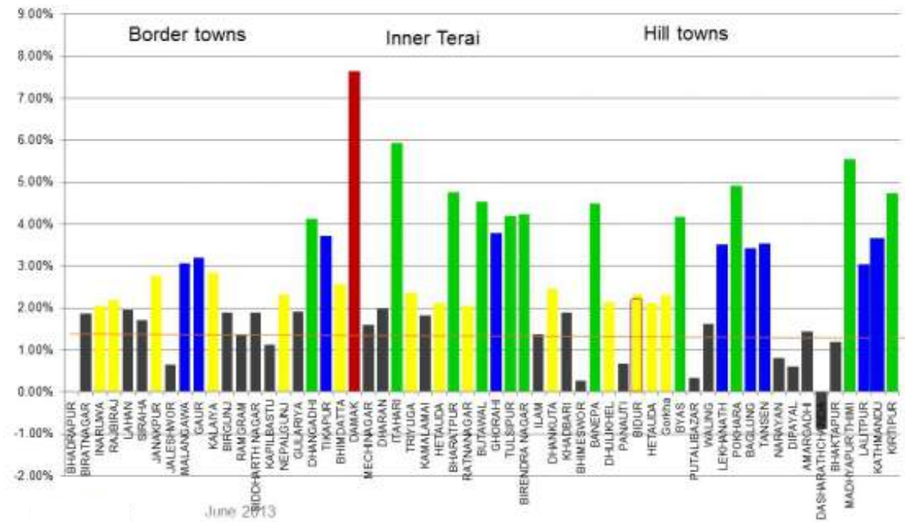
3. Religion and culture

Hinduism is the most popular religion among citizens of Bidur, followed by Buddhism. There are many religious sites, frequent activities and numerous temples in the city, and there are still many historical sites with strong religious characteristics. At present, the government plans to apply to the United Nations for the inclusion of some buildings in the world cultural heritage.

(V) General economic conditions

According to the annual economic growth rate of the cities of Nepal, the average annual economic growth rate of Bidur is about 2%, the economic development is below the middle level of the country.

Tab.Annual economic growth rate of Nepal cities



Legend

- Annual economic growth rate》7%
- 《4% Annual economic growth rate《6%
- 3%< Annual economic growth rate《4%
- 2%< Annual economic growth rate《3%
- Annual economic growth rate《2%

According to the "2005/2006 Economic Survey Data" shows that, from the income level, Bidur agricultural and non-agricultural income ratio is 21:79, non-agricultural income is much higher than agricultural income. The average daily income of both agricultural and non-agricultural households in Bidur is Rs 164, Rs 390, which is well below the national average of Rs 328 and Rs 692.

Labor supply, demand and wages

Labor supply and demand: At present, there are many unemployed population in Nepal, the labor force is mainly farmers and urban poor, mostly engaged in heavy physical labor. Some people through long-term work, have some professional skills, such as the construction industry workers, carpentry, small workers, there are also some special types of work, such as forklifts, cranes and crane drivers. Chinese companies in Nepal generally engaged in hydropower stations, housing, road and airport construction, it is easier to hire workers

Labor costs: general technician 20000-25000 Rs./Month, mechanic (tile, wood, electrician) 15000-30000 Rs./Month, general workers 12000-15000 Rs./Month, drivers 15000-20000 Rs./Month, security 12000-15000 Rs./Month. The project contracting company does not bear the social security and taxation for Nepalese contract labor workers. Because the Nepalese social security system is still being perfected, Chinese companies generally in the signing of employment labor contracts, require employees to solve their own social security and other issues, or signed a short-term employment contract, without social security provisions. In the future, when Nepal's social security requirements are more explicit and enforced, it is possible to increase the cost of investment.

In June 2013, the Nepalese government raised the minimum wage standard from Rs. 6,200 to Rs. 8,000 per month, of which the basic wage was Rs. 5,100 and the remaining Rs. 2,900 was the price subsidy. In 2016, the Nepalese government plans to adjust the minimum wage standard.

Source: "Nepal Foreign Investment Cooperation Country (Region) Guide"

11% households in Bidur have no electricity; More than 31% homes are unable to access good roads; 42% of households have no irrigation equipment; most families are lack of drinking water. (Source: The Impact of Infrastructural Facilities on the Poverty of Farmers in Bidur Municipality, Nepal).

(VI) Natural conditions

1. Nature ecology

Bidur's ecological resources include the Trisuli River and the Tadi River, as well as three mountains in the west, north, and east respectively. The average elevation of the three mountains is about 690m. Generally, Bidur is "lower in the south and west, and higher in the north and east". Tablelands along the rivers are divided into level 2 and level 3 with a height difference of 20m to 60m.

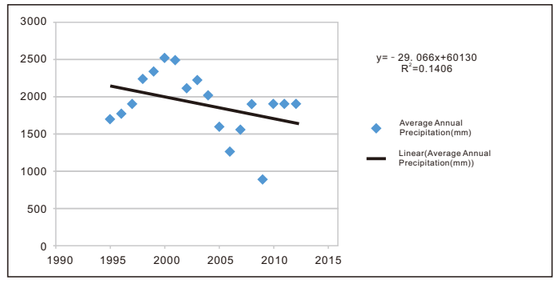
Figure Distribution of mountains and waters in Bidur
(data source: drawn by the author)

Human activities are generally found in the river valley area formed due to alluviation by the Trisuli River and the Tadi River, and on gentle slopes in the mountains in the west, north, and east respectively. People living on the mountains rely mainly on production on terraces, as a result of which a large area of woodland has been reclaimed into terraces. Construction of terraces has also resulted in soil erosion, causing continuous damage to vegetations on the mountains. The extensive utilization of land is threatening the ecology of Bidur.

2. Climate feature

Bidur is located in the subtropics with sub-humid climate, the general climate is pleasant all year round, the rainfall is appropriate. The average annual precipitation is about 1500mm (Max. 20044mm), and the rainfall in recent years has kept decreasing.

Table–annual rainfall trends in Nuwakot district (source: "Nuwakot climate energy plan")



The average temperature is 22 degrees centigrade, and the temperature doesn't change much.

Table--annual temperature change in Nuwakot district (Source: "Nuwakot climate energy plan")

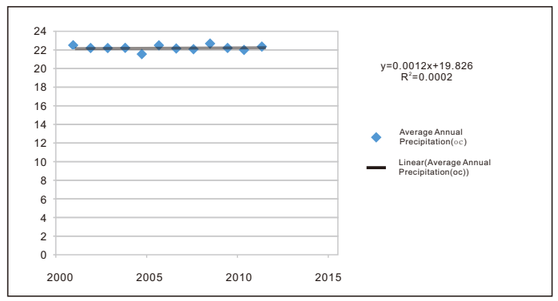


Table-annual climate change in Nuwakot district (Source: "Nuwakot climate energy plan")

Month	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Average temperature	13.54	15.27	20.27	24.10	24.3	24.78	24.18	23.99	23.34	21.52	17.94	14.44
Highest	19.25	21.60	26.86	30.30	30.70	29.51	28.80	28.89	27.88	2701	24.19	20.58
Minimum	7.83	8.94	13.68	17.7	17.96	19.90	19.55	19.09	18.81	16.03	11.70	8.30
Relative humidity (%)	75.5	69.9	59.0	53.1	65.0	82.9	87.4	86.1	89.5	79.9	76.1	75.6
Relative humidity	61.3	47.8	39.8	43.0	50.8	68.4	77.4	74.8	76.3	68.6	60.2	61.3
Rainfall (mm)	17.86	26.6	26.2	44.94	186.92	342.66	617.002	682.08	340.3	41.96	0.8	1.3

III. Bidur Status Quo Evaluation

(I) Land use status

Bidur administers 13 administrative regions and covers a total area of 13,205.51 hectares. The construction land in the city is about 1,169.26 hectares and mainly comprised of river valley concentrated construction land and land for village construction which is scatted on the hills, accounting for 8.85% of the total area of Bidur.

The non-construction land is mainly comprised of forest land, paddy field, terrace and rivers. Of the non-construction land, woodlands are distributed in the city's major mountains and cover a combined area of about 6,315.05 hectares, accounting for 47.82% of the city's total area; terraces are mainly distributed on the relatively gentle slopes and cover a combined area of about 3586.32 hectares, accounting for 27.16% of the city's total area; paddy fields are concentrated on the alluvial tablelands on both sides of the river and cover a combined area of about 1,454.45 hectares, accounting for 11.01% of the city's total area; rivers and aqueducts cover a combined area of 517.6 hectares, accounting for 3.92% of the city's total area.

Table Summary of land utilization of Bidur in 2017
(data source: produced by the author)

Land type			Area(hectare)	Percentage
Construction land	Urban construction land	Urban built-up area	170.34	1.29%
		Land for special purpose	21.77	0.16%
		Agriculture school	15.85	0.12%
	Land for village construction	Villages	961.29	7.28%
	Regional road land	Roads	162.83	1.23%
Non-construction land	Rivers		489.67	3.71%
	Channels		27.93	0.21%
	Forest land		6315.05	47.82%
	Paddy field		1454.45	11.01%
	Terrace		3586.32	27.16%
Total			13205.51	100.00%

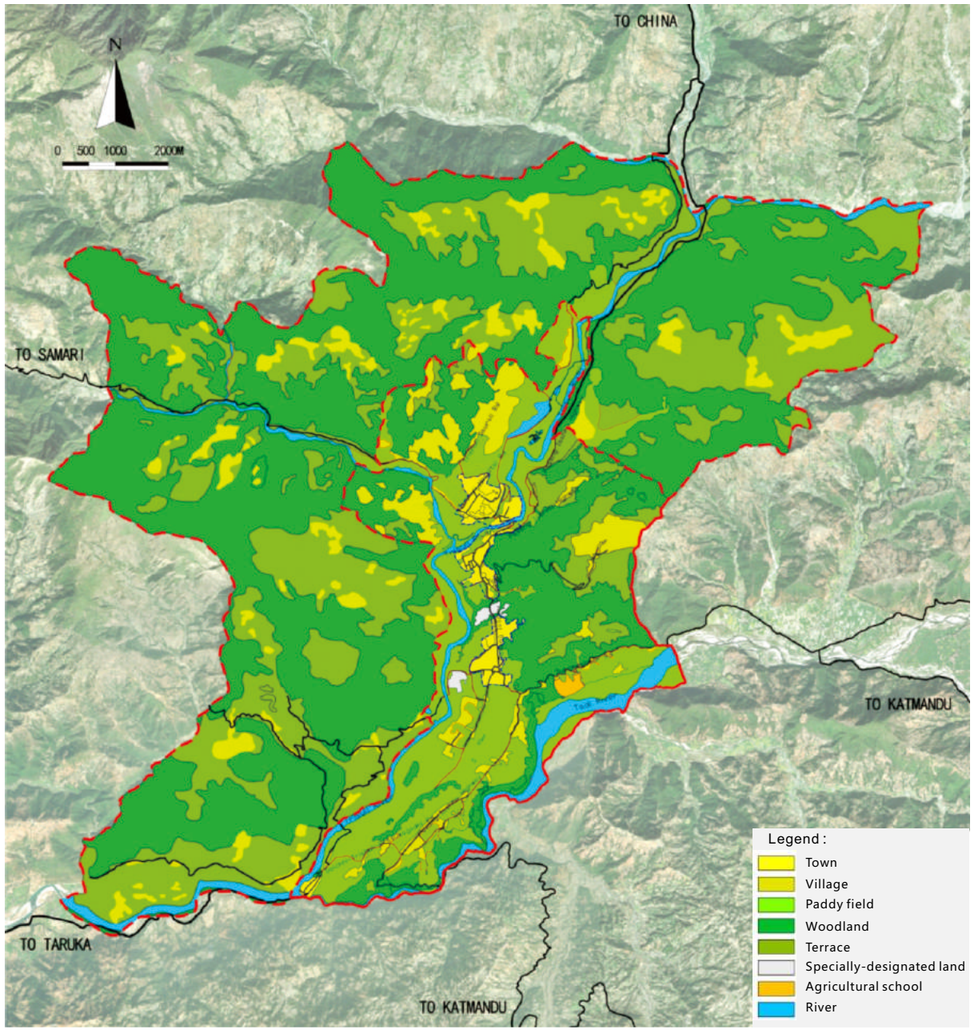


Figure Land utilization of Bidur in 2017
(data source: drawn by the author of this paper)

Construction land mainly includes urban and rural construction land. Urban construction land is only concentrated in the valleys and tableland along the Trisuli River and the Tadi River, while most rural construction land is distributed in the city's mountains. The city's urban construction land area is about 207.97 hectares, accounting for 1.57% of the city's total area, while the city's rural construction land area is 961.29 hectares, accounting for 7.28% of the city's total area.

(II) Status Quo of Public Service Facilities

1. Health care

According to Bidur Municipality City Profile (2016), there are 11 medical facilities in Bidur.

According to site surveys and data sorted out at the late stage, Bidur's current medical and health facilities mainly include 5 hospitals and 4 health stations, which are generally concentrated in Trishuli and Bidur Cluster. There is a lack of medical facilities in the crowded areas in the central, southern, eastern, and northern regions.

Table: Statistics of main medical facilities in Bidur in 2017

(Data source: data sorted out based on Bidur Municipality City Profile (2016))

Nature of the hospital	Number
District hospital	1
Aryuvediy hospital	1
Polyclinic	3
Private hospital	2
Lion’s dental hospital	1
Community eye hospital	1
Health post	1
Nursing campus	1

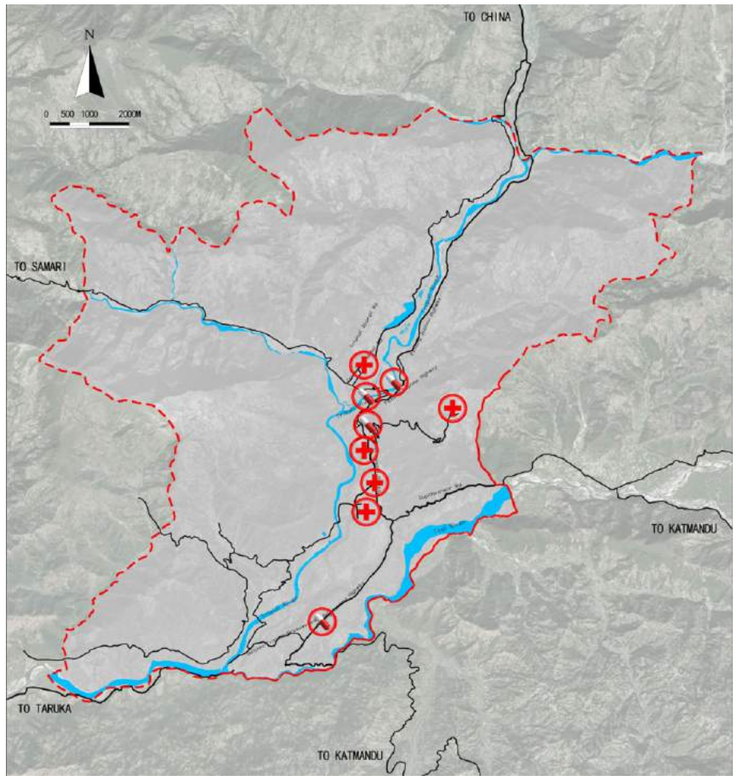


Figure Distribution of main medical facilities in Bidur in 2017

(Data source: data sorted out based on the existing documents and Google Images)

2. Education

According to Bidur Municipality City Profile (2016), Bidur has 6,260 students and a total of 26 educational facilities, including 14 primary schools, 2 junior secondary schools, 4 secondary schools, 4 senior secondary schools, and 2 colleges.

Table Statistics of main educational facilities in Bidur in 2017

(Data source: data sorted out in accordance with Bidur Municipality City Profile (2016))

Description	Primary school	Lower secondary school	Secondary school	Higher secondary school	Campus	Total
No. of educational institutions	14	2	4	4	2	26
No. of students	1870	1300	823	842	1425	6260
No. of teachers	60	18	58	82	60	278

According to site surveys and data sorted out at the late stage, Bidur has 6 primary and secondary schools, 1 agricultural school, and 1 nursing school. Bidur's educational facilities are generally concentrated in Bidur Cluster. There is a lack of educational facilities in the southern and northern areas.

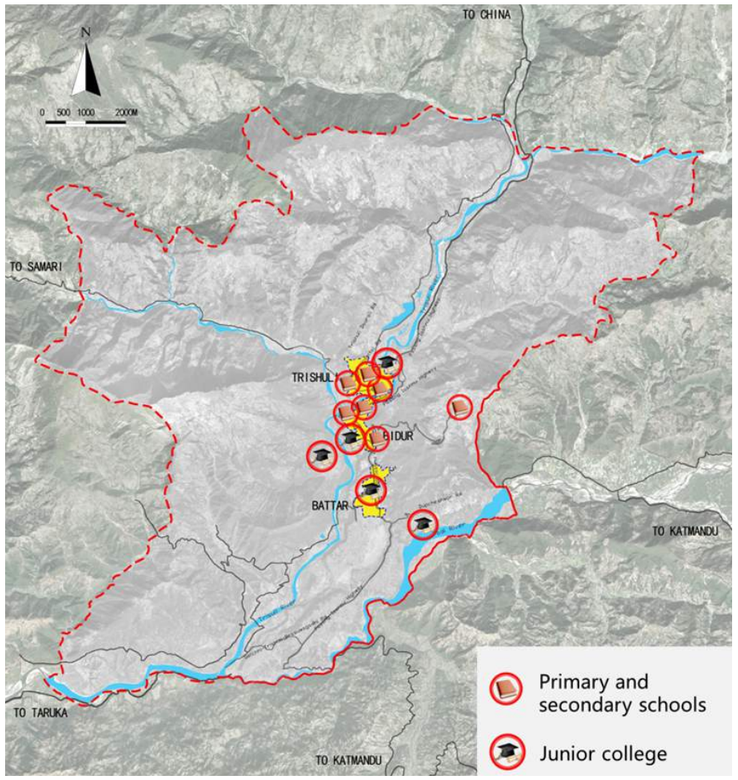


Figure Distribution of main educational facilities in Bidur in 2017

(Data source: data sorted out based on the existing documents and Google Images)

(III) Evaluation of current cultural tourism resources

1. Scenic tourism resources

The unique ecological pattern of "three mountains and two rivers" has endowed Bidur with superior natural ecological landscape. The average altitude of 700m is also suitable for long-term human activities of human beings. But at present, important tourism project in combination of the landscape resources has not yet formed in Bidur.

Figure Current ecological landscape of Bidur

2. Cultural tourism resources

Nepal is a sacred place for Hinduism and Buddhism and its own religious and cultural characteristics are inherited in Bidur. The Hindu and Buddhist temples and characteristic buildings are scattered throughout the city. The scenic spots and historical sites are mainly concentrated in TRISHULI and the Palace area where many Palace complex and many important temples are preserved. Most of the above cultural resources were damaged in the earthquake happened in 2015 and are being gradually repaired and finished at present.

Figure Religious and cultural heritage of Bidur

(IV) Status Quo Traffic Assessment

1. Road system

A network of roads centering round the river valley concentrated construction area has generally formed in the city.

The types of the city's roads include highways, feeder roads, district roads, and village roads.

2. Traffic organization

The south-north extension of the existing Pasang Iaahmu Highway passes through the city's urban areas and the east-west extension connects Trishuli Highway to Kathmandu; another five feeder roads including Dupcheshwor connect the city with its surrounding areas. The total length of the existing roads in Bidur's river valley concentrated construction area is about 179.1km and the city's road network density is

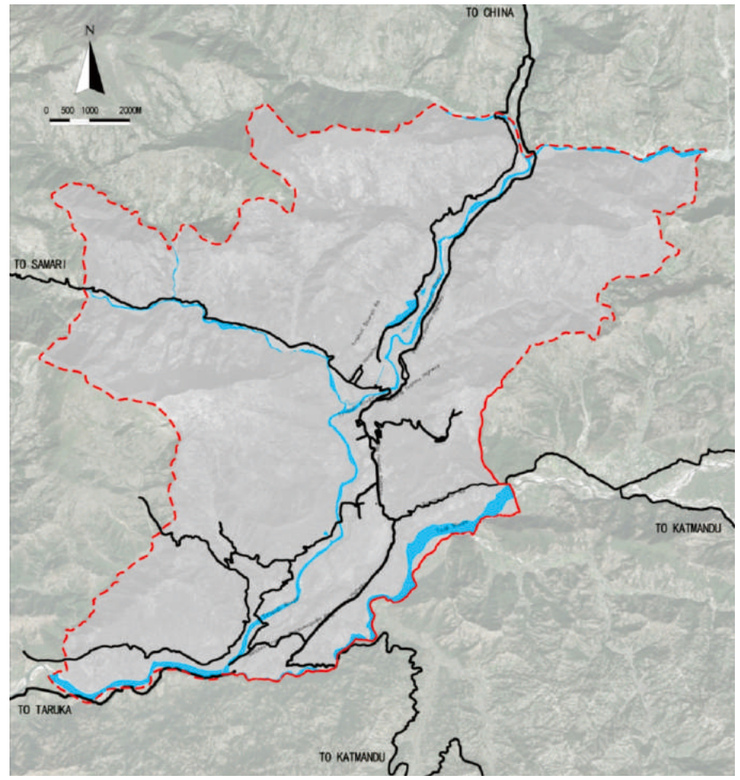


Figure Bidur's outbound traffic in 2017
(data source: drawn by the author)

about 5.24km/km^2. The Pasang Iaahmu Highway passes through the whole city and connects China's Gyirong International Port in the north and Kathmandu in the south. It is the only high-grade national highway through the city and carries the main outbound traffic of Bidur.

3. Public transit

The main mode of transport in Bidur is motorcycle. Public bus lines and bus stops are arranged in the concentrated construction areas of the city to provide passenger service for the citizens. The number of public bus lines and bus stops within the 500m of Bidur's concentrated construction area accounts for 50.3% of the total in the area, which is lower than 90%, the Chinese standard. As the capital of Nuwakot, Bidur has a low level of public transit coverage.

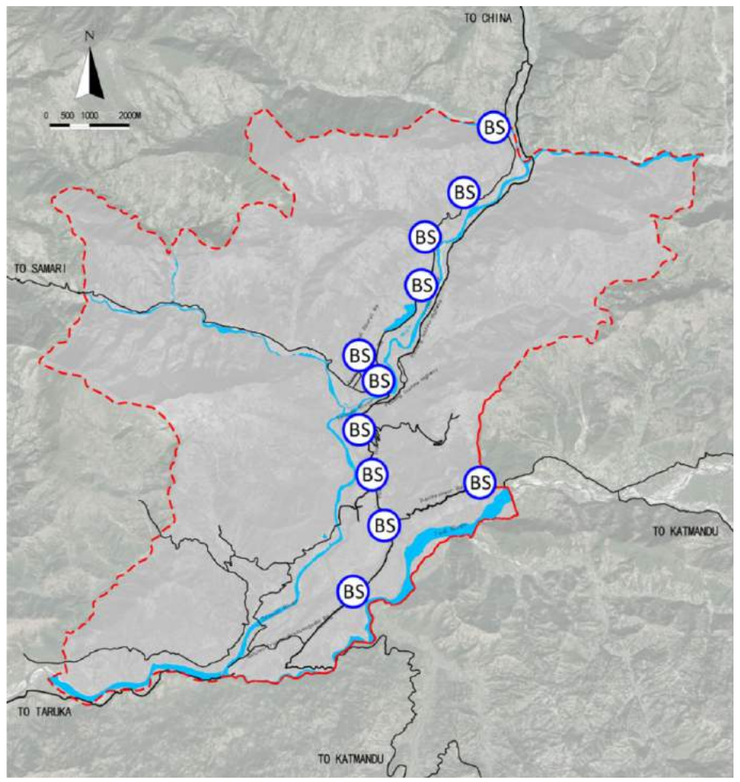


Figure: Distribution of public bus stops in Bidur
(data source: drawn by the author)

(V) Status of municipal infrastructure evaluation

1. Water supply and drainage

In terms of water supply, water for Bidur mainly comes from rainwater and the rivers in the city's surrounding areas. Despite abundant water resources, the disruption of water supply tends to last several days to several weeks as floods in the rainy season often damage water collection facilities and pipelines due to a lack of effective water conservancy facilities.

Since 1995, the Bidur Drinking water and Sanitation User Committee has been preparing to build a comprehensive government-level water supply system. More than 12 water supply facilities have been built. Source water is first collected and stored and then distributed to various households. Moreover, there are public water outlets for supplying water for a limited time. At present, the water supply system supplies water for 2,000 households (about 40% of the population).

Despite years of Bidur's efforts, it is still very difficult to build and operate a comprehensive drinking water supply system. Investment in water supply facilities and water supply system is insufficient, and development is lagging behind.

The main problems are as follows:

①The number of the city's residents supplied with water is small.

②Simple waterworks have no water treatment facilities, and the quality of the water supplied by the waterworks depends on the quality of the water source.

③The water supply pipe network is a branch system, which is not very safe.

④The water supply pipelines are old and out of date and the urgent updating is mainly faced with two problems.

In terms of drainage, since Bidur's overall topography is characterized by highland in the north and lowland in the south, the rainwater along the river valley concentrated construction area is drained into the Trishuli, Tadi and Samari rivers by way of surface runoff. Both sides of some roads are set with drainage ditches or cover ditches to collect and discharge the rainwater. The topographic and geomorphological features of mountainous and hilly areas in Bidur are favorable for rainwater drainage and because the relative lower development and construction strength at present, the waterlogging is not serious in the city. However, due to lack of protection over the developed and constructed sites and concentration of rainfall in the rainy season, Bidur is suffering from severe soil and water loss and the existing drainage ditches have different degrees of siltation.

In terms of sewage, there is no sewage collection and centralized treatment facilities in Bidur. Most of domestic sewage produced by the city's residents is discharged into their own septic tanks for degradation and then seeps into the ground gradually.

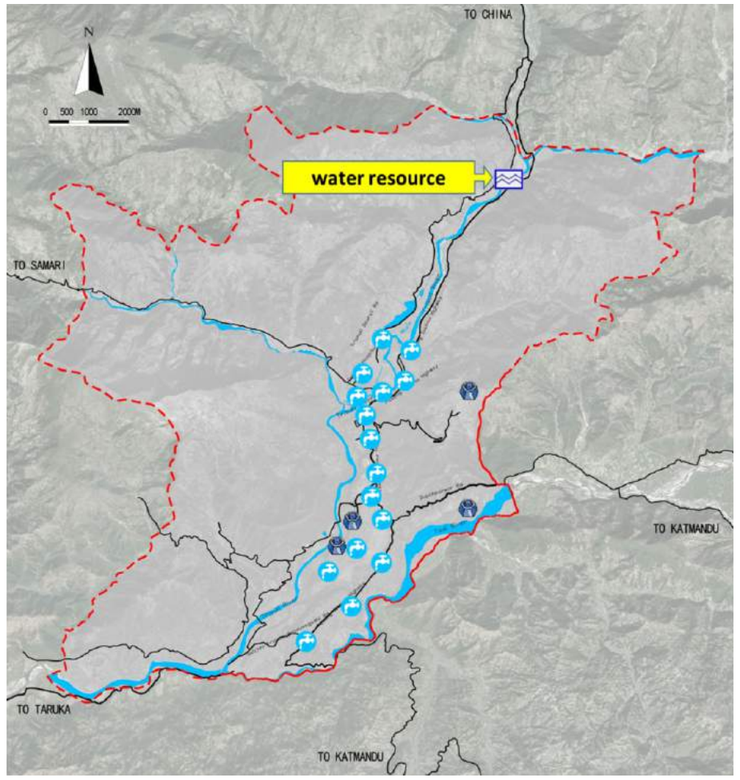


Figure Current water supply facilities in Bidur
(data source: drawn by the author based on site surveys)

2. Energy facilities

According to the site surveys, Bidur has two hydropower stations, namely, Trishuli and Battar. All existing power lines are laid overhead. Electricity is not only supplied by the hydropower stations, but also created using firewood. The capacity of the existing power supply and distribution facilities is small, which cannot meet the power needs of the development of the future planning area.

Bidur's residents mainly use bottled gas as fuel. About 80% of the residents use bottled gas

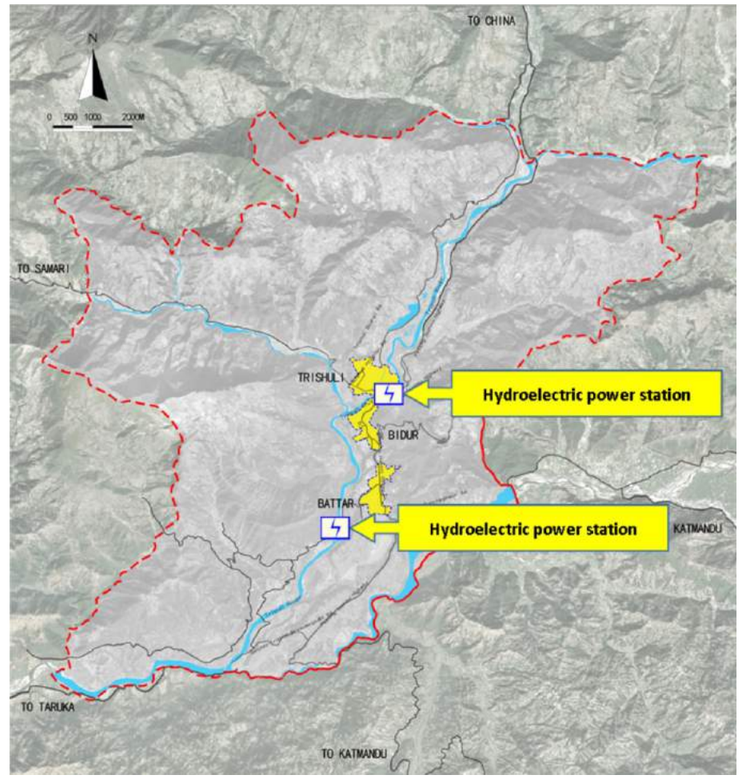


Figure Current energy facilities in Bidur
(data source: drawn by the author based on site surveys)

3. Sanitation

With regard to the construction of public toilets, there are 4 public toilets in Bidur.

With regard to waste disposal, according to Bidur Municipality City Profile (2016), 10 tons of waste is produced in Bidur per day.

According to the data collected through site surveys, solid waste in Bidur is managed by the environment and health departments of Bidur Municipal Government. Waste is collected and transported mainly by relevant workers. Waste collection services are provided by roadsides in the city. Residents can put their garbage by the roadside and then cleaners employed by the government will collect it. There are 12 temporary cleaners in the city and they are equipped with 11 trolleys, 8 wheelbarrows, and 1 trailer.After the trolleys and wheelbarrows fill up with waste, the waste is then loaded

onto the trailer. As the government has not set up a transfer station, the collected waste is kept on outdoor dumpsites. In addition, the local groups of Bidur have also engaged in "door-to-door" waste collection and street cleaning.

According to the on-site survey, domestic waste in Bidur's river valley concentrated construction area is dumped on the bank of the Trishuli River, about 6 Km from the city. This dumpsite has an area of about 200 hectares and has been used for nearly 15 years. According to the on-site survey and interviews, the dumpsite is expected to be used for another 15 years. In addition, Bidur Municipal Government plans to build a new landfill site in Khampa of District 6. According to the plan, the new landfill site will be about 6 kilometers away from Bidur's urban area, have a footprint area of about 300 hectares, and be used for 45 years.

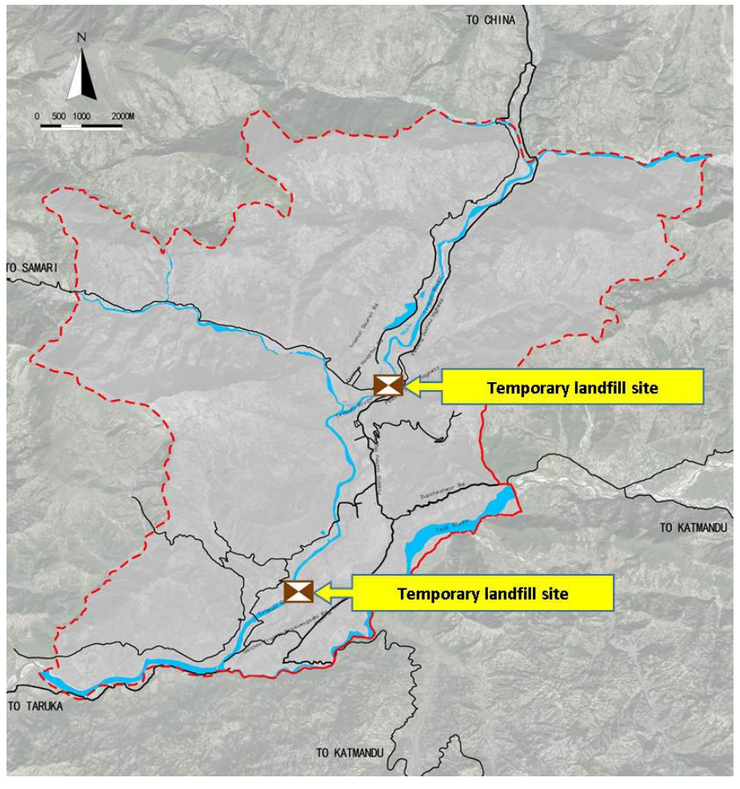


Figure Current sanitation and electric utilities in Bidur
(data source: drawn by the author based on site surveys)

Collection and disposal of other waste:

There is no project promoting the recycling of waste in Bidur. Waste is composted at the household and community levels. Bidur has one hospital with 25 beds, one health center and one clinic, but there is no specialized system for the collection and management of medical waste. Medical waste from hospitals, clinics, and pharmacies is dumped with municipal waste. Similarly, Bidur does not have no system to collect other types of special waste, such as construction debris /demolition waste, industrial waste and dead animals.

4. Fire-fighting equipment

Bidur has a fire brigade, but it lacks specialized fire-fighting equipment and the people have to rely on themselves when a fire happens.

5. Disaster prevention facilities

Bidur mainly faces the following natural disasters: flood, earthquake, and landslide. Bidur's flood control task is mainly to prevent flooding by the Trishuli, Tadi, and Samari rivers, and to prevent mountain torrents in the mountainous areas in the east and west of the city.

According to the on-site survey, the concentrated built-up areas and scattered residential areas in Bidur are all on the upland and far away from flood land, so the risk for these areas to be flooded is relatively small. The mountains in both sides of the city are well covered in vegetation and the gullies in the mountains remain relatively intact without undergoing any development or construction, so damages caused by mountain torrents are small. In addition, as roads in the urban areas are generally narrow and there is a lack of shelter sites, it is difficult to evacuate people when an earthquake happens. The existing houses in the city are brick-wood structures and dilapidated, so they can hardly withstand any high intensity earthquake, and secondary disasters tend to occur as a result thereof.

IV. Conclusion

Generally speaking, although Bidur has rich historical and cultural resources and abundant ecological landscape resources, its industrial economic development and the construction of livelihood infrastructures lag behind.

On the one hand, although Bidur was less affected by the Nepal Earthquake in 2015, the current construction of roads, water, electricity, and energy infrastructures lags behind and the public service facilities for medical treatment, education and culture can only accommodate basic needs of 26,800 people. There is still larger room for improvement of the transport, municipal and public service. On the other hand, the current development mode which is dominated by agriculture and the newly started tourism and industry do not give sufficient impetus to the economic development of Bidur and play limited role in driving the local job market.

Systematically analyzing the development environment of Bidur, namely, what kinds of advantages and opportunities as well as challenges will Bidur face for its development, can help clarify our thinking and find a scientific path of sustainable development.

Chapter II

Development Strategy

- SWOT analysis 049
- Development positioning and vision 057

I. SWOT analysis

(I) Strength

1. Rich natural ecological resources and long history

Located in valley area surrounded by two rivers and three mountains, Bidur is adjoined with Nepal Langtang national park, and China's Tibet Everest national nature protection zone, and there are abundant natural ecological resources and biodiversity diversity.

There are many historical and cultural resources such as temples and palaces in Bidur. The most famous Nuwakot palace in the region is the Summer Palace and the wartime front command post of Nepal's modern shah dynasty (18th century - modern). Every April, Nepal's important statue of bhagwati will be transported to the Nuwakot palace for a grand Hindu festival.

Remark: Bhawani statue of liberty, she is the consort of Shiva, one of the embodiment of "Ms." Pal is enshrined in the famous Nepalese tamar nagorno-karabakh amarna temple goddess of one of the most sacred temple (Nepal), Dr Nagorno-karabakh amarna meaning is the goddess who can make great vows, every year there are many Indians miles to come to visit.

2. The current situation of agricultural production, hydropower generation and other industries are prominent

The land resources of Bidur are fertile, the industry is mainly agricultural, and agricultural production is mainly distributed along the belt valley basin and some mountain areas along the river.

Bidur uses the natural resources to build hydroelectric power and irrigation facilities and provides energy support for urban development by using natural advantages.

Figure Bidur agricultural production space

(II) Weakness

1. The development of urbanization is still in its infancy, and the layout of urban space is scattered

Due to the natural conditions of the present situation, the main urban area of Bidur is formed along the Pasanglaahmu Highway from south to north. The long - term scattered urban space pattern makes the population dispersing unevenly in the city. Although the public service facilities construction cost is in a higher level, the service level is not high enough. The space layout is not economical, and the city in general is in the initial stage of urbanization.

2. The industrial type is monotonous, the economic development motive is insufficient, the employment opportunity is limited, and the population attraction is not enough

The present situation in Bidur is mainly based on agricultural primary agniculture, and the second and third industries have been lagged behind. Agriculture also has been slowed down due to lacking of mountain irrigation facilities and necessary production technology. The overall lack of impetus for industrial development makes it difficult to provide large-scale employment, and residents have to change their jobs or work outside the country, which end up to have not enough to attract the population.

(III) Opportunity

1. The "Belt and Road" policy will promote the upgrading of the industrial economy

In 2014, China and Nepal signed 'the People's Republic of China ministry of commerce and the government of Nepal under the framework of the ministry of finance on bilateral economic and trade commission jointly promote economic belt "silk road" of the construction of the memorandum of understanding', put forward the ideal of building "the silk road economic belt", Renaissance the ancient silk road from China Lhasa to Kathmandu, Nepal patna, India (sacred place). The macro strategy of "Belt and Road" provides a good environment for the upgrading of the industrial economy.

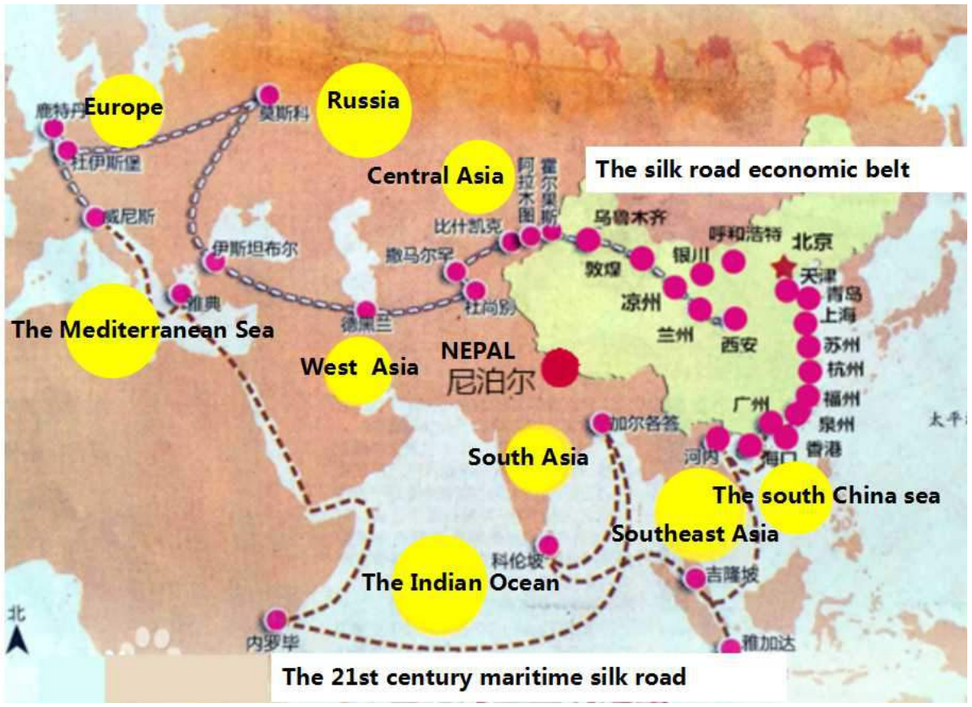


Figure the "Belt and Road"

2. Post-earthquake, the reconstruction of cross-boundary channel will inspire the potential of "Sino-Nepal portal"

Historically, Bidur has been the main gateway for trade between ancient China and Nepal. In modern times, due to geographical conditions, and especially because of the high speed development of Arniko in the east, the statue as the gateway for Bidur had been reduced. With the upgrade of Mountainous Highway, China's Tibet to Nepal traffic of people, logistics, port turned to Kuala Lumpur from camphorwood, through the Mountainous Highway and zhongshan road, then connect the eastern Kathmandu valley urban agglomeration and western pokhara.

Figure: Sino-Nepal traffic map

The qinghai-tibet railway branch lines (Lhasa to xigaze) opened in 2014 will be extended to the border of the China - Nepal Kuala Lumpur port, connected with the Nepal railway, and will further be extended to Kathmandu, chitwan and pokhara city.

The connection between China and Nepal and the establishment of the port will fully activate the traffic advantage of the Bidur area, and will drive it back to the Sino-Nepal gateway status.

Figure: Qinghai-Tibet railway branch future planning map

3. The radiation of urban agglomeration in the Kathmandu valley will promote regional cooperation in the region

Bidur is located in Kathmandu valley 69 kilometers northwest of urban agglomerations, it takes 6 hours to get there from Kathmandu road due to mountains blocking traffic, and the transport time will be shortened significantly after the completion of the tunnel.

Based on the regional transportation connection, Kathmandu valley will witness its own rapidly urban agglomeration expanding, which will promote economic development in surrounding area, industry related processing and manufacturing, and service industries etc. and will ouso spill over to the surrounding satellite cities. As an important node of the Sino-Nepal link, Bidur will actively participate in the functional division of the urban agglomeration in the Kathmandu valley and gain more economic development momentum.

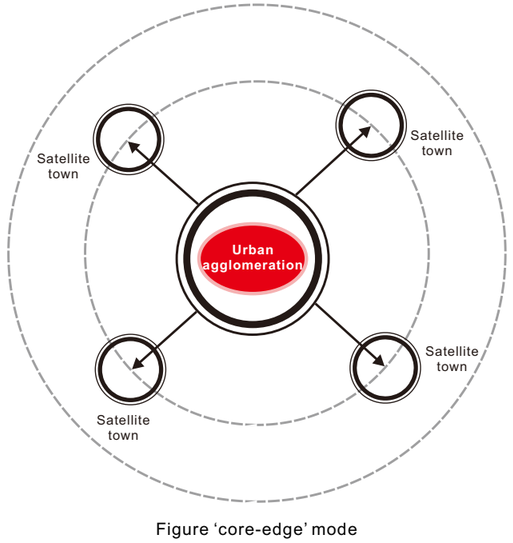


Figure ‘core-edge’ mode

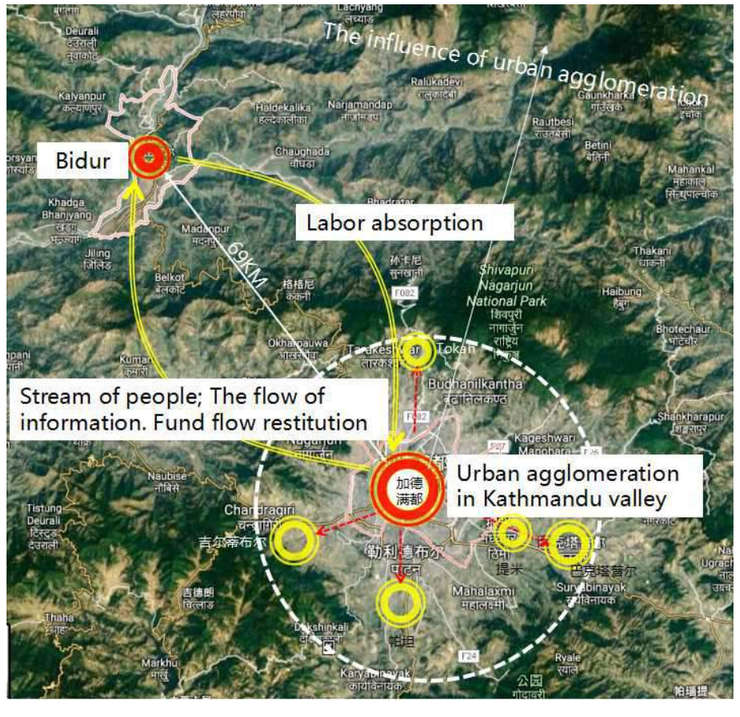


Figure influence of the radiation of urban agglomeration in the Kathmandu valley

(IV) Challenges

1. How to ensure industrial transformation and upgrading while trying to protect the superior ecological environment

The significant improvement of traffic location conditions will bring Bidur development opportunities in processing, logistics, commerce, tourism service industries. The existing traditional agriculture industry structure will be upgraded. However, industrial development will probably result in large scale land lost and ecological environmental impact of farmland. The lessons learned from China and other rapidly developing countries can be found that rapid economic development often comes along with the expense of the environment damage. From Nepal official statistics also can be seen, as the national pillar industries of tourism led to a Mount Everest every year about 240 million cubic meters of mountain surface soil erosion, larger destruction of ecological environment. Therefore, choosing the appropriate industrial upgrading and transformation direction and maintaining the environment while seeking development and taking the road of sustainable development will be an important challenge for the development of Bidur.

2. How to take an important role in the Kathmandu City Cluster

Kathmandu valley urban agglomerations as Nepal's economic and political center, the home of more than 50% of the urban population of Nepal, contributes more than a third of GDP in Nepal, and provides the best advantage resources development throughout the country. As its satellite city, Bidur will face the competition with other similar satellite cities around the urban agglomeration. On the other hand, the core attraction from Kathmandu will be an issue for Bidur to deal with in the initial development. To find the reasonable position in the Kathmandu valley urban agglomeration satellite system, find the different development path and diversify urban form competition and cooperation will be the key for Bidur and other satellite cities in Kathmandu urban agglomeration.

3. How to explore the flexible development model

In the future, outside investment construction will bring the promoting opportunity to Bidur, but there are some uncertainties in it. On the one hand, external investment intention and time uncertainty will influence the choice of urban development and timing. On the other hand, the uncertainty of investment domain and construction area will also affect urban industry choice and spatial distribution.

Therefore, how to give full consideration to the development of elasticity and predict the multiple development paths of the city; Strategically locate the city and choose the rational industrial system; To plan urban spatial pattern and protect ecological and cultural characteristics; It is another challenge for the city to develop the urban construction time series and guide the moderate and orderly construction, so that the city can cope with the uncertain factors in the future development.

(V) Summary

Based on the above analysis, we believe that this plan should focus on "finding motivation, respecting ecology, improving people's livelihood, and emphasizing the culture". To Find motivation is to locate the development of the city in the region, and to foresee the space, population, and economic growth path. Respecting ecology means emphasizing ecological protection and urban security, considering improve the city adaptability of urban disaster as the preparedness of development, and laying the foundation for sustainable development of the city. Improving people's livelihood means to ensure public service facilities and municipal infrastructure construction, promote the service level during the urban economy development and meet the urgent needs of citizens to improve their lives. Emphasizing the culture means to carry forward the religious and cultural advantages of Bidur, txplont the regional cultural characteristics, and enhance the sense of cultural identity of the citizens.

II. Development positioning and vision

Based on SWOT analysis, we proposed four major visions for future development of Bidur from the aspects of "finding the motivation, respecting the ecology, improving the people's livelihood and highlighting the culture".

(I) Development positioning

We plan to build Bidur into a prosperous and dynamic city with thriving industry and population, a friendly homeland that can resist natural disasters and a society that every people can have convenient access to the equally shared service and people of different cultural background and class can live in harmony and respect each other.

(II) Vision Positioning

1. Bustling and Vibrant City

Based on the connection between China and Nepal, and agricultural base and water resources advantages, cultural tourism, logistics business, agricultural products processing and water power generation and other industries should be developed, to build a prosperous city. To provide a large number of jobs in industrial development, to promote sustained population growth, to form a vibrant atmosphere of vitality.

(1) Develop Characteristic Industries, search for the driving force of economic development

Benchmarking Case–

Vietnam Lao Cai: focus on regional environment and its own advantages to develop the characteristics of industry

Vietnam Lao Cai is adjacent to Yunnan Province, China. It was one of the poorest provinces in Vietnam. Its industry development ideas mainly attach importance to the following two aspects: First, relying on port positioning, with the development of special tourism characteristics, to promote their own development. Actively promote tourism development with unique border location advantages. In 2015, the tourism industry brought in the local income of 4.5 trillion VND and created 10,000 labor jobs. Second, with their own advantages of resource to develop border industry. Lao Cai with its own mineral resources, water resources, agricultural cultivation and other advantages, focus on the development of small and medium-sized mineral mining and processing, agricultural products and folk crafts and other specialty products to export to the Chinese market. Actively build hydropower stations to promote local economic development.

Figure Old street in Vietnam

Revelation–

Bidur could use the advantages of Sino-Nepalese border location, to develop logistics and trade and cultural tourism industry; can use their own landscape farmland resources to develop the agricultural processing industry; vigorously develop hydropower and low-pollution industries.

(2) Industrial development drives employment and leads to population increase

Benchmarking Case–

Pokhara, Nepal: Tourism development increases the population

Pokhara is located in central Nepal, is located in the southern slope of the Himalayas in the foothills of the Pokhara Valley, has a wealth of historical and cultural resources and ecological resources, and is the famous tourist city after Kathmandu in Nepal. Before the 1970s, the locals were dominated by agricultural production and were sparsely populated. Until 1970, traffic conditions gradually improved. Local Buddhism, Hindu temples, other unique historical and cultural resources, and magnificent landscape attract many tourists come. In the 1980s, Bokhara has become a modern mountain resort, the tourism industry began to flourish and promote a large number of related industry convergence, it has formed nearly 100 hotels, shops, bars and restaurants, providing a large number of jobs, to absorb the surrounding population and agricultural population of Bokhara, to achieve a dramatic increase in population. Today Pokhara is the second large city in Nepal with a population of 100,000. Urban population vitality gathers.

Figure Pokhara In the area of Nepal

Figure Pokhara Natural scenery

Revelation–

Bidur has similar historical and cultural and natural landscape resources as Bokhara's, tourism can be as the fundamental, agriculture can be as the basis, logistics and trade can be as the opportunity, and processing industry can be as the assistance, to create more labor-intensive industries, attract people continue to gather, quickly enhance the popularity of the city.

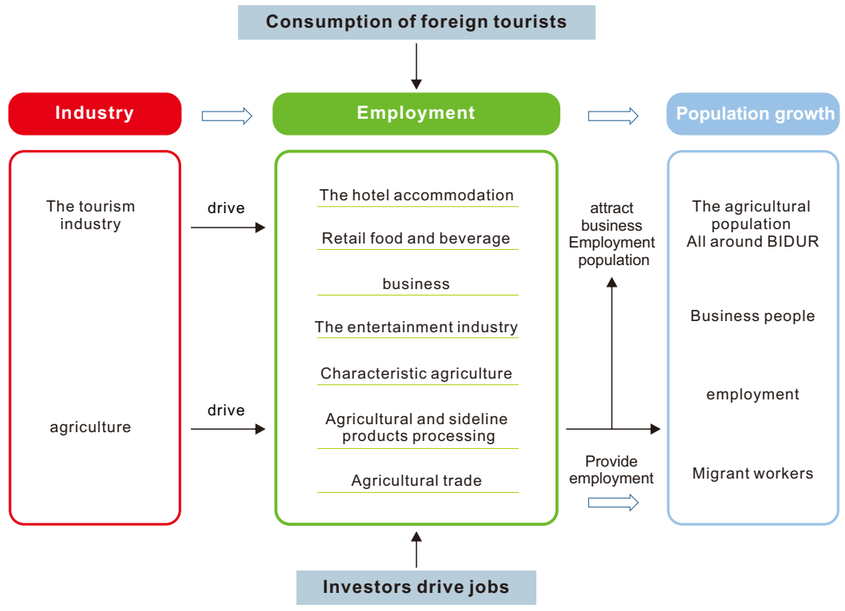


Figure Population growth and industrial growth model

TAZ Population gathering area

LPZ group Population gathering area

CLZ group Population gathering area

2. Ecologically safe homeland

Pay attention to the protection and utilization of mountain, river, farmland and other natural ecological resources, create a beautiful and livable atmosphere, and establish an ecological city; avoid construction in disaster risk areas such as earthquakes, landslides and floods and etc., establish refuge routes and places, and enhance the city's ability to cope with disasters so as to create a safe homeland.

(1) Enhance ecological conservation, consider both ecological and economical benefits

Benchmarking Case–

Lanzhou, China: Develop both Ecological Restoration and Ecological Economy

Lanzhou, China started the "Yellow River in the upper reaches of the ecological restoration pilot area project" in 2013, using regional trees, shrubs and flowers suitable for planting in Lanzhou to carry out regional ecological restoration, taking into account the economic output benefits of vegetation. In 10 years, 1024 million mu of barren hills around Lanzhou will be repaired, raising the vegetation coverage from 12% to 50% or more, and 810 million mu of economic forest around city will be formed, to achieve "ecological, economic double harvest", from the fundamental restoration of ecological vegetation in Lanzhou, effectively reduce urban air pollution, regulate climate, maintain water and soil benefits

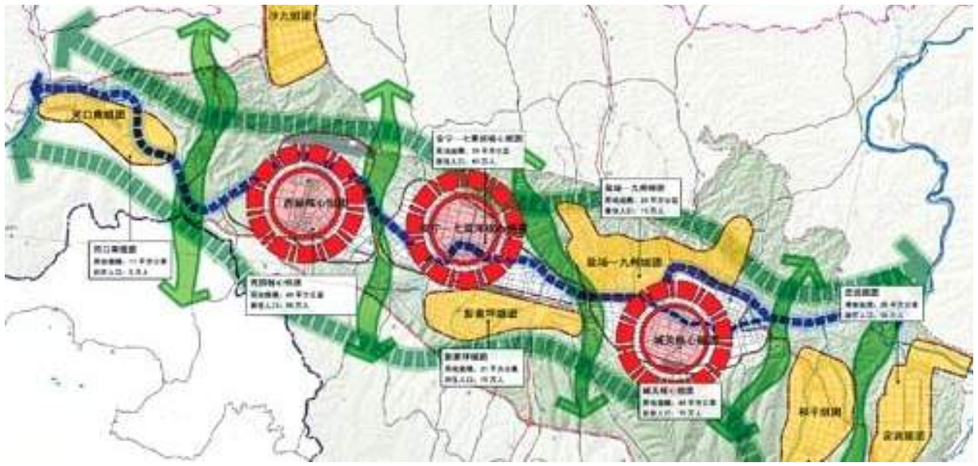


Figure The ecological structure of lanzhou city

Figure Ecological scenic spot protection construction planning of LanZhou

Revelation–

Learn from the experience of ecological of Lanzhou, China, Bidur can plant local trees, shrubs, and flowers in the surrounding mountains and important urban roads, such as Shorea robusta Gaertn. , Oak, and Terminalia catappa, which are economically beneficial. To prevent soil erosion, increase green coverage, beautify the urban ecological environment while gaining the economic benefits.

(2) Focus on the expanding flexibility of urban space, planning ecological security zone

Benchmarking Case–

Sorsogon, Philippine: Make flexible construction as a city ecological security background

We studied the case of Sorsogon in the Philippines. It emphasized the use of flexible construction as the background of urban ecological security. Sorsogon, Philippine faces long-term threats such as storms, droughts and sea-level rise, and suffers huge property losses every year.

The government proposes to build “elastic cities” based on climate change adaptation and disaster reduction, and delineates high-risk areas, is strictly prohibited all kinds of development and construction activities.

The government is proposing to build “elastic cities” based on climate change adaptation and disaster reduction. It has designated high-risk areas, prohibited all types of development and construction activities, protected urban built areas and basic farmland, and guided city to expand into safer inland areas. The construction of “elastic cities” reduced the destruction of natural disasters and saved US$3.3 million in post-disaster relocation costs for Sorsogon each year.

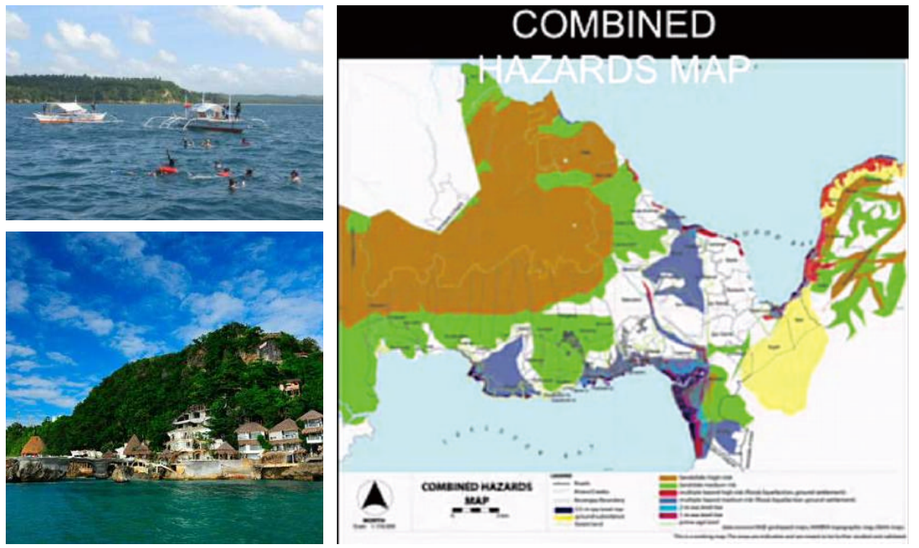


Figure Sorsogon city vulnerability partition

Revelation–

Learn from the "flexible city" experience of Sorsogon, Bidur must pay full attention to the construction reality that urban area is surrounded by mountains, close to the river, based on the ecological protection and construction of the adaptive derivation of urban security zoning, bypass the existence of disaster risk areas to designate urban centralized construction area, select the city expanding mode, promote the development of urban security.

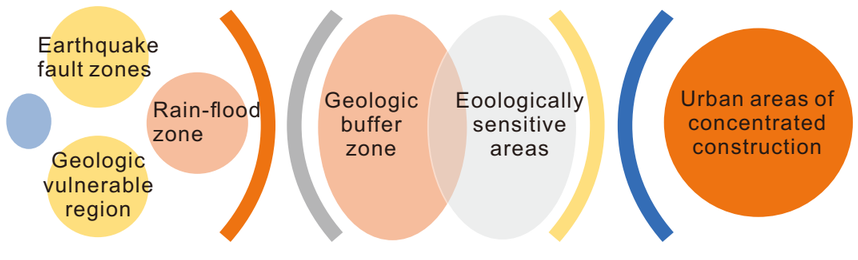


Fig . Ecological security pattern

3. Equal and shared services

Construct a regional pass that can conveniently contacts the domestic witn foreign regions and form urban transport system which is dominated by public transport; ensure the normal supply of water and electricity and proper treatment and reasonable discharge of garbage and wastewater; ensure that the citizen can have equal and convenient access to the services of medical treatment, education, culture, entertainment and social welfare.

(1) Construct convenient and completed municipal infrastructure with selection and priority

Benchmarking Case–

Wenchuan, China: promoting infrastructure reconstruction to promote post-disaster economic recovery with priority

After the 2008 China Wenchuan earthquake Wenchuan post-disaster reconstruction focused on facilities with weak original basic conditions and high economic dependence as the priority of reconstruction, effectively promote the protection of agricultural production of water conservancy facilities and strengthen the regional links of transport and communication facilities, which are "more input-output facilities," to promote the rapid recovery of post-disaster industrial economy.

Figure Wenchuan In The Aftermath Of The Disaster

Figure The Reconstructed Wenchuan

Revelation–

From the Chinese experience can be seen, infrastructure construction, as a key step in urbanization, is very important to the future development of Bidur.

In the reconstruction of Bidur, the focus on the protection of the original basic conditions are weak and high economic dependence of infrastructure could not only ensure the basic needs of the public, but also bring new investment and construction opportunities for economic and social development to lay a good foundation to Bidur.

(2) Build a completed-covered and shared public service system

Benchmarking Case—

Deyuan Town,China: promotion of public service facilities brought by City and Industry integration

Deyuan Town is located in the western Sichuan hinterland, an area of 30.9 square kilometers, located in the outskirts of Chengdu, and was originally a traditional agricultural town. The original commercial facilities in the township along the street distribution, cultural and educational and welfare and other service facilities can only basically meet the town 3000 resident population needs. In 2009, Foxconn Industrial Park settled to bring about 10 million industrial workers, changes in service demand led to the town's public service facilities for a comprehensive upgrade. In township a commercial street that brings together catering, clothing, entertainment, department store telecommunications, and electronic functions has been formed; two secondary schools, four primary schools and nine kindergartens were added; four health service centers were added; combined with the layout of Foxconn residential area a number of cultural and recreational facilities were formed. Most of the operating facilities are operated by the original residents, Realized the "integration of industry and city". The construction and development of Foxconn Industrial Park greatly promoted the construction of public service facilities in Deyuan Town and promoted the economic growth of Deyuan Town.

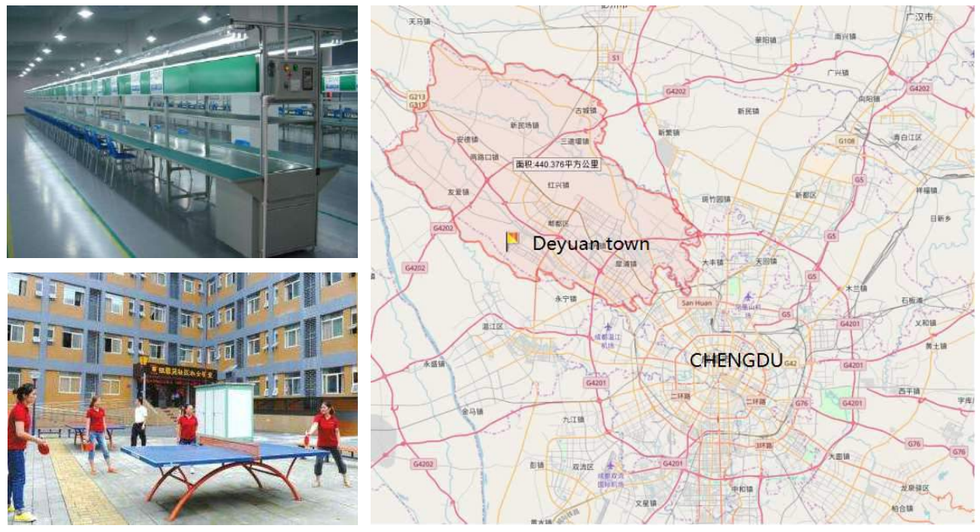


Fig. Public Service Facilities Of Deyuan Town

Revelation–

Bidur should seize the development opportunities, with the industrial development of the population, economic agglomeration to attract public service facilities layout, so as to promote the city industrial economy and the public life supporting the simultaneous development.

4.Harmonious and Inclusive Atmosphere

Build street parks and leisure places that are convenient to enter and attract people to stop so as to form an open and inclusive public space system; build a diversified space for religious activities to meet the cultural customs and demands for religious activities of citizens and tourists of different nationalities and religious belief.

(1) Create Open and Inclusive public space system

Benchmarking Case—

Medelling，Columbia: Improve public space and create inclusive environment

Medellin of Colombia was once plagued by social problems such as inequality and violent crime. In the 1990s, the government adopted the “Project of Urban Integration (PUI)” to plan a series of public spaces such as walking paths, small squares, street parks, libraries, community centers, and other public transportation sites. Connect the fragmented communities together so that low-income people can enjoy a better living environment and feel social identity. This will increase contact and exchange opportunities for people of different ethnic and religious backgrounds. The open and inclusive public space system transformed Medellin into a “city of science and technology” and was voted “the most innovative city in the world” by the International Urban Land Institute.

Fig. The results of the PUI project in Medellin

Revelation–

The public space provides a place for residents' social interactions to provide a venue for social group exchanges with diverse cultune backgrounds, so that residents of different incomes, ethnic groups, and religious backgrounds have more opportunities for exchanges, thereby reducing barriers and prejudice and enhancing residents' cultural identity.

Fig. Public Space Layout Vision

(2) Protect the rational and orderly distribution of religious culture

Benchmarking Case–

Lishui, China: Combined with the city public service facilities grading set religious and cultural space

There are 6% population believe in religion in Lishui China. With the acceleration of the urbanization process, population growth and economic upgrading, the contradiction between limited religious area, unreasonable spatial layout and the growing demand for religious activities is increasingly prominent.

In order to solve the "contradiction between supply and demand", Lishui combined with urban public service facilities to build municipal, regional and community religious activities and other three places of religious and cultural activities, respectively to meet the major religious rallies, general religious activities and daily religious activities such as demand.

Fig. Religious Space Layout Vision

Revelation–

The public space provides a place for residents' social interactions and to provide a venue for social group exchanges with diverse cultural backgrounds, so that residents of different incomes, ethnic groups, and religious backgrounds have more opportunities for exchanges, thereby reducing barriers and prejudice and enhancing residents' cultural identity.

Key religious space

Community religious space

Chapter III

Spatial Planning

- Judgment on urban development pattern 073
- Spatial layout planning 083
- Planning of the supporting system 089

I. Basic estimation of spatial development

(I) Construction land suitability evaluation

1. Establish a construction land evaluation system

Based on the current land use and development characteristics of Bidur, the SRTM 3D topographical data with 90m precision is used to analyze the natural and ecological conditions such as elevation, gradient and water of the whole city, the conditions of artificially constructed facilities like roads, and the use of urban construction land, villages, woodland, and cultivated land, thus evaluating the construction suitability of Bidur.

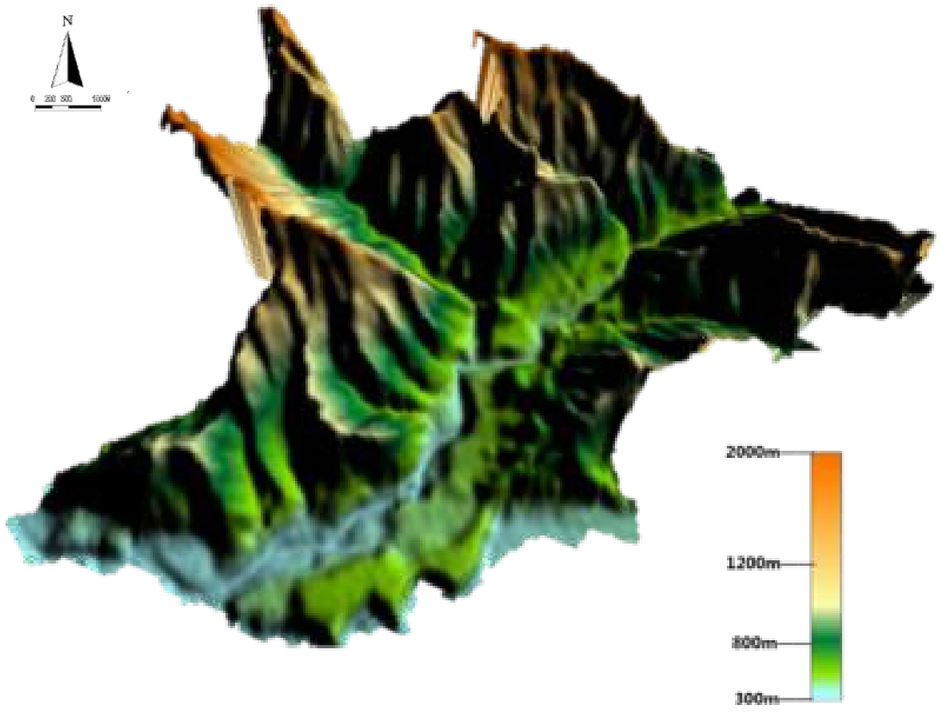


Figure Bidur agricultural production space

(Data source: SRTM 90M)

Elevation analysis: The elevation of mountains in Bidur ranges from 400m to 2,000m. Seventy percent of Bidur's land is over 600m in elevation. Generally, Bidur's terrain varies sharply, which greatly limits its urban construction space.

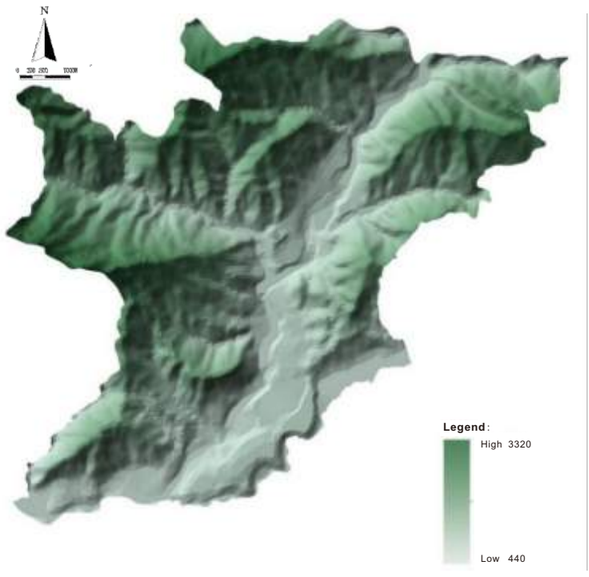


Figure Elevation analysis

(Data source: SRTM 90M)

Twenty-meter rise of water level is used as the limit for simulating the rise of the water level in Bidur. Based on this, it is preliminarily concluded that there is a risk of flooding in the area below 520 meters above sea level.

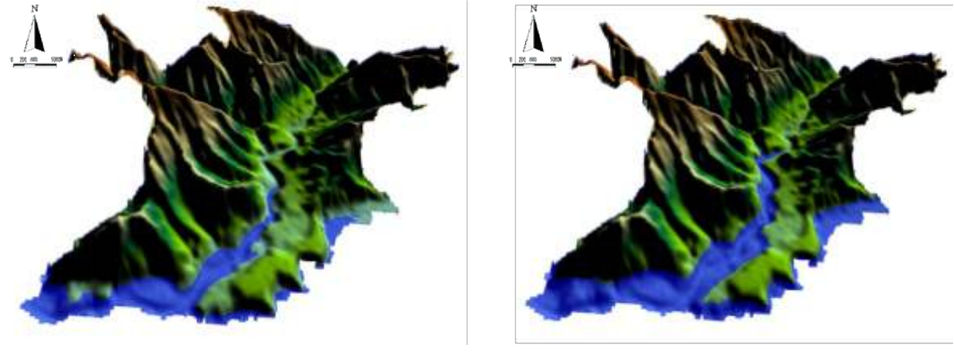


Figure Simulation analysis of inundated Bidur

(Data source: SRTM 90M)

Slope analysis: The slope of the river valley area of central Bidur is gentle. The river valley area is surrounded by steep mountains on all four sides, with the maximum slope reaching 67°. Most parts of the city are not suitable for urban construction.

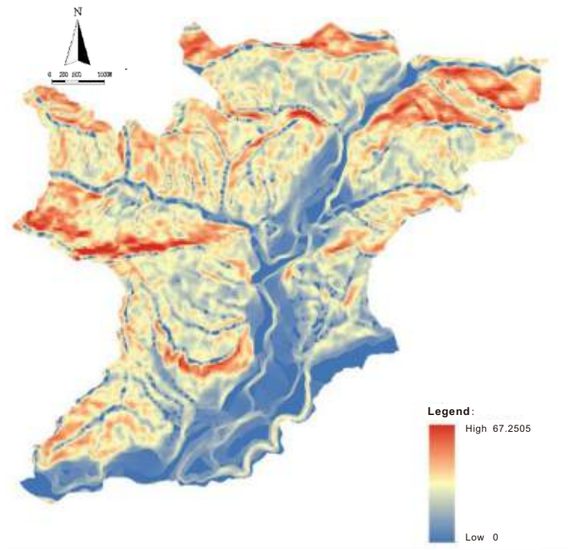


Figure Slope analysis

(Data source: SRTM 90M)

Analysis of distance between the downtown and roads: Road accessibility is analyzed based on the distance between the downtown and the main existing roads. The longest horizontal distance between the downtown and a road is 5,153 m.

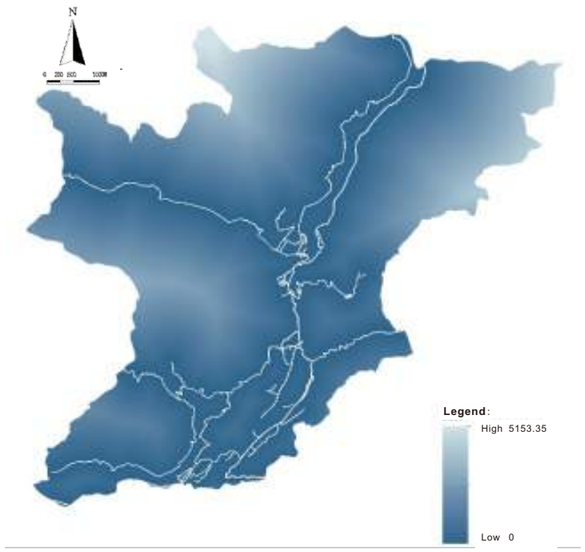


Figure Analysis of distance between the downtown and roads

(Data source: drawn by the author)

Analysis of distance between the downtown and waters: Accessibility to waters is analyzed based on the distance between the downtown and waters. The longest horizontal distance between the downtown to a water body is 6,587 m.

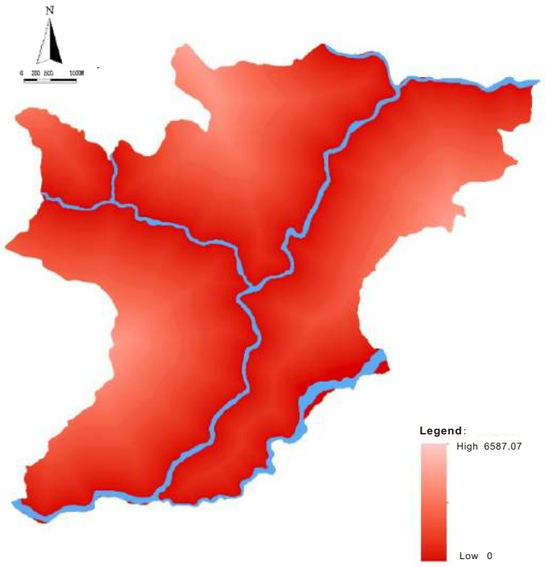


Figure Analysis of distance between the downtown and waters

(Data source: drawn by the author)

The elevation, slope, distance between the downtown and waters, distance between the downtown and roads, and land utilization are classified and evaluated, based on the relevant documents, domestic and foreign practices and experience, and construction suitability in terms of the aforesaid factors.

Table Evaluation of various factors

Evaluation factor	Level of suitability	Classification	Assignment
Elevation	Very suitable	700-900 m	10
		520-700 m	9
	Suitable	900-1100 m	8
		1100-1300 m	7
		1300-1500 m	6
	Less suitable	1500-1700 m	5
		1700-2000 m	4
	Unsuitable	440-520 m	2

Evaluation factor	Level of suitability	Classification	Assignment
Slope	Very suitable	0°-8°	10
	Suitable	8°-12°	9
		12°-15°	8
	Less suitable	15°-20°	7
		20°-25°	6
	Unsuitable	25°-30°	5
		30°-35°	4
	Very unsuitable	35°-45°	3
		45°-55°	2
		55°-70°	1
Water	Very suitable	50-500 m	10
		500-1000 m	9
	Suitable	1000-1500 m	8
		1500-2000 m	7
	Less suitable	2000-2500 m	6
		2500-3000 m	5
	Unsuitable	3000-3500 m	4
		3500-5000 m	3
	Very unsuitable	5000-7000 m	2
		0-50 m	1
Road	Very suitable	0-500 m	10
		500-1000 m	9
	Suitable	1000-1500 m	8
		1500-2000 m	7
	Less suitable	2000-2500 m	6
		2500-3000 m	5
	Unsuitable	3000-3500 m	4
		3500-4000 m	3
	Very unsuitable	4000-5000 m	2
		5000-6000 m	1
Land	Very suitable	Town	10
		Village	9
	Suitable	Plain area for agricultural facilities	7
	Less suitable	Residential area	6
	Unsuitable	Terrace	4
		Aqueduct	3
	Very unsuitable	Woodland	2
		River	1

The results of the evaluation of each factor are shown in the figure below:

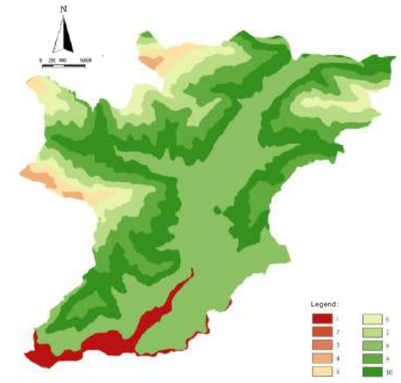


Figure Elevation classification evaluation

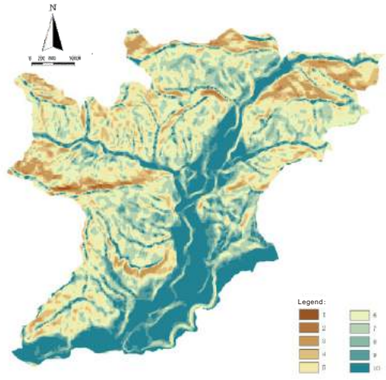


Figure Slope classification evaluation

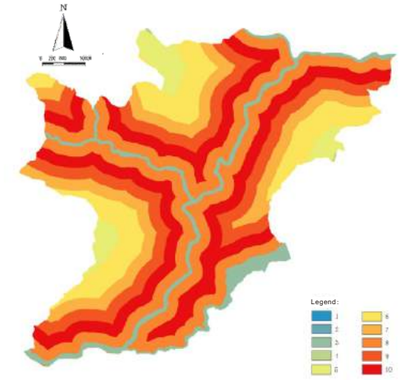


Figure Water classification evaluation

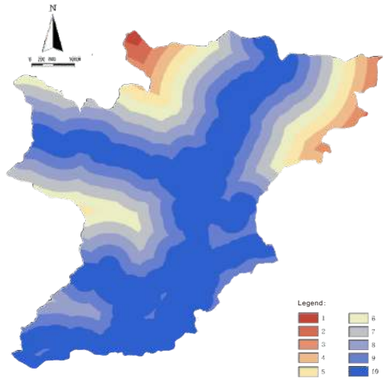


Figure Road classification evaluation

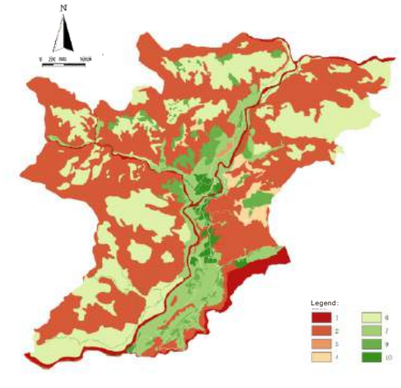


Figure Land use classification evaluation

Based on the weighted stacking of all factors, construction-prohibited areas, construction-restricted areas, the areas that can be constructed, and the areas suitable for construction are preliminarily delimited in Bidur.

Construction-prohibited areas mainly include the areas that have high altitude or high slopes, the city's flood retarding basins, and the highly ecologically sensitive areas; in these areas, construction is prohibited.

Construction-restricted areas mainly include terraces, woodlands, and other areas where construction should be restricted.

Areas that can be constructed are agroforestry areas with gentle slopes; in these areas moderate construction can be carried out on the condition that construction does not affect ecological security and ecological functions.

Areas suitable for construction are the areas suitable for centralized urban development and construction.

Table Weight distribution for evaluation factors

Evaluation factor	Weight
Elevation	0.1
Slope	0.25
Water	0.15
Road	0.15
Land	0.35

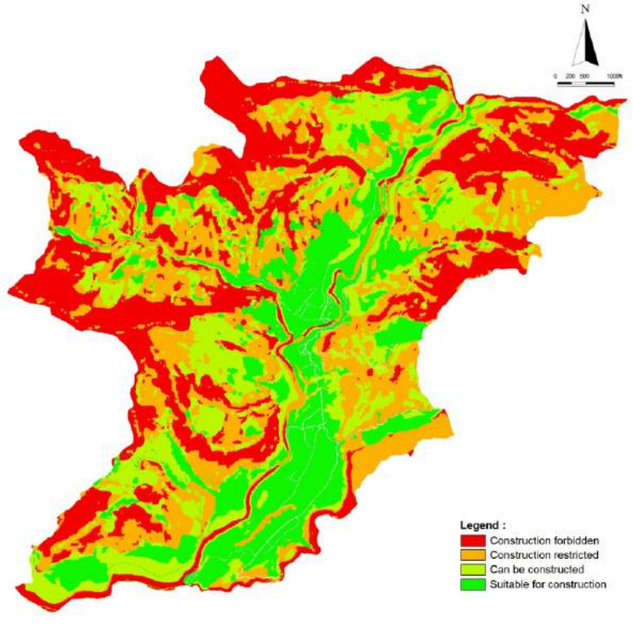


Figure Land suitability evaluation

2. Clear ecological function zoning

Based on the analysis and evaluation of construction suitability, the needs for ecological conservation and ecosystem restoration, and the plan for the future development of the city, the urban development boundaries and ecological bottom-line areas are delimited. The city is divided into ecological bottom-line areas, ecological restoration areas, agroforestry areas, urban development areas, agricultural community guidance areas, and water areas.

The ecological bottom line area covers 4,699.59 hectares, ecological restoration area covers 1,545.81 hectares, agroforestry area covers 4,116.76 hectares, urban development area covers 1,388.63 hectares, agricultural community guidance area covers 964.28 hectares and water area covers 489.67 hectares.

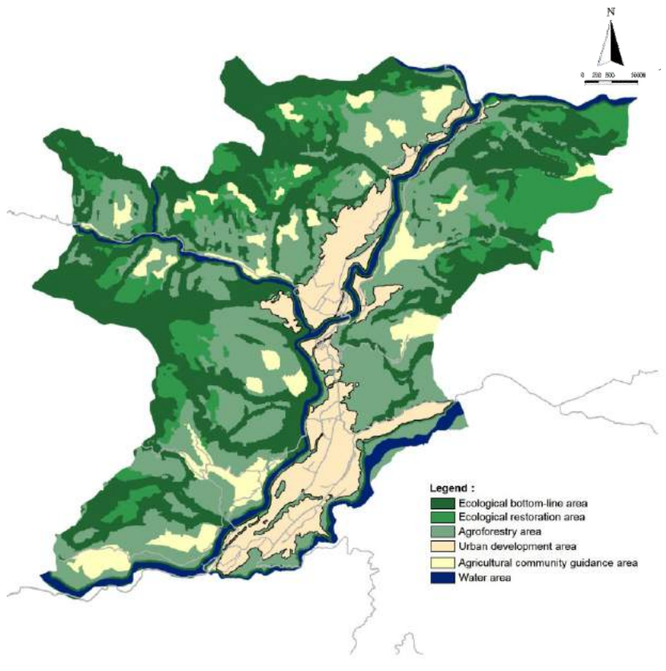


Figure Ecological function zoning

Table Bidur's ecological function zoning and area statistics

Zoning	Area (hectare)
Ecological bottom-line area	4699.59
Ecological restoration area	1545.81
Agroforestry area	4116.76
Urban development area	1388.63
Agricultural community guidance area	964.28
Water area	490.44
Total	13205.51

(II) Analysis of spatial expansion direction

1.Stimulated external development

Reconstruction of China-Nepal Channel will serve to connect Bidur with Sichuan & Tibet of China. As the China-Nepal channel is being rebuilt, Gyirong Port will be an important gateway linking China and Nepal again. Bidur can take the advantage of its location in the area of the important channel linking Gyirong and Nepal and use logistics and the influx of people to develop its logistics, business, and border trade. Moreover, a business logistics cluster can form in north Bidur to stimulate the development of the areas around Gyirong Port.

The tunnel construction will promote eastward expansion of Bidur and the cooperation between Bidur and the city agglomeration of Kathmandu. The proposed tunnel through the mountain will halve the time used for traveling between Bidur and Kathmandu, allowing Bidur to share as a satellite city the functions of the urban agglomeration across the Kathmandu Valley. The urban agglomeration's strengths in economy, science, education, and industries will stimulate the upgrading of industries in Bidur.Its connection with Kathmandu in the east will facilitate the formation of a new industrial cluster in east Bidur and enhance the cooperation between Bidur and the urban agglomeration.

2. Driven by internal development

Enhancing the functions of the urban agglomeration consisting of three major cities, the southern hinterland ushers in opportunities for development. Bidur's existing construction land is concentrated in the valley plains between the "three mountains".From north to south, three city clusters centering round Trisuli, Bidur, and Battar respectively have formed. The planning should take into full account settlement patterns and urban functions, consolidate business in the northern region, public services in the central region, and emerging industries in the southern region, and strengthen the characteristics of each cluster. Moreover, the planning should comply with the city's southern extension trend and utilize the large area of land in the south that is suitable for construction and can be used to develop industrial clusters.

Historical sites served to boost the development of tourism services. Relying on important historical sites such as Nuwakot Palace Complex, Bhairabi Temple, and Jalapa Devi Temple, two major tourist areas for cultural tourism will form in the south and north respectively as a way to develop tourism services and business.

The focus of agricultural development will shift to large-scale development with distinctive characteristics with a view to accelerating village agglomeration. Based on its existing agriculture and aquaculture, Bidur will develop specialty agriculture in its surrounding mountainous areas and form large-scale agricultural production clusters, facilitating the agglomeration of scattered villages.

3. Functional zoning throughout Bidur

Based on the analysis of ecological function zoning and spatial expansion directions, Bidur is divided by its functions into different areas. The ecological bottom-line area is an area where construction is forbidden and the area where the bottom line for urban development is; the ecological restoration area is an area that has been disrupted due to production and human activities and needs to be restored; the agroforestry area is generally farmland and woodland development area; the urban development area is divided into multiple functional groups by the ecological restoration area; peripherally scattered residential areas have formed a village agglomeration,which is surrounded by large-scale agricultural production areas.

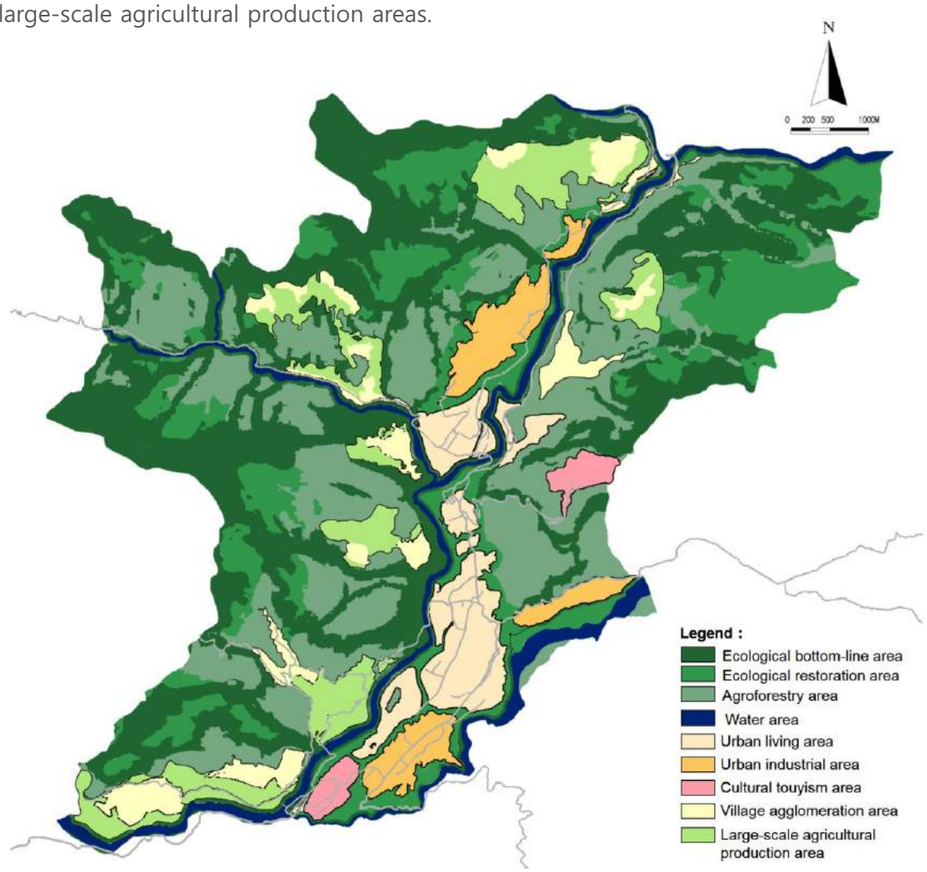


Figure Functional zoning throughout Bidur

II. Urban development projection

(I) Trend analysis of population growth

The improvement of traffic conditions and the establishment of an industrial system become the major impetus for the leap-forward growth of Bidur's population: According to the international experience in the development of Ruili and other international port cities, the opportunities for industrial development brought about by the improvement of external traffic conditions will create a large number of jobs and promote the influx of people seeking jobs. This will become the major impetus for the leap-forward growth of Bidur's population. Moreover, the influx of people into Bidur will in turn prompt the city to improve its public services and accelerate infrastructure construction. This will not only improve the level of the city's service, but also promote the influx of more people into the city, allowing the city's population to grow continuously.

The environmental and resource capacity becomes a main constraint on the growth of Bidur's population: The major constraints on the growth of Bidur's population will include the finite areas in Bidur that are suitable for construction; the water bodies, mountains, and cultivated land that remain to be properly utilized; and the ecological resources and environment in urgent need of protection.

(II) Population projection

According to the above analysis, the natural growth of Bidur's population, the influx of people into the city due to traffic and industry development, and the constraint caused by environmental and resource capacity are the factors directly related to the growth of Bidur's population.

This population projection primarily involves three areas: population projection based on the natural growth of population; population projection based on industrial development; and population projection based on resource capacity.

1. Population projection based on the natural growth of population

(1) United Nations Law

According to Nepal's Population Projection 2011-2031, the total population of Nuwakot will reach 291,045 in 2022 and 307,804 in 2035; the average urbanization rate of Nepal will reach 23.41% in 2022 and 33.76% in 2035. The total population of Bidur will equal the urban population of Nuwakot. According to the above projection, the total population of Bidur is expected to reach 68,134 in 2022 and 103,915 in 2035.

Table Population projection for Nuwakot
(data source: Nepal's Population Projection (2011-2031))

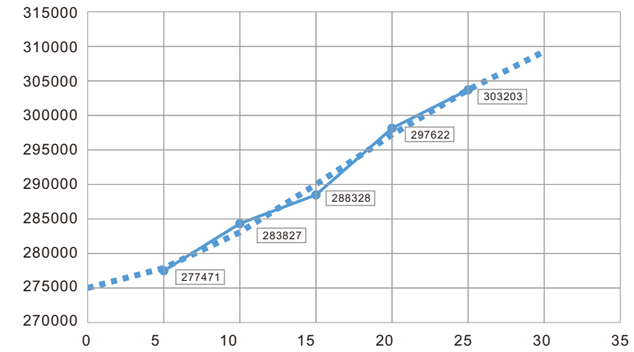
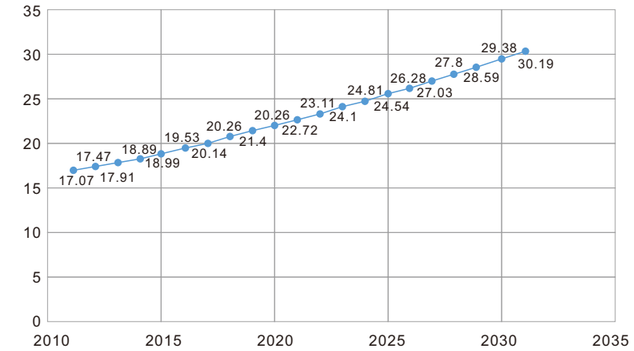


Table Average urbanization rate projection for Nepal
(data source: Nepal's Population Projection (2011-2031))



(2) Natural growth rate method

Formula for population projection by using the natural population growth rate is as follows:

$P=P0(1+K)^N$

Of which, P denotes total population in the population projection period, P0 denotes the total population of the base year of the projection, K denotes the annual population growth rate, and N denotes the projection period (number of years).

In the decade between 2001 and 2011, the original total population of Bidur had increased from 21,193 to 26,750, with an increase of 5,557 and an average annual increase of 2.36%. Using 2011 (Bidur's total population was 54,351 in 2011) as the base year for population projection, the total population of Bidur is expected to reach 70,177 in 2022 and 94,916 in 2035.

2. Population projection based on industry development

Formula for population projection by using the economic resilience factor of industry development is as follows:

$Pn=P0(1+v`)^n$, of which $v`=V`/K$

Of which, Pn denotes population size in the population projection period, P0 denotes the urban population size in the base year, n denotes the projection period, v` denotes the average population growth rate in the projection period, V` denotes the average economic growth rate in the projection period, and K denotes the population elasticity coefficient of economic growth.

According to data from the International Monetary Fund, the rates of economic growth in Nepal and its neighboring countries are as follows:

Table The rates of economic growth in Nepal and its neighboring countries

Countries	2012	2013	2014	2015	Projection		
					2016	2017	2021
Bangladesh	6.3	6.0	6.3	6.4	6.6	6.9	6.5
Bhutan	6.0	4.9	6.4	7.7	8.4	8.6	7.5
India	5.6	6.6	7.2	7.3	7.5	7.5	7.8
Maldives	2.5	4.7	6.5	1.9	3.5	3.9	4.7
Nepal	4.8	4.1	5.4	3.4	0.5	4.5	3.8
Sri Lanka	9.1	3.4	4.5	5.2	5.0	5.0	5.0
Pakistan	3.8	3.7	4.0	4.2	4.5	4.7	5.5
Afganistan	14.0	3.9	1.3	1.5	2.0	3.0	4.0
China	7.7	7.7	7.3	6.9	6.5	6.2	6.0

According to the table, Nepal's economy grew at an average annual rate of 4.4% between 2012 and 2017. Given that Bidur's current economic growth rate is 4.4% and its population growth rate is 2.36% in the corresponding period, the total population in 2017 will be 62,083, K=1.86.

In view of the opportunities for industry development that will be brought to Bidur by improved transportation and location conditions, the average annual rate of growth for Bidur's economy is expected to reach 8% between 2017 through 2022, which is slightly higher than Nepal's economic growth rate (7.5%) in 2017. In consideration of its strategic planning and positioning, Bidur will not only develop into a trade portal between China's Tibet and Nepal's Kathmandu by 2035, but also become a satellite city in the Kathmandu metropolitan area. With reference to China's rapid economic growth since its economic reform, the average annual rate of growth for Bidur's economy is expected to reach 10% between 2023 and 2035. Given the formula and that the base year for population projection is 2017 when the total population was 62,483, Bidur's population is expected to reach 77,123 in 2022 and 152,232 in 2035.

3. Population projection based on resource capacity

(1) Population projection based on construction land capacity

According to the results of construction suitability evaluation for Bidur, the urban development area and the agricultural community guidance area are suitable for construction, with a combined area of 2,352.91 hectares.

According to the analysis of current land utilization, the per capita area of construction land in Bidur is 215.13 m2/person. According to relevant data, the per capita area of construction land in cities in countries of different income levels is shown in the table below:

Table: the per capita area of construction land in cities with their respective population of over 500,000 in middle-or low-income countries (m^2/person)

Middle-or low-income countries or regions	
Europe: except Russia	211
Mainland China	95
India	64
Russia	190
Asia: except China, India, and Russia	103
Africa	122
Latin American Countries	150
Average	109

According to relevant data, the per capita area of construction land in middle-or low-income countries is 109m2/person. In consideration of current urban construction in Bidur and its future development, the per capita area of construction land in Bidur is expected to be 120-150 m2/person and the population projection based on construction land capacity is shown in the table below. The suitable population based on construction land ranges from 160,000 to 190,000.

Table Population projection based on construction land capacity

	150 m^2/person	160 m^2/person	180 m^2/person
Area of land suitable for construction is 2,352.91 hectares	190,000 people	170,000 people	160,000 people

(2) Population projection based on cultivated land resources

The formula for population projection based on cultivated land resources is as follows:

P=F/ (v*g)

Of which, P denotes the maximum population carrying capacity (population) of cultivated land, F denotes the area of the cultivated land in the target year (hm^2), v denotes the self-sufficiency rate in terms of grain, and g denotes the per capita area of the cultivated land reserved for guaranteeing food security (hm^2/person). The Food and Agriculture Organization of the United Nations (UNFAO) determined that the per capita area of the reserved cultivated land should be no less than 0.053hm2 /person.

According to the results of construction suitability evaluation for Bidur, the maximum arable land area is the agroforestry area and the agricultural community guidance area, with a combined area of 5,081.04 hectares. Based on Nepal's current social development, Bidur's self-sufficiency rate in terms of grain is expected to be 100% in 2022 and 60% to 80% in 2035 when the focus of Bidur's industries will shift from the primary industry to the secondary and tertiary industries and some of grain will be supplied by Bidur's surrounding areas.

Based on the formula, the maximum population under the constraint of Bidur's cultivated land resources is 100,000 in the short term and 120,000 to 160,000 in the long term.

Table Population projection based on cultivated land resources

	Self-sufficiency rate		
	100%	80%	60%
Population cap projection	100,000 people	120,000 people	160,000 people

4. Population projection result

Based on industry development, resource capacity, and the natural growth of population, population projection for Bidur is as follows:

Table Summary of population projection for Bidur

Population projection method		2022	2035
Based on the natural growth of population	Based on United Nations Law	68,000 people	104,000 people
	Natural growth method	61,000 people	83,000 people
Based on industry development		67,000 people	140,000 people
Based on resource capacity	Based on construction land resources	Population cap: 130,000 to 160,000	
	Based on cultivated land resources	Population cap: 100,000	Population cap: 120,000 to 160,000

In view of the above analysis and based on the "Cannikin Law", it is predicted that the total population of Bidur by 2022 will be 70,000 to 80,000 and the total population by 2035 will be 100,000 to 120,000.

(III) Prediction on area of construction land

In consideration of relevant international standards, it is planned that the per capita area of construction land in Bidur will be 130 to 150m2/person in 2022 and 120 to 140m2/person in 2035 when the city will embark on intensive development. Area of construction land in Bidur will be predicted based on its population projection.

Prediction on area of construction land based on population: area of construction land in Bidur is predicted to be 910 to 1,200 hectares in 2022 and 1,200 to 1,680 hectares in 2035.

Table Prediction on area of construction land in Bidur

2022			2035		
Total population (10,000 people)		6-7	Total population (10,000 people)		8-12
Area of construction land	160 m^2/person	960-1120 hectares	**Area of construction land**	150 m^2/person	1200-1800 hectares
	170 m^2/person	1020-1190 hectares		160 m^2/person	1280-1920 hectares
	180 m^2/person	1080-1260 hectares		170 m^2/person	1360-2040 hectares

III. Spatial layout planning

(I) Center system

Based on the structure of strategic planning space and functional zoning of the whole city, it is planned to form the three-level center system consisting of **"the city center, the district center, and the agricultural community center"**.

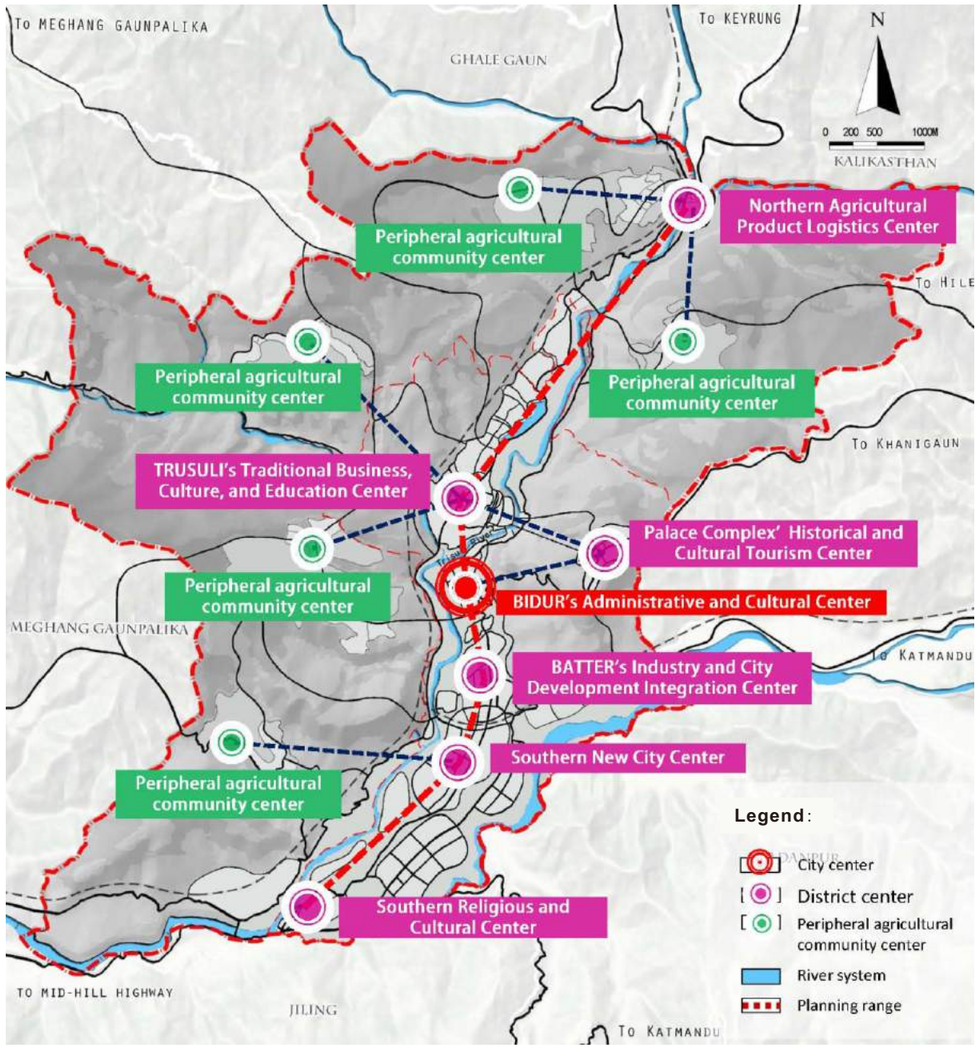


Figure Bidur's three-level center system

City center: The city center is arranged in BIDUR cluster. It is the administrative and cultural center of the city.

Valley district center: It is arranged in TRUSULI's traditional business cluster, BATTER's new city cluster, Nuwakot palace complex cluster, and southern new city cluster. It is an integrated service center for all major function clusters.

Peripheral agricultural community center: The agricultural community will be formed on the peripheral of the city and the community service center will be arranged.

Table Bidur's urban service functions and scale

Center system	Quantity (number)	Center	Urban service function
City center	1	BIDUR's Administrative and Cultural Center	The city's political, financial and service centers
District center	6	TRUSULI's Traditional Business, Culture, and Education Center	Traditional business and border trade logistics center, and culture and education center
		Palace Complex' Historical and Cultural Tourism Center	Cultural tourism center featuring historical culture, ecotourism, and homestay
		BATTER's Industry and City Development Integration Center	A new city service center featuring the integration of residence, e-commerce,hotels, and public services
		Southern New City Center	New city's business culture and service center for serving the southern new city, industrial clusters, and eastern industrial clusters
		Northern Agricultural Product Logistics Center	Small business and border/frontier trade cluster
		Southern Religious and Cultural Center	Bidur's southern religious, cultural, and tourist service center
Peripheral agricultural community center	5	Charghare Agricultural Community Center	Community CenterCommunity center for serving agricultural tourism, agricultural compound production, farmers' lives
		Kalyanpur Agricultural Community Center	
		Tupche Agricultural Community Center	
		Gerkhu Agricultural Community Center	
		Khadag Bhanjyang Agricultural Community Center	
Total			

(II) Land use layout

1. Value orientation

Organic growth: Followed the historical growth pattern a city should be developed from the mountains towards the plain and along the river from north to south to extend the urban space development logic.

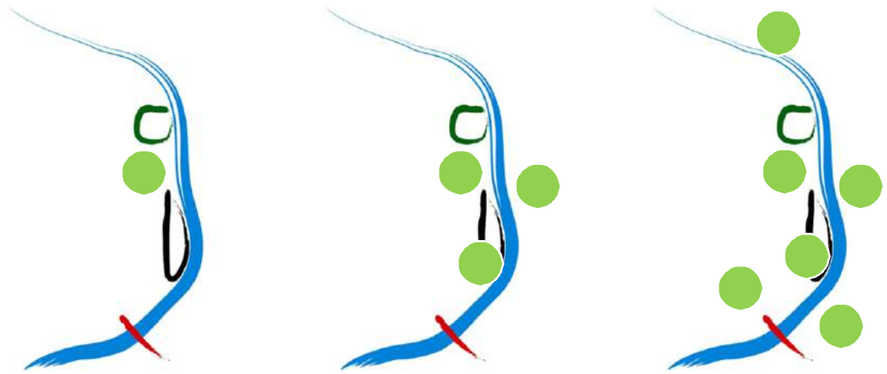


Figure Schematic diagram of organic growth model

Elastic cluster: Respecting the natural and ecological background of the city, arranging the functional clusters, and promoting the harmonious coexistence and elastic growth of the city and the nature

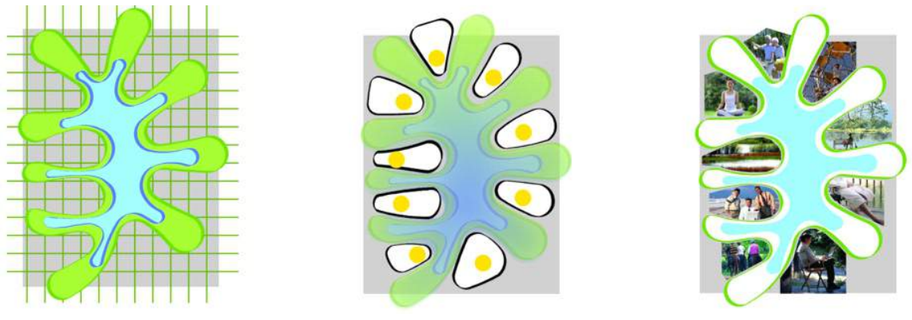


Figure Schematic diagram of the concept of elastic clusters

Joint thriving of old and new city areas: Protecting distinctive historical resources, developing new functions, and planing old and new cities and tradition and modernity in an integrated manner, so as to create a city picture in which both old and new city areas thrive

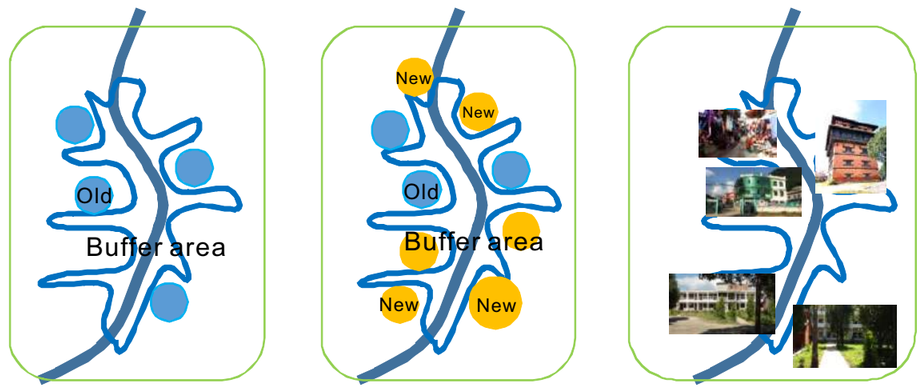


Figure Schematic diagram of the joint thriving of old and new city areas

2. Spatial structure

It is planned to form a general spatial structure with two level, namely the river valley "concentrated construction area" + "large-scale agricultural community" in the mountains, and "network of one belt, double T expansion, two zones, seven sub-area and five communities".

"Concentrated construction area" refers to the concentrated city development area formed along the valley plain; "large-scale agricultural community" refers to the area of large scale agricultural production by taking advantage of the agricultural resources in the mountains;

"One belt" refers to the concentrated urban development belt formed along Pasang Iaahmu Highway and boasting the functions of the city;

"Double T" refers to the eastward expansion belt which is vertical to Pasang Iaahmu Highway and connects the tunnel road of Kathmandu and the westward expansion belt which is vertical to Pasang Iaahmu Highway and connects the Meghang Gaunpalika region;

"Two zones" refers to the zone of historic town style and features formed by Bidur, Trusuli and Nuwakot palace area and other areas of historical style and the new city area formed by Batter, southern industrial area and other emerging clusters;

"Seven sub-area" refers to the administrative and financial sub-area formed by relying on Bidur cluster, the business service sub-area formed by relying on Trusuli cluster, residential service sub-area formed by relying on Batter cluster, two cultural tourist clusters formed by relying on the palace, temples and other historical relics of Nuwakot cluster and Devighat cluster, the trade and logistics sub-area in the north that serves the logistics from and to the Gyirong Port and the industrial production sub-area in the south that is formed by relying on the advantageous land resources;

"Five communities" refers to the five large scale agricultural production communities: Charghare, Kalyanpur, Tupche, Gerkhu, and Khadag bhanjyang.

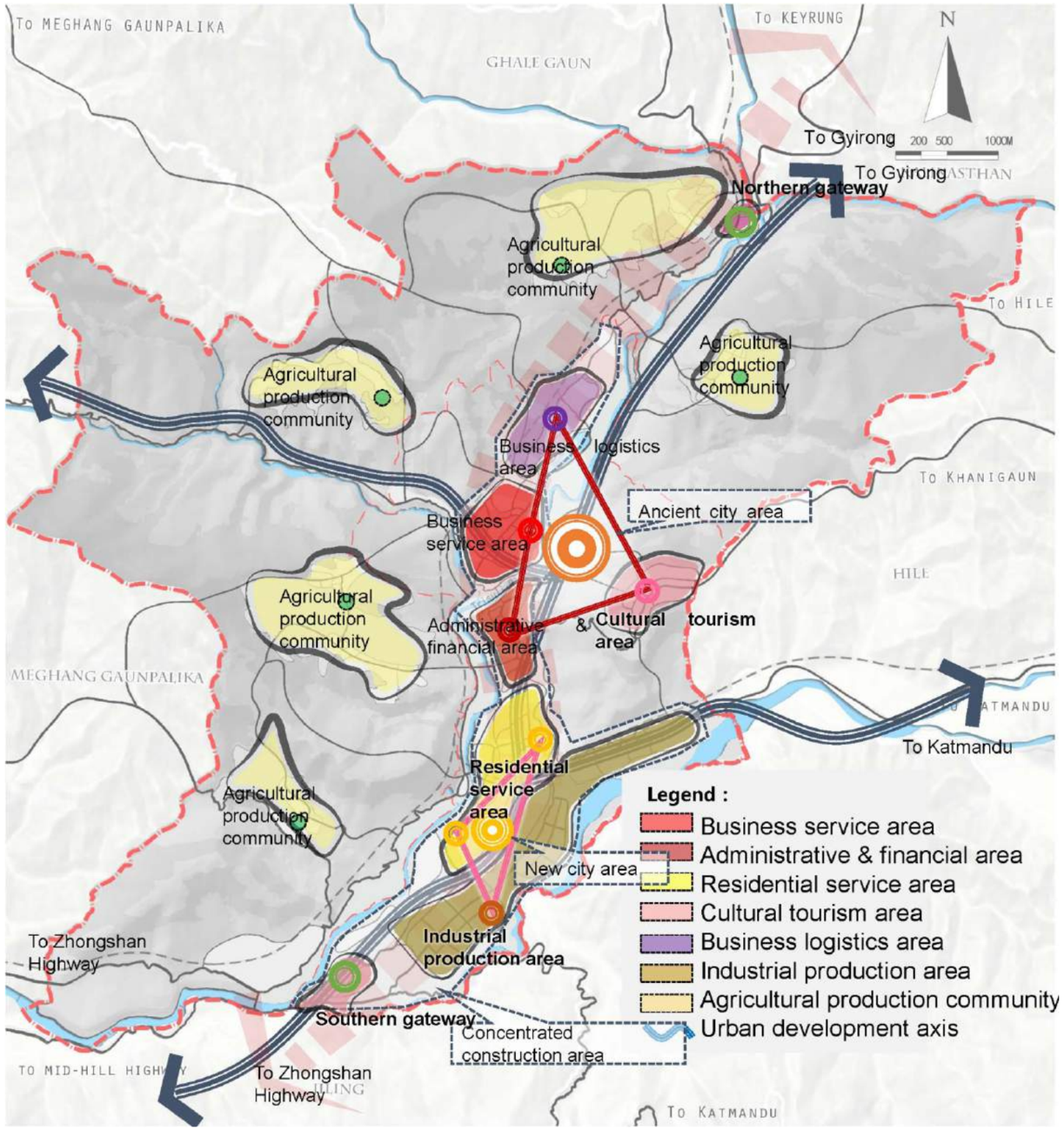


Figure Spatial structure planning

3. Land use layout

Plans should be devised based on the space strategy research for land use and the concept of spatial layout, in order to more clearly guide the future development of Bidur and classify land use.Urban functional areas and ecological functional areas should be introduced to Bidur. Urban functional areas include administrative area, living area, business and trade area, logistics area, industry area, historical cultural area, public service facility area, special management area, infrastructure area, urban parks, and elastic development area. Ecological function areas include mountain forest area, ecological restoration valley, planting area, and water area.Some functional areas can be further divided based on the actual demand for land use. See the table below for the classification, scale and layout of functional areas:

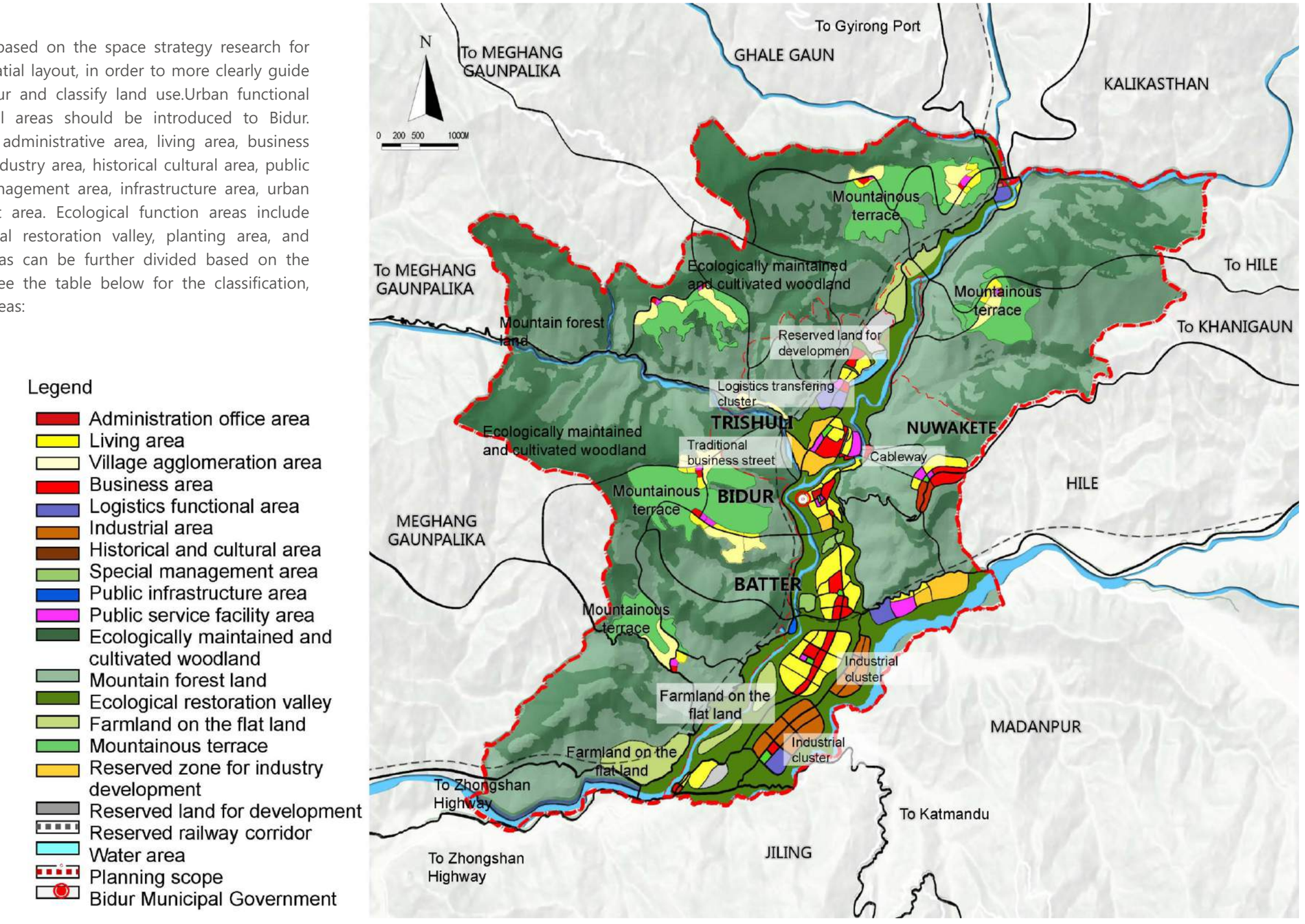


Figure Layout of land use in Bidur

Tab. Schedule of functional zoning of Bidur

Classification of functional zone	Name of the functional zone		Contents	Area (hectare)
Urban functional zone	Administration area		Functional area for the government's centralized working	4.94
	Living area	Urban residential area	Concentrated urban residential area	375.77
		Village agglomeration area	The area for concentrated self-construction of houses by the villagers	199.02
	Business and trade area		The area featuring the integration of the traditional business and trade, the emerging business and trade, and the business services	135.06
	Logistics area		Logistics warehousing and transfer area	101.84
	Industry area		Processing and industrial manufacturing area	168.78
	Historical and cultural area		The area of architectural complex with rich historical and cultural connotation	18.04
	Public service facility area		Including the functions of school, hospital, culture and education	63.6
	Special management area	Military camp	Army station	10.69
		Prison	Prison	11.65
	Infrastructure area		Including the area for hydropower station, water treatment plant, and garbage treatment plant	4.07
	Urban park		Central greenland and centralized open space for activities in the city	18.84
	Elastic development area	Reserved area for industry development	The reserved area for urban development in the future, with no restrictions on the functions	70.69
		The reserved area for long-term development	The urban development area retained for long-term development	100.46
	Total			**1288.98**
Ecological functional areas	Mountain forest area	Ecological forest maintenance and cultivation land	Areas where human activities are prohibited and mountains are maintained, cultivated, and reinforced	9181.83
		Mountain forest land	Areas where human activities are controlled and mountain restoration is recommended	
	Ecological restoration valley		Slope of the concentrated construction area, space area of table land, urban safe isolation and protection area, slope restoration, greening and beautifying	944.22
	Planting area	Farmland on flat land	The planting area on flat land with gentler slope and lower elevation	293.58
		Mountainous terrace	The planting area in the mountains that is formed by taking advantage of the mountainous topography	958.79
	Water area		Rivers and lakes	517.6
	Total			**11916.02**
Total				**13205**

(III) Supporting system

1. Population distribution--building a diverse, inclusive and harmonious industrial city community

(1) Spatial distribution of population

In consideration of the population agglomeration effect brought by the industry development and traffic, it is planned that more than 65% of total population will inhabit Bidur's river valley concentrated construction area, 20% of total population will reside in the large-scale agricultural community in the mountains, and another 15% will scatter in the mountainous areas by 2035.

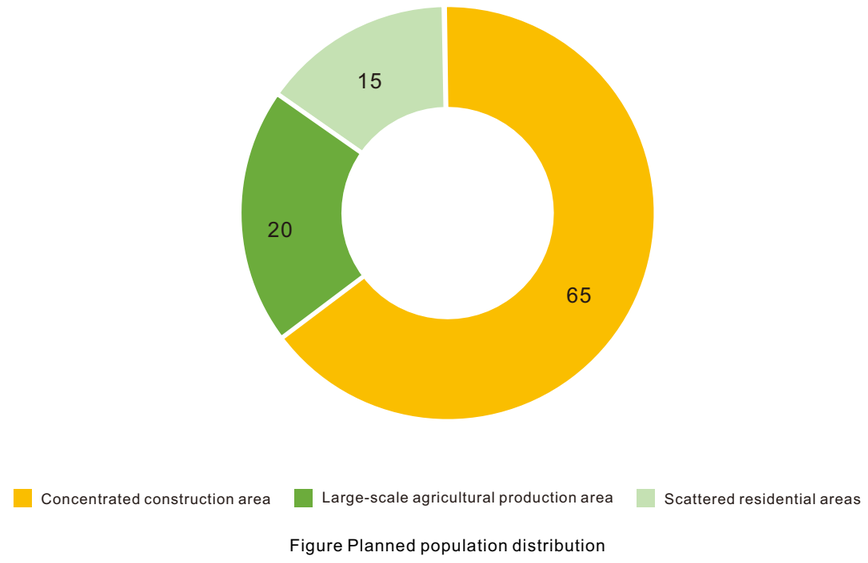


Figure Planned population distribution

According to the population projection, the permanent population of Bidur will reach 100,000 by 2035. Calculating as per the construction land indicator of the concentrated construction area as 120m2/person and the construction land indicators of the large-scale agricultural communities as 140m2/person, the residents of each cluster are distributed as follows:

Tab. Distribution of the planned permanent residents of Bidur in 2035

Region	Current population	Planned population		
		Total population	Population in each cluster	
Concentrated construction area (Bidur)	26750	65000	Bidur	5000
			Trusuli	15000
			Batter	30000
			Palace cluster	5000
			Devighat	4000
			Southern Industrial Cluster	3000
			Northern Industrial Cluster	3000

Region	Current population	Planned population		
		Total population	Population of the agricultural communities	The scattered population
Charghare	5419	6900	3900	3000
Kalyanpur	5722	7200	4100	3100
Tupche	5286	6700	3800	2900
Gerkhu	6382	8100	4600	3500
Khadag Bhanjyang	4792	6100	3500	2600
Total	27601	35000	20000	15000

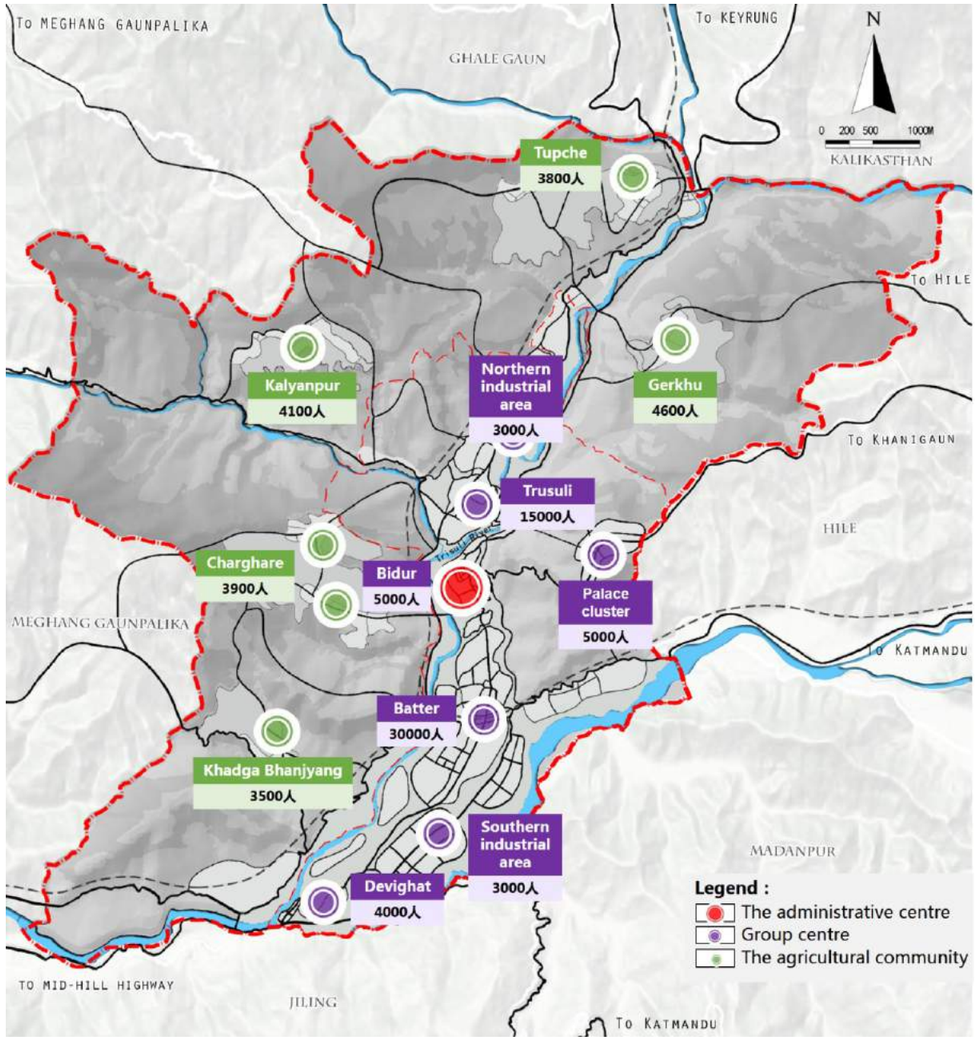


Figure The planned spatial distribution of population for Bidur in 2035

(2) Distribution of employed population

In consideration of relevant strategic planning research, Bidur will focus on drawing people to industries such as logistics, business, cultural tourism, agricultural cultivation and processing, hydroelectric power, and low-polluting industry. Based on the fact that the young adults of Bidur now account for 40% of its total population, it is planned that the employed population of Bidur in 2035 will be about 40,000 (accounting for 40% of the total population). Based on Guide for Overseas Investment and Cooperation by Country (Region)-Nepal (2017), the ratio of the three industries of Nepal in 2017 was 30:14:56. It is planned that the proportion of the tertiary industry in the three-level industries of Bidur will be increased while the proportion of the primary industry will be reduced by 2035, forming an industrial structure with ratio of 15:30:60. On this basis, of the employed population planned, 15% engage in agriculture, 25% engage in industries, 45% engage in specialized services, and 15% engage in technical services. Bidur andBatter clusters focus on drawing people specializing in services to administrative management, life services, and business services; Trusuli cluster focuses on drawing people specializing in services to logistics and trade services and cultural tourism services; Nuwakot Durbar and Devighat clusters focus on drawing people specializing in services to cultural tourism services and life services; northern logistics cluster mainly draws to the area the industrial workers and technical service personnel in the industries related to hydroelectric power and logistics; southern industrial cluster mainly draws to the area the industrial workers and technical service personnel in the industries related to low-pollution industries; peripheral agricultural communities mainly draw agricultural workers.

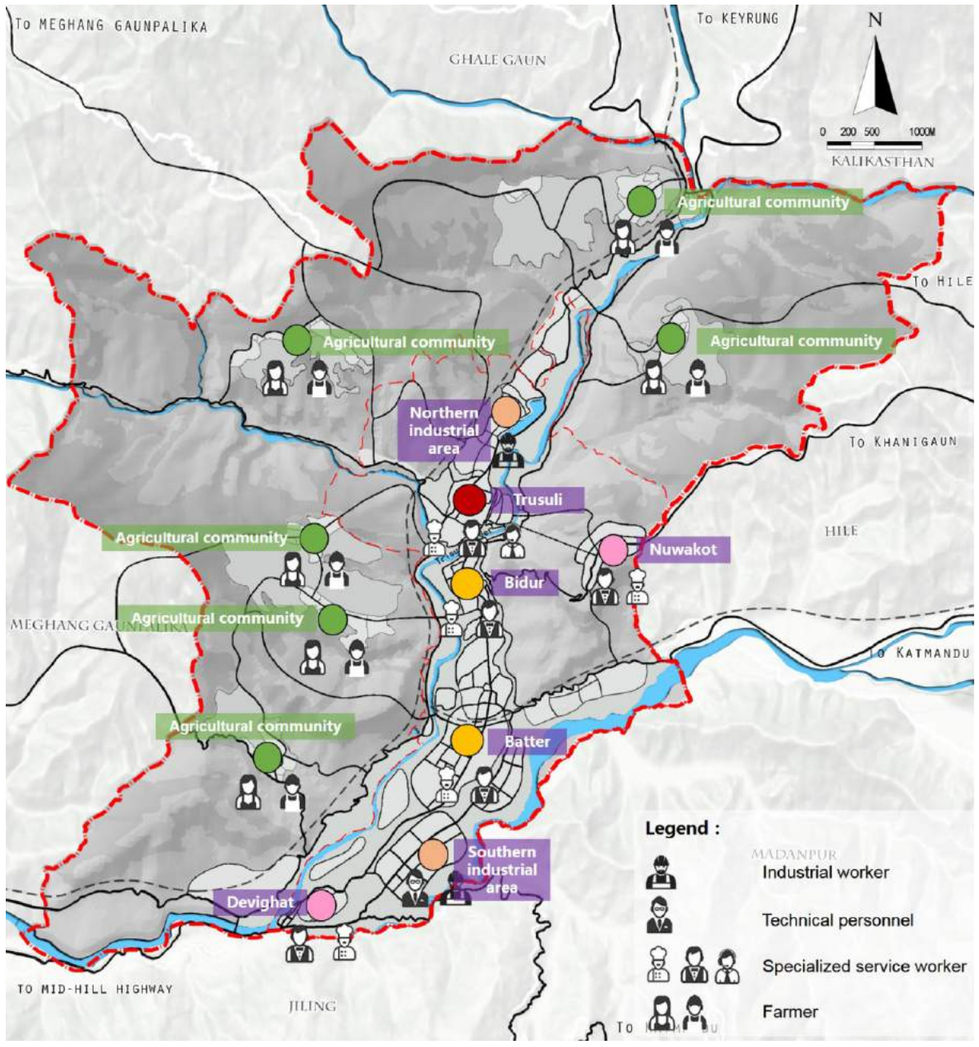


Figure Planned distribution of employed population for Bidur in 2035

2. Industry development -- an industrial system with both good quality and quantity, integrating the first, secondary and tertiary industries

(1) Constructing integrated industrial system of the primary, secondary and tertiary industry

We will introduce industries via the trade portal, transfer industries with regional coordinate development, and develop industries utilizing natural resources. In this way, we will build an integrated industrial system of the primary, secondary and tertiary industries.

We will ecologicalize, modernize, standardize and expand the agriculture of Bidur comprehensively. We will build high-quality terraces to improve the quality and efficiency of Bidur's agriculture comprehensively, establishing a featured agricultural brand for Bidur. We will transfer the agricultural structure from pure crops to a comprehensive structure including crops, fruits, vegetables and flowers, establishing a leading ecological agriculture pattern in China.

The processing industry of agricultural byproducts and fine processing industry of foods will be supported and developed, industries transferred from China and other countries along the line of "Belt and Road Initiative" will be actively undertaken to introduce manufacturing industries of garments, household appliances, furniture and other daily necessities. The contract manufacturing will be utilized to accumulate technical experiences, so as to expedite the industrialization process of Bidur and lay the foundation for realizing the rejuvenation of national industries.

With the emphasis laid on the logistics industry, the flow of people and goods brought by regional advantages will be made use of to vigorously develop frontier trade and commercial services. On one hand, wool woven fabrics, shawls, scarves, ornaments and other petty commodities may be utilized to establish border trade markets and expand exports. On the other hand, the tourism will be combined with the historic and cultural preservation to develop characteristic commercial tourism projects.

(2) Construct urban agricultural space with "five production areas and two aquiculture regions"

Five large-scale agricultural production areas: Five high-standard terraced fields will be constructed to develop the large-scale agricultural production and plant commercial crops such as paddy, rice, tea, forest fruit and herbs so as to form various industrial modes of "terraced fields + orchards", "terraced fields + cucurbits and vegetables", "terraced fields + nursery stocks", "terraced fields + medicinal materials" etc. In the meantime, the terraced field construction will be combined with the mountain forest protection to develop the terrace landscape and rural tourism.

Two fishery breeding zones: By taking advantage of the rich water resources of Trisuli River and Tadi River, two aquaculture regions will be constructed to develop the characteristic aquaculture.

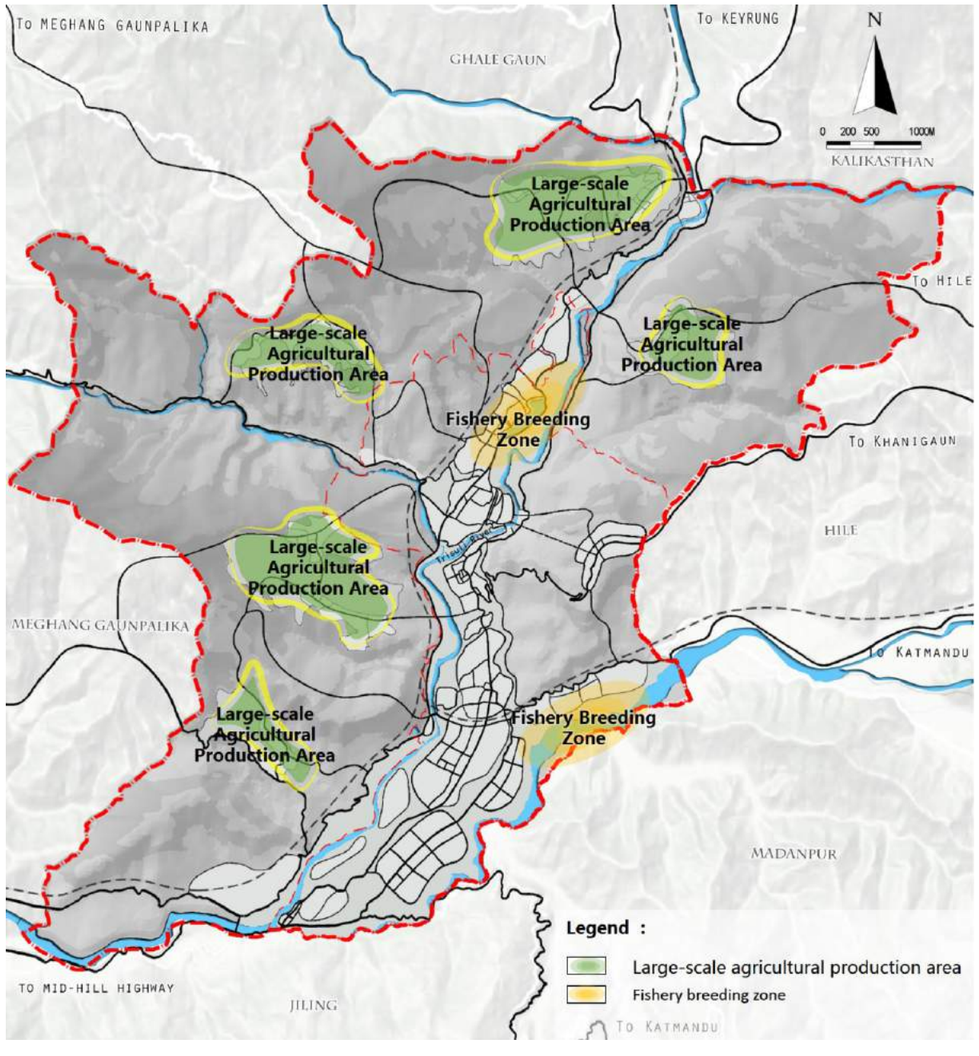


Figure Planned agricultural spatial layout of Bidur

(3) Construct processing and manufacturing bases with "two clusters and multiple parks"

Cluster of agricultural product processing industries: It is an industry cluster dominated by local processing industries of agricultural products, fine processing industries of foods and handicraft industries.

Cluster of daily chemicals manufacturing industries: It is a cluster dominated by foreign enterprises from the manufacturing industry of textiles, garments, household appliances, furniture and other daily necessities.

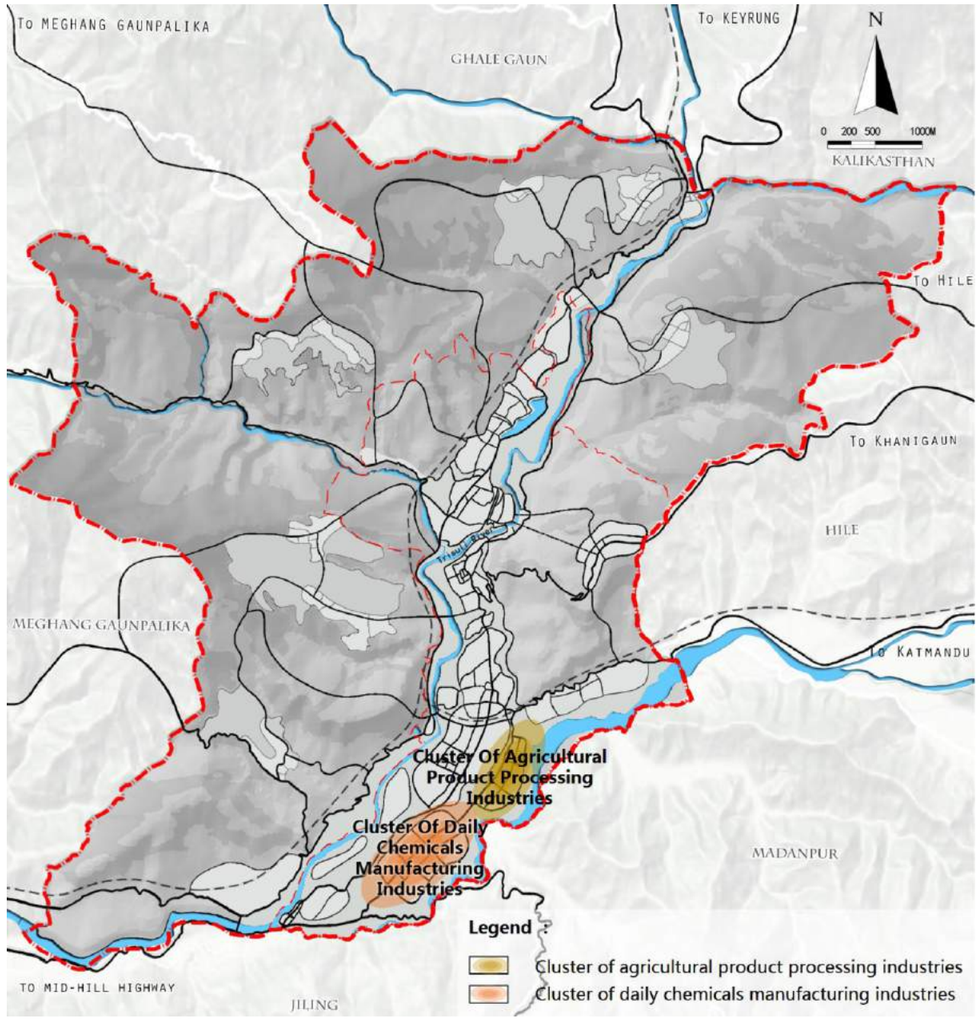


Figure Planned spatial layout of processing and manufacturing industry in Bidur

(4) Build a modern service industry base with "two hubs and three centers"

Two hubs: The north logistics hub will mainly handle the flow of goods from the Gyirong Port at Tibet Autonomous Region of China, and the east logistics hub mainly serves for the flow of goods from the city agglomeration of Kathmandu.

Three centers: The TRISHULI commercial service center will be constructed by relying on the trade logistics brought by the old commercial streets and Gyirong Port. The NUWAKETE tourism service center will be established on the basis of the cultural and tourism industry cluster of the palace area. The BIDUR comprehensive service center will be constructed to create industrial linkage with other centers and provide administrative, financial and commercial services.

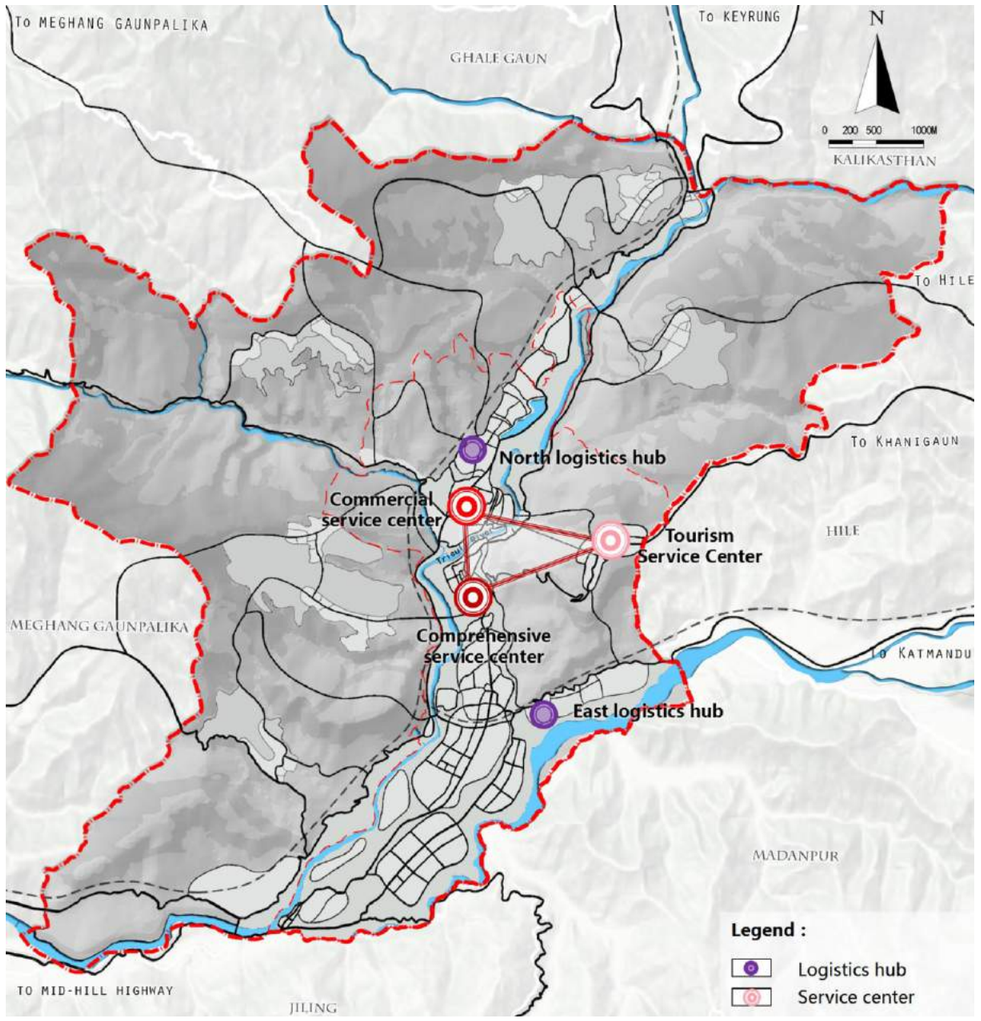


Figure Planned spatial layout of modern service industry

3. Comprehensive transportation -- Build a public-priority transportation system that is accessible both internally and externally

(1) Build a China-Nepal Transport Gateway Hub that is accessible both north and south

For railways, a north-south railway passage is planned to be reserved. It will head northward to China's Gyirong Port, connecting to the extension line of the Lhasa - Shigatse Railway, which is the branch line of China's Qinghai-Tibet Railway. It will head southward to an east-west railway passage planned by Nepal, connecting to important cities such as the capital Kathmandu, Pokhara and Lumbini. A railway passenger station will be reserved in the Batter cluster, and a freight station will be reserved by considering industrial and logistics parks, and a planned north-south railway line will be connected through a dedicated railway line.

For roads, the expressway and mountain tunnel that head north to Kathmandu will continue to be built, and the class of the existing F021 Road (Montanis Road) will be raised. What's more, a north-south Class-I road will be newly built, which will head northward to China's Gyirong Port, and head southward to an east-west expressway in central mountainous areas in Nepal, connecting to important cities such as the capital Kathmandu, Pokhara and Lumbini.

Figure Traffic Channel Planning in Bidur Region

(2) Build a radial road network centered on Bidur and increase the radiation to the surrounding rural areas

By upgrading and adding 9 external radial National Highways, and making the Collector-distributor Roads and District Roads denser according to the demands of urban and rural development in the region, a road network that is "reasonable in grading, organically connected, radiated around, and facing the whole country" will be formed. We will vigorously develop rural transportation, implement the Extending Road Coverage to Every Village Project and improve rural transportation infrastructure conditions so as to improve rural production and living conditions. The urban road network density in Bidur is planned to be no less than 80 km/hundred square kilometers, and the class of village road will be no less than Class-IV.

Figure Road System Planning of Nuwakot in 2035 (plus Legend)

According to Nepal Road Standard 2070, Nepal roads can be divided into Class-I, Class-II, Class-III and Class-IV roads based on the technical classes, of which the Class-I road has the highest class. The design speed of roads with different classes is shown in the table below.

Tab. Design Speed of Roads with Different Classes in Nepal (km/h)
（Source：《Nepal Road Standard 2070》）

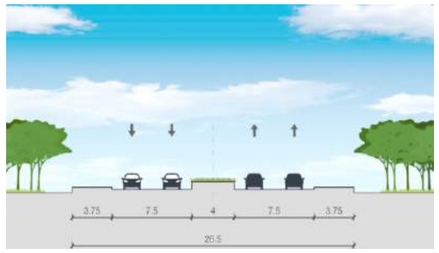
Road class	Plain area	Hilly area	Mountainous region	Steep mountain
Class-I Road	120	100	80	60
Class-II Road	100	80	60	40
Class-III Road	80	60	40	30
Class-IV Road	60	40	30	20

According to Nepal Road Standard 2070, Nepal roads can be divided into National Highways, Collector-distributor Roads, District Roads, and Urban Roads based on the administrative categories. Of which, Class-I, Class-II and Class-III standards can be selected for the technical classes of National Highways, and Class-II, Class-III and Class-IV standards can be selected for the technical classes of Collector-distributor Roads.

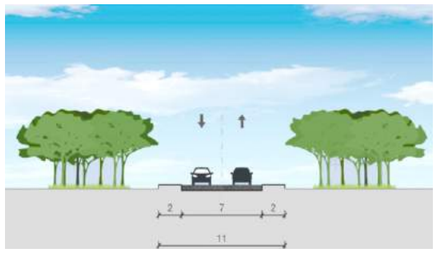
Tab. Class Selection for Roads with Different Administrative Categories in Bidur
（Source：《Nepal Road Standard 2070》）

	Plain andhilly areas	High mountainsand steep terrain
National Highways	I,II	II,III
Collector-distributor Roads	II,III	III,IV

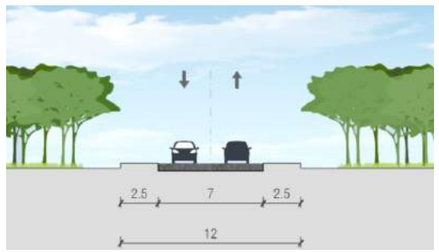
Bidur is a typical mountainous city. Class-I and Class-II standards can be selected for National Highways, of which the Class-I road is a two-way four-lane road, with a design speed of 60-100 km/h. Class-II, Class-III and Class-IV standards can be selected for Collector-distributor Roads, with a design speed of 40-80 km/h. And Class-III and Class-IV standards can be selected for District Roads, with a design speed of 20-60 km/h. The typical section can refer to the following figure:



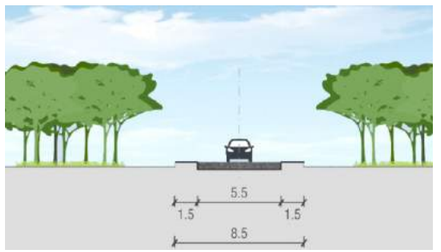
Standard Section of Class I Road (Width of Boundary Lines Is 26.5m)



Standard Section of Class II Road (Width of Boundary Lines Is 12m)



Standard Section of Class III Road (Width of Boundary Lines Is 11m)



Standard Section of Class IV Road (Width of Boundary Lines Is 8.5m)

Figure Standard Sections of Roads with Different Classes in Nepal

(3) Adapt to the urban spatial structure and land use layout to build a backbone road network system with "two vertical roads and six horizontal roads"

Improve road network planning and layout. Of which, "two vertical roads" refer to add one south-north arterial road on the west bank of the Trushuli River for the purpose of improving the existing F021 Road; "six horizontal roads" refer to making use of the transverse artery in the southern part and the surrounding forest roads to plan six link roads in the city. The backbone road network with "two vertical roads and six horizontal roads" is connected to the National Highways to provide smooth traffic links between Beijing and Nuwakot or Kathmandu. Optimize and make Sub Arterial Road, Collector-distributor Road, and Local Street denser according to various functional clusters, to build a road network with “reasonable scale, optimized structure, and clear functions”. And the density of the road network in the river valley concentrated construction area will not be less than 6.5 km/km^2.

The technical standards for sections of roads with different classes are shown in the figure below:

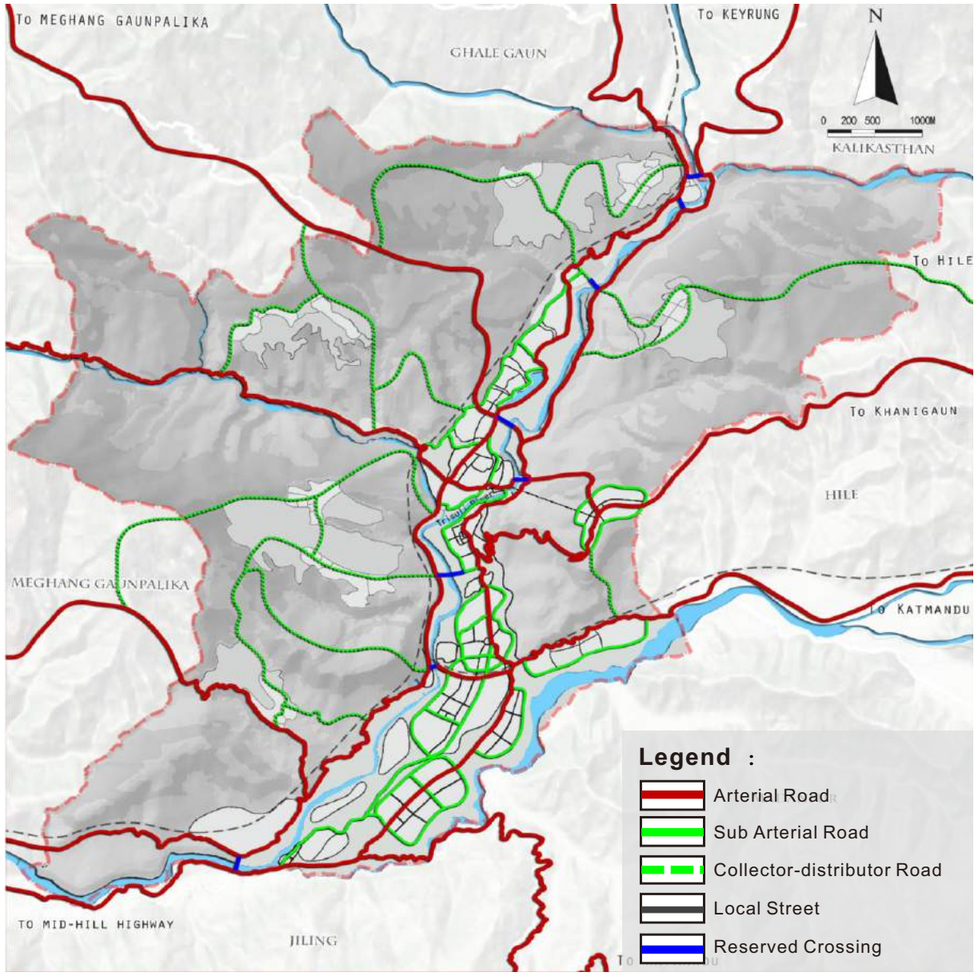
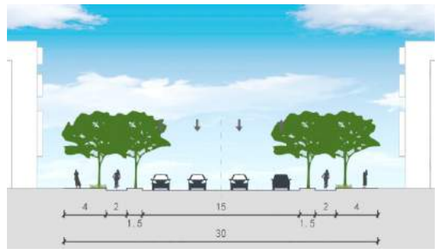
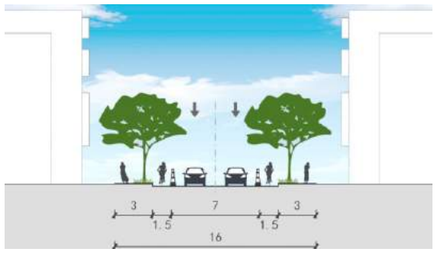


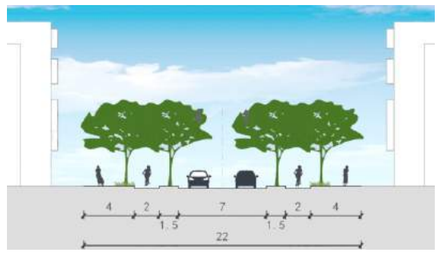
Figure Road System Planning of Bidur in 2035



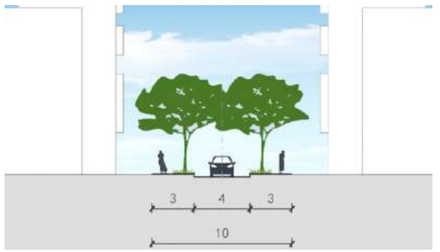
Standard Section of Arterial Road (Width of Boundary Lines Is 30m)



Standard Section of Collector-distributor Road (Width of Boundary Lines Is 16m)



Standard Section of Sub Arterial Road (Width of Boundary Lines Is 22m)



Standard Section of Local Street (Width of Boundary Lines Is 10m)

Figure Technical Standards for Sections of Roads with Different Classes in Bidur

Fully focus on right of way of non-motorized vehicles, pedestrians and other slow-moving traffic participants. The Arterial Road and Sub Arterial Road will be separated by green belt for motor vehicles and non-motor vehicles. The bicycle lane on one side will be 2 meters wide and the walkway will be 4 meters wide (including 1.5 meters wide for street trees). The Collector-distributor Road will be separated by side rails. The bicycle lane on one side will be 1.5 meters wide and the walkway will be 3 meters wide (including 1.0 meter wide for street trees).Actively promote civilized travel, realize various types of traffic participants follow their respective lanes, and build a road traffic system that is smooth, accessible, safe, and orderly.

(4) Vigorously develop public transport and comprehensively improve the residents' public transport conditions

Improve the density of public transport network and coverage of bus stops, set up a bus operation company, regulate bus operation modes, and provide citizens with high-quality public transport services. Make the intercity public passenger lines to Kathmandu denser, start to run the intercity public passenger lines to other cities in Nuwakot, make the routine public bus lines in the river valley concentrated construction area denser and start to run the city-to-countryside public lines at appropriate times. Build a multi-level bus service system. It is planned that the public transport network density in the concentrated construction area will be no less than 2.5 to 3km/km2 and the coverage of bus stop with spacing of 500m will be 80% or more.

It is planned that a road and bus passenger hub with an area of not less than 2.0 hectares will be arranged; and a road and bus passenger hub with an area of not less than 2.5 hectares will be reserved by considering the situation of railway passenger stations in the long term. It is planned that a standard bus will be arranged for every 1,300 people. Therefore, 65 to 100 standard buses will be required in 2035, and 1.2 to 1.8 hectares of land for various types of bus stations need to be controlled.

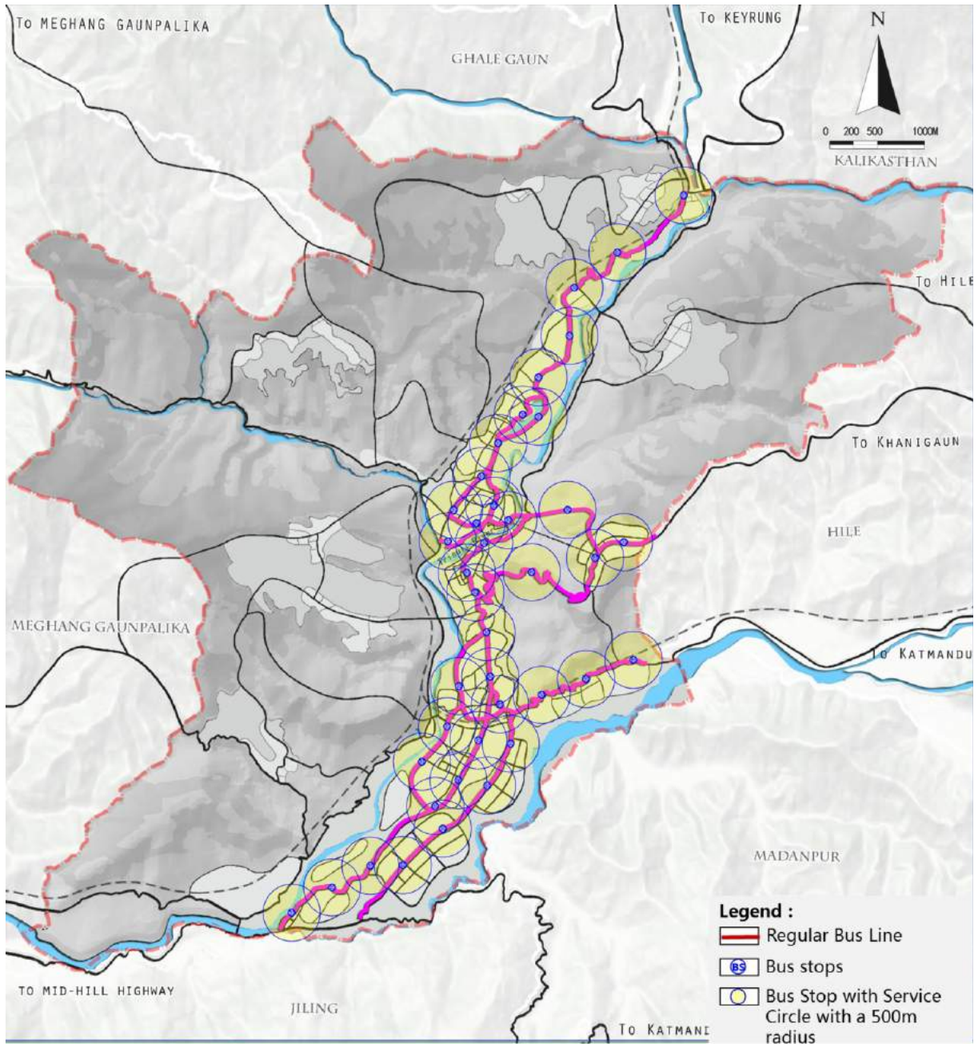


Figure Bidur Public Transportation Planning in 2035

(5) Improve traffic organization and create a traffic pattern that "separates the passenger transport from freight"

The passenger line is based on the main north-south traffic channel of Montanis. It is rerouted in the southern Batter cluster and directly connected with the southern gateway through the city center. The freight line runs around the city from city outskirts, and is based on the north-south double-track line. It's connected with the main road through the industrial cluster to form a freight loop.

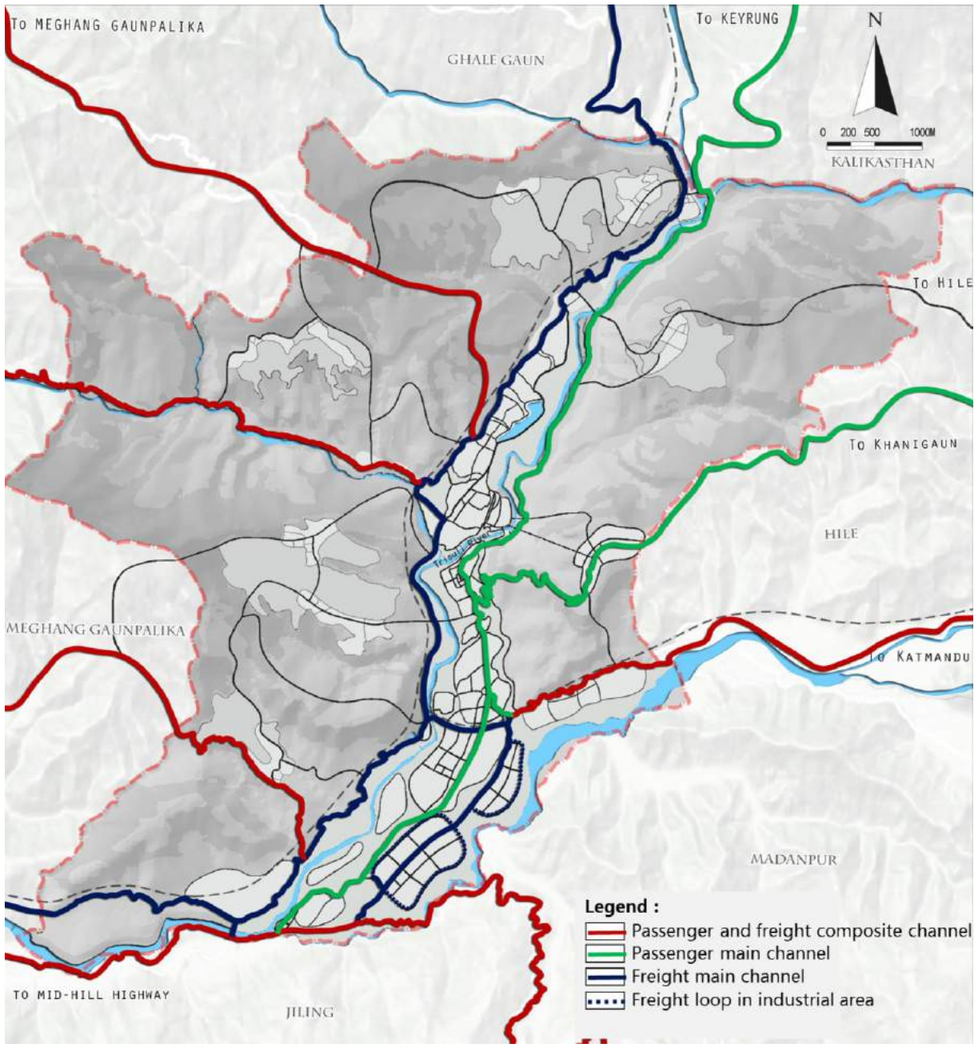


Figure Passenger and Freight Main Channel Planning of Bidur in 2035

4. Public service--building an equally shared and easily accessible public service system

Build the "municipality-community" two level public service system based on Planning Norms and Standards 2013, with reference to experiences of China and India and other developing countries and according to requirements on equal access to public service facilities. The system shall involve “one center and multiple facilities”, consisting of medical care, education, social welfare, culture, religion, sports, food market, and public space. “One center" refers to the Bidur cluster public service center that focuses on the layout of municipal-level public service facilities, and "multiple facilities" refer to the community level public service facilities of each cluster.

(1) Layout of municipal-level public service facilities

Tab. Standards of Municipal-level Public Service Facilities of Bidur

Public service	Municipal level					
	Type of facilities		Service radius	Service standard	Scale standard	Quantity
Education	Primary school	Basic	400-800m	3-5 classes / 30-60 people	0.2 hectares per each	10
		Complete		10-20 classes / 30-60 people	0.65 hectares per each	9
	Higher school		Can arrive by public transport within 30 minutes	15-25 classes / 45-60 people	0.80 hectares per each	9
	College preparatory school		Can arrive by public transport within 45 minutes	25000 people	1.0 hectare per each	3
	University		Can arrive by public transport within 60 minutes	40000 people	1.5 hectares per each	2
	International school		Can arrive by public transport within 45 minutes	25000 people	1.0 hectare per each	1
Medical treatment	General hospital		——	50000 people	1.3 hectares per each and 25 to 50 beds	2
	Nursing center		——	20000 people	0.25 hectares per each and 10 to 15 beds	3
Social welfare	Welfare home		Can arrive by public transport within 45 minutes	20000 people	0.3 hectares per each	5
Culture	Library		——	——	0.5 hectares per each	1
	Museum/art gallery/exhibition center		——	——	4.0 hectares per each	1
	Hall		——	10000 people	0.2 hectares per each	7
Religion	Key religious culture space (Bhairabi temple, Jalapa temple, Sugatpur vihara)		——	——	Maintain the current conditions	3
	Religious funeral home		——	——	0.5 hectares per each	1
Sport	Sport center		——	100000 people	5.0 hectares per each	1
Public space	Riverside park		——	——	Controlled to 50-150m along the river	2
	Citizens' square (parade ground)		—	——	2.0 hectares per each	1

Education -- In order to make effective use of the teaching staff, an education system composed of primary schools, higher schools, college preparatory schools, universities, and international schools is constructed with the principle of intensification of higher education and equalization of basic education. Taking the service radius of 400-800m as the standard, 10 primary schools with basic functions will be arranged in the peripheral agricultural community. Each school will have an area of over 0.2 hectares and 3-5 classes with 30-60 people in each class. And 9 primary schools with complete functions will be arranged in the concentrated construction area. Each school will have an

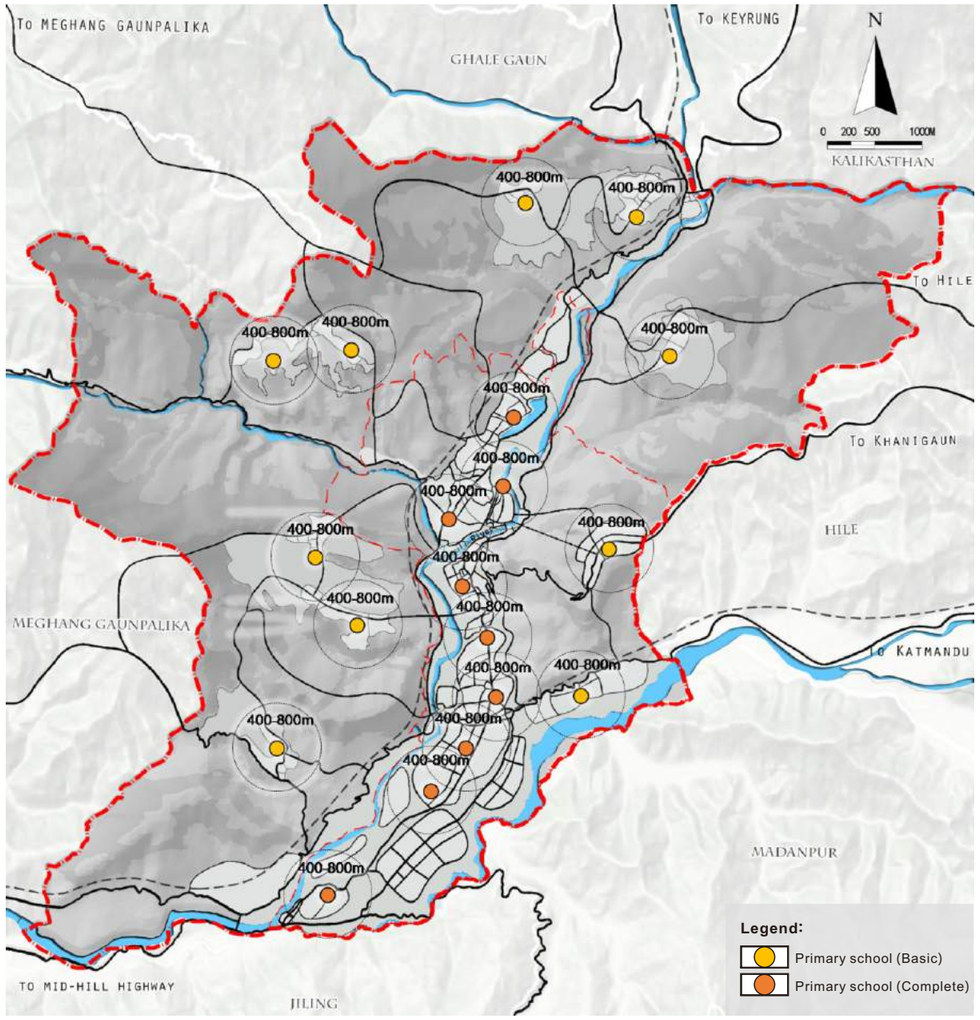


Figure Spatial Distribution of Primary Schools of Bidur in 2035

9 higher schools will be arranged with the distance that people can arrive by public transport within 30 minutes as the service radius. Each school will have an area of over 0.80 hectares and 15-25 classes with 45-60 people in each class.

A total of 3 college preparatory schools will be arranged in Bidur, Trusuli and Batter clusters, with the distance that people can arrive by public transport within 45 minutes as the service radius, and 25,000 as the standard of population served. And each school will cover an area of above 1 hectare.

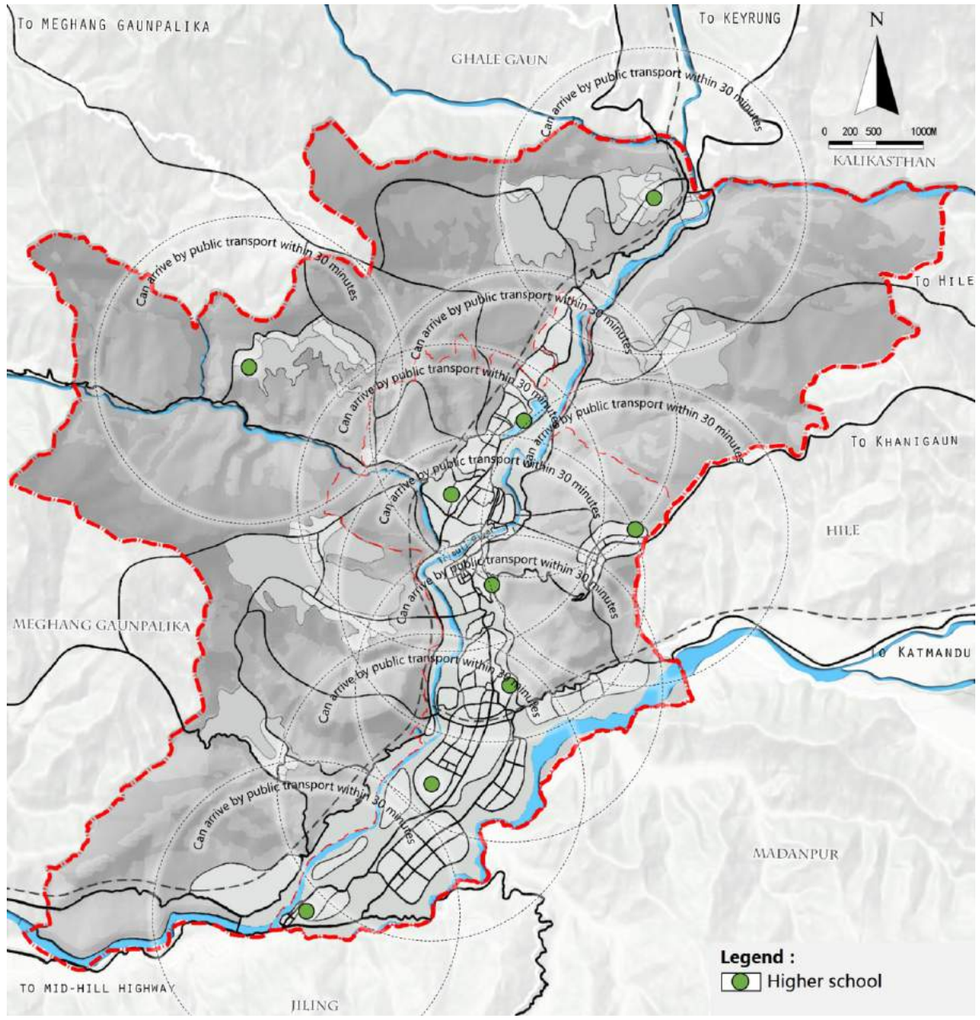


Figure Spatial Distribution of Higher Schools of Bidur in 2035

A total of 2 universities will be arranged in Trusuli and Batter clusters, with the distance that people can arrive by public transport within 1 hour as the service radius, and 40,000 as the standard of population served. And each school will cover an area of above 1.5 hectares. Taking into account the needs of international talents arising from industrial development, a one-stop international school covering an area of over 1 hectare will be arranged in Batter cluster to provide primary and secondary education services for children of international staff.

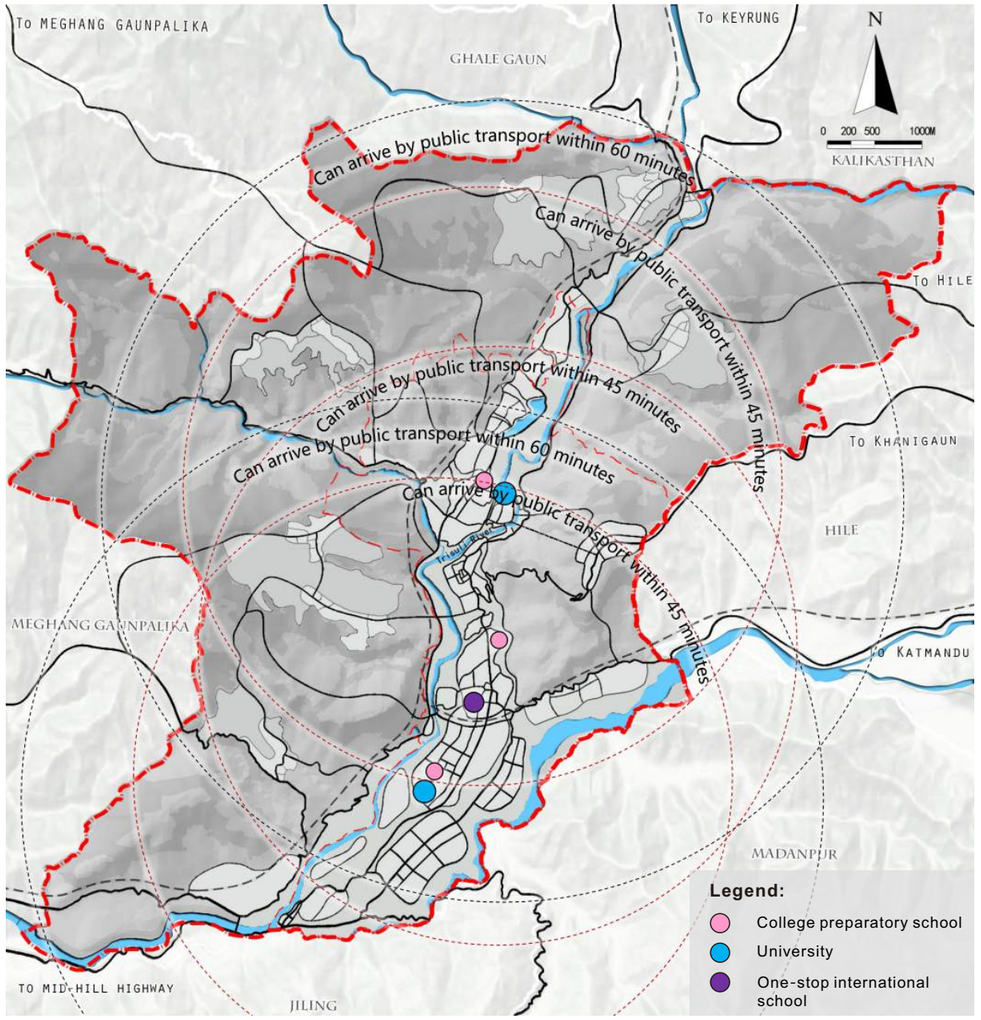


Figure Spatial Distribution of Higher Education of Bidur in 2035

Medical treatment -- Increase Bidur's bed index to 2/1,000 people with the goal of "going to the hospital for serious illness and going into the community for minor illness". Raise the level of the original general hospital facilities in the Bidur cluster and increase the number of beds to 100. Taking into account the needs of international talents, a new international general hospital with an area of 1.3 hectares and 50 beds will be newly built in Batter cluster. A health care center with an area of 0.25 hectares or more and 10-15 beds will be arranged respectively in Trurusli, Batter and Devighat clusters, to ensure that major diseases can be treated promptly.

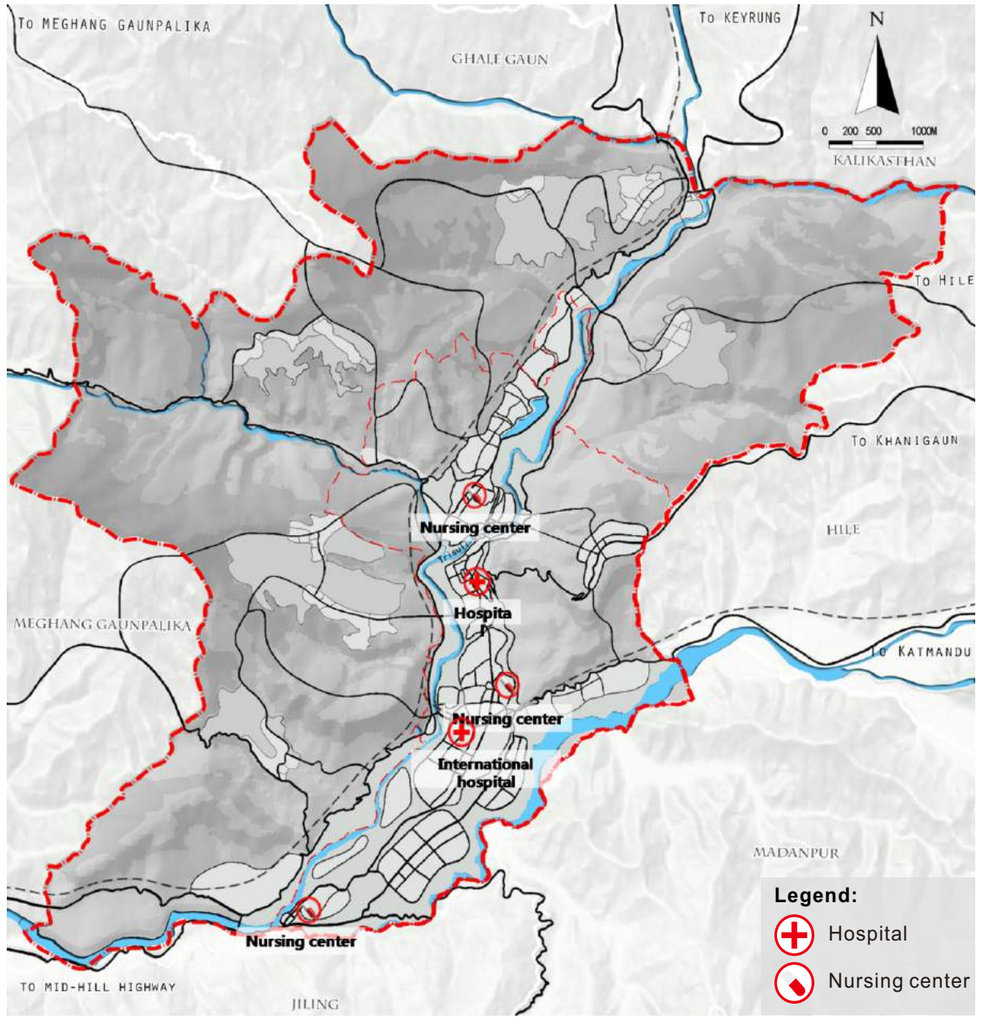


Figure Layout of Municipal-level Medical Facilities of Bidur in 2035

Social welfare -- A total of 5 social welfare homes will be arranged in Bidur, Trusuli, Batter, Southern Industrial Cluster, and Devighat Cluster to provide social welfare services for the aged, orphans, and disabled, with the distance that people can arrive by public transport within 45 minutes as the service radius, and 20,000 as the standard of population served. And each welfare home will cover an area of above 0.3 hectares.

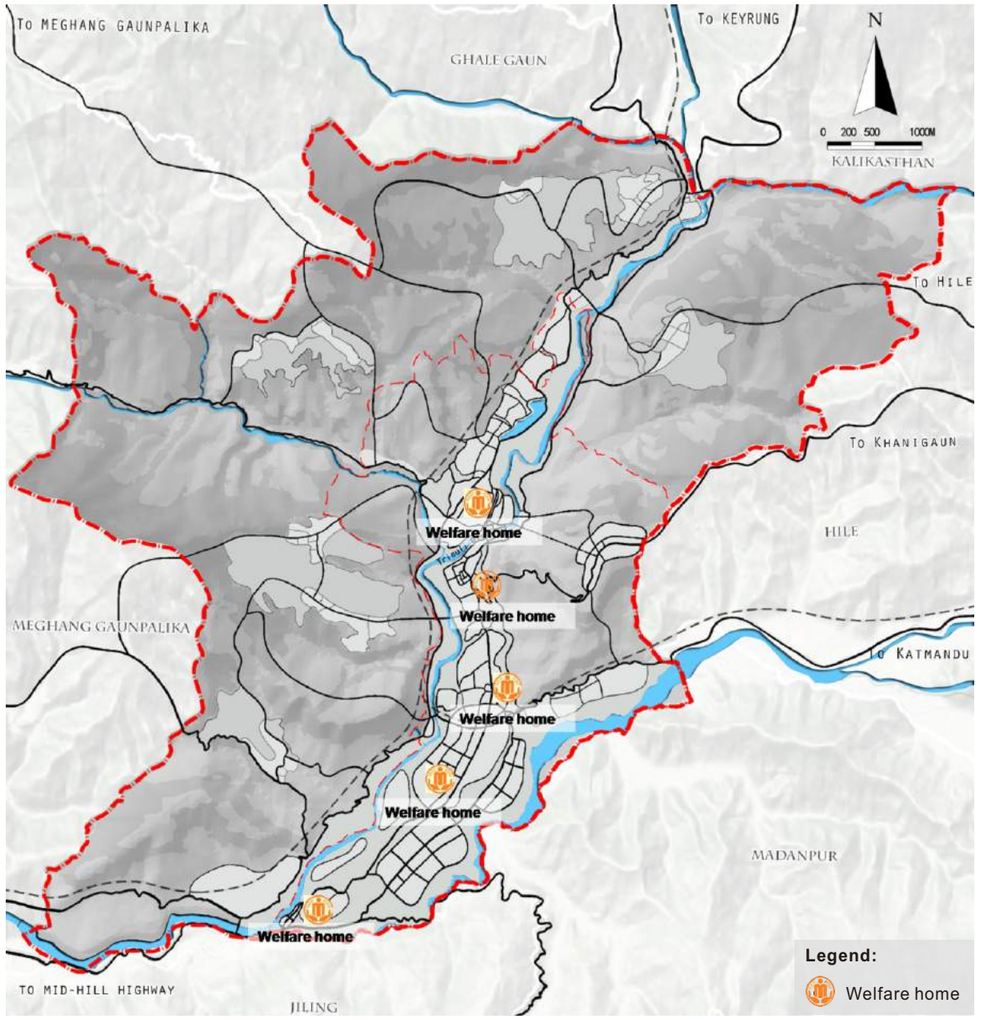


Figure Layout of Municipal-level Social Welfare Facilities of Bidur in 2035

Culture -- To enrich the citizens' spiritual life, a municipal-level library covering an area of over 0.5 hectares will be arranged in Bidur cluster; and a municipal-level museum/art gallery/exhibition center covering an area of over 4 hectares will also be arranged; 1 hall will be arranged in each cluster of the river valley concentrated construction area to provide citizens with multiple functions like congregation. There will be 7 halls in total, each covering an area of over 0.2 hectares.

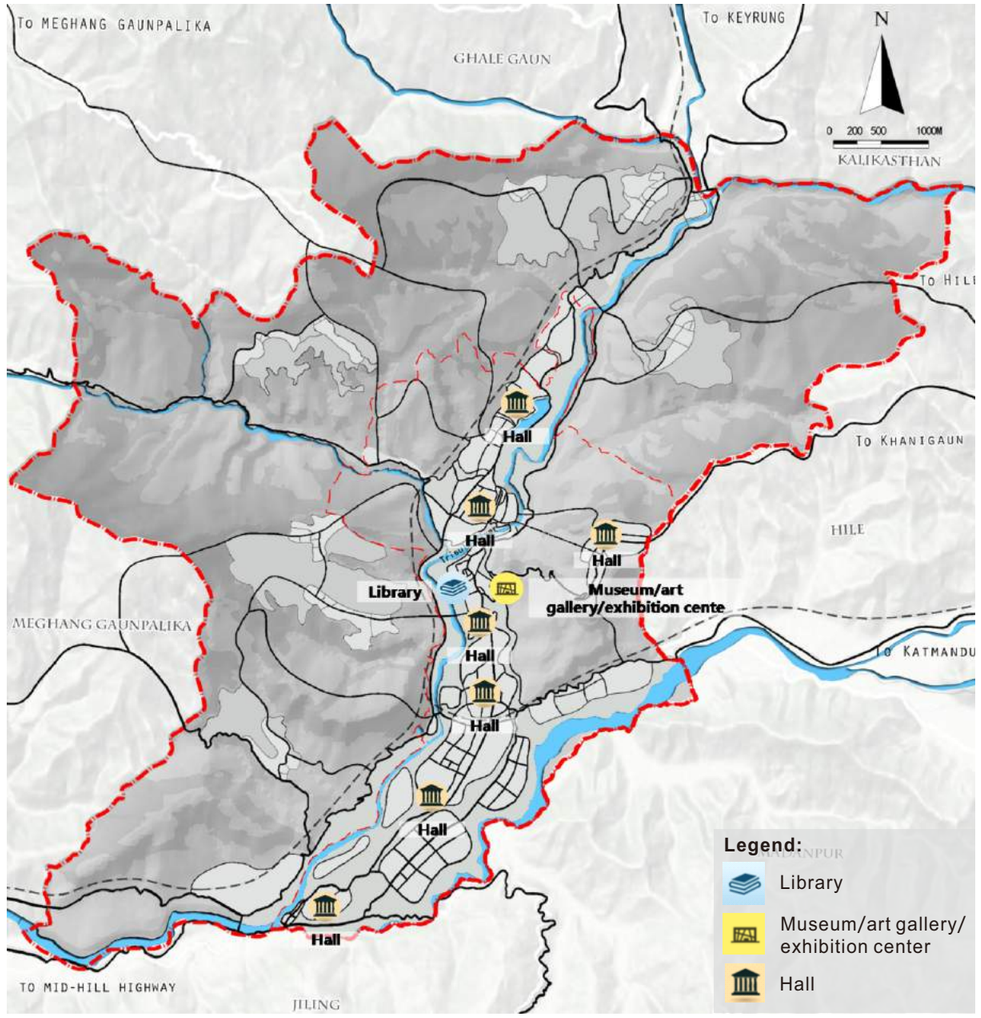


Figure Layout of Municipal-level Cultural Facilities of Bidur in 2035

Religion -- Bhairabi Temple, Jalapa Devi Temple and Sugatpur Temple will be selected as municipal-level key religious culture space for holding major congregations; and a religious funeral home covering an area of over 0.5 hectares will be arranged in Devighat cluster, to meet religious funeral demands.

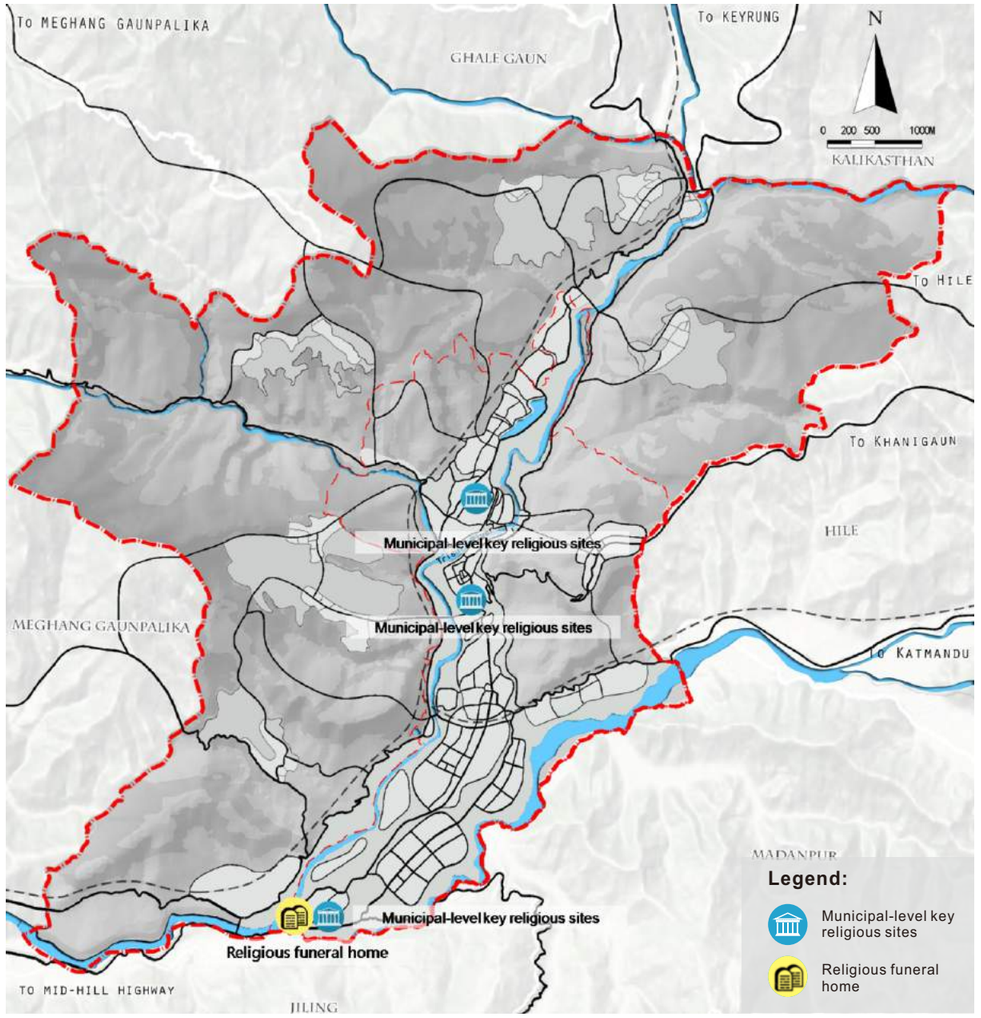


Figure Layout of Municipal-level Religious Facilities of Bidur in 2035

Sports -- A sports center will be arranged in Bidur cluster in order to provide relatively complete sports facilities in a concentrated manner. It will cover an area of over 5 hectares, and be equipped with various types of sports facilities such as football fields, basketball courts, badminton courts, tennis courts, and swimming pools.

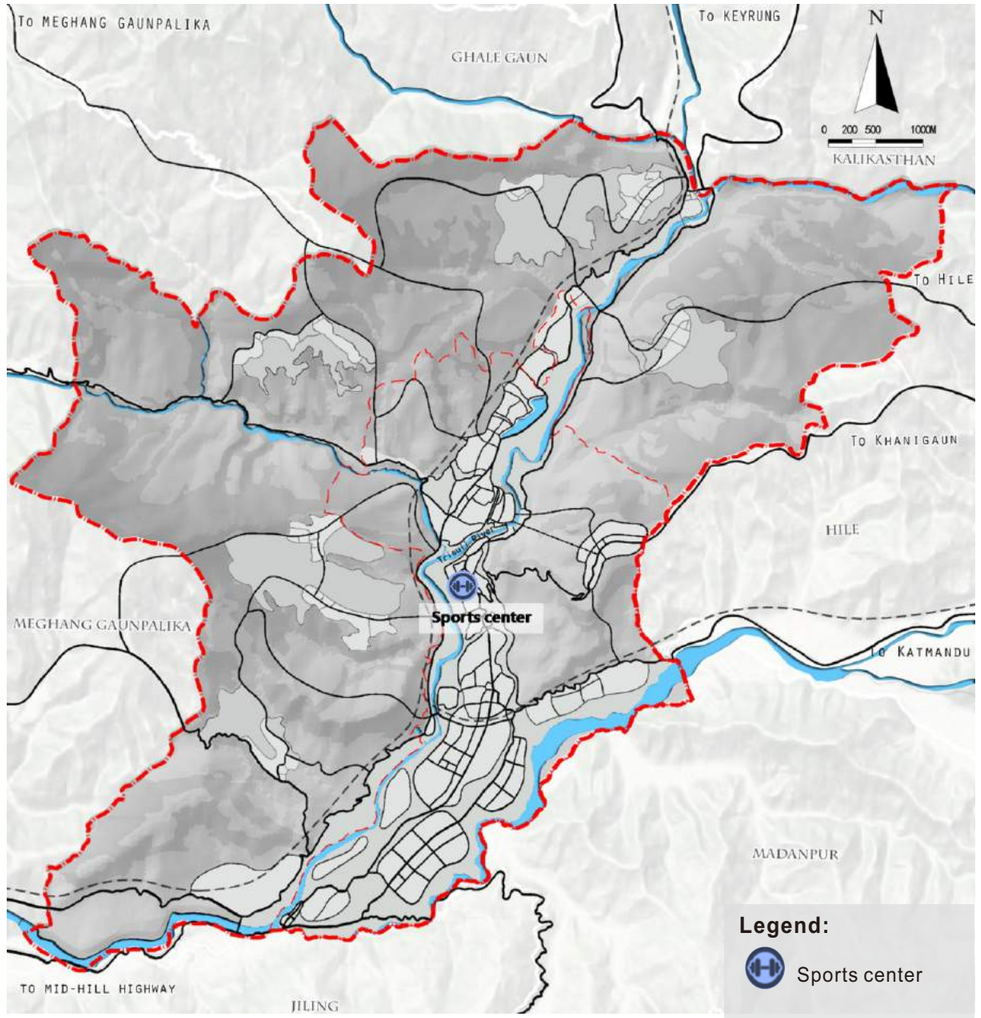


Figure Layout of Municipal-level Sports Facilities of Bidur in 2035

Public space -- 50-150m wide riverfront greenbelt will be controlled along the Trisuli River and the Tadi River as a municipal-level riverside park, and a civic square (parade ground) covering an area of over 2 hectares will be arranged in Bidur cluster.

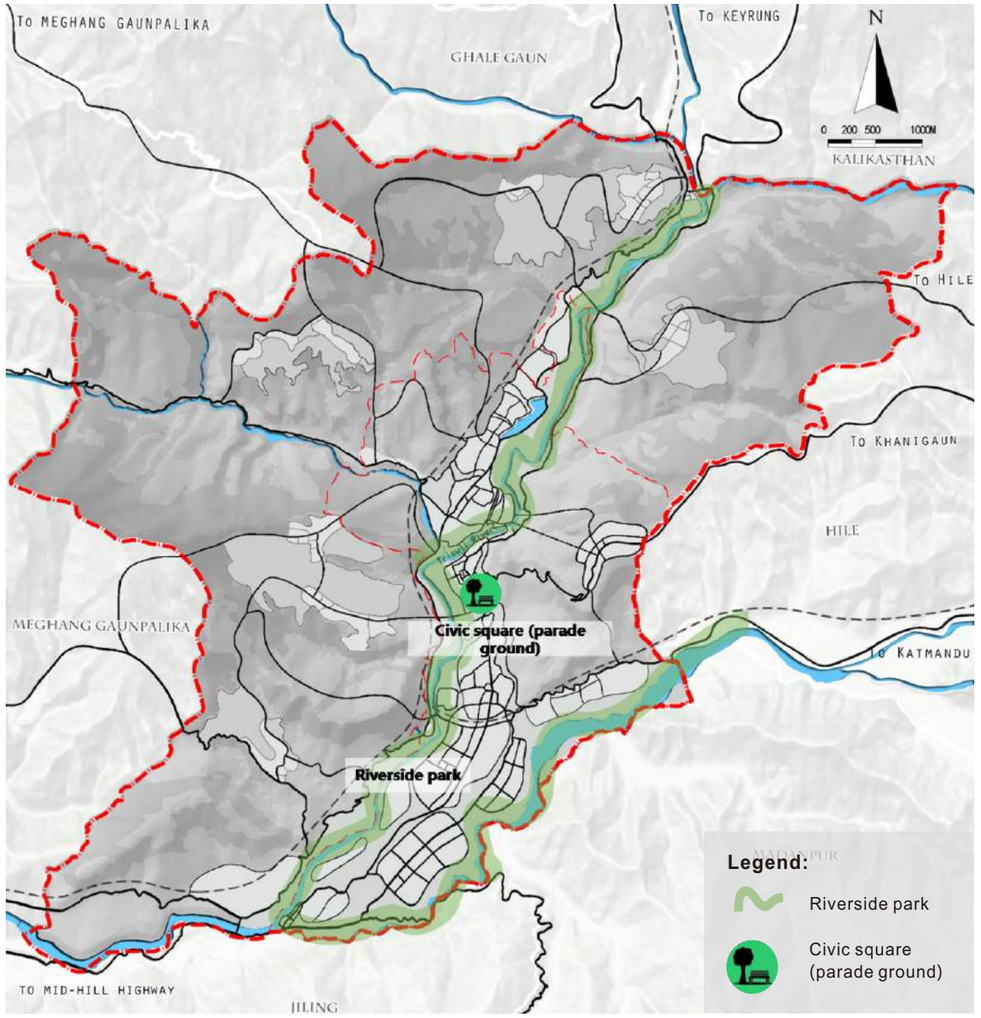


Figure Layout of Municipal-level Public Space of Bidur in 2035

(2) Layout of community-level public service facilities

Tab. Standards of community level public service facilities of Bidur

Public service	Community level						
	Type of facilities	Functions	Service radius	Population served	Scale standard		Quantity
Community Comprehensive Service Center	Medical treatment room	Provide basic medical treatment service	1000m	6000 people	Construction area ≥100m²	Area of site ≥ 0.2 hectares, construction area ≥350m²	11
	Welfare room	Provide nursing service to the orphans, widow and disabled person			Construction area ≥60m²		
	Culture room	Provide book borrowing, popularity of scientific and technological knowledge, education and training and other culturalservice			Construction area ≥100m²		
	Religion room	Provide room for daily worship and congregation			Construction area ≥60m²; area of outdoor facilities ≥100m²		
	Outdoor sport field	Composite badminton and basketballcourt and other outdoor sport fields			Area of outdoor facilities ≥100m²		
Vegetable Market	Comprehensive vegetable market	Also has the functionof wholesale, retail and slaughter	——	6000 people	0.5 hectares per each		16
Public space	Community Park	Can composite the sport facilities	——	10000 people	0.5 hectares per each		6
	Neighborhood Park	Can arrange sport apparatus	——	800 people	0.4 hectares per each		100

Community comprehensive service center -- 11 community comprehensive service centers will be arranged with 1,000 meters as the service radius, and 6,000 people (2 Neighborhood) as the standard of population served, to provide community services such as medical treatment, social welfare, culture, religion, and sports for residents in the neighborhood. Each community comprehensive service center will have a footprint area of no less than 0.2 hectares and a construction area of no less than 350m^2. Among them, the community medical treatment room will have a construction area of no less than 100m^2, providing basic medical treatment services for community residents. The community welfare room will have a construction area of no less than 60m^2, providing nursing service to the orphans, widows and disabled people in the community. The community culture room will have a construction area of no less than 100m^2, providing book borrowing, popularity of scientific and technological knowledge, education and training and other cultural services for community residents. A community religion room will have a construction area of no less than 60m^2, and an area for outdoor facilities of no less than 100m^2, providing room for daily worship and congregation. A community outdoor comprehensive sports field will have an area of outdoor facilities of no less than 800m^2. It will composite badminton and basketball courts and other outdoor sports fields to provide sports venues for community residents.

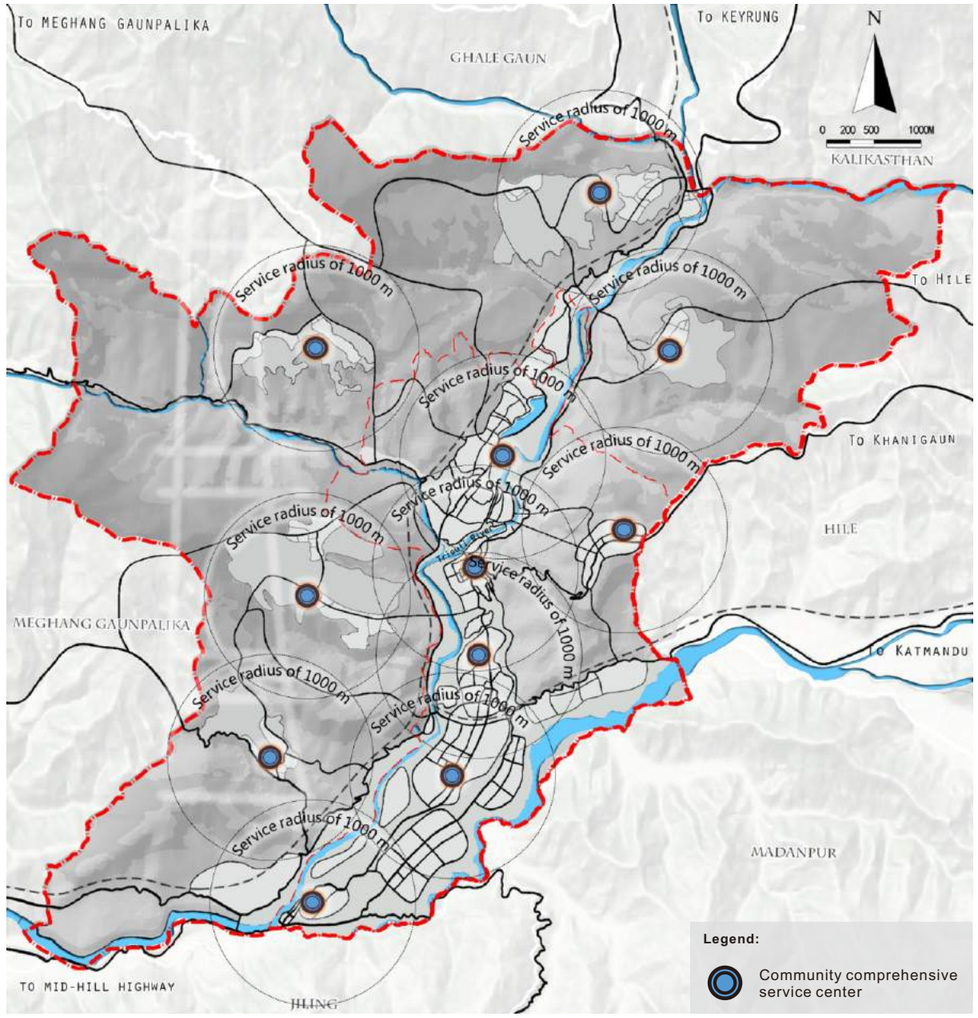


Figure Layout of Community Comprehensive Service Center of Bidur in 2035

Market -- 16 comprehensive vegetable markets will be arranged in the city with the standard of providing comprehensive vegetable markets with the function of wholesale, retail and slaughter for 6000 people (2 Neighborhoods) and each vegetable market covers an area of over 0.5 hectares, to provide daily life needs for community residents.

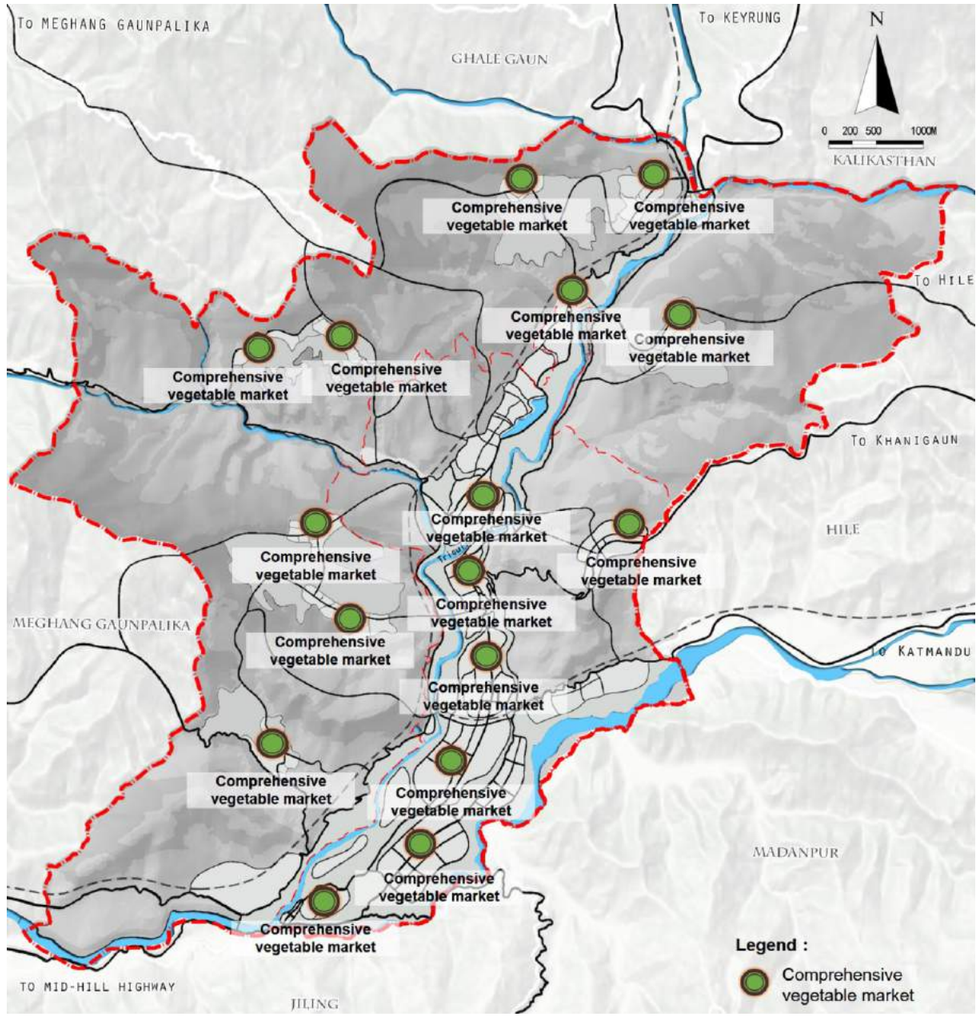


Figure Layout of Vegetable Markets of Bidur in 2035

Community public space -- A total of 6 community parks (can composite with the sports facilities) will be arranged in the river valley concentrated construction area, Trusuli, Batter, Southern Industrial Cluster, Devighat, and Nuwakot Durbar, each covering an area of above 1 hectare, and serving 10,000 people. And 100 neighborhood parks compositing sports apparatus will be arranged with serving 800 people and covering an area of 0.4 hectares as the standard to provide daily recreational activities for community residents.

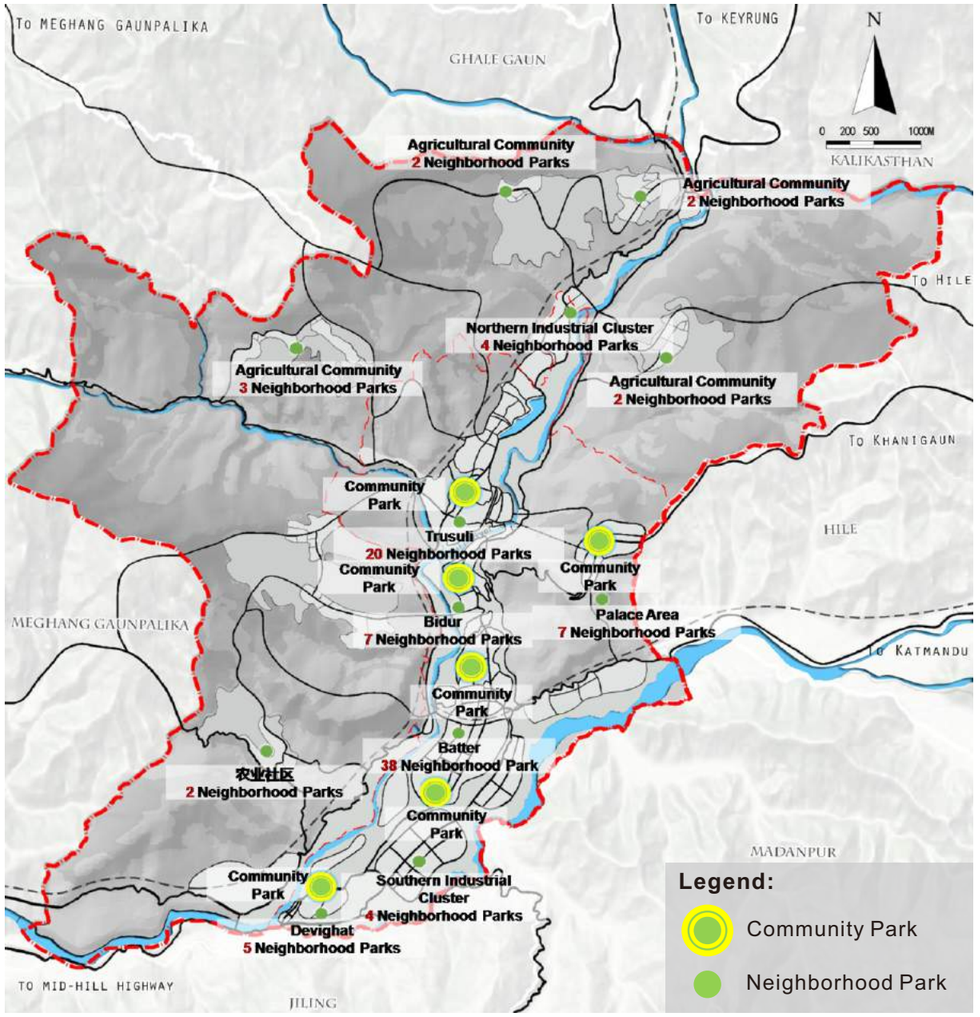


Figure Layout of Community Public Space of Bidur in 2035

5. Infrastructure--building a stable, improved, ecological and highly efficient municipal system

(1) Water supply engineering planning

①Planning goals and principles

1) Planning goals

Establish a sound, safe and reliable water supply system to meet the water demand for development of Bidur. The penetration rate of tap water should be over 80%. Water sources should be effectively protected, and the water qualification rate of source water and water supply should reach 100%.

2) Planning principles

People-oriented principle: Utilize advantageous resources to serve the public. Provide safe and high-quality water supply to meet people's life and production needs.

Economy principle: Make full use of existing facilities and topographical features to optimize the layout of the water supply system, expand the scope of services for centralized water supply, save project investment, and reduce operational energy consumption.

Coordination principle: Coordinate the relationship between agricultural water and domestic and production water for urban residents, and develop water supply by different quality and independent water supply for concentrated industrial area.

② Water consumption forecast

1) Forecasting method

The water consumption forecast adopts the water classification forecasting method, that is, the total water consumption is calculated according to sub-categories such as domestic, production and other water use. The domestic water consumption is calculated based on the urban population and per capita water consumption indicator. The production water consumption is calculated based on the industrial land scale and the water consumption indicator of unit land. The other water consumption is calculated based on 15% of the domestic and production water consumption.

2) Water consumption indicators

In accordance with Planning Specifications and Standard (2013) formulated by the Ministry of Urban Development of Nepal and with reference to the China's national standard, Code for Urban Water Supply Engineering Planning (GB50282-2016), the following indicators are adopted:

Table List of Water Consumption Indicators of Bidur in 2035

Indicator categories	Unit	Short-term	Long-term
Per capita comprehensive domestic water consumption indicator	l/person*day	80	100
Industrial water consumption indicator	m3/d*hectare	50	30

3) Calculation of water consumption

Table Planned Water Consumption Forecast of Bidur in 2035

Item	Short-term	Long-term
Population scale (10,000 people)	6	10
Domestic water consumption (10,000 m3/d)	0.48	1
Area of industrial land (hectare)	168.78	239.47
Industrial water consumption (10,000 m3/d)	0.84	0.72
Leakage and other water consumption (15% of the sum of the above water consumption)	0.2	0.26
Total water consumption	1.52	1.98

③ Water source planning and protection

1) Selection of water supply source

According to the planning, the water source is the Trushuli River and the water intake point is located in upstream of the Trushuli River and the border of Bidur administrative region. The drop in the water potential at the water intake point is large, so the geopotential can be used to maximize water supply for Bidur. In addition, the surrounding area of the water intake point still maintains a natural state, and human activities have little disruption to the water source, so the water quality conditions are good.

2) Protection of water sources

Division of source water protection areas: The range from 1000m upstream to 100m downstream of the water intake point is classified as the primary protection area; the range from 2000m upstream to 200m downstream of the water intake point beyond the primary protection area is classified as the secondary protection area.

Regulations for the protection of source water protection area: New construction and expansion of construction projects that are not related to water supply facilities and water source protection are prohibited in the primary protection area; it is forbidden to discharge sewage into waters, and to stack and store garbage, excrement and other wastes; it is forbidden to set up oil depots; it is forbidden to engage in planting, stocking livestock, etc.; and tourism activities and other activities that may contaminate water sources are prohibited. New construction and expansion of construction projects that discharge pollutants into water bodies are not allowed in the secondary protection area. The quantity of pollutants discharged must be reduced in the reconstruction project; the sewage discharge must be reduced in the original sewage draining exit to ensure that the water quality in the protection area meets the required water quality standards; it is forbidden to stack garbage, excrement, oil and toxic substances.

④ Planning of water supply engineering facilities

1) Water treatment plant

According to the planning, a standard water treatment plant with functions of sedimentation, filtration and disinfection will be set up at north border of Bidur and on the east bank of the Trushuli River. The water supply capacity will be 15,000 m3/d in 2022 and 20,000 m3/d in 2035.According to the planning, the diversion canal of the current water intake point will be used to transport raw water for water treatment plant. After the raw water is treated, it will be supplied to Bidur at the downstream through the gravity aqueduct.

2) Main water delivery pipe

According to the planning, a main water delivery pipe with DN500mm will be installed along the east bank of the Trushuli River to supply water for clusters of Bidur from north to south.

The overall elevation of the palace cluster is 300m higher than the water source, so it is impossible to deliver the water to the Palace cluster by gravity. Therefore, a high level cistern is considered to be set up in the palace cluster in 2022, to supply water for the cluster by regular water supply through the water transporting vehicle. And a multi-stage pump is considered to be used for water supply in 2035.

3) Water supply network

Each cluster introduces a water supply pipe with DN300mm from the nearby main water delivery pipe to supply water for the cluster. And water distribution pipelines with DN200 to DN80mm are installed along the roads in each cluster to form a loop-type pipeline network.

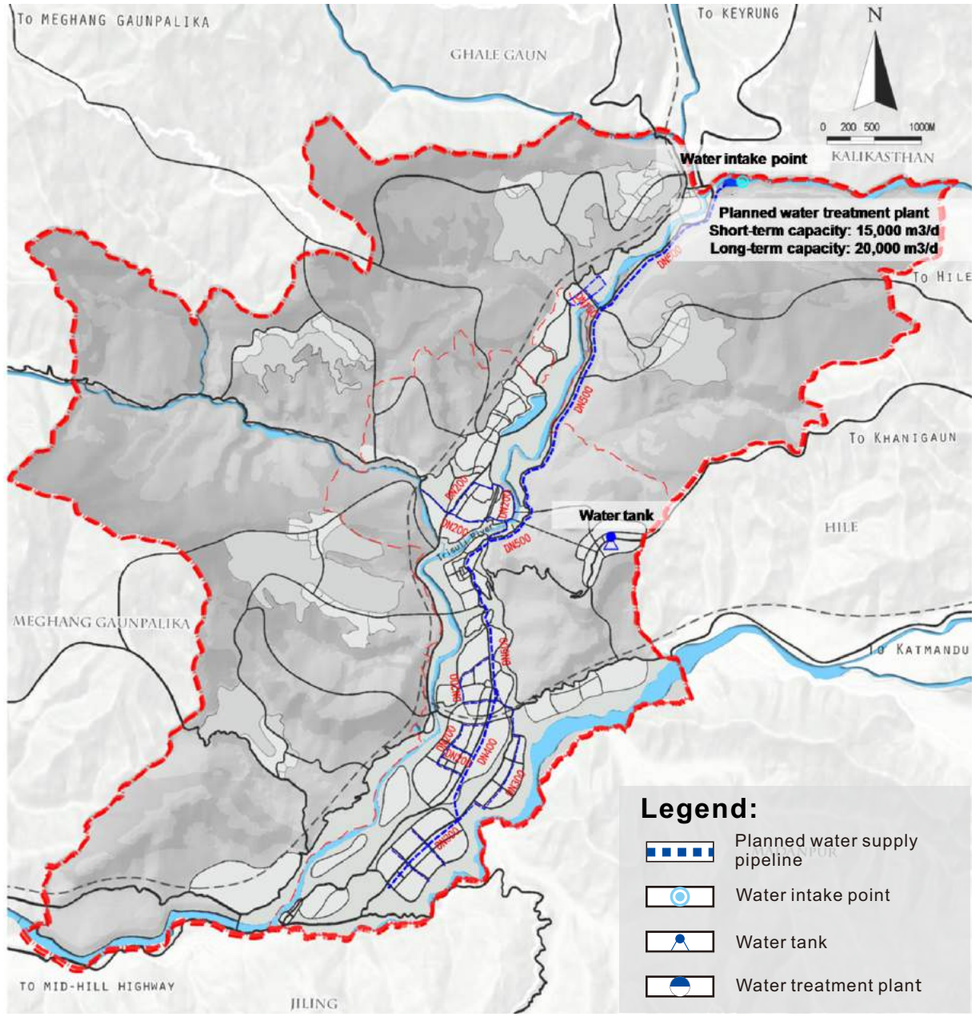


Figure Water Supply Engineering Planning of Bidur in 2035

(2) Drainage and waterlogging prevention project planning

①Rainwater project planning

1)Planning goals

According to the principle of "relatively concentrated discharge of rainwater to the rivers nearby", the urban rainwater drainage system will be perfected, and the urban disaster prevention capabilities will be enhanced to ensure that there is no accumulation of water during light rain, and no serious waterlogging during heavy rain.

Under the premise of ensuring the safety of the city, the capacity of urban flood detention will be increased, the construction scale of drainage project will be reduced, the initial rainwater management will be strengthened, and the ecological environment will be protected.

2)Planning standards

According to the urban construction scale of Bidur and with reference to the China's national standard, Technical Code for Urban Flooding Prevention and Control (GB51222-2017), the design recurrence interval for waterlogging prevention and control is 20 years. The one-year design recurrence interval (three to five years in the important sections) is adopted as the design standard of water drainage pipes and channels.

3) Rainwater system planning

Retain and control the open channels and ditches between the clusters and rivers as the main water drainage passage. Covered trench or grass planted ditch are constructed along the roads in the clusters according to the topography and terrain by combining with the road construction to collect the rainwater and drain them into the nearby open channels or ditches and finally into the Trishuli, Tadi and Samari rivers.

② Sewage collection and treatment project planning

1) Planning goals

Establish a relatively perfect sewage collection and treatment system. The sewage treatment rate will reach over 70% in 2022, and over 85% in 2035.

2) Drainage system

It is planned to adopt the separate drainage system to build independent sewage collection pipe network system in the river valley concentrated construction area for the purpose of gathering the sewage and transporting them to the sewage treatment plant before discharging.

3) Sewage discharge forecast

The average daily sewage discharge is calculated as 85% of the average daily water consumption (the daily variation coefficient is 1.6) and in addition, 10% infiltration quantity of groundwater is considered.

According to the water consumption forecast, the average daily sewage discharge in river valley concentrated construction area of Bidur will be 8800m3/d in 2022 and 11,500m3/d in 2035.

4) Sewage treatment plant planning

It is planned to build a secondary sewage treatment plant in south of Bidur, west of industrial cluster and on east bank of the Trushuli River, to serve the Trushuli cluster, Bidur cluster, Batter cluster, and industrial cluster along the Trushuli River. The treatment capacity will be 8000m3/d in 2022 and 10,000m3/d in 2035.After the tail water of the sewage treatment plant reaches the national discharge standard, it will be discharged into the Trushuli River. The sludge produced by the sewage treatment plant can be used as agricultural fertilizer after drying.

5) Layout of sewage pipe network

It is planned to arrange the main sewage collection pipes along the east bank of the Trushuli River to collect the sewage of each cluster from north to south; the sewage pipes with DN300mm will be installed along the roads in the clusters according to the topography and terrain and road construction to collect sewage from the land along the road, and the pipes will be connected to the nearby main sewage pipes.

6) Sewage collection and treatment in the village agglomeration area and palace cluster

Considering that the distribution of the village agglomeration area in the mountains and palace cluster is relatively scattered, the construction cost is high if all the pipes are connected to the pipe network of the sewage treatment plant; what's more, the sewage discharge in each village is relatively small. Therefore, it is

planned to concentrate the sewage of above-mentioned clusters and build simple ecological sewage treatment facilities, such as septic tank, methane tank and ecological wetland and so on, or use them as some farmland fertilizers.

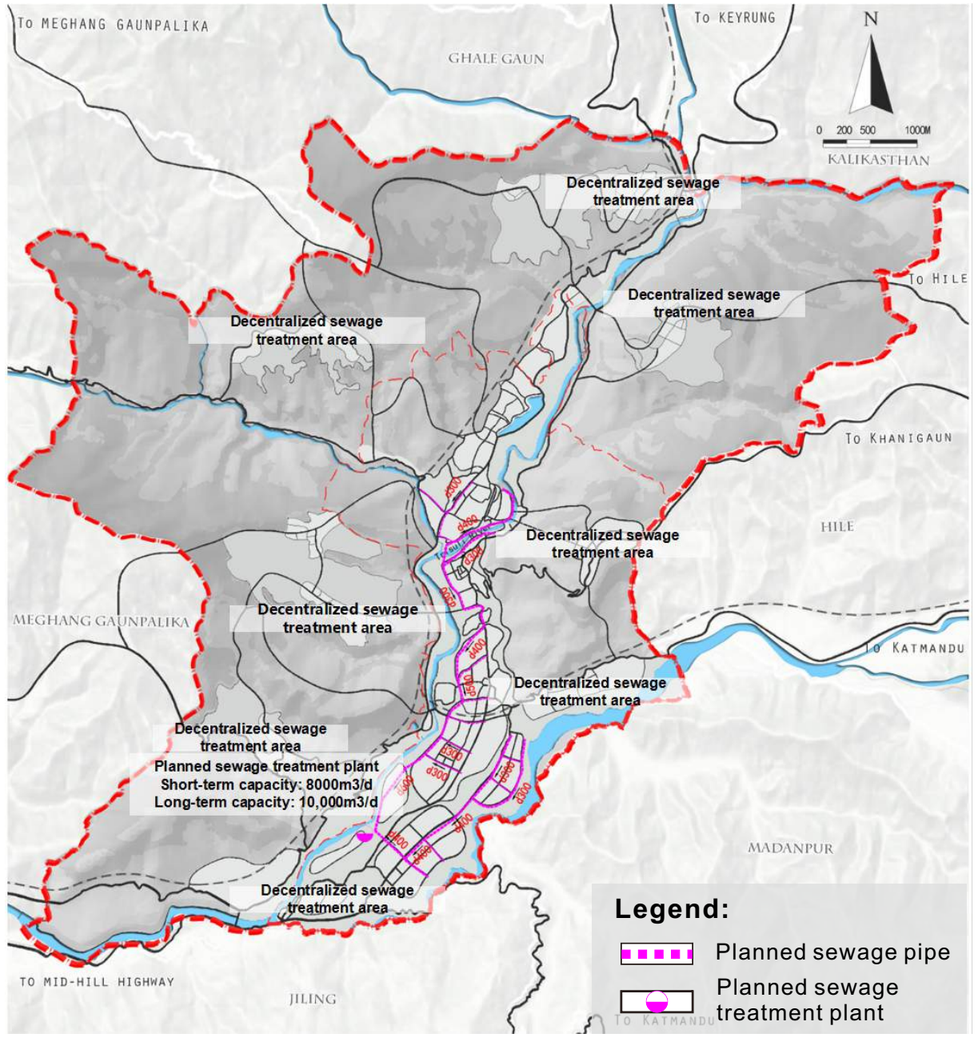


Figure Sewage Engineering Planning of Bidur in 2035

(3)Power planning

① Principle of power supply planning

Adhere to the principles of putting urban infrastructure construction first, meeting the needs of urban development, and combining the macro planning and construction management. Simplify voltage levels, reduce transformer gradation, and simplify electrical connections of substation in the power transmission and transformation project. The voltage levels are 132 kV, 66 kV and 10 kV. Reasonably arrange the grid, and extend into the load center through high voltage. Emphasize that the power supply network shall be in harmony with the social environment.

② Power supply load forecast

The electricity consumption load demand and load density in the planning area are calculated according to the plan for construction land in the area, and the electricity consumption standards in the table below.

Table Electricity Consumption Standards of Bidur in 2035

(Unit: Megawatt)

Land type	Public facilities	Business	Residence	Industry
Electricity consumption indicator	400	500	200	400
Demand coefficient	0.6	0.8	0.5	0.5

It is planned that the maximum power supply load of Bidur will be about 133MV and the load density will be 11MV/km^2 in 2035.

③ Power grid planning

1) 132 kV and above high-voltage distribution network planning and substation distribution

The 132kV power grid meets the requirements of the N-1 standard. And the 132kV substation supplies power by dual power supplies or dual loops, and is reasonably distributed as close to the load center as possible. The 10kV switching station meets the requirements of “small capacity and short radius”, and the power grid meets the requirements of the N-1 standard. A modern power grid with 132kV network as the center and 10kV network as the extension will be formed.

According to the development demand of urban construction land, 132kV Bidur 1# and 2# substations will be newly built by 2035, with the ultimate main transformer capacity of 3×50 MVA and the incoming lines will be led from the Trishuli and Battar Hydropower Stations respectively. Transform and upgrade the Trishuli and Battar Hydropower Stations into 132kV hydropower stations and incorporate them into Nepalese 220kV power grid in the long term. In principle, it is planned that the cable pipes will be laid on both sides of a road of 40m or more in length, laid on two sides or one side of a road of 30 to 40m, and laid on one side of a road of 30m or less.

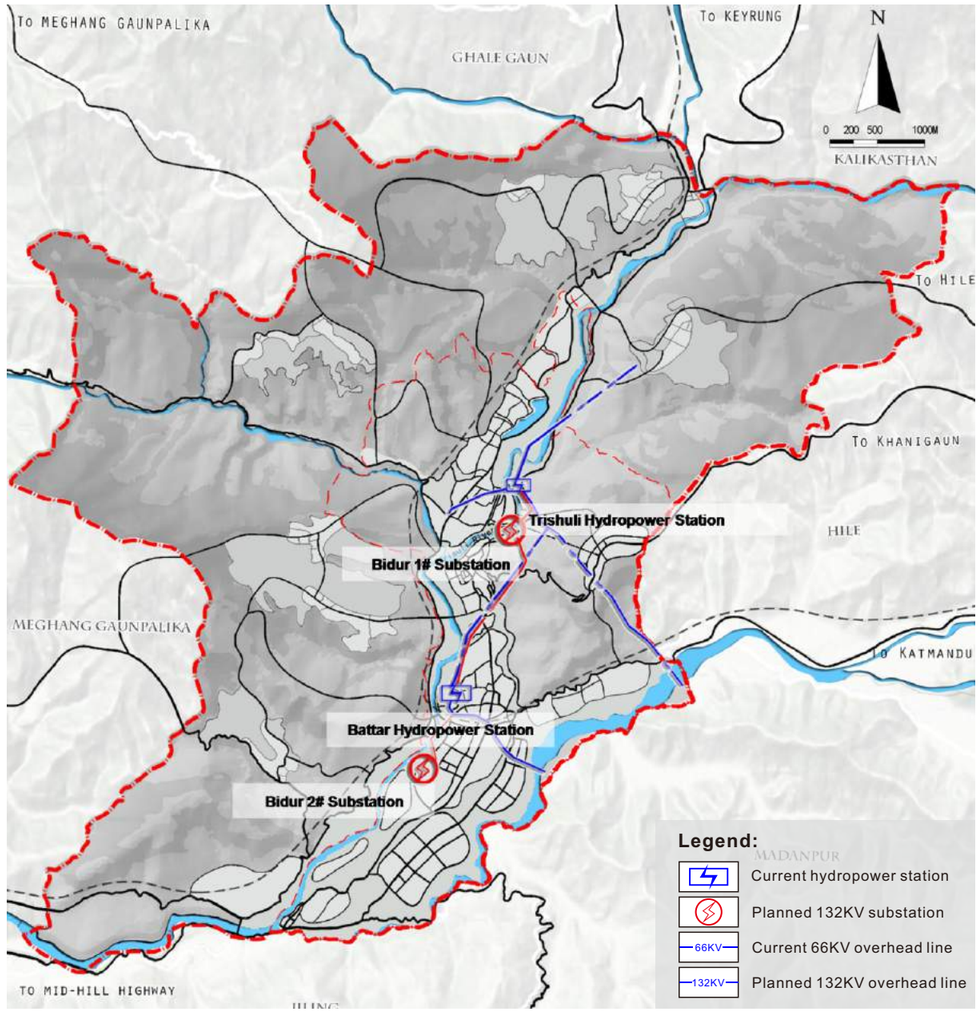


Figure Power System Planning of Bidur in 2035

2) Setting of lamp network and outdoor lighting

The external lighting of the building should coordinate with the environment under the premise of meeting the illumination requirements. The lamps of the road with width of 30m or more will be installed on both sides of the road and the lamps of the road with width of less than 30m will be installed on one side of the road, with span of no longer than 35m. LED light source is suggested.

④ High-voltage corridor planning

Build 132kV overhead line from the Trishuli and BattarBatta hydropower stations to Bidur 1# and 2# substations. The width of the high-voltage corridor is controlled to 30m. The original 66kV overhead lines will be retained and upgraded to 132kV overhead lines in the long term.

In principle, the newly-built power lines shall be laid overhead or laid into the ground along the corridors such as planned roads, river courses, and railways. The width of the single-row 132kV and 66kV high-voltage corridors shall be controlled to 30m.

(4) Communication and postal planning

① Communication level prediction

According to the land use layout plan, the phone demand of Bidur is calculated as per the phone installation standard in the table below.

Table Communication Phone Installation Standard of Bidur

Land type	Public facilities	Business	Industry	Residence
Phone installation indicator (Gate/hectare)	150	150	30	80

According to the above-mentioned standards, the number of installed telephones in Bidur will be approximately 90,000 in 2035, and the popularizing rate of phones will be 100%.

② Communication network planning

According to the phone installation demand of Bidur, the phone installation capacity

of the current communication building will be expanded to 150,000 gates. During the planning period, we will vigorously promote the application of new communication technologies like optical access network, and by 2035 gradually realize Fiber-To-The-Curb (FTTC) and Fiber-To-The-Home (FTTH), and realize "triple play" of television, telephone, and data transmission. A 100m2 equipment access room for communication users with a construction area of 100m2 shall be reserved in a suitable location near the roadside for about every 500 households to adapt to the development of communication technologies, and meet the various data communication services of the users.

③ Broadcast television planning

Expand the cable broadcast television business and enrich the content of broadcast television. And the popularizing rate of cable TV will be 98% by 2035. The front-end equipment of cable TV will be installed in the densely populated area. The front-ends are connected with the optical cable star structure among the optical nodes under their jurisdiction, and the optical node is connected to the user through the cable structure to form the HFC network. Complete the transmission of images, voice, and data to achieve multi-functional development and utilization of cable TV.

It is planned that the transmission cable of cable TV will be buried on the same side as the communication line. The position of the optical cable transfer box will be reserved at the intersection of arterial road.

④ Pipeline planning

Taking into account the actual situation, the overhead installation of communication lines can be adopted in 2022. However, cable installation through pipe holes should be adopted in the section with dense lines such as outlet of communication building, especially when it's in both the city center and important scenic spot. And cable installation through pipe holes will be adopted in 2035 according to the construction development, and the communication through cable, optical cable, microwave and satellite will co-exist.

In principle, it is planned that over 24 communication pipe holes will be arranged for the communication pipeline on a road of 40m or more in length, 12-18 holes will be arranged on a road of 30 to 40m, and 12 communication pipe holes or less will be arranged on a road of 30m or less.

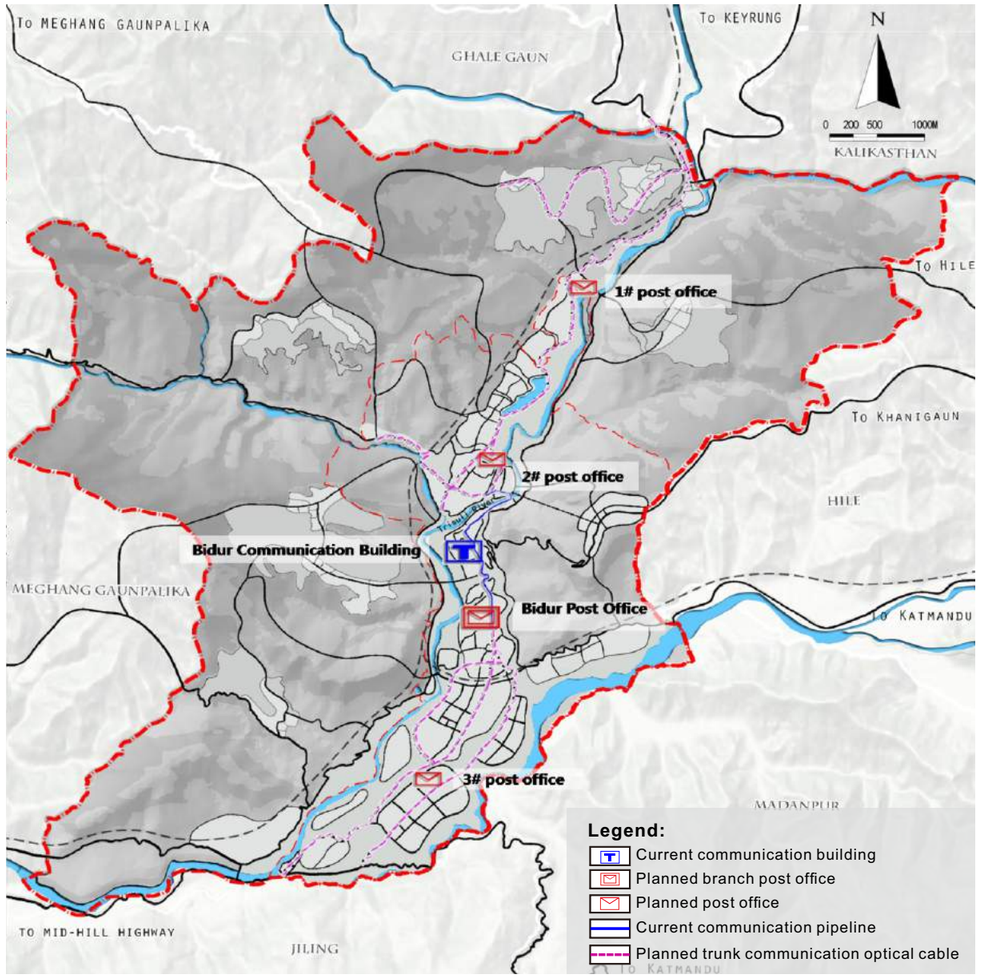


Figure Communication and Postal Planning of Bidur in 2035

⑤ Postal planning

According to the setting standards of post offices, the postal service radius will be 1 to 2 km, and the population served by each office will be no more than 20,000 to 30,000.The post offices should be set up in the city's main streets, commercial centers, cultural education and scientific research concentrated areas, industry concentrated areas and residential areas. According to the above standards, it is planned to build one Bidur Branch Post Office covering about 2,000m2 in Bidur and three post offices with construction area of 200 to 250m2 along with the urban construction.

(5) Environmental sanitation engineering planning

① Planning principles and goals

1) Build a relatively complete people-oriented and environment-centered solid waste classified collection, transport and treatment system. The rate of harmless urban domestic wastes treatment reaches to 80% in the near future and 95% in the long term. The rate of harmless sludge treatment of the sewage treatment plant reaches to 75% in the near future and more than 90% in the long term.

2) Vigorously develop the cyclic economy and promote recycling and use of solid waste to reduce the solid waste and convert it into resources.

3) Reasonably arrange the public toilets and domestic wastes transit station and other environmental sanitation facilities to meet the urban living needs, pay attention to the harmony with the environment and achieve the standard of being "neat and beautiful".

② Solid waste treatment planning

1) Domestic wastes output forecast

The method of average domestic wastes output per person is adopted in the forecast. In accordance with Planning Specifications and Standard (2013) formulated by the Ministry of Urban Development of Nepal, the average domestic wastes output per person is 0.3kg/d. It is planned that the population of Bidur will be 100,000 in the long-term and 60,000 in the near future. Then the output of urban domestic wastes will be 30 ton/d in the long term and 18 ton/d in the near future.

2) Domestic wastes treatment plan

The domestic wastes of river valley concentrated construction area of Bidur will undergo harmless treatment by the city garbage treatment plant. Adopt the centralized collection in the community and door-to-door garbage collection to collect and transport the domestic wastes. Plan and improve the classified collection facilities in communities and roads and distribute the garbage collection stations, waste bin and roadside trash can according to the service radius of not more than 200m. Set up the discarded material recovery service system in each community to reduce the domestic wastes from the beginning.

3) Treatment and utilization of general industrial solid waste

Comprehensive utilization should be the priority in treatment of industrial solid wastes. Formulate corresponding method according to the industry type and technological features in the urban area and make best efforts to arrange the upstream and downstream industries and turn the waste into resources according to the waste utilization industry chain.

4) Medical waste treatment

Set up the medical wastes collection, transportation and treatment system serving the whole city. The medical wastes of hospitals of the city will be collected by special institutions, transported to the garbage treatment plant and treated separately.

③ Planning on environmental sanitation facilities

1) Planning on treatment facilities

It is planned to build a domestic waste landfill on the east bank of the Ttrshuli River in south of the city, and in comprehensive consideration of the domestic waste treatment of the urban areas and the villages in the surrounding area, the capacity is planned to 30 ton/d.

2) Planning on parking and maintenance yard of environmental sanitation vehicles

The waste collection and transportation of Bidur is mainly completed by man and medium- and small-load vehicles. Calculating according to 2.5 vehicles for environmental sanitation per 10,000 people and that each vehicle occupies land of 60m2, then Bidur has to be equipped with 25 environmental sanitation vehicles and the parking and maintenance yard of 1500m^2. The parking and maintenance yard can be set by comprehensively consideration of the location of garbage landfill.

3) Public toilet planning

Based on the standard that every 10,000 person requires three public toilets, Bidur has to set up 30 public toilets with spacing of 300 to 500m in the business district and 500 to 800m in the residential areas. The standard land area for each public toilet is 60m^2.

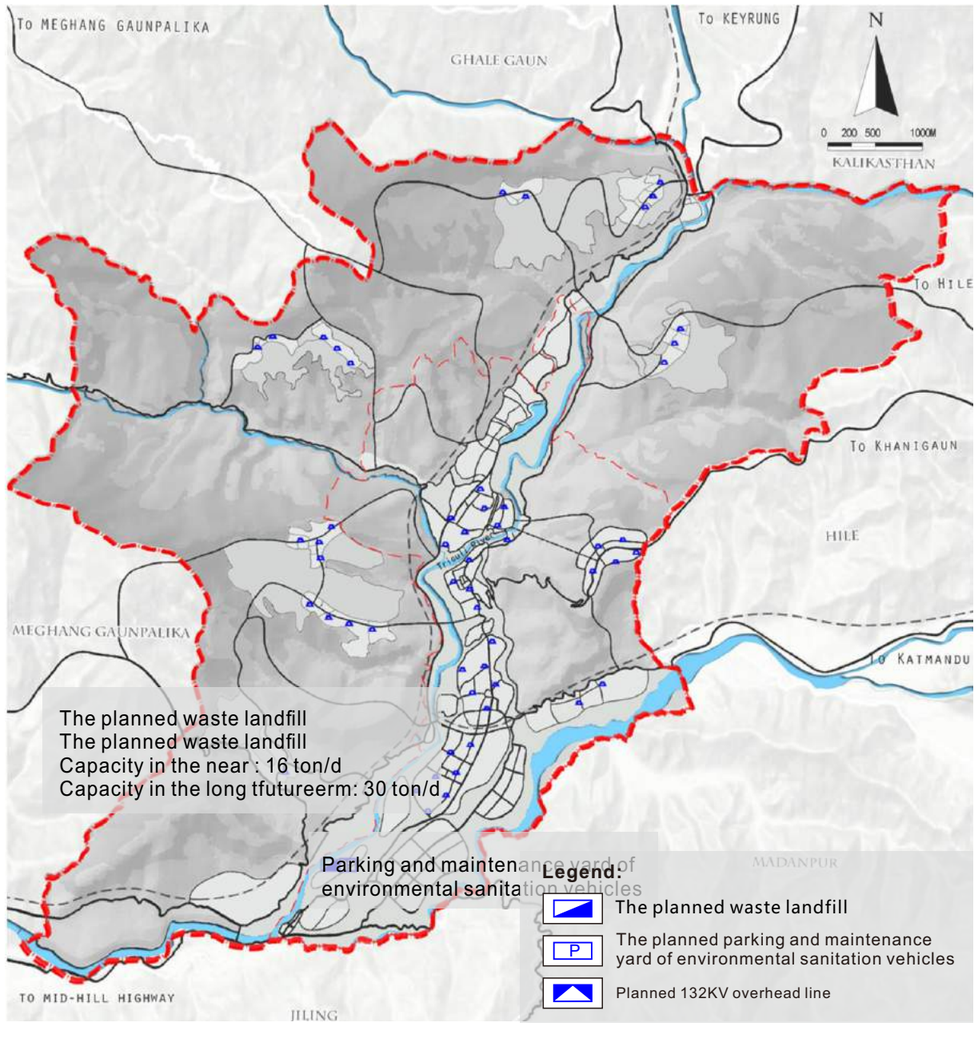


Figure Environmental sanitation facilities planning of Bidur in 2035

6. Culture protection--Building up classified and level-by-level culture protection system with orderly guidance and control

(1) Historical and cultural resources evaluation

Distribution of historical and cultural resources: "old cities are densely distributed in the city center, the portals are gathered in both the south and north side of the city and the villages are scattered in the periphery of the city". TRISHULI traditional business and trade cluster and the palace cluster are distributed with a large number of historical and cultural resources, including the Palace historical and cultural architectural complex, traditional business and trade street and some important temples; the south and north

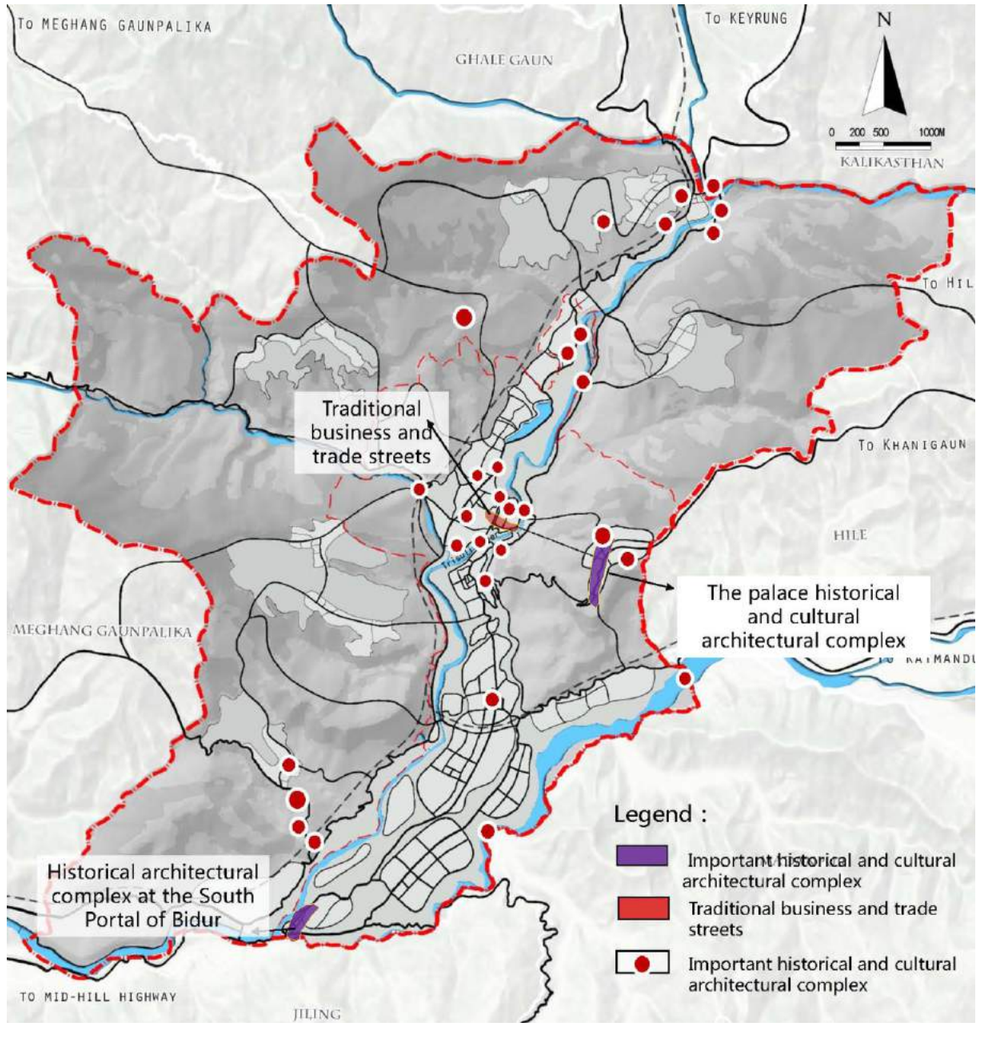


Figure Communication and Postal Planning of Bidur in 2035

side of Bidur are distributed with religious buildings and temples; many temples are scattered in the Charghare region connecting to the surrounding mountain and forest area; and some religious facilities are scattered in the BATTER and BIDUR clusters. Historical and cultural resources evaluation: Through comprehensively evaluation of the year, architectural style, historical and cultural characteristics, protection and use value of the historical and cultural resources, Bidur's historical and cultural resources can be divided into historical and cultural architectural complex, traditional business and trade culture streets and important historical and cultural facilities.

Table Nepalese historical and cultural resources evaluation and grading

Grading	Contents	Connotation and value
Important historical and cultural architectural complex	The palace historical and cultural architectural complex	The imperial palaces of Nepal in the ancient times, includes the palace, bedroom and other buildings
Traditional business and trade streets	TUISULI traditional business andtrade street	The terrace streets having the TUISULI historical and traditional business and trade functions
	Religious culture streets in south of the city	Religious living area at entry to the southern part of Bidur, including the religious temple and religious cultural streets with historical and cultural buildings
Important historical and cultural facilities	Tibetan Empire - Nepal Marriage Monument	A monument in memory of the marriage between the Tibetan Empire and Nepal
	Facilities of BATTER Center	The important historical facilities like the tree, well, temple and the site
	Hindu temple, and other temples	Religious culture of Nepalese characteristics and important scenic spots (Trishuli Ram temple,Battar Ram temple, Pancha Kanya, Barahi temple, Bandevi, Trishuli Krishna temple, Battar Krishna temple, Kalika temple, Malika temple, Raktakali temple, Laxmi Narayan temple, Trishuli masjid.)

(2) Historical and cultural facilities protection system and standard

Plan and establish the classified protection standard of "historical and cultural architectural complex zone -- traditional business and Trade Street -- important historical and cultural facilities" with reference to China's specifications for preparation of famous historical and cultural town protection and relevant requirements on historical and cultural resources and in consideration of the historical and cultural characteristics and development reality of Bidur.

① Important historical and cultural architectural complex zone

The palace historical and cultural architectural complex: classify the complex into three levels, namely "core protection zone + construction controlled belt + coordination zone", to protect it.

Core protection zone: Delimit the scope of core protection zone by following the principles of including all palace building. The core protection zone extends to the south entrance in the south, the bedroom of the Palace in the north, the forest in the west and the valley in the east. Construction of new buildings is strictly controlled in the zone and the style of the newly built buildings must be consistent with that of the Palace.

Construction controlled belt: The 100 to 200m scope outside the core protection zone is delimited as the construction controlled belt of historical and cultural architectural complex. The construction controlled belt reaches to the mountain roads in the west and south, the entrance to the school on the mountain top in the north and the mountain valley in the east. In this belt, the construction of residential building and business facilities are strictly controlled, the building height is strictly confined to below four floors and the style of business facilities and residential buildings must be in harmony with that of the palace historical and cultural buildings.

Coordination zone: The coordination zone is the zone within 200m to 500m scope along both sides of the ridge line, including the terrace and slopes in the mountains and the construction area with concentrated hinterland. In this zone, the building height is confined to below four floors and the building style must be in harmony with the palace historical and cultural buildings.

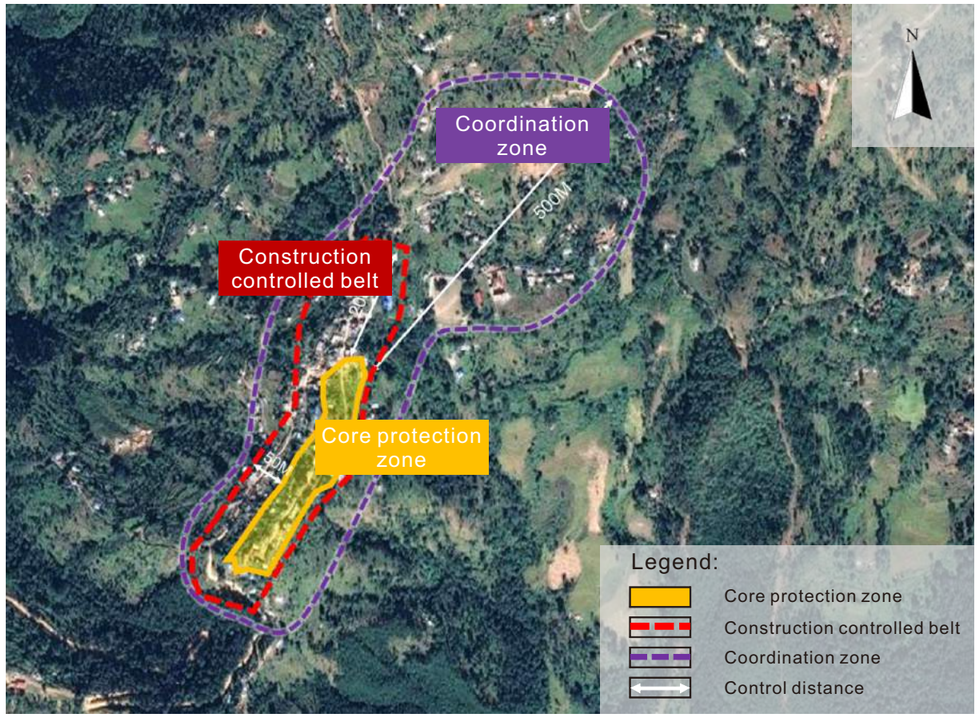


Figure the palace historical and cultural architectural complex protection and control

② Delimit and protection standard of traditional business and trade street

TUISHULI Traditional business and trade streets: Some historical buildings and traditional business and trade buildings are on these streets and the standard of historical and cultural streets can be referred to classify it into core zone of business and trade streets and the peripheral coordination zone to protect it. The scope of core zone of business and trade streets start from the TUISHULI Bridge in the east and extend to the channel in the west, with business buildings at both sides. In this zone, the comprehensive building governance and improvement will be done and no construction of new buildings is allowed. The 50 to 150m scope outside the core zone of traditional business and trade streets is delimited as the coordination zone. In this zone, it is suggested to confine the building height to be below three floors, the building density should be controlled to a lower value and the style should be in consistent with the original style of the traditional business and trade streets.

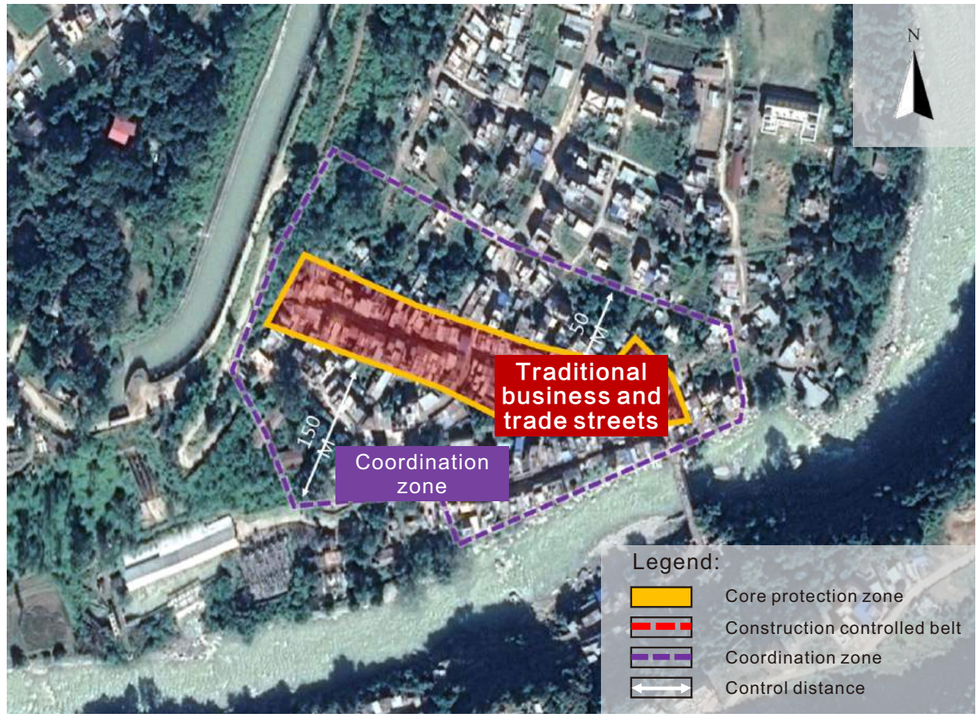


Figure TUISHULI Traditional business and trade streets protection and control

Religious culture streets in south of the city: It includes the most famous Hindu temple and activity sites of Bidur. In this zone, the historical and cultural street protection standard can be referred to classify it into zone of religious cultural street and peripheral coordination zone for protection.

The core zone of religious cultural streets reaches to the TUISHULI River in the west, the TADI River in the south and 50m away from the main roads in the east and north. The core zone has large Hindu Temples, sites and traditional residential buildings. In this zone, the comprehensive building governance and improvement will be done and no construction of new buildings is allowed to develop it into the southern religious portal of traditional regional features. The 150m scope outside the zone of religious cultural streets is delimited as the coordination zone. In such zone, it is suggested to control the building height to be below three floors, the building density should be controlled to a lower value and the style must be consistent with that of the traditional streets.

Figure Protection of the religious culture streets in south of the city

③ Important historical and cultural facilities protection standard

The important historical and cultural facilities are the buildings that can reflect the historical and cultural characteristics, artistic value and scientific research value of Bidur's building and mainly include the important temples, marriage monument and featured public site facilities (the tree, the well and the pond) and so on. Regarding the protection of the important historical and cultural facilities, its original architectural style should be maintained, its main plane layout, characteristic structure and components may not be damaged; the surrounding protection scope should be made clear and the construction controlled belt should be delimited. No construction and development activities in the scope within 50m of the marriage monument and 20m of the important temples and facilities may be allowed.

(3) Protection and use of intangible cultural heritage and resources

Traditional holidays and festivals: As a country of religious ceremonies, Nepal has more than 300 traditional holidays and festivals take up one-thirds of the year. Bidur's intangible cultural heritage is mainly the traditional cultural festivals of Nepal.

Traditional crafts: Mainly the religious paintings and Nepal woodcarving.

Table Schedule of important intangible cultural heritage of Nepal

Type of intangible cultural heritage	Date	Connotation and value
Traditional ceremonies and festivals	Dashain, October 1 to October 15	The largest festival in Nepal, celebrates the Goddess Durga's victory of the devil, hundreds of thousands of livestock are slaughtered, and villagers erect bamboo branches at the doorway. (The calendar group announces the important pray time)
	Tihar, October 21 to October 26, i.e August 15 of Nepal calendar	The second largest festival in Nepal. Worship crows and provide foods for crows in the day one. Feed and honor the dogs on day two. Thank cows during daylight and Laxmi, the goddess of wealth, during the night of the day three. Honor the ox on day four. Brothers and sisters will gather together and accept Tihar quotes on their foreheads on day five. (Dance and drawing the religious pattern)
	Holi (China's Spring Festival, March 6 to March 13)	The festival starts with bamboo pole erection ritual, and then people smear each other with colors, drench each other and water-filled balloons are also used to color each other. Burn out the bamboo poles on day eight and the festival is over. (Export of live sheep of Tibet)
	Women's Day September 18	Adults and children dress themselves in red to sing and dance
	The traditional New Year of Vikram Samvat Middle of April	The Newari people who believe in Buddhism will worship the god and pray for the happiness and the entire family will gather together to drink the rice wine, eat eggs, sing and dance.
Traditional fine art and crafts	Nepal color painting	Wall painting and drawing of religious pattern of Nepal
	Nepal woodcarving craft	National handicraft, woodcarving, copper sculpture, clay figurines and silver jewelry craft and so on.

Protection and use measures: Under the premise of maintaining the authenticity of intangible culture such as the traditional festivals, tourism, business and trade activities can be held in the public space during the festival to mine the potential economic value of local traditional festivals. Regarding the traditional fine art and crafts, Bidur can actively find and cultivate inheritor to inherit and carry forward the intangible culture of Bidur on the one hand and promote the conversion of fine art and woodcarving works into commodities that can be sold and intensify the publicity and protection of intangible cultural heritage via the commodity circulation on the other hand.

Figure Spatial planning on Nepalese intangible cultural heritage protection and use

7. Ecotourism—Developing a Management—Usage Combined and Ordered Tourism System

To develop a cultural tourist route of "cultural circle tour around Jingzhou + classic ropeway" and an eco-tourist route of "large circle eco-tour + mountain roads adventure ".

(1) "Small cultural tour loop + classic ropeway"

A "small circle of cultural tour" in the city center is to be formed by utilizing the mountain roads, developing the plan of connecting the mountain footpath with the traditional commercial streets of the historic town, historical and cultural landscape zone of architectural complex and administrative service center of Bidur, and the setting of several tourist service facility points by integrating the theme of traditional culture. In the long term, a sightseeing ropeway connecting the traditional commercial streets and the historical and cultural landscape zone of palace complex will be constructed, in order to further integrate the historic and cultural resources.

(2) "Big ecotourism loop + mountain roads adventure"

The ecological landscape along the River TUISHULI and River TADI provides beneficial conditions for tourist activities such as rapid drift or slow canoeing sightseeing. The supporting tourist facilities along these rivers form the "big ecotourism loop". A mountain hiking route and a riverside tourism greenway in the peripheral areas will also be developed as adventure hiking routes to enrich ecotourism experience.

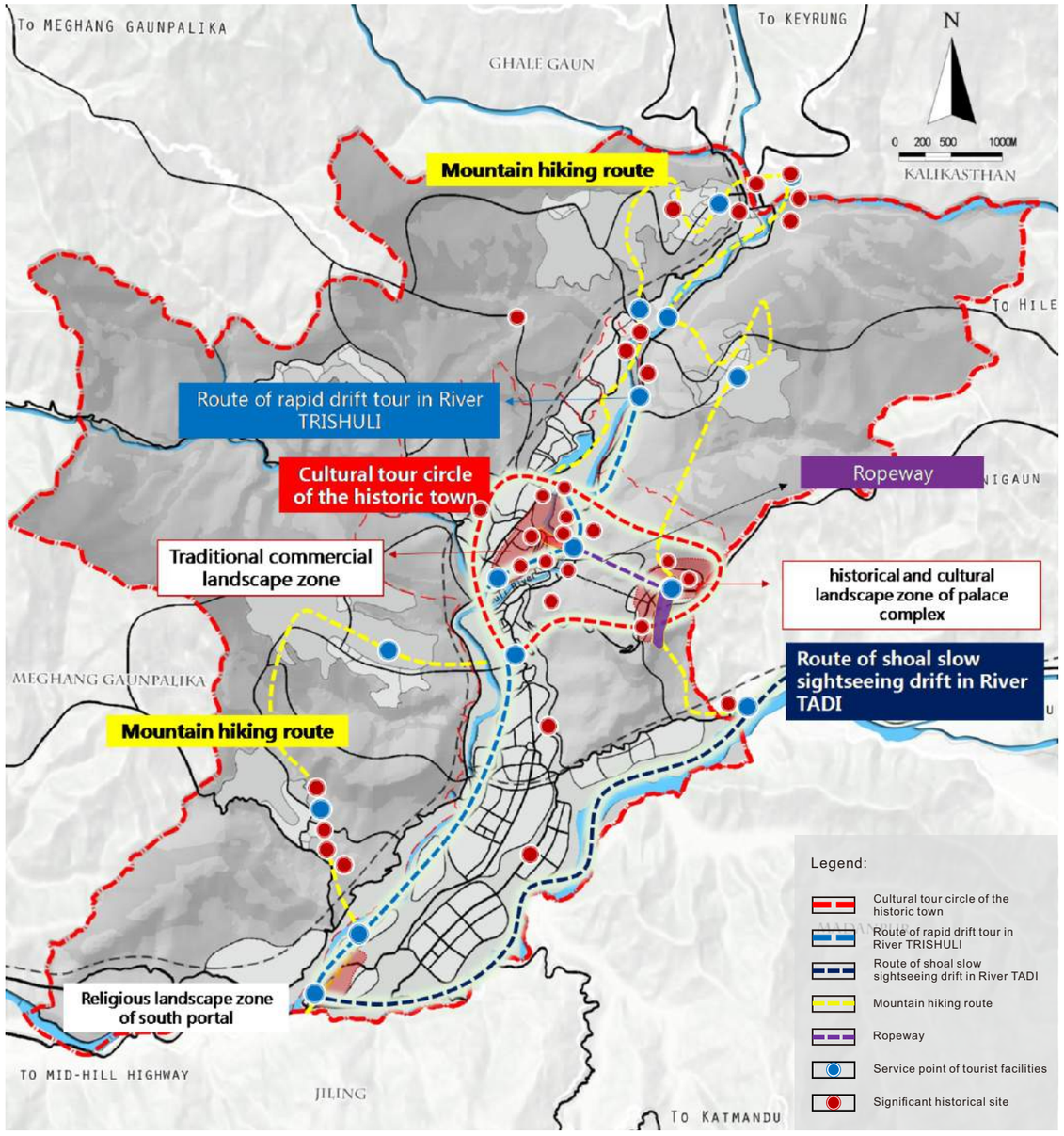


Figure Systematic planning map of ecological and cultural tourism in Bidur

8. City design--forming a distinctive landscape system with both ancient and modern attractions

(1) Overall landscape layout plan

Build a distinctive landscape structure of "one belt, one axis, five wedges and multiple districts"

One belt: A "river valley landscape sightseeing belt" connecting "religious and cultural landscape portal, new town landscape zone, Batter industry and city integration center, heart of BIDUR administrative and financial capital, distinctive traditional commercial center of TRISULI and riverside landscape belt" from south to north.

One axis: An "opposite scenery axis of the historic town" with the TUISULItraditional business and trade streets of and historic and cultural streets of Nuwakot Palace complex as the opposite scenery.

Five wedges: Construct multiple east-west eco-corridors on the basis of ecology conservation forest land and ecology restoration valley of the river valley, in order to form a distinctive city cluster and construct corridors with a nature view while securing the safety in flood discharge of mountains.

Multiple districts: TRUISHULI traditional commercial, historic and cultural landscape zone, BIDUR administrative and financial capital landscape zone, historic and cultural landscape zone of palace complex, BATTER industry and city integration landscape zone, Devighat religious portal landscape zone and demonstration sightseeing area of mountain terraces and other major landscape zones.

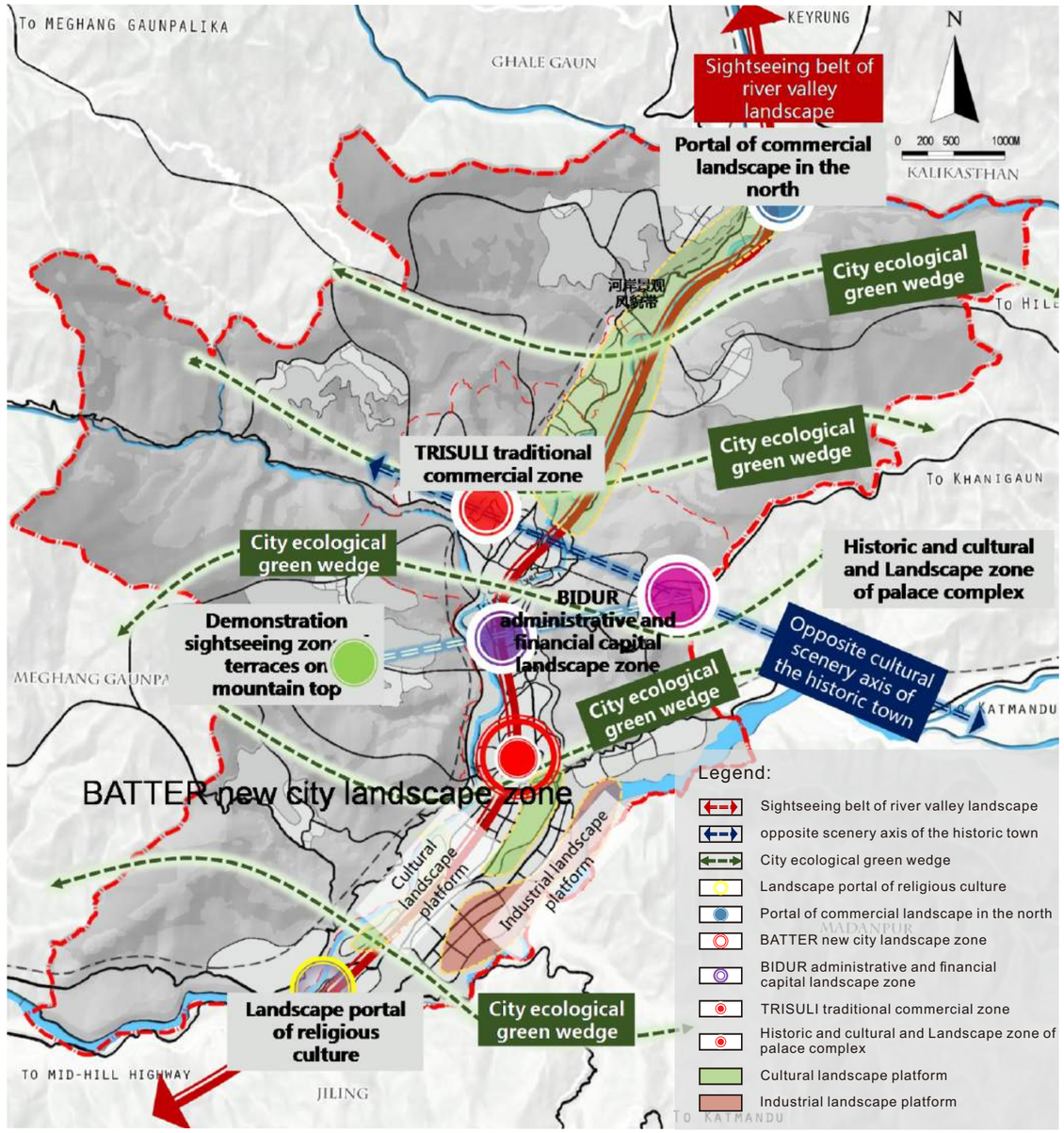


Figure Overall landscape layout map of Bidur in2035

Figure General Layout map of Bidur Landscape planning

(2) Construction guidelines for major landscape zones

① TRISHULI traditional trade landscape zone

1) Spatial landscape structure — "One street, one axis, two belts, four parts and multiple joints"

Tuishuli traditional trade zone manifests the cluster landscape feature of an integration of mountain, water, street and city as a whole and the cluster landscape feature of standing by mountains and facing the water.

One street: A traditional commercial and cultural street following mountain terrain.

One axis: opposite cultural scenery axis of the historic town, which extends to the mountain along the commercial street, dominates buildings on the two sides and contributes to the forming of sight corridor.

Two belt: The ecological riverside landscape belt along River TUISHULI and the reserved ecological protection belt along the channel project in the middle part.

Four parts: Traditional commercial and cultural block, cultural service functional cluster along the river, new commercial and residential cluster and comprehensive cluster of logistics management.

Multiple joints: including architecture complex joints and open space joints. Architecture complex joints consist of service facility cluster joints along the river and new trade zone service cluster joints; open space joints consist of carnival Open Park of public service cluster, Open Park of new commercial cluster and other parks.

2) Cluster zone guidelines

Traditional commercial and cultural block: The traditional commercial and cultural street highlights the image of the commercial street. The building is mainly composed of 2 to 3 floors. The building protection and utilization mode is based on the "reserved + new construction" architectural layout pattern, forming the architectural layout features of "having a street and a courtyard". Combining the original features of the traditional style street, it repairs and redesigns the window edges, railings, window legs and roof.

Cultural service functional cluster along the river: It is suggested that this cluster should be basically distributed in low density and its buildings should be constructed into no more than 4 storeys. A large open space should be reserved in the riverside areas; other areas in the cluster should have a control on several small green lands. The cluster is enclosed by square residential buildings.

New commercial and residential cluster: The overall building should be constructed into no more than 3 storeys and follow the traditional architecture landscape zone in style. It should have a control on a large park, a connection mountain, green corridor of the channel and several green lands and parks.

Comprehensive cluster of logistics management: It is mainly composed of strip type warehouse of 1-3 storeys, which is arranged by type of goods being stored. Along the road lay park lots and buildings of comprehensive administrative management center, for the purpose of ensuring the efficient running of logistics and trade activities. The building adopts the "reservation + new construction" utilization mode to highlight the human settlement characteristics of the courtyard and greening.

Figure master plan map of TRISULI cluster

Figure spatial structure map of TRISULI cluster

Figure bird view map of TRISULI 1

Figure bird view map of TRISULI 2

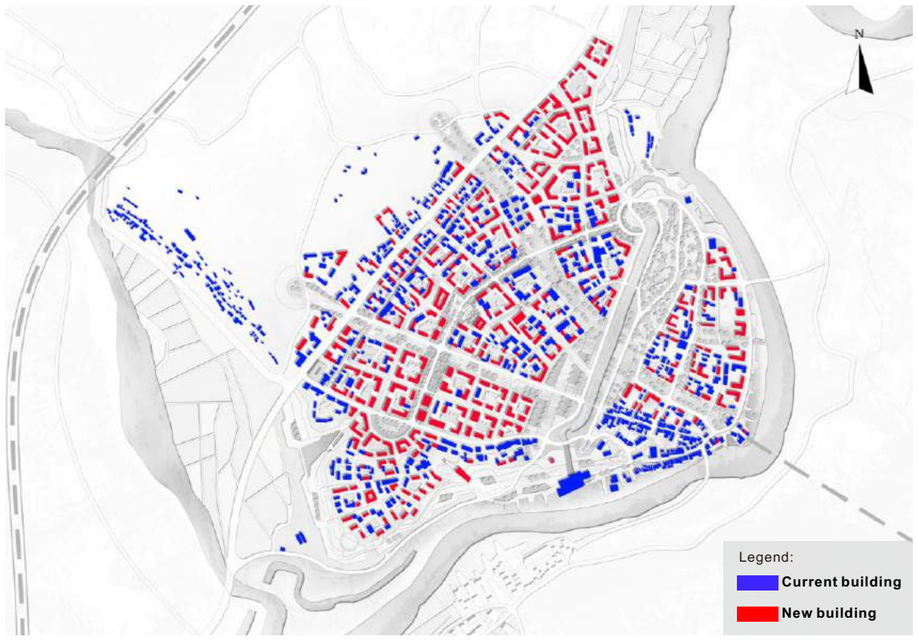


Figure new and old building layout map of TRISULI

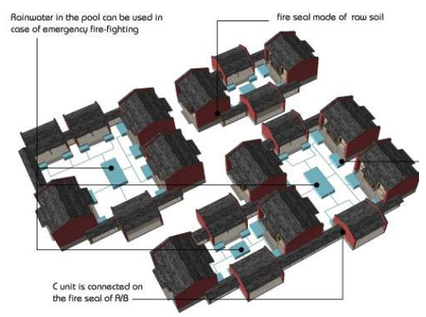


Figure intention map of Architectural layout in TRISULI

② Bidur administrative and financial capital landscape zone

1)Spatial landscape structure — "One axis, one circle, two centers, two corridors and multiple zones"

Through comprehensive analysis of the location characteristics, planning elements, and the landscape relationship of the surrounding landscapes of Bidur cluster, plan to form a service zone landscape image of BIDUR administrative and financial capital with the integration of ancient and modern styles and the combination of modern and traditional buildings by intensive conservation of land achieved by applying a building layout of low density and high intensity and providing high-quality supporting environmental facilities.

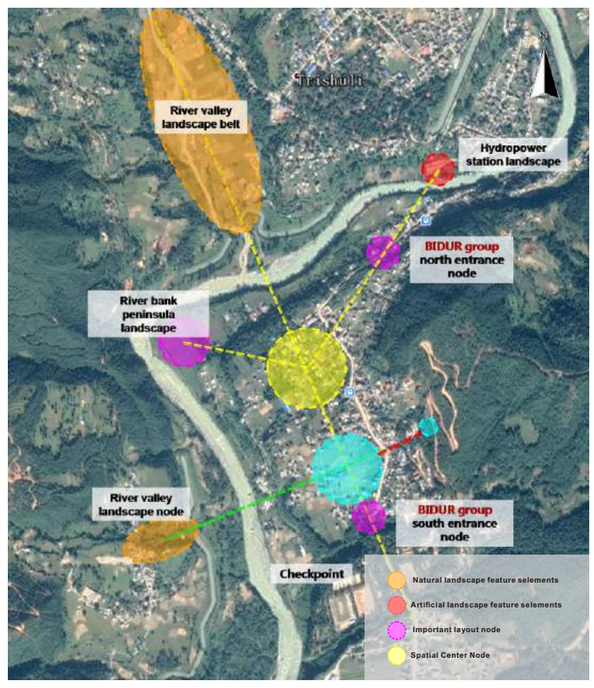


Figure Natural factor analysis map of BIDUR

One axis: BIDUR administrative and financial service axis, which benefits from the traffic main artery in the south-north direction, controls the green belts on the two sides and improves the landscape of both sides by planting trees and flowers with a better landscape.

One circle: The ecological landscape circle distributing along the loop type road network.

Two centers: The administrative office capital core zone having a central park under its control and the high-end hotel service center in the south which has a large park under its governance. And reserve the landscape sight corridor leading to the mountain and facing the river.

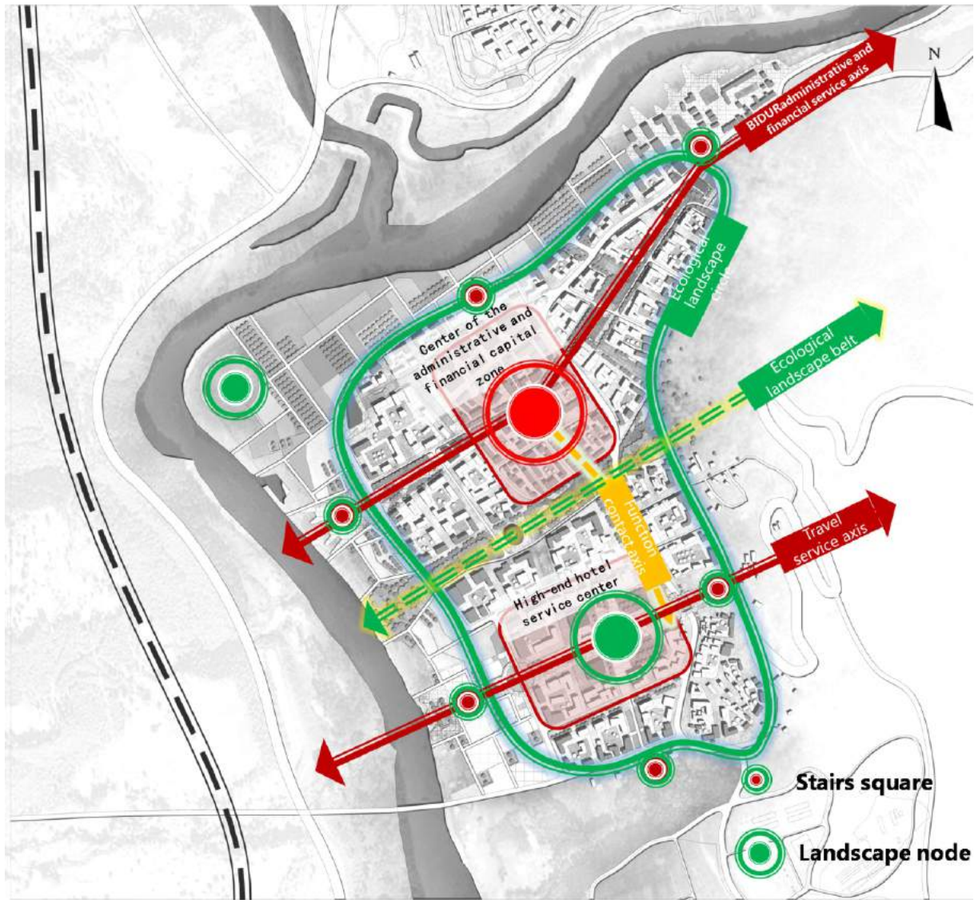


Figure spatial structure map of BIDUR cluster

Two corridors: Two eco-corridors connecting the administrative and financial capital core zone and the high-end hotel service core zone with the riverside landscape, and reserve green space in park and create a walking environment in the city.

Four zones: The administrative and financial capital core zone, the high-end hotel service core zone, supporting residential zone for administrative staff and the Riverside valley recreation and landscape zone.

2) Guidelines for BIDUR cluster zones

Administrative office capital core zone: The capital center with such functions of providing administrative offices for government, bank, finance bureau, education bureau, tax bureau and public security bureau. Buildings in this zone should be constructed into no more than 5 stories and adopt the color combination of white and brick red or grey and brick red. It has a central park under its control, the building is dominated by protective restorations, highlighting the old town.

High-end hotel service core zone: The core zone with such main functions as high-end hotel, accommodation and travel agency. It controls a large central municipal park near the main road, has hotels, travel agencies, park lots and other facilities distributing along the park, and has governance on central landscape green land and landscape axis on the riverside. Buildings in the zone are of low density and high intensity as a whole. It is preferred for the buildings to be constructed into no more than 10 stories and adopt glass curtain walls.

Supporting residential zone for administrative staff: Provide regularized residential buildings as supporting administrative and financial cluster for the equipment of such facilities as some kindergartens, schools and hospitals. It is suggested that buildings in the zone adopt the color of faint yellow and constructed into no more than 4 stories. The layout of the building adopts a semi-enclosed form, It is preferred that the cross wall of the buildings face the river.

Riverside valley recreation and landscape zone: The emphasis will be laid on afforested parks which serve as venues of leisure and entertainment. Tourism service and recreation parks will be constructed at important river bend parks basing on requirements of point locations of tourist service facilities. The two-stories scattered tourist facilities will be mainly established in some areas to serve rafting activities and circular cultural tours to the old city.

Figure Master Plan of BIDUR cluster

Figure bird view map of BIDUR

Figure bird view map of BIDUR 2

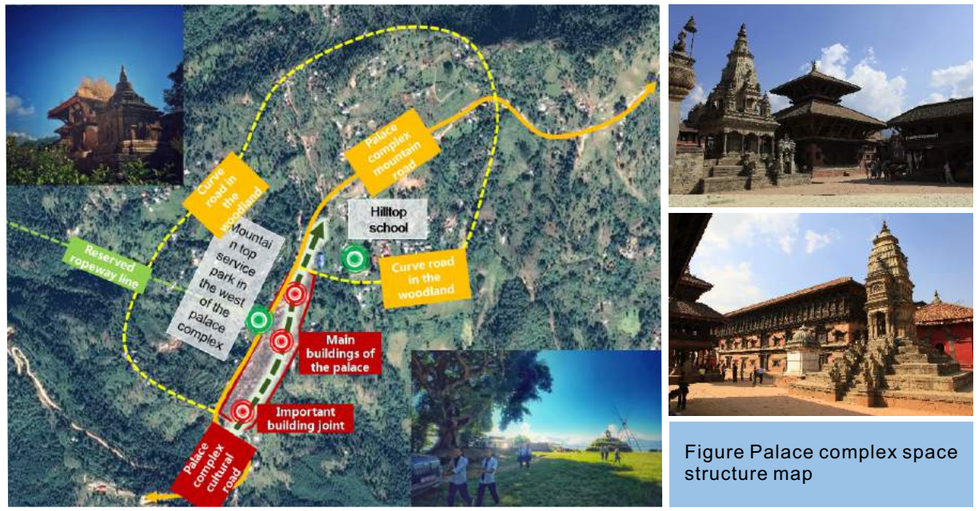


Figure Palace complex space structure map

③ Historic and cultural landscape zone of palace complex

1)Spatial landscape structure — "One street, one park, four route connections, a curve road in the woodland and four zones"

In the background of historic and cultural blocks of the palace complex, the homestay hotels are distributed beside the mountain. A cultural and historic tourism picture is formed in which the tourists climb the mountain and move on the woodland.

One street: Historic and cultural block of palace complex which controls the sight corridor of main landscapes.

One park: Mountain top service park located in the west of the palace complex which serves as an open public space.

Four route connections: The palace road leading to mountain top, the forest land road leading to the mountain foot, the reserved ropeway line connecting to TUISHULI cluster and the environment and facility service point along the route for improving landscape.

Curve roads in the woodland: Circle terrace forest roads and recreation routes around the homestay zone, historic and cultural block and village agglomeration zone.

Four zones: Historic and cultural block of palace complex, homestay commercial service zone, villager agglomeration zone and service functional zone on the mountain top.

Figure general layout map of Palace complex plan

Figure Palace complex planning renderings

2) Guidelines for cluster zones of palace complex

Historic and cultural block of palace complex: A block that contains the historic and cultural essences and features of Bidur. It has a full length of 300m and a width of 20-50m. Most buildings on both sides of the street are of wood or brick-concrete structure of 2-3 stories. Such buildings have the same architectural form ad style as Nuwakot palace complex. Several open spaces should be reserved in the block to perform the coordination function and ensure space order. The buildings shall not exceed the palace in height.

Figure real photo of Palace complex Historical and Cultural District

Homestay commercial service zone: A zone located in the northeast of the historic and cultural block of the palace complex which consists of Marriage Alliance Monument, hilltop school, BAPS Shri Swaminarayan Mandir, forest farm and other major tourist spots. According to the plan, the zone provides two main functions, namely commercial and homestay functions. The commercial district is distributed along the road, while the homestay district, with the mountain road as its basis, has a architecture layout following the mountain terrain. The buildings shall be constructed into no more than 2 stories and has the same architecture style as the palace complex.

Figure intention map of B&B business service area

Villager agglomeration zone: It is located in the northwest of the palace complex. Buildings in the zone, constructed into no more than 2 stories, shall have an architecture layout following the mountain terrain and be in harmony with the mountain environment.

Cultural service functional zone: As the entrance of historic and cultural block of palace complex and a main service functional zone, the zone shall have buildings with the same architectural features as the palace complex. Such buildings shall be 2-3 stories and have the same design as the palace complex. The main activity space and entrance space should be delimited by enclosed architecture; the sight corridor and ropeway corridor from the palace to entrance space and mountain foot cluster shall be reserved; and the token of the gate of the scenic spot can be designed.

Figure intention map of walkway on Mountain

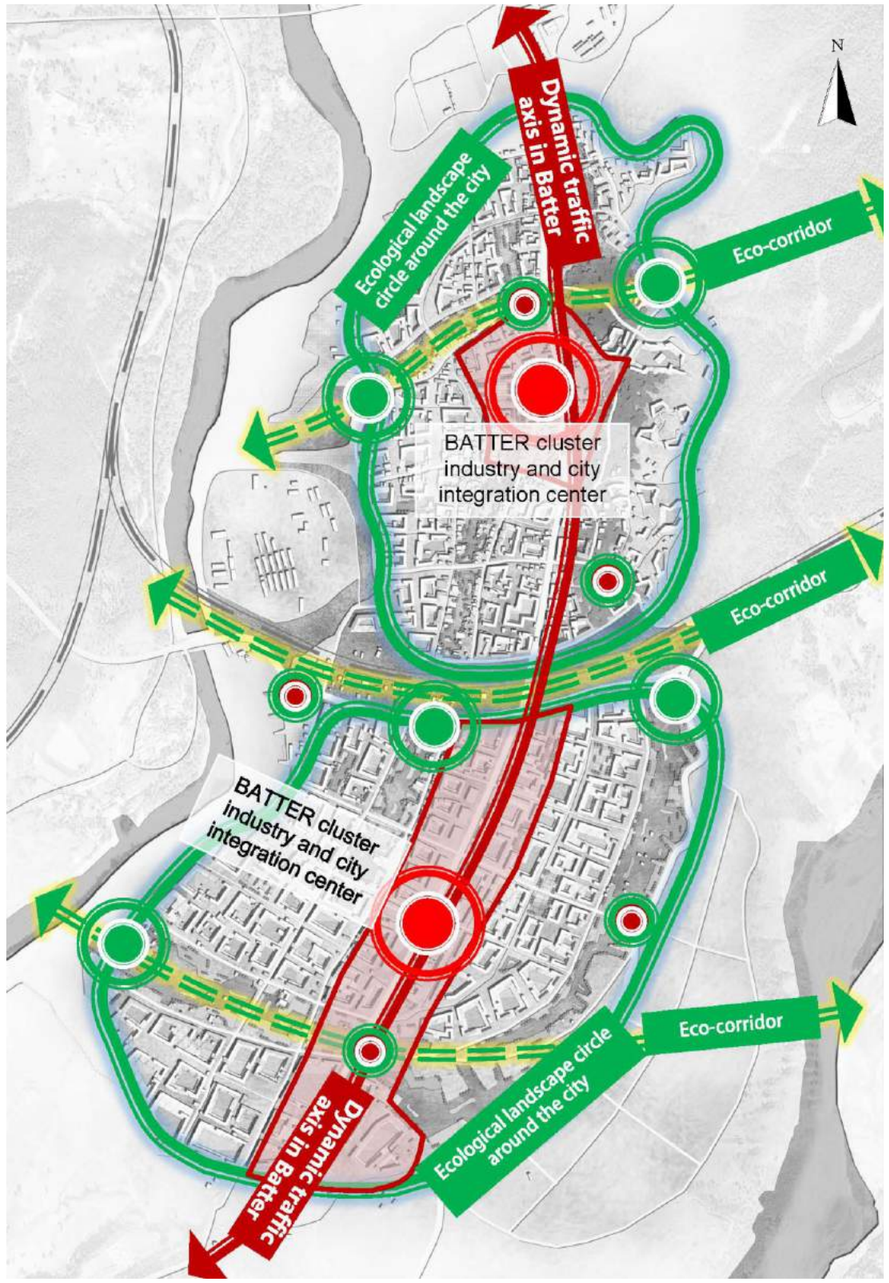


Figure Spatial structure diagram of BATTER Cluster

④ BATTER industry and city integration landscape zone

1) Spatial landscape structure — "One axis, two centers, two rings, three corridors and four zones"

The zone highlights the theme of a city of vitality and is devoted to constructing a vigorous modern industry and city integration zone. The north industry and city integration zone emphasizes diversity and inclusiveness, while the south new town is of modern terse style.

One axis: A vigorous main road traffic axis of Batter new town, which regulates the greenbelts on both sides.

Two centers: BATTER cluster industry and city integration center and commercial service center of the south new town

Two rings: The city landscape outer ring in the north BATTER and the landscape outer ring in the south new town

Three corridors: The reserved railway landscape corridors which connect the BATTER cluster industry and city integration center and the commercial center of the south new town with the riverside landscape corridor and such corridor between the interval space of south and north clusters

Four zones: North industry and city integration center, north new town service center, strip type commercial zone and residential zone.

Figure Master Plan of BATTER cluster

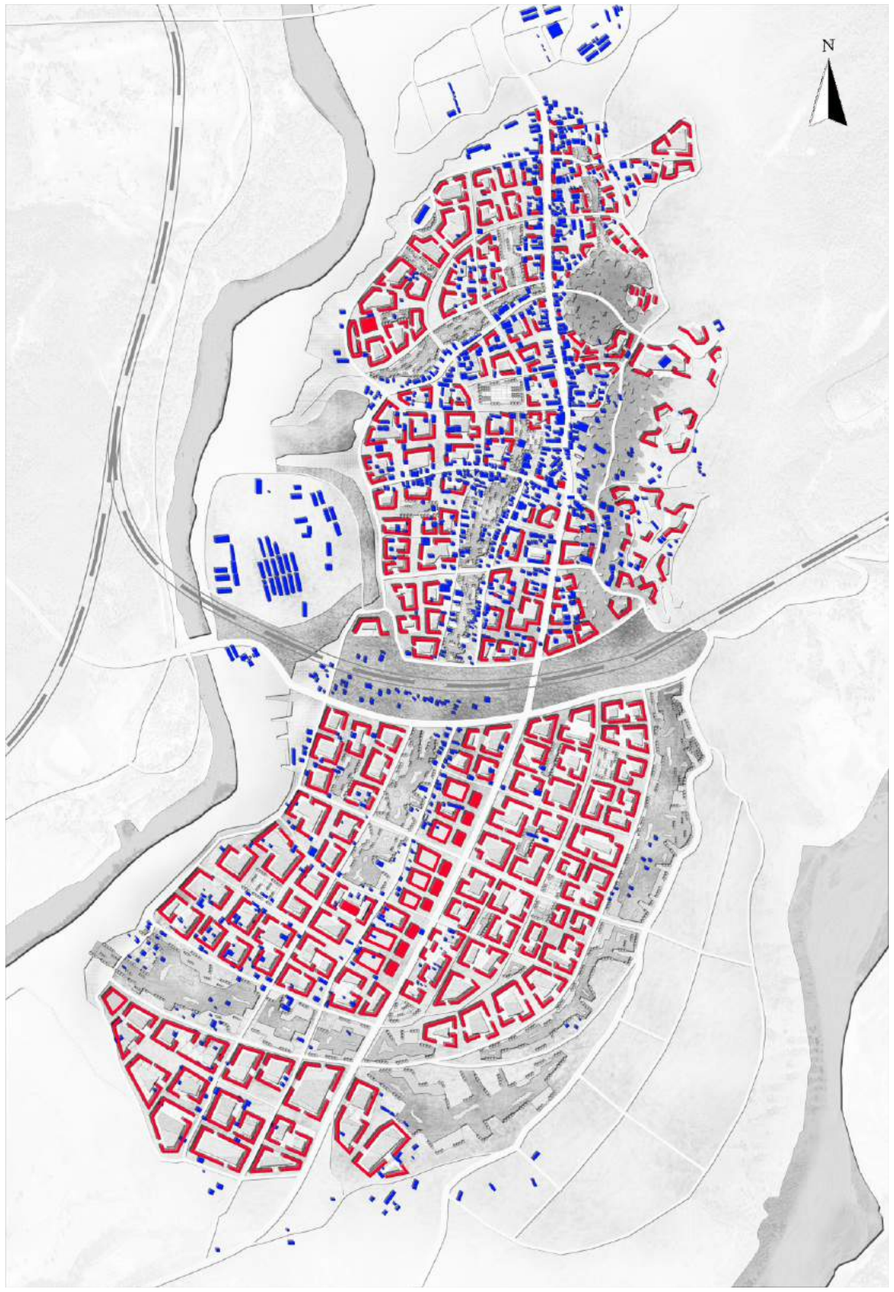


Figure new and old building overlay map of BATTER

Figure Planning renderings of BATTER Cluster

2) Guidelines for BATTER Cluster zones

North industry and city integration center: An industry and city integration community which emphasizes diversity and inclusiveness and regulates the public architecture complex at the intersection of the main roads and the important open public spaces such as the master school. It reserves several small green lands and regulates the landscape corridor leading to the river bank. It is preferred that buildings in the zone be constructed into 4-5 storeys and have a dense distribution along the road. In some part, such buildings can be constructed into 8 storeys at its maximum. The main colors of the buildings shall be grey, white, brick red and faint yellow.

Figure intention map of industrial and city integration

South new town service center: An agglomeration zone of new service functions such as cinema, cultural center and market as well as a popular service center in Bidur. Architecture scale of the zone, which adopts the form of cultural and public buildings, appears as the combination of the public building of podium with high-rise apartment. The podium for public service adopts the brick wall color of white grey, while the high-rise apartment introduces modern glass material in some part in order to emphasize the modern terse style of the new town. It controls the central park and several public green lands and reserves a sight corridor on the river bank.

Figure intention map of city's riverside park

Figure intention map of industrial factory building

Strip type commercial zone: The most centralized modern commercial zone in Bidur which provides industrial products of a higher level, in order to meet the commercial demand of the new town. Buildings in the zone are distributed along the road and form an inner commercial street. It is ideal for them to choose materials of modern colors, such as terse grey and white and to adopt glass curtain wall to form a modern commercial street. The inner commercial street, having a control on several public green lands, shall be 20-50m in width and be varied in height.

Residential zone: Residential building of 4-5 storeys, an integration of modern architecture style; it emphasizes the cultural connotation of fusion and inclusiveness and have varied architecture styles.

Chapter IV

Five-year Action Plan

- Development prospect prediction 179
- Recent development goals 181
- Thoughts on spatial development in the near future 183
- Action Plan in the near future 189
- Construction fund calculation in the near future 199

I. Development prospect prediction

(I) The principle of phased development

1. Follow the law of natural growth of "developing along the river from mountain top to mountain foot and from north to south".

2. Absorb the external development advantage of "developing border trade logistics by connecting to Gyirong Port in the north, while interacting with city agglomeration in Kathmandu Valley in the south" in an order way.

3. Release the potential development advantage of internal tourism and trade of historic and cultural agglomeration such as Nuwakot Palace Complex and traditional commercial streets in Trishuli in a reasonable manner.

4. Conduct city development along high-class south-north roads by employing the principle of TOD (Transit Oriented Development), in order to exploit the regional traffic advantages of Bidur in convenient internal and external interactions.

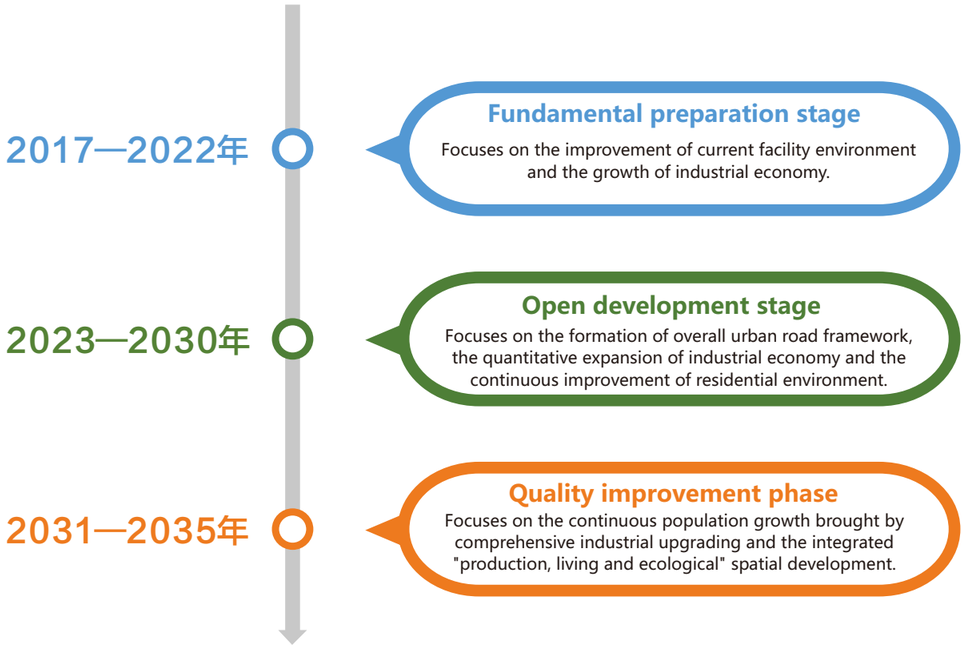
5. Strike a balance among industrial economic development, residential environment construction and eco-resources conservation.

(II) Phased development prediction

Phase one (fundamental preparation stage, 2017-2022), which focuses on the improvement of current facility environment and the growth of industrial economy.Construction work will be implemented from three aspects in this stage. Firstly, the transformation and upgrading work of Mountainous Expressway will be conducted, for the purpose of easier connection with Gyirong Port, the flow-in of human resources and commodities, achieving initial development of distinctive spots such as Nuwakot palace complex and TUISULI traditional business and trade street and focusing on the development of tourism and trade; Secondly, the east-west City Agglomeration Channel across Kathmandu Valley will be constructed to integrate the excellent construction-available space in the south and facilitate the construction of the industrial park; thirdly, the transformation work for 1-2 mountain village agglomeration zones will be initiated on the basis of the proper improvement of public service and municipal facilities of river valley concentrated construction area.

Phase two—open development stage (2023-2030), which focuses on the formation of overall urban road framework, the quantitative expansion of industrial economy and the continuous improvement of residential environment. Firstly, the main and subsidy road systems will be established to form the city space framework; second, the TRUSULI, palace complex, BIDUR and other clusters in the north will be optimized to form cultural commercial area of the historic town and the BATTER cluster in the south will be expanded to construct new industrial park in the new town. Thirdly, further efforts will be made in the upgrading of public service and municipal service level of the river valley concentrated construction area and transformation plan for the mountain village agglomeration zone will be extended to the north.

Phase three—quality improvement phase (2031—2035), which focuses on the continuous population growth brought by comprehensive industrial upgrading and the integrated "production, living and ecological" spatial development. Firstly, the industrial park will be upgraded to develop industries of finish machining of agricultural products and electronic manufacturing and the spatial layout will be more intensive; secondly, the railway construction plan will be determined to facilitate external passenger and cargo communication and population growth; thirdly, with the improvement of residential and eco- environment, green park, public service and other environmental facilities in the river valley concentrated construction area will be further perfected, scale agricultural production of peripheral mountains will increase in popularity, eco-safety of mountains will be restored, the city will develop with greater impetus and with heavier urban color, thus to build an interaction platform between China and Nepal which is capable of satisfying the demand of "production, life and eco-system".



II. Recent development goals

(I) Development positioning

Base on the current situation and the determination of development stage of Bidur, the focus of the period from recent time to 2022 will be tourism development and infrastructure construction, especially the construction of all types of road traffic and municipal facilities which lay a foundation for the industrial park development. Firmly attracting the transit tourist of Gyirong County of Tibet Autonomous Region, China focuses on Nuwakot palace complex to create palace characteristics tourism culture brand, thus drive the urban development via tourism and construct it into the

"Sino-Nepal Business and Trade Service Portal".

(II) Construction scale

1. Population scale

According to the above population scale speculation, the population size of Bidur in the near 2022 will approximate 750,000.

2. Area of construction land

According to the above construction land area speculation, the area of construction land will be about 1,125 hectares and the average construction land will reach 150m2/person.

3. Industry scale

In 2017, the population of Bidur stands at 66811. Based on the per capita GDP of Nepal in 2017, it is speculated that per capita GDP of Bidur in 2017 is 824.23 dollars; accordingly, GDP of Bidur in 2017 will reach 55,067,600 dollars. According to the annual economic growth rate of the annual economic growth rate of Bidur of 8% in the near 2022, it is predicted that the GDP of Bidur in 2022 will be USD 80,912,400 and the per capita GDP will be USD 1078.83.

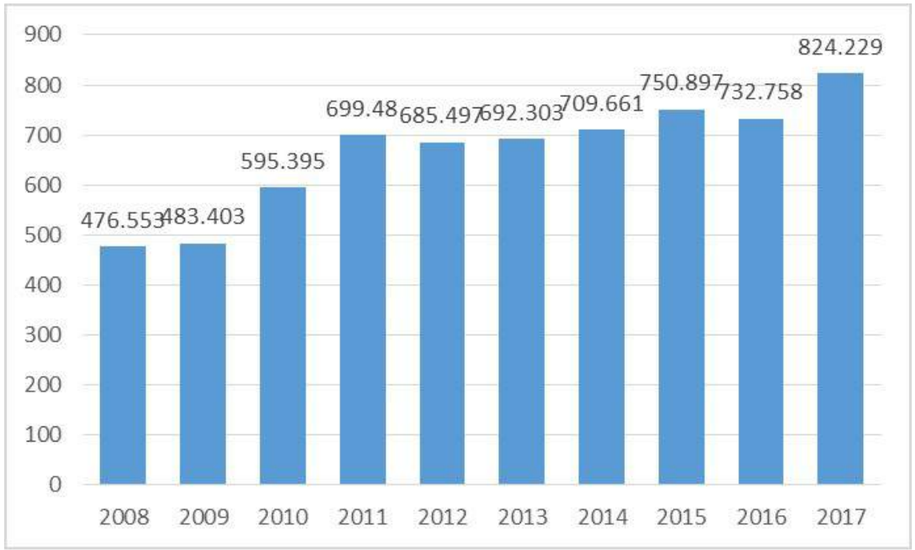


Figure: Nominal per capita GDP of Nepal from 2008 to 2017 (USD)

Source: World Economic Financial Web (http://www.8pu.com/country/npl/)

According to the latest classification standard of the World Bank in 2017, Bidur will preliminarily reach the level of lower middle-income country in 2022.

Table--Income group divided by World Bank based on per capita GDP

(Source: World Bank)

Income group	Per capita gross national income (current price of dollar) limit
Low income	<1005
Lower middle income	1006—3955
Upper middle income	3956—12235
High income	>12235

III. Thoughts on spatial development in the near future

(I) Structure guidance and control

1. Analysis of recent spatial expansion direction

The flow-in of people and goods brought by the "only" passage between China and Nepal will promote the external expansion of Trushuli, Bidur and palace complex. The destruction of Nikolai Highway which is the Sino-Nepal contact passage makes the Mountainous Highway become the only land road connecting China and Nepal. The people and goods flowing from Tibet of China to Nepal must transport from Zhangmu to Gyirong Port. In order to connect to Pokhara, they have to pass Bidur to contact with Kathmandu and Pokhara via Sun Yat-sen Freeway in the south, which will bring heavy flow of people and goods—a potential opportunity for tourism development of Bidur. The palace cluster supporting on Nuwakot Palace Complex, Trushuli cluster depending on distinctive Commercial Street and building style, and BIDUR cluster relying on supporting tourist service expand themselves outward.

Stable political situation promotes the steady urban development. With the stabilization of domestic political situation of Bidur as a new administration is established upon the finishing of the general election in 2017, the new government urgently needs to seek the external driving force for development, especially the pursuit of China's "Belt & Road" initiatives, according to which it strikes to make breakthroughs in the development of tourism and commerce industry, investment and construction of infrastructure and industrial park construction.

Fertile back-land in the south lays solid foundation for the scale development of industrial park in the long run. According to the ecological function zoning of the city of Bidur and the development demands of the government, the southern part of Bidur, which has flat and sufficient land can be used as hinterland of industrial park development. In the near future, the land reserve and construction of supporting municipal road network can be implemented to lay a good foundation for large scale development of industrial park in the long term.

2. Guidance and control over population and space of construction land

At present, there are 32882 people in the concentrated construction area, accounting for 49.22% of the total population; the population in peripheral villages takes up 28.22% of the total. Considering employed population agglomeration effect brought by the tourism development and the effect of agglomeration of population from peripheral villages in the concentrated construction area, it is planned that more than 55% of permanent residents will inhabit in the river valley concentrated construction area of Bidur, 25% of the permanent residents will reside in the large-scale agricultural community in the mountains and another about 20% will be scatted in the mountains in 2022.

By referring to the international standards, the standard of average construction land of Bidur in the near future is 150m2/person and the area of construction land required by each cluster is shown as follows:

Table--Population distribution and area of construction land of each cluster of Bidur in 2022

District	Current population	Planned population			Area of construction area in the near future (hectare)
		Total population	Population in each cluster		
Concentrated construction area (Bidur)	32882	41500	Bidur	3500	52.5
			Trusuli	10400	156
			Batter	21300	310.5
			Palace cluster	4000	60
			Devighat	2900	43.5

Table--Population distribution and area of construction land of each cluster of Bidur in 2022

District	Current population	Planned population			Area of construction area in the near future (hectare)
		Total population	Population of the agricultural communities	The scattered population	
Charghare	6661	6600	3700	2900	99
Kalyanpur	7034	6900	3900	2900	103.5
Tupche	6498	6400	3600	2800	96
Gerkhu	7845	7700	4400	3300	115.5
Khadag Bhanjyang	5891	5900	3300	2500	88.5

3. Spatial guidance and control over industrial development

According to Guide for Overseas Investment and Cooperation by Country (Region)-Nepal (2017), the proportion of tertiary, primary and secondary industries in 2017 are 30:14:56. Recently, a development idea of boosting the regional economic development by tourism development, putting great efforts in fostering secondary industry and stabilize the primary industry is formed. It is predicted that by 2022, Bidur will have an overall industrial structure similar to that of Nepal. With the tertiary industry and primary industry rise and fall in percentage respectively, the proportion of the three industries will be 25:15:60.

Table Production value prediction of the three Industries of Bidur in 2022

(Source: Guide for Overseas Investment and Cooperation by Country (Region)-Nepal (2017))

Industry type	Output value in 2017 (USD 0,000)	Output value in 2022 (USD 0,000)	Average annual growth rate(%)
Primary industry	1652.03	2022.81	4.1
Secondary industry	770.95	1213.69	9.5
Tertiary industry	3083.79	4854.74	9.5
Total	5506.76	8091.24	8.0

According to Guide for Overseas Investment and Cooperation by Country (Region)-Nepal (2017), the total output value of the three industries is USD 21,621,000,000. The primary industry, with an output value of USD 6.486 trillion, accounts for 30% of the total. With a cultivated area of 3,251,000 hectares, the output value per hectare of this industry is USD 1995.08/hectare. Considering the annual increase in average land output value as a result of advance in agricultural technology, it is predicted that the output value of the primary industry of Bidur in 2022 will reach USD 3000/hectare. Accordingly, the land scale of the primary industry will reach 5485.2 hectare in 2022.

According to the results of Evaluation on Intensive Use of Land in National Level Development Zone (2022), the output intensity of industrial land in the middle and west China is 83.5823 million yuan/hectare and 85.2999 million yuan/hectare respectively; that for the northeast region is at a slightly higher level of 94.4556 million yuan/hectare; the east region sees the highest output intensity of industrial land of 158.3711 million yuan/hectare. According to Blue Book of Industrialization: "The Belt and Road" National Industrialization Process Report released by Institute of Industrial Economics, CASS, Nepal, with a comprehensive index of industrialization of 0 and the lowest marks for all other evaluation indicators, has the lowest industrialization level among the 65 countries implementing Belt & Road Initiatives. Based on the above analysis, it is predicted that the industrial average output of Nepal is merely 1/4 of that of China and that the land scale of the secondary industry of Bidur will reach 32 hectares in 2022.

(II) Spatial layout

1. Spatial structure

Focus on facilities and environment improvement and industrial economy cultivation to form the spatial structure of "one axle, one center, three sub-area and two zones" in the near future.

"One axle": The axle forms on the basis of the transformation and upgrading work of Mountainous Expressway;

"One center": The "golden triangle center" of tourism consists of Trshuli, Bidur and the palaces.

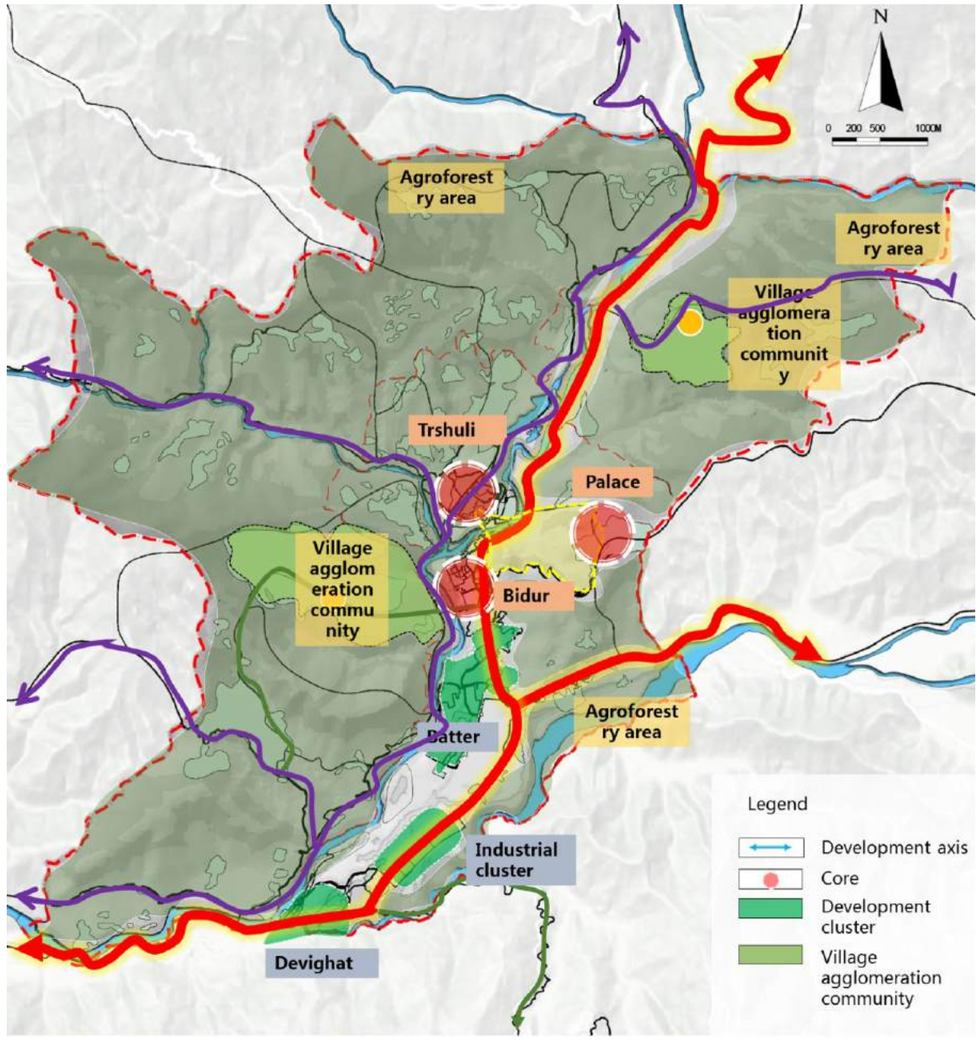


Figure:Structure diagram of construction space of Bidur in the near future

"Three sub-areas": the optimization of Batter, Devighat and industrial clusters.

"Two districts": The initiation of transformation works for 2 mountain village agglomeration areas.

2. Land use layout

Form the layout of construction land in the near future in accordance with the population distribution, scale of the cluster and guidance and control over the area of industrial land and by combining with the action plan in the near future.

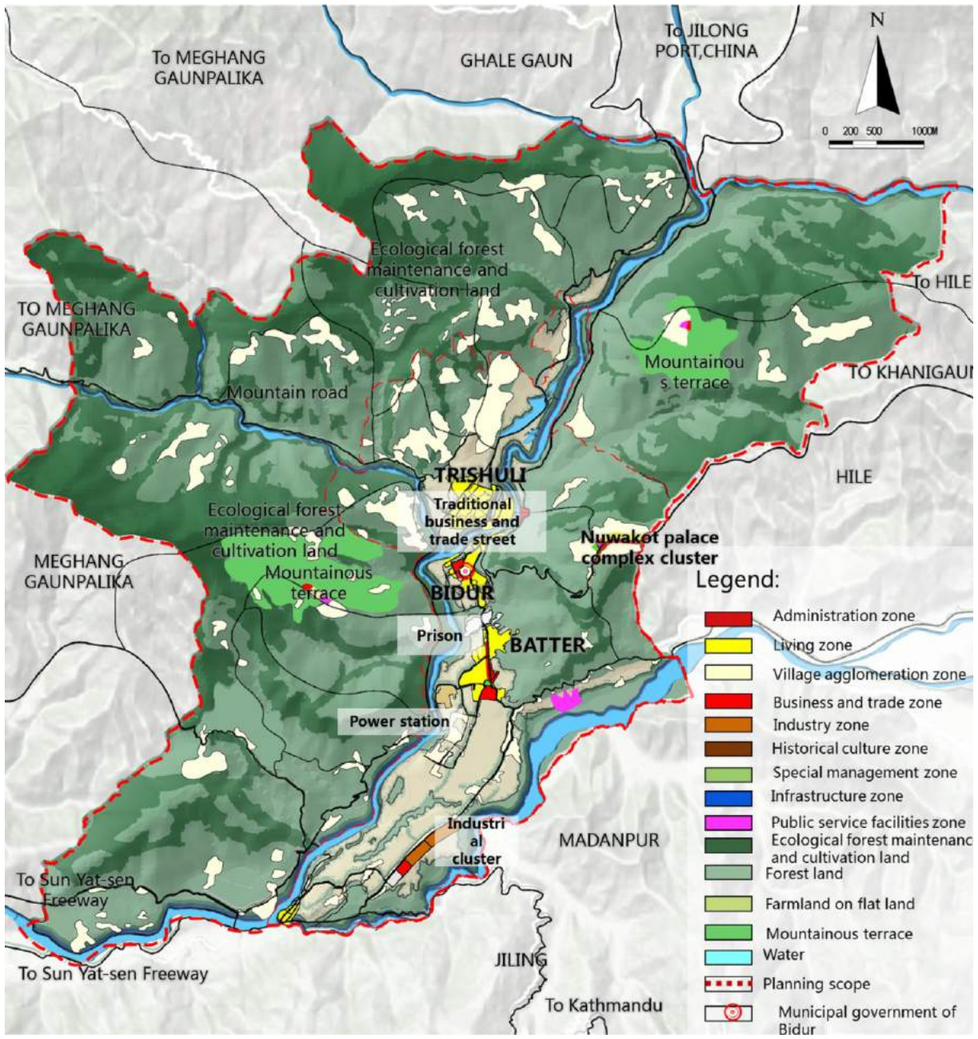


Figure:Construction area Layout of Bidur in the near future

IV. Action Plan in the near future

(I) Industry cultivation plan

1.Primary industry

Integrate agriculture and terrace of agroforestry zone chosen on the basis of ecological adaptability evaluation and form the concentrated agricultural planting area on the basis of the existing villages. Attempt to introduce the modern agricultural planting technology of China to increase the average productivity of farmland and terrace, thus ensuring the food safety in commensurate with the population growth of Bidur in the future.

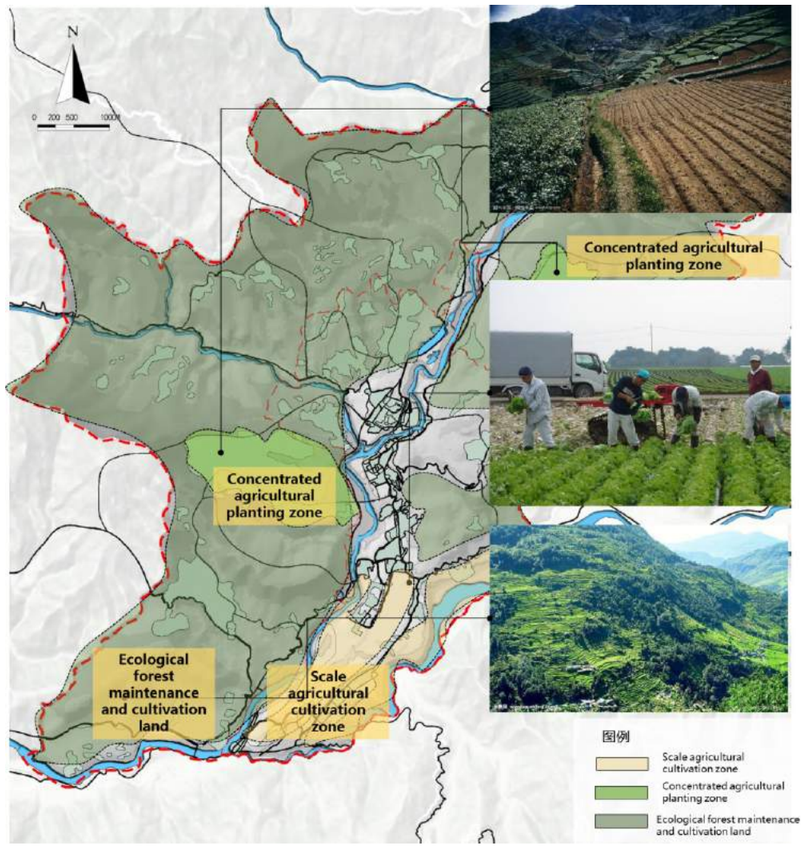


Figure: Layout of agricultural production

2. Secondary industry

Focus on rough processing of agricultural and sideline products, the development of industries related to local chicken feed factory and introduction of featured agricultural product rough processing enterprises; Lay emphasis on developing the secondary industry according with the local agricultural development level.

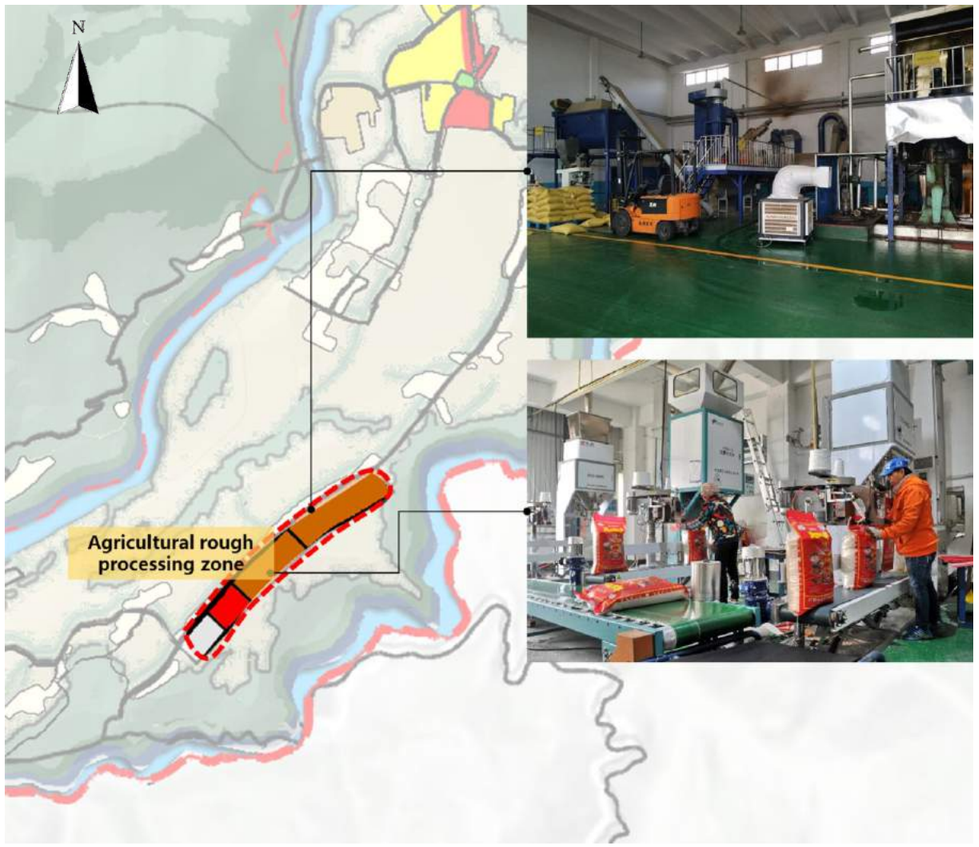


Figure: Industrial park layout

3. Tertiary industry

Combine the local characteristics of Bidur to vigorously develop the tourism and the mating business and trade service industry and develop the Trshuli, Bidur and Palace tourist routes.

① Delimit the historic conservation block to create a cultural brand with a distinctive palace culture and improve the cultural connotation.

Delimit the historic conservation block of the palace based on Nuwakot palace complex layout and protect and utilize them with the principle of "non-destroy and minor restoration". Create a tourism brand of palace culture on the basis of the historical status of the palace (the summer palace of Shah Dynasty of Nepal of modern times and the front line command post of pre-war times) and devise tourist routes based on palace complex.

② Improve tourism supporting facilities from the perspectives of sightseeing, shopping, accommodation and entertainment

Sightseeing: Build mountain roads to create connection with the palace cluster and Trisuli cluster, develop hiking routes to form the tourism "golden triangle" of Trshuli, Bidur and palace.

Shopping: Focus on the restoration of historical buildings damaged severely and optimize Trisuli historic business and Trade Street, to form a distinctive tourist product market in the gate connecting to the palace tourist routes in the south business and Trade Street.

Accommodation: Build distinctive homestay complex in business streets of palace cluster and Trisuli cluster, in order to develop hotel and distinctive catering industries.

Entertainment: Optimize existing public service facilities in the Bidur cluster to improve the tourist service in historic resources concentrated area in the north.

Figure: Tourist route planning map

(II) Municipal infrastructure plan

1. Road traffic

① Construct "T type" access road

Take advantage of the opportunities brought by cross-border road reconstruction after the earthquake and the tunnel construction in city agglomeration in valley of Kathmandu to form "T-shape" external traffic pattern and improve the traffic connection between Kathmandu and Gyirong Port of China. Repair, harden and widen the F082 (east-west) and the F021 (south-north) to the level of arterial road with red line width of 30m on the basis of constructing the channel connecting the F082 road and Kathmandu.

② Improve the accessibility of Nuwakot palace

Follow the standard of arterial road with red line width of 30m to repair and harden the F074 road extending to the palace cluster.

③ Implement the Village-to-village artery project

Follow the standard of collector-distributor road with red line width of 16m to repair and harden the main roads extending to each village.

④ Support the construction of industrial part to form the framework of arterial road network

Follow the standard of sub-arterial road with red line width of 22m to construct the framework of arterial road in the southern industrial park.

2. Municipal projects

① Drainage project

Construct sewage treatment station in the south of Batter Cluster to meet the demands of citizens and the industrial enterprises for living and production sewage discharge.

② Water supply project

Construct a water supply plant in the upper stream of River trisuli of the north trisuli cluster.

③Landfill site

Construct a landfill site in the east coast of River trisuli of the south of Bidur.

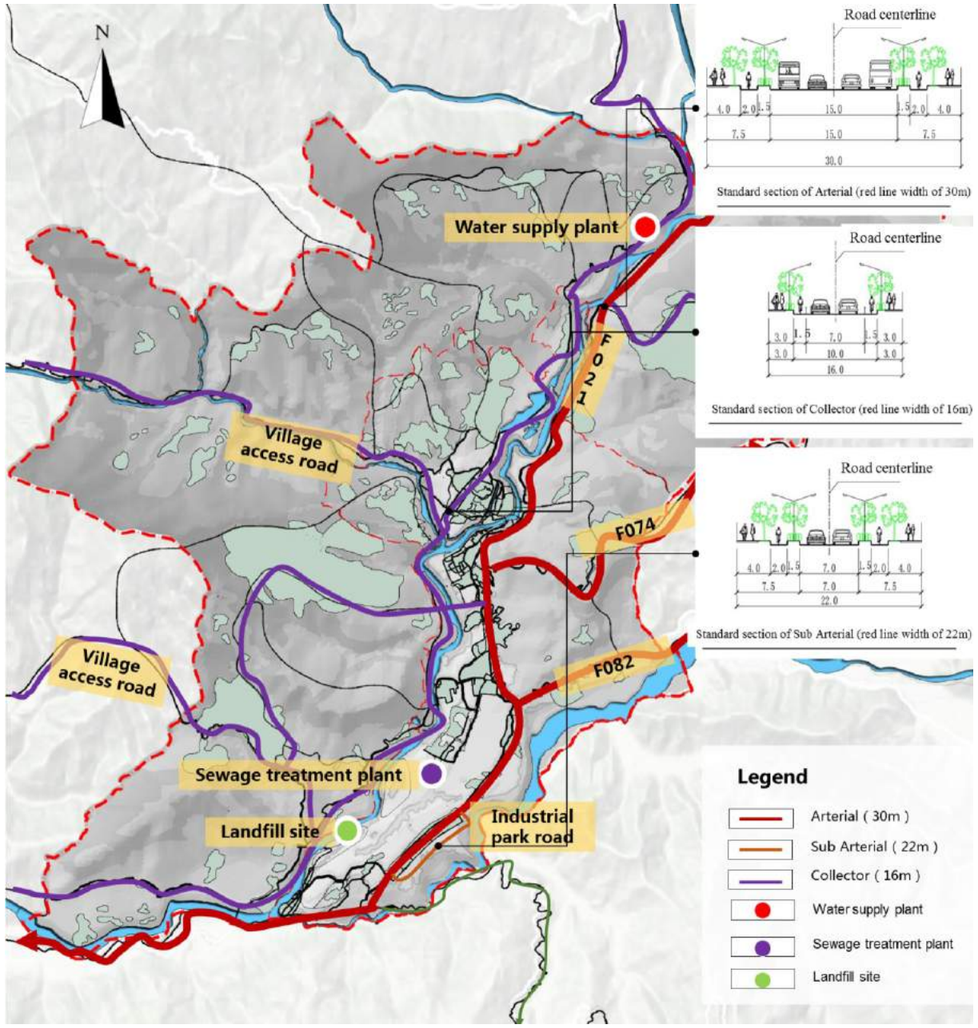


Figure: Layout of municipal traffic facilities

(III) Livelihood improvement plan

1. Construction of residential area

Follow the concept of industry and city integration and rely on the industrial development focus to construct two living clusters, namely, living cluster in southern industrial park of Batter Cluster and featured homestay cluster in the Palace Cluster in the north.

2. Public service facilities

Build a public service system which can meet the requirement of 65,000 people, based on Planning Norms and Standards 2013 (standards for the construction of public service supporting facilities), with reference to experiences of China and India and other developing countries and according to requirements on equal access to public service facilities.

① Educational facilities

Build 5 primary schools with full function and a service service radius of 400-800 in the concentrated construction area, each with a floor area of above 0.65 hectare, a class number of 10-20 and a class size of 30-60 students;

Build a graduate/post graduate school with a service radius of public transport access within 45 minutes, a service population of 25,000 people and a floor area of above 1 hectare; improve the facilities of graduate/ post graduate school in the Batter cluster based on its current condition.

Upgrade two schools in Trusuli and Batter clusters with a floor area of above 1.5 hectare, in order for them to have a service radius of public transport access within 1 hour and a service population of 40,000 people.

② Medical facilities

Raise the level of the original general hospital facilities in the Bidur cluster and increase the number of beds to 60. Taking into account the needs of international talents, a new international general hospital with an area of above 1.3 hectares and 50 beds will be newly built in Batter cluster.

③ Social welfare facilities

Social welfare -- A total of 3 social welfare homes will be built recently in Bidur, Trusuli, Batter clusters, each one with a public traffic access within 45 minutes, a service population of 20000 and a floor area of above 0.3 hectares.

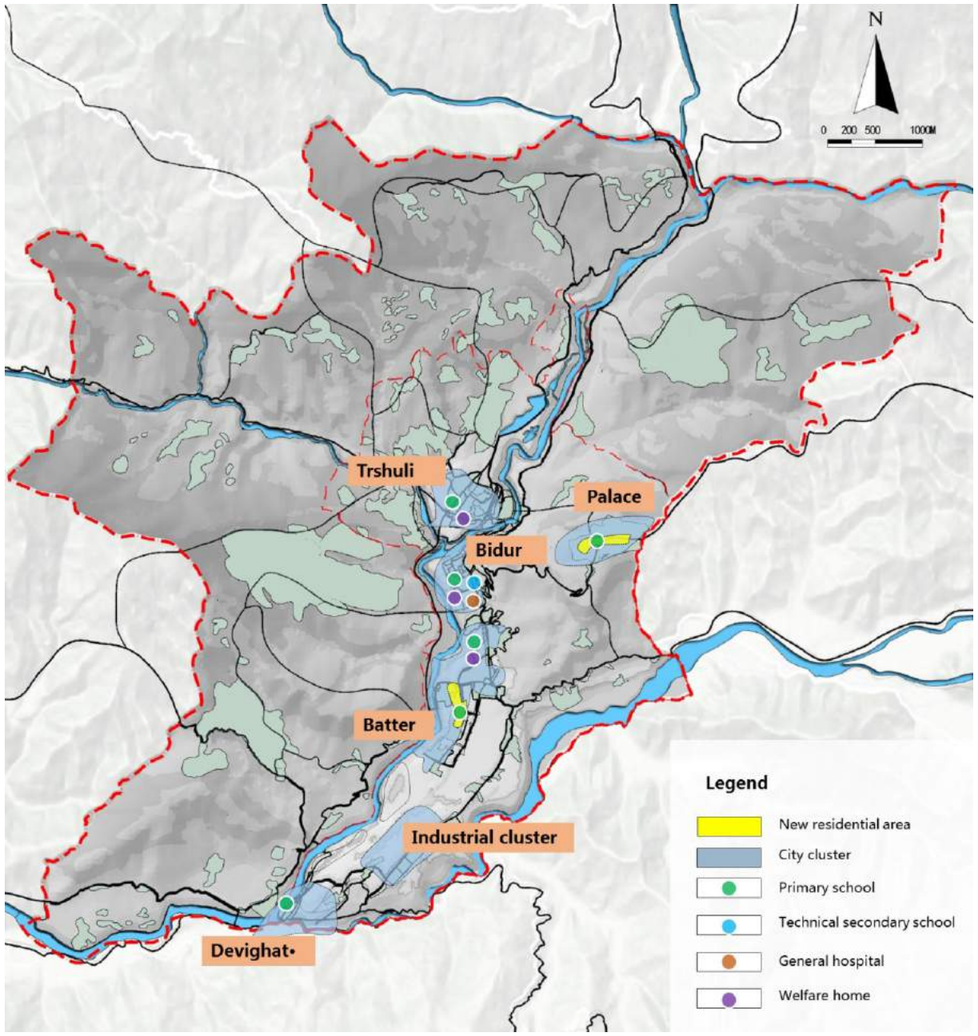


Figure: Layout of municipal traffic facilities

3. Public space

50m wide riverfront greenbelt will be controlled along the Trisuli River and the Tadi River, and a civic square (parade ground) covering an area of over 2 hectares will be arranged in Bidur cluster.

4. Peripheral villages

A pilot project of commercial, public service and public spatial layout improvement will be implemented for 2 villages recently, to arrange and delimit the agricultural production zone and encourage the aggregating of villagers.

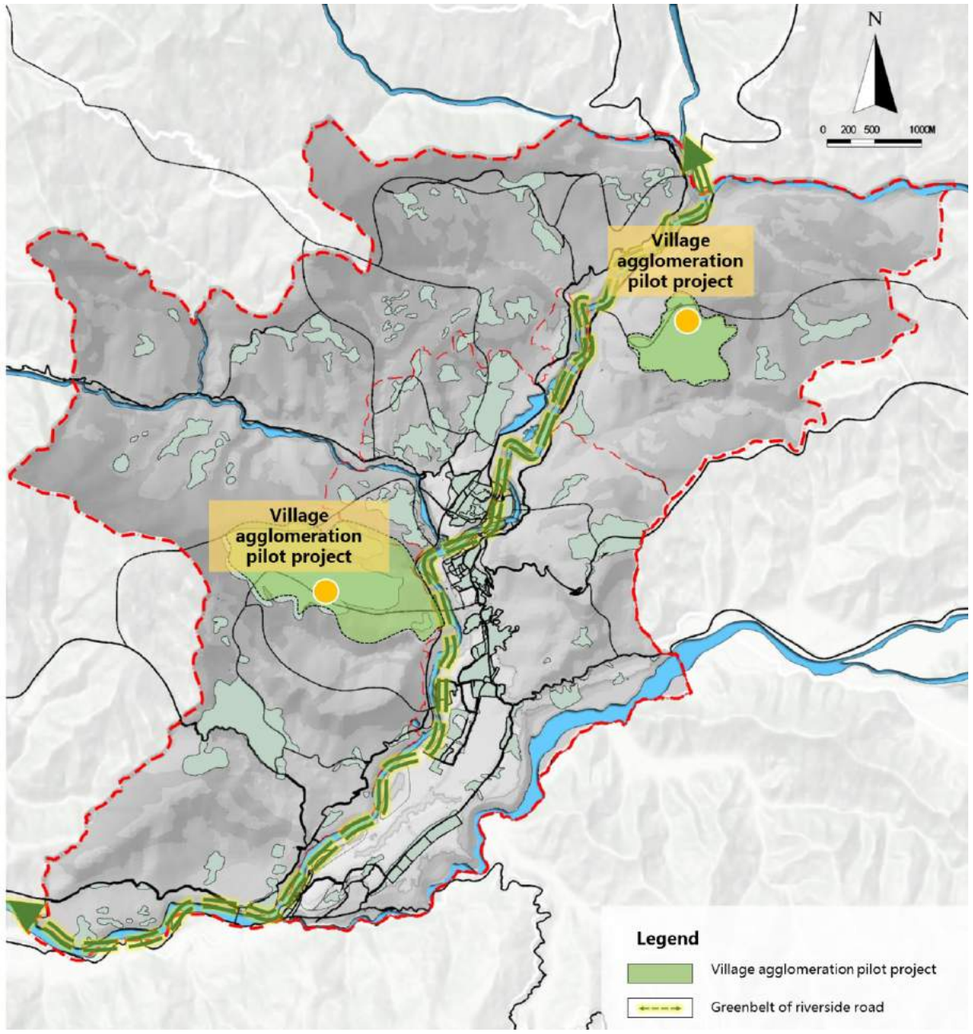


Figure: Layout of public service facilities

(IV) Ecological maintenance and cultivation plan

No felling and tourist development and other construction activities damaging the ecological environment may be allowed in the delimited ecological maintenance and cultivation zone, plant Itsuki Sara, Oak, Terminalia Catappa and other local trees which can bring economic benefits and Shrubs and Flowers on the basis of ensuring the ecological value to form the ecological maintenance and cultivation loop of Bidur in the near future.

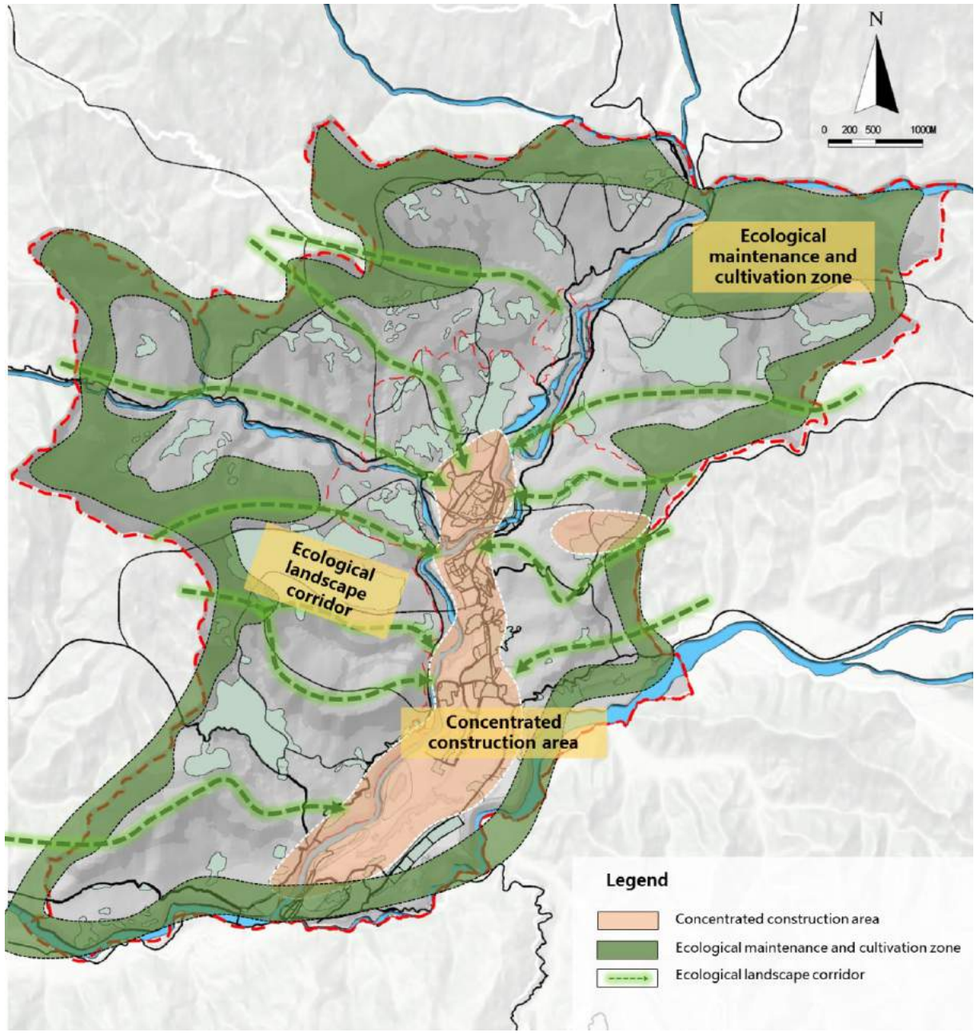


Figure: Layout of ecological maintenance and cultivation zone

V. Construction fund calculation in the near future

According to data in Guide for Overseas Investment and Cooperation by Country (Region)-Nepal (2017), the main building materials of Nepal are imported and, basically, the price of main building materials is once to twice the price of China's materials. Considering that the local industry in Nepal is very underdeveloped, 1.2 times the China's standard price is used in this calculation.

Table--Comparison of the price of main building materials between Nepal and China

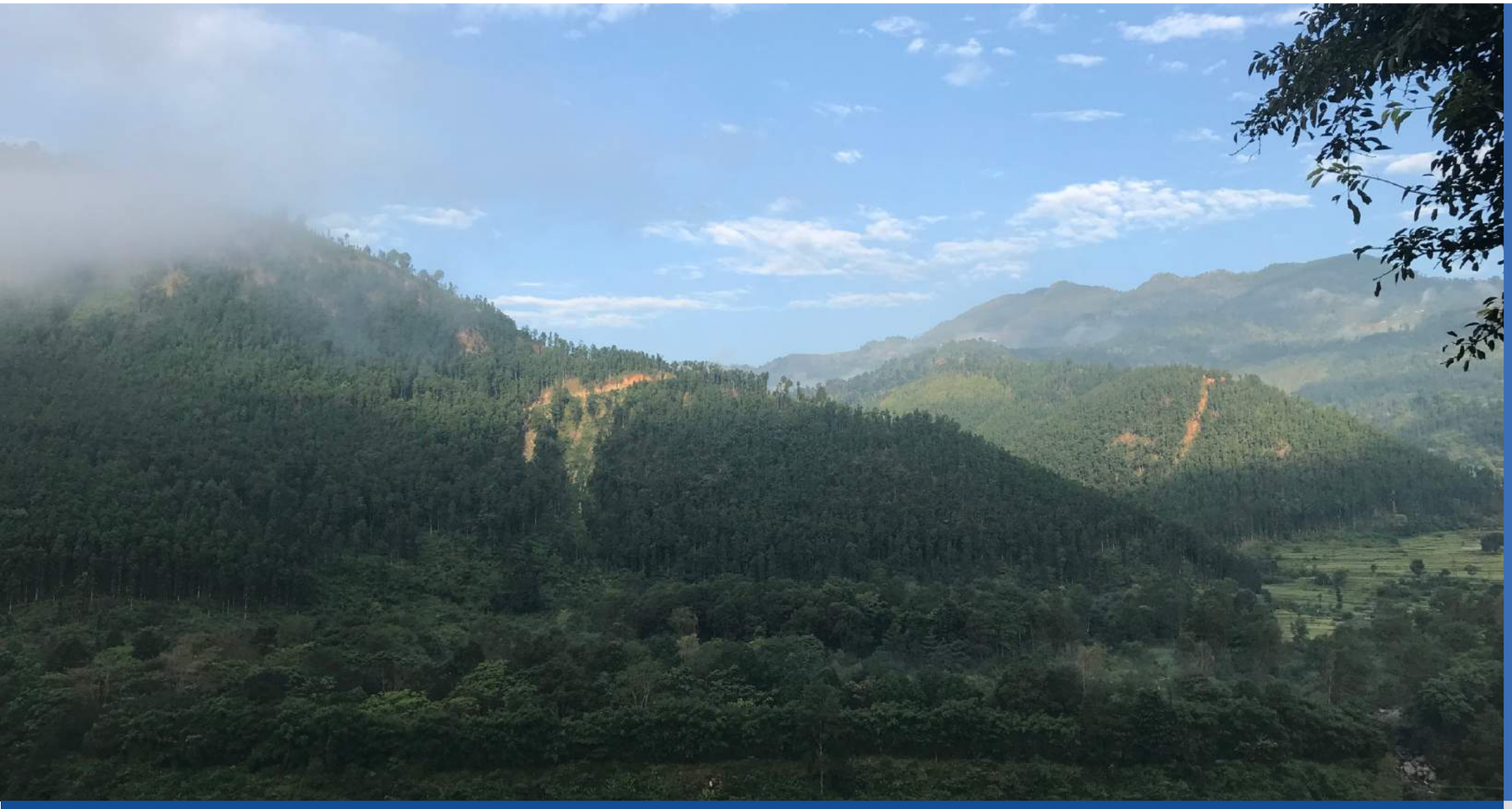
Note: The exchange rate of Nepalese rupee against RMB then (in April 2018) is 0.060

Material	Unit	Purchase country	Delivered price (rupee)	Delivered price (RMB)	Local price in China (RMB)
Cement	Ton	India	15076	904.56	400-420
Diesel	Litre	Nepal	77	4.62	6.41-6.58
Rebar	Ton	India	77946	4676.76	4000
Lumps of wood	Lump	Nepal	66151	3969.06	1000-2000
Steel plate	Ton	India	75382	4522.92	4000

Combine the construction action plan in the near future to set up construction project database and upon calculation, altogether 168,570,000 Yuan are required (exclude the industrial park project, residential area and some building reconstruction project).

Table--Calculation of Action Plan Fund of Bidur in recent years

Project type		Project name	Construction standard	Construction scale	Unit price	Economic calculation (ten thousand Yuan)	Construction period	Reference standard
Industry cultivation plan	Primary industry	Farmland consolidation project	-	385.45 hectare	18,000 Yuan / hectare	695	2018-2022	1000 Yuan/mu, with reference to China's land consolidation price
	Secondary industry	Industrial park construction project	-	32 hectare	-	-	-	-
	Tertiary industry	Trushuli business street transformation project	-	1600m	-	-	-	-
		Nuwakot palace complex repair project	-	3.24 hectare	-	-	-	-
Road infrastructure plan	Road traffic	Mountainous F021 Highway transformation project	Cross-section standard: 30m	16700m	130 Yuan/m	207	2018-2020	130 Yuan/m, with reference to China's 250m road hardening price
		F082 highway transformation project	Cross-section standard: 30m	3600m	130 Yuan/m	56	2018-2020	
		F074 highway transformation project	Cross-section standard: 30m	4500m	130 Yuan/m	70	2018-2020	
		Palace mountain road construction project	Cross-section standard: 16m	1600m	130 Yuan/m	25	2018-2019	
		Phase-I road project of the industrial park	Cross-section standard: 22m	2400m	130 Yuan/m	38	2019-2021	
		Village-village road hardening project	Cross-section standard: 16m	45000 m	130 Yuan/m	702	2018-2022	
	Municipal projects	Level-2 sewage treatment plant construction project	The capacity is 8000m^3/d	2 hectare	24,000,000 Yuan/plant	2200	2019-2021	20,000,000 Yuan/m, with reference to China's sewage treatment plant construction price
		Water supply plant construction project	Water supply capacity 15,000 m^3/d	2 hectare	48,000,000 Yuan/plant	4800	2019-2021	40,000,000 Yuan/m, with reference to China's water supply plant construction price
Livelihood improvement plan	Residential area	Supporting residential community project in the industrial park	-	-	-	-	-	-
		Featured homestay community project for palace tourism	-	-	-	-	-	-
	Public service	Primary school	Above 0.2 hectares each	0.2 hectares per each * 6 schools	240,000 Yuan /school	144 168	2019-2021	200,000 Yuan/m, with reference to China's hope primary school construction price
		BIDUR cluster's general construction project	Above 1.3 hectares, 25 to 50 beds	1.5 hectares per each * one hospital	48,000,000 Yuan/plant	4800	2020-2022	40,000,000 Yuan/m, with reference to China's county-level hospital construction price
		Social welfare home construction project	Above 0.3 hectares	0.3 hectares per each * 3 homes	3,600,000 Yuan/home	1080	2020-2022	3,000,000 Yuan/m, with reference to China's rural welfare home construction price
	Public Space	10m riverside green belt project along the Trisuli and Tadi River	-	16000m * 10m	36 Yuan/m^2	576	2020-2022	30 Yuan/m, with reference to China's riverside green belt construction price
		BIDUR cluster's civic square construction	-	2 hectare	540 Yuan/m^2	1080	2020-2022	250 Yuan/m^2 for hardening and 200 Yuan/m^2 for greening, with reference to China's park square construction price
Ecological maintenance and cultivation plan	Villages	Village agglomeration pilot project	-	-	-	-	-	-
	Ecology	Ecological maintenance and cultivation project	-	100 hectare	360,000 Yuan / hectare	360	2018-2022	2,000 Yuan/m, with reference to China's protection forest construction price
Total						16857		



Chapter V

Implementation of the policy

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- Land development mode 206
- Intensive land utilization 208
- Land asset operation 211
- Construction Suggestions for Different Districts 215
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I. Land resource protection

Arable scale land and available land for construction are limited in Bidur.Therefore, it is necessary to establish strict land resource protection and use policy to avoid the uncontrolled city expansion, safeguard the urban grain safety and protect resources.

(I) Formulating strict cultivated land protection system

Maintain the number of cultivated land.According to the farming condition, area, and distribution location of the arable scale land, divide the mainly agriculture spatial range into the northern and the southern.No agricultural activities such as residence and plant construction (except for moderate quantities of agricultural infrastructure construction) are allowed in the agricultural spaces that are under strict protection.

Protect the quality of cultivated land. Encourage soil protection, improve land quality, avoid land waste, implement protective cultivation system according to local conditions, improve organic matter content in soil, maintain the balance of soil nutrient, emphasize land maintenance while using it, protect and improve the output of cultivated land by taking different measures.

Establish a compensation mechanism for farmland. Because the water conservation, electric power, water supply, expressway, railway and other regional infrastructure construction and some major projects which support the urban

development must occupy the agricultural space, it must have compensation for cultivated land in other regions, in order to ensure the agricultural land quantity. It's suggested to take land replacement or land reclamation to ensure the compensation.

(II) Having graded and classified protection over the ecological space

Define the rivers, lakes and natural mountains and delimit the ecological protection zone and the protection boundary of animal passage. Coastlines of rivers and lakes, natural mountain boundaries, ecological conservation area and biological channel are defined as primary protection area.It is forbidden to take actions that will affect the natural flow, boundary and established standards of the river. It is also forbidden to take any large0scale development and construction actions, in order to ensure the urban safety.

The areas 50m or 100m away from the river are under second-class protection. In the second-class protection areas, the ecological construction should be combined with protection by improving diversification of land functions and ensuring the resilience and flexibility of the city.

The construction of sectional protection of waterfront areas should be encouraged. For the river section in the south and north, it is suggested to form the eco-landscape river bank line of farmland, and it is suggested to build urban open space by waterfront promenade and platform construction in the middle section.

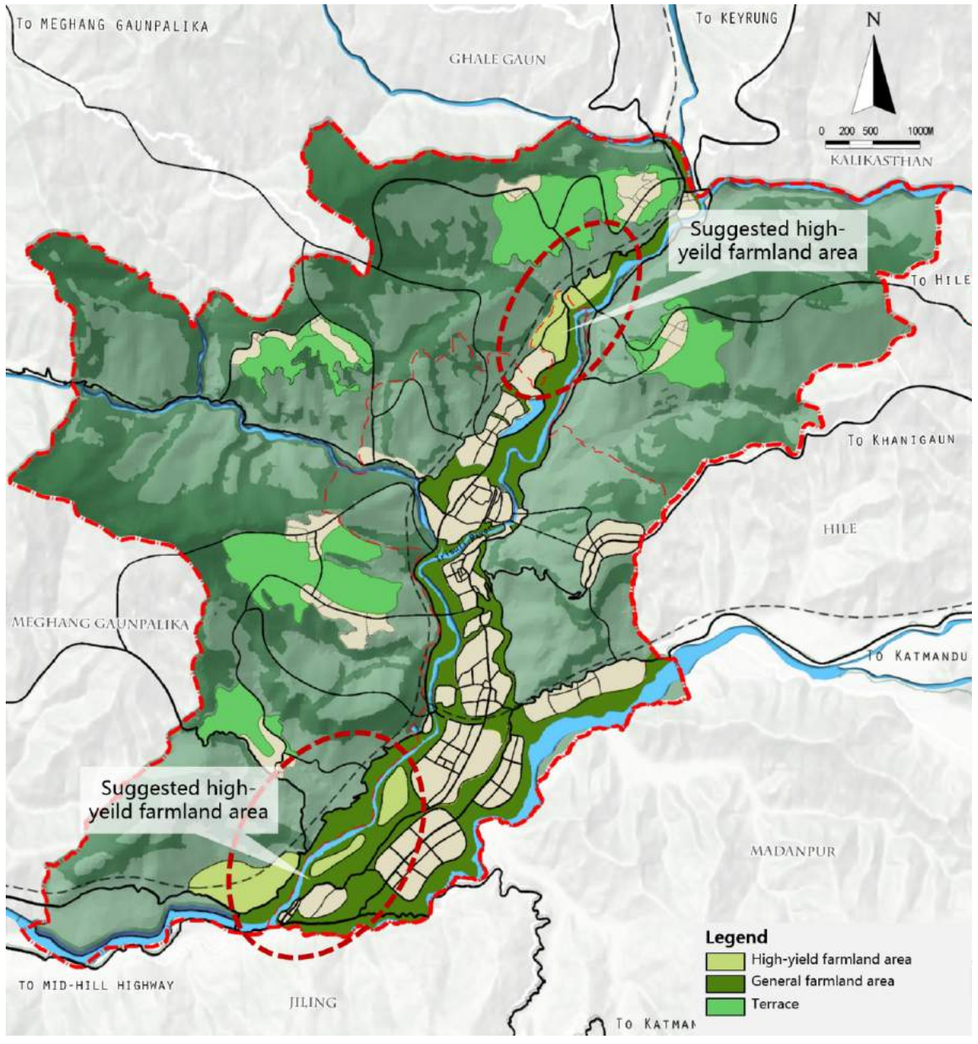


Figure: Distribution sketch map of farmland of Bidur

Encourage a cultivation method with mountain characteristic.Strengthen the planting of characteristic seedlings and medicinal materials and encourage the actions as afforestation and returning the grain plots to forestry, and strengthen regional eco-construction.

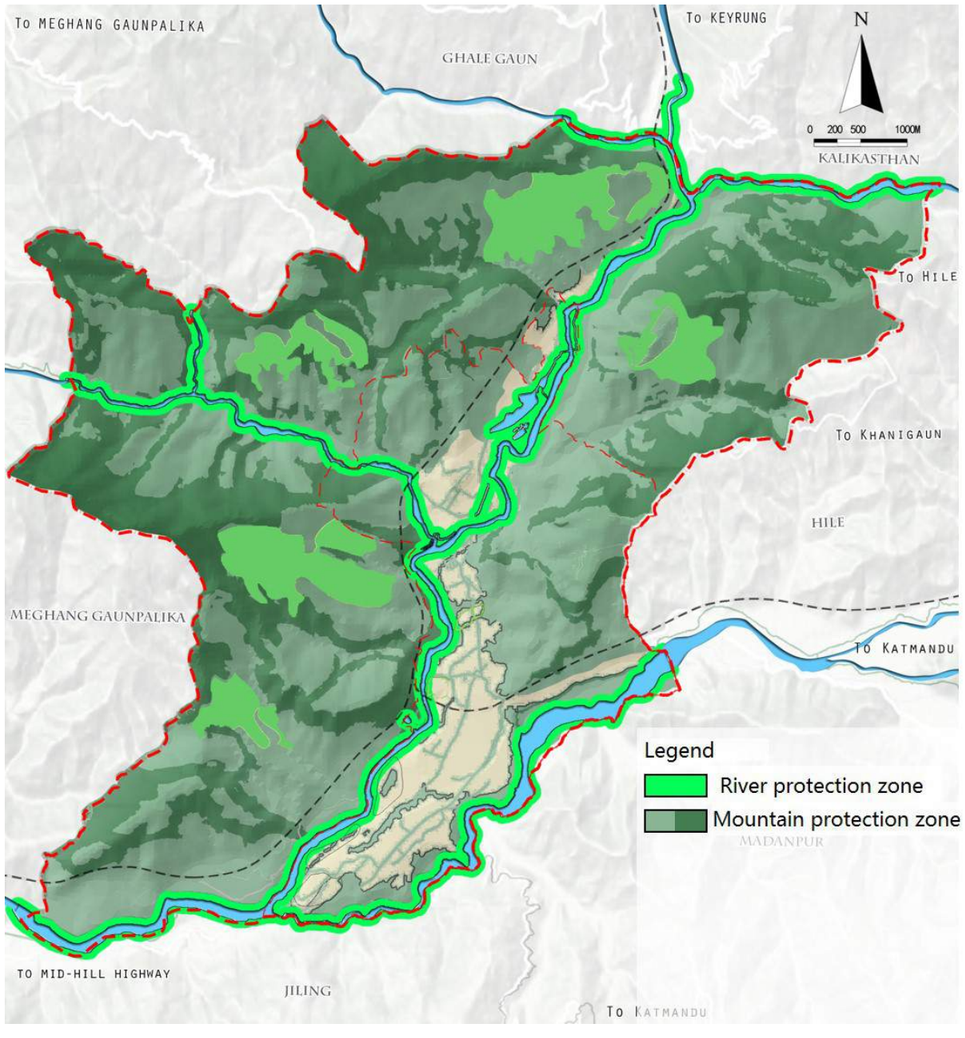


Figure: Sketch map of eco-protection of Bidur

II. Land development mode

For the country with private land ownership, the government and land owners should cooperate to obtain the developed land value-added income to perform urban construction. For example, the urban land rezoning system formed by Taiwan, China, which combine the cadastral consolidation and necessary infrastructure construction, stipulated that the land owners within the rezoning area should share the cost of public facilities and infrastructure construction as well as land by the proportion of benefits. Accepted the action that the land owners use land to offset construction costs, the government obtain a large amount of land for public facilities without charge. Therefore, the government realized the urban development while protecting the benefits of the land owners, with realizing win-win cooperation between the government and the citizens. As a private land ownership, Nepalese government can't completely monopolize land supply and don't have the conditions to adopt the mode of low-priced land acquisition and high-priced land sale. Therefore, it is suggested that Bidur government could learn from “Taiwan experience” and establish a land consolidation system of “urban land readjustment”, in order to promote the construction of public service facilities and urbanization through land development schema based on self-compensation, solve the capital source of urban infrastructure with land value-added income, and realize the geographical sharing between the public and the government. Finally improve agricultural operation conditions, provide urban development and large-scale infrastructure construction with land use, and improve the living conditions of the residents and protect the landscape and ecological environment. The government can redraw 45% land through the urban rezoning. The whole land development schema can be divided into these following 4 processes:

(I) Delimiting the re-adjustment area of the city and districts

Delineate the urban land rezoning unit according to the layout blueprint defined by the overall planning. It is suggested that the village committee (VDC) can be regarded as the basic unit or divide the rezoning area into four adjacent road areas, or delineate the rezoning area according to the actual construction needs and current land ownership.

(II) Preparing detailed design of the re-adjustment area

Compile detailed scheme of rezoning area, determine the specific location and area of roads and public service, and evaluate the current land and land value after planning.

Moreover, re-delineate the land ownership line according to the principle that the value of land reclaimed by the landowner after rezoning should not be lower than the land value owned by land owners before rezoning.

(III) Negotiation on interests

The city land rezoning plan can only be implemented with the consent of the land owners. Therefore, it is necessary to obtain the consent of the landowners in the rezoning area, and the negotiation content includes the feasibility of the land, rationality of land ownership, and so on, within the clarifying the obligations and rights of the government and the public. In principle, the scheme can be implemented with more than 50% land area or consent of more than 50% land owners. The government of Bidur could adjust according to the actual situation.

(IV) Implementation plan

The government is responsible for public service facilities, construction of road facilities, and management and preparation of re-planning plan; The land owners in the rezoning area should provide the cost and land for infrastructure construction in the region and part of the land used to cover expenses.

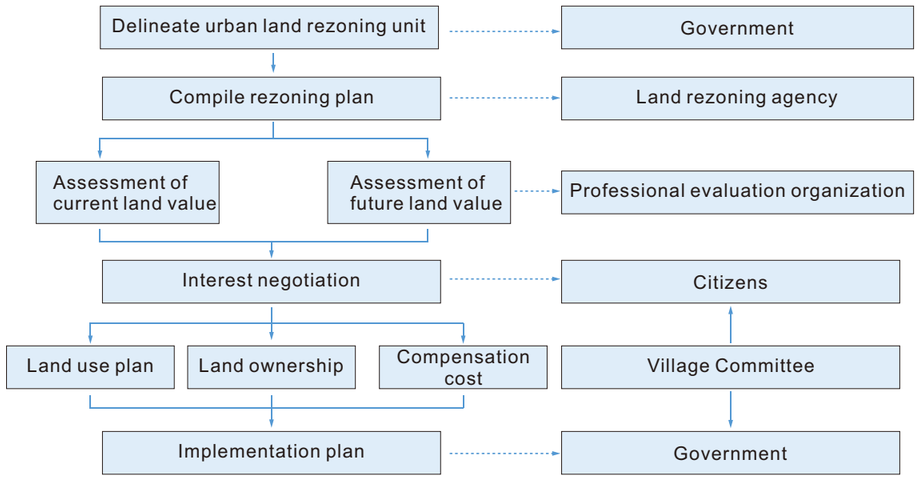


Figure: schematic diagram of urban land rezoning and development

III.Intensive land utilization

It is necessary to formulate policies on intensive land utilization, in order to make profits on land resources, ensure the reasonable locating of the limited resources and push thedevelopment of agriculturalization, urbanization and modernization. Meanwhile, it will help the government centralize management over land and the land can be centralized for concentrated construction, and the best economic benefits can be gained from the limited land resources.

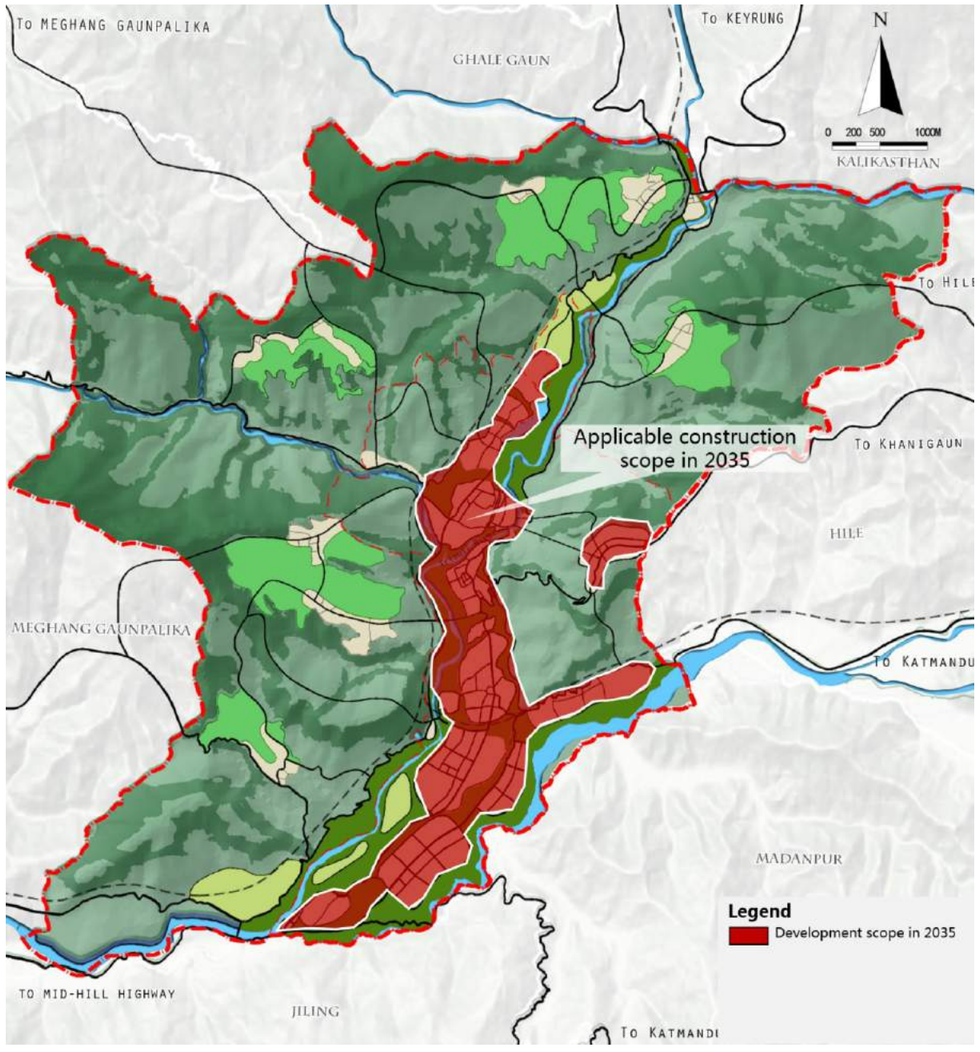


Figure: Applicable construction scope for Bidur in 2035

(I) Delimiting city expansion boundary

The urban construction scale should be in commensurate with the population in the planned period, the urban construction should be carried out the delimited urban development scope and no urban development beyond the delimited scope may be allowed, so as to avoid immature land development activities.

Implement land function control.The living zone shall avoid serving the industrial function of plant construction, but allows the construction of public service and commercial facilities; serving the basic function of industrial production, the industrial zone shall allow the construction of retail trade and petrol station and prohibit residence building.

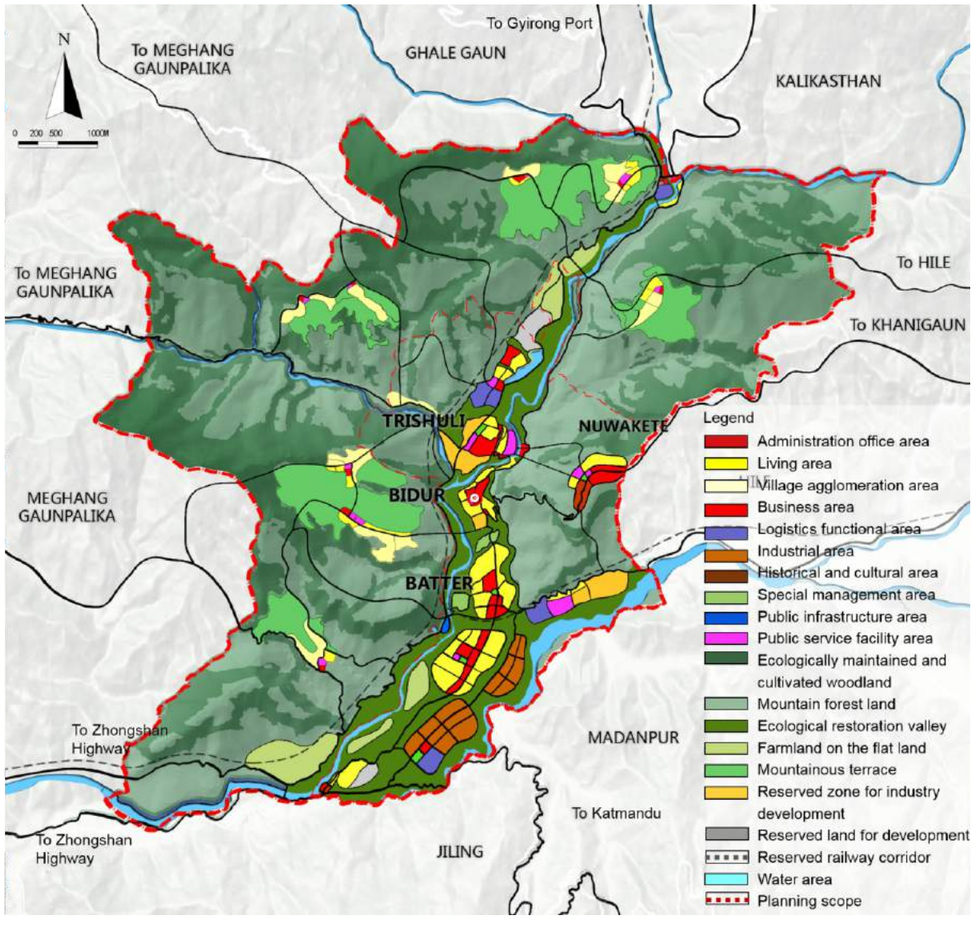


Figure: Land layout of Bidur in 2035

(II) Improving land utilization efficiency

Multiplemethods should be adopted to activate the idle inefficient and scattered land resources. Encourage to transform waste mountain, land and village into land available for use; encourage guide land users to re-develop, adjust and utilize the existing construction land; Adjust, merge and integrate the scattered land by ownership adjustment and rational land compensation.

(III) Unified land management

It is suggested that the government should set up a whole process land reserve system integrating acquisition, reserve and transaction. Make greater efforts in land repurchase and recovery; increase land reserve; integrate the land transferred to state in ownership, the land reserve originally owned by the government and land acquired through recovery and purchase and etc. into the scope of land reserve for a unified management over them.

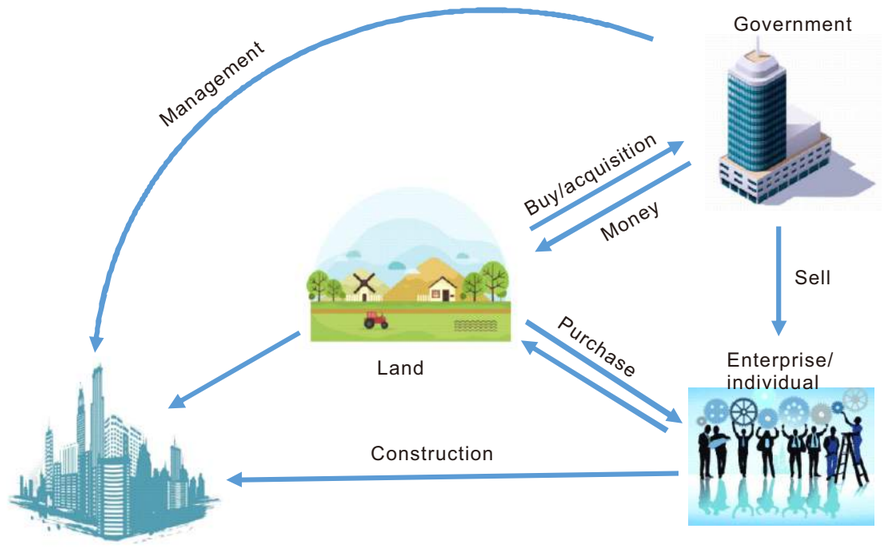


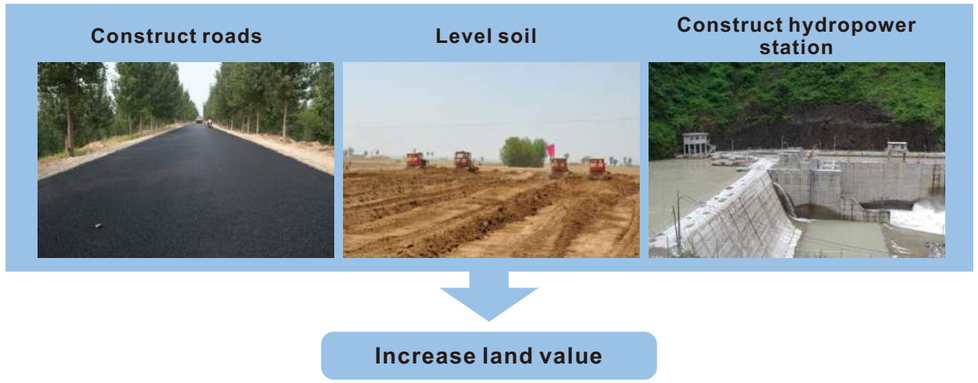
Figure: Sketch map of land transfer system

IV.Land asset operation

Because Land is regarded as one of the most significant assets, managing land is the key to managing cities. It is suggested to efficiently manage the land assets by classification, phased construction, mixed development, and joint state-private ownership, etc.

(I) Classification

Improve the economic carrying capacity of land by road and infrastructure construction and pre-leveling of land. Improve land efficiency and value by function exchange, environmental improvement, road broaden in the built-up area; improve the land value of new district by following the industry and city integration idea and under the drive of major projects and infrastructure; improve the land value of village areas by constructing village access road and infrastructure.



(II) Phase-by-phase construction

The government-owned land can be developed at first. The first step is to upgrade tourism service industry by renovating Nuwakot palace complex with the land in the periphery of Nuwakot palace complex, constructing cableway and commercial service facilities and etc. to attract foreign visitors and investments, improve the popularity and influence of Bidur and build portal joint by utilizing the southern land. After that, the new town and public service facilities construction will be implemented with revenues from tourism and the foreign investment can flow in for supporting industrial park construction and public service facilities development of the surrounding communities. It is suggested to select the core area as the starting area through economic evaluation.

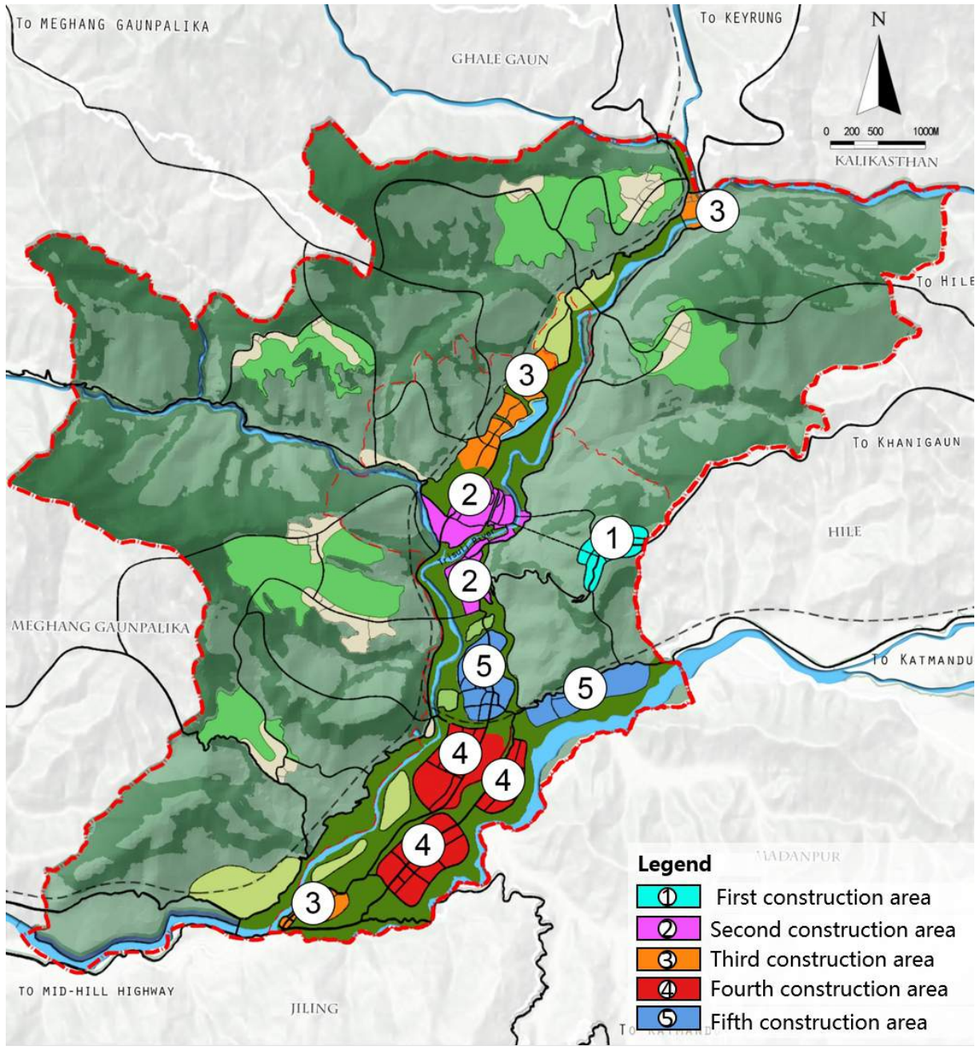
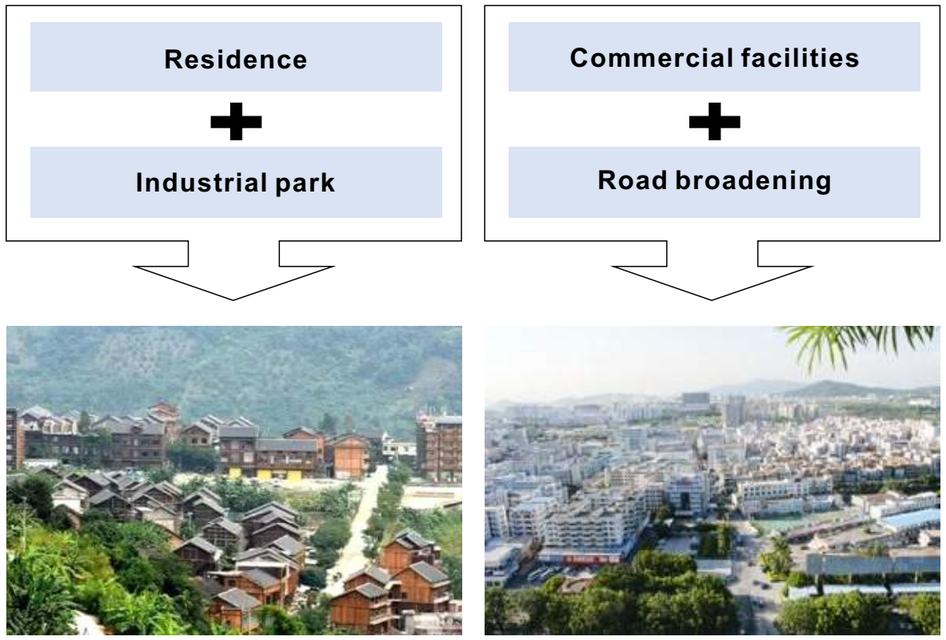
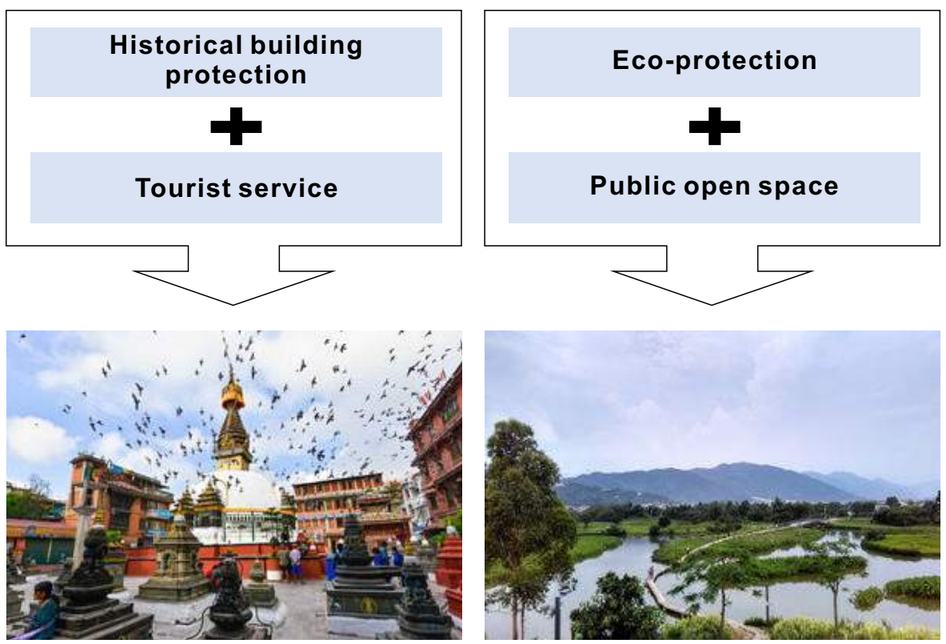


Figure: Development order suggestions for different districts of Bidur

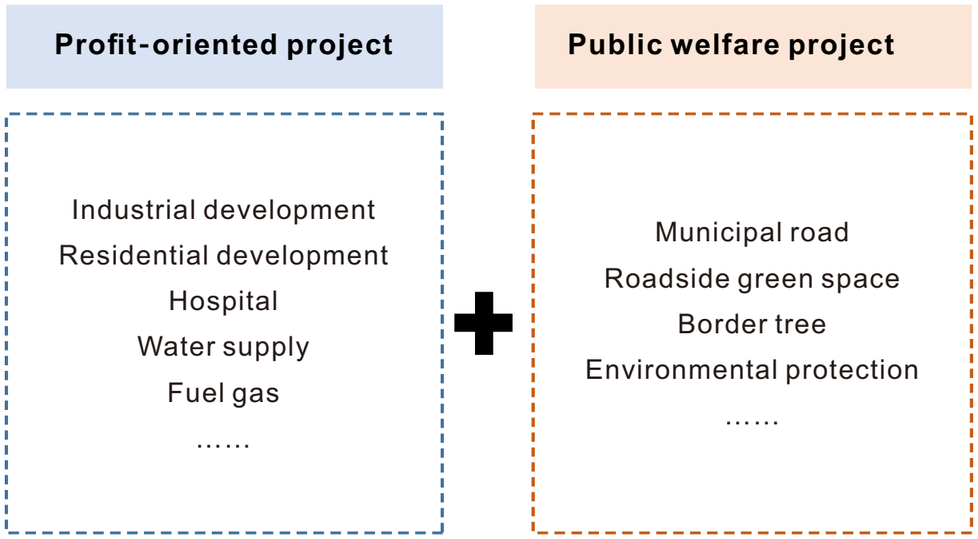
(III)Mixed development

Encourage the action of mixed development of different functions.Encourage the construction of residential area in support of that of the industrial park, the renewal of old city function and the supporting infrastructure construction, historical building protection and the construction of supporting tourist facilities, and the combination of eco-protection and water space development.





Encourage the combined development of profit-oriented project and public welfare project. Profit-oriented projects include industrial development, residential area development and profitable projects such as hospital, water supply and gas; public-welfare projects include municipal road, roadside green space, border tree and other non-profitable projects.



(IV) Public-private partnership

Public-private partnership encourages the use of PPP mode in the road construction, infrastructure construction and public service facilities construction. The government provide policy support, while the enterprises and private persons, as the builders are suggested to make upfront investment, project investment, project development and project management. After land value going up, the government shall compensate investment of the enterprise with its transferring income, in order to create an all-win situation for government, citizens and enterprises.

V.Construction Suggestions for Different Districts

(I) Southern Industrial Cluster

It is suggested that the construction of Southern Industrial Cluster should be carried out under the **unified planning, government leadership** and **enterprise collaborationby stages.** The government should uniformly arrange and manage the land ownership, land use function and resettlement related to this cluster.

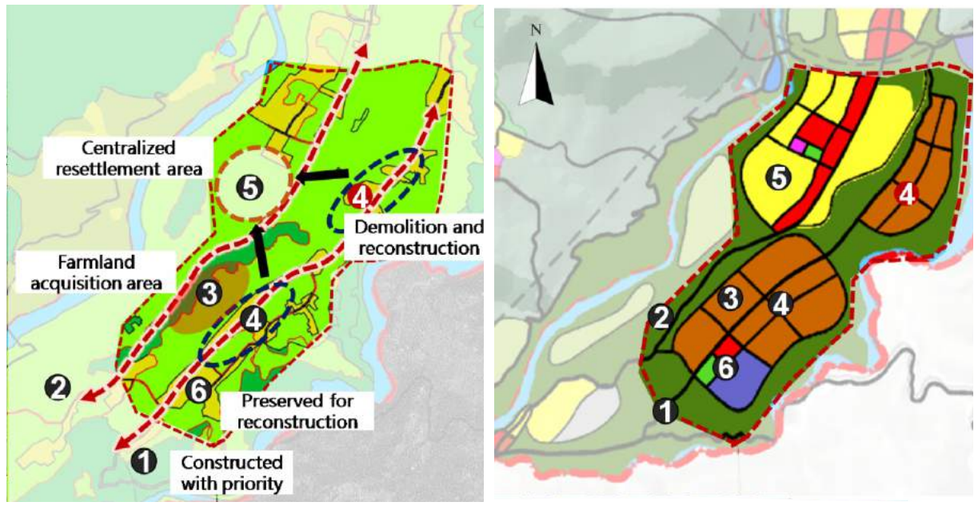


Figure: Implementation Suggestions for Southern Industrial Cluster

The first is the reasonable functional access. As Southern Industrial Cluster centers on industrial functions, industries such as the planting and processing, scale breeding, food processing and warehousing industry should be allowed while public service facilities such as residential housing, schools and hospitals are not suggested. Service facilities such as retail stores, fire stations and gas stations may be constructed in this cluster, and facilities for drainage, sewage disposal and other related functions can be planned uniformly.

The second is the government-leading land development. The government and the citizens lead the land development together. It is suggested that the land should be obtained by transferring the management right and transferring the ownership right. Or the government should provide funds, technologies and resource channels. The income arising therefrom can be distributed among concerned parties in later stages. Thirdly, private persons/entrepreneurs should be encouraged to play a leading role in the construction, and the government should provide the tax preference and other preferential policies for the establishment of factories, plantations and farms and other large-scale agricultural production activities.

The third is the unified resettlement of concerned residents. The government should take reasonable arrangement of original residents by means of residential resettlement or employment placement. Monetary compensations, land compensations or other methods can be used. Secondly, the job placement should be provided for land-lost residents by providing them with job opportunities in this industrial park.

(II) TRISHULI Cluster

The local reconstruction and function replacement of land parcels should be made to modify urban functions slightly. The emphasis should be placed on the promotion of functions and internal development of urban areas. No disordered construction or mass-demolition and mass-construction carried out privately should be encouraged. The original city scape should be protected with emphasis.

The first is to preserve original functions. Original functions of various land parcels and buildings should be preserved, with emphasis placed on the commercial function, residential function and public service function.

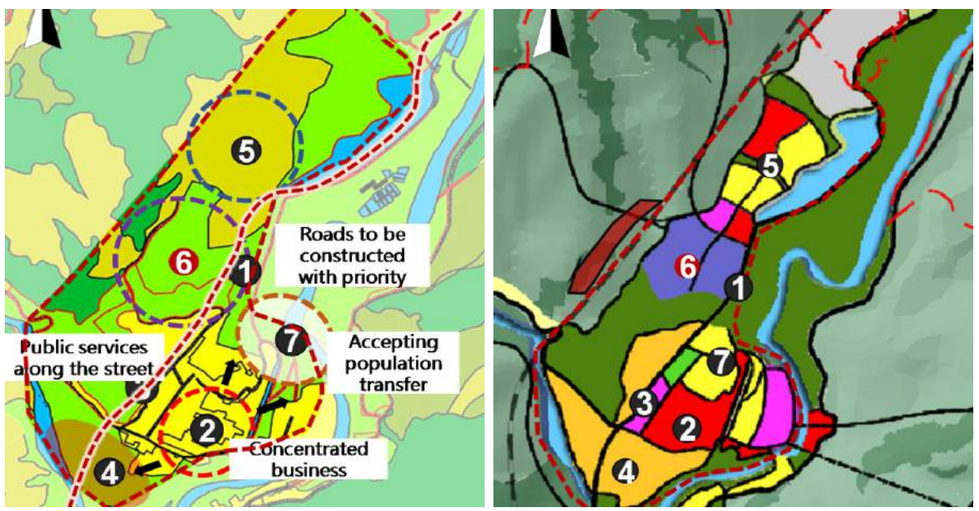


Figure: Implementation Suggestions for TRISHULI Cluster

The second is that the local reconstruction is recommend. The renovation of building facades, road hardening, landscape improvement and other slight modifications should be carried out uniformly so as to improve the urban space environment and unitize the city scape, and may be reconstructed to develop new functions related to the public service, medical service, commerce and market etc.

The third is to guide the function transformation. The government should encourage the development of commercial and retail business along the streets and concentrated business. Firstly, residents should be permitted to use their own houses to operate commercial stores along the street. Secondly, the government should play a leading role in constructing concentrated commercial districts and directing the population in commercial blocks to surrounding regions. Commercial transaction venues and supporting facilities should be constructed with priority, and the leasing and other methods should be used to attract individuals/enterprises to operate business in such commercial districts so as to activate the commerce function of the city and construct the farmer's market and vegetable market.

(III) Bidur Cluster

It is suggested that the function of the Bidur Cluster will be improved in the future, to inject public service facilities and large-scale financial service functions to drive the renewal of the old city.

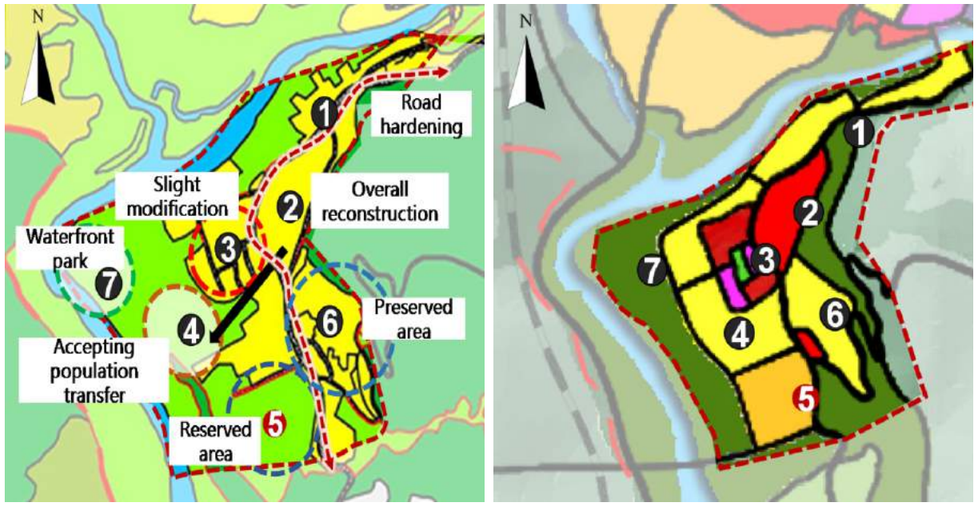


Figure: Implementation Suggestions for Bidur Cluster

The first is to fully explore the potential land. The unutilized land, land with low utilization efficiency and unused functional buildings should be acquired and managed uniformly so as to increase the land use efficiency.

The second is tointegrate.Functions of existing land should be integrated. Firstly, the housing function should be integrated, and the population in central areas should be decentralized. To be more specific, the residential building and people living in the central area and in the east of main roads should be directed to the western area. Secondly, public centers should be arranged concentratedly. The library, exhibition center, bank, hotel and other public service facilities and large-scale commercial service facilities should be arranged concentratedly. Thirdly, the waterfront areas should be integrated, and public spaces should be constructed.

The third is to mixed develop. The mixed development of residential land and commercial land should be advocated. The community construction and commercial development should be carried out by investment entities while the government should play its role in planning and control.

(IV) Palace Cluster

As an important cultural and historical heritage area, the Palace Cluster should focus on protective development in conjunction with tourism projects.

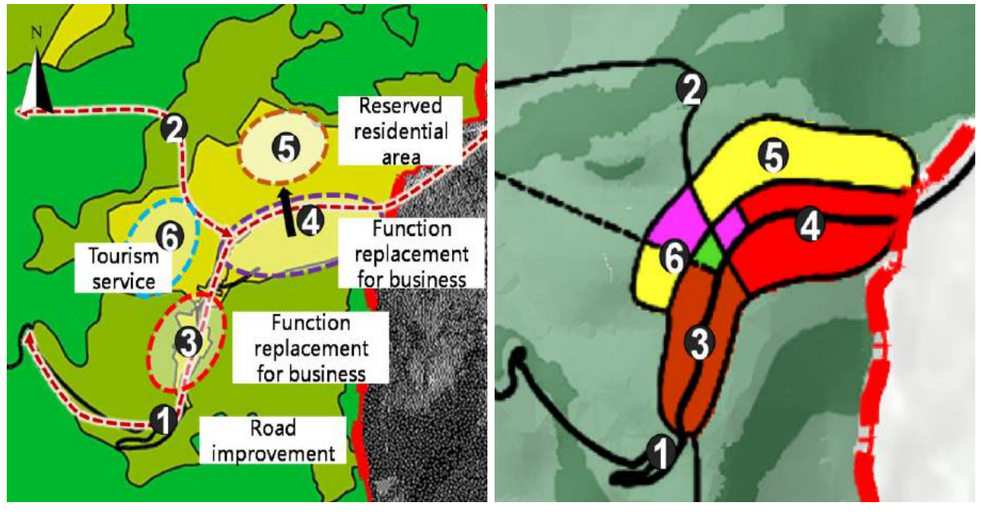


Figure: Implementation Suggestions for Palace Cluster

The first is to give priority to road construction. Priority will be given to the construction of roads leading to Palace Cluster and recreational channels.

The second is to delimit the protective range of Palace Cluster. The palace should be repaired and the protective range should be delimited. Private constructions of other functional facilities within the protective range shall be prohibited.

The third is to encourage villagers to build recreationaland service facilities such as folk hotels and commercial facilities.

(V) BATTER Cluster

As a new urban city in the future, BATTER Cluster should be constructed in a centralized manner under the unified planning by stages.

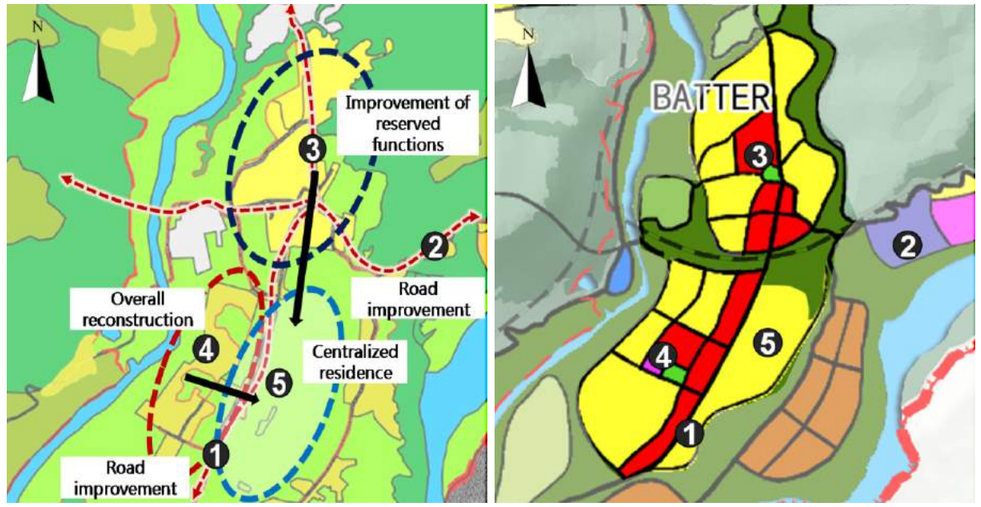


Figure: Implementation Suggestions for BATTER Cluster

The first is the construction of the northern and southern district. In the northern district, large-scale community and commercial centers or public service centers should be constructed to direct residents along the road to areas surrounding public service centers. In the southern district, industrial parks should be constructed, as a supporting service area to build jointly.

The second is that existing residential sites should be concentrated to facilitate the unified resettlement. Unoccupied land may be reallocated and reclaimed for agricultural production so as to improve the land use efficiency.

(VI) Rural communities

Currently, rural residential sites are scattered among mountains and forests. It is recommended that rural areas should be constructed into rural communities in a concentrated manner.

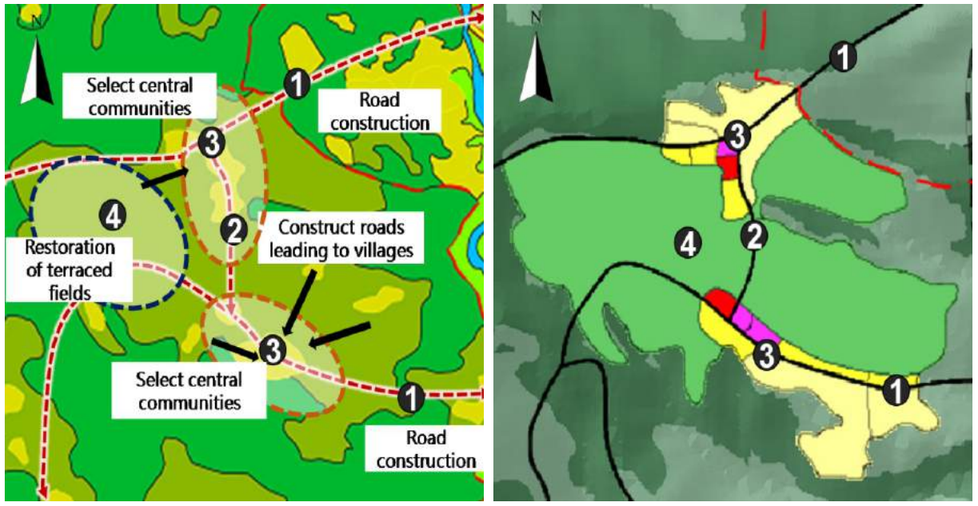


Figure: Implementation Suggestions for Rural Communities

The first is to select the central community. The village with larger populations and better traffic conditions should be selected and developed into the central city.

The second is to improve infrastructure. In central villages, medical facilities, educational facilities, commercial facilities and other public service facilities should be developed centrally, and village roads should be constructed to direct villagers to central communities and residential areas at the foot of mountains.

The third is the unified regulation and independent construction. The government should carry out the planning and design, approve and provide assistance funds, supply supporting infrastructure and carry out quality supervision uniformly, and villagers should be allowed to select the house type, choose the construction unit, provide funds, carry out constructions, have discussions and make decisions independently, etc.

VI. Suggestions for the development and operation of key areas

(I) Nuwakot Palace Cluster

Tourism service industry is an important internal driving force that drives the urban development of Bidur.Special attention should be paid to featured tourist attractions in the grand palace, the distinctive religious culture of Nepal and traditional features of local residents, and create a tourist area with folk culture and customs.

1.Tourism development integrating food, accommodation, sightseeing and shopping

It is suggested to develop tourism programs characterized by sightseeing, folk custom and tourist souvenir so as to develop the tourism which integrates the sightseeing, touring, entertainment, food, accommodation and shopping. Develop tourism programs such as a tour to the grand palace,hiking and exploration, and high-quality cableway tour etc. Explore experience programs featured with folk customs such as Nepali colored drawing,festival of lanterns, exhibition and experience of woodcarving, performance of Holi Festival, and traditional dwellings of Nepal etc. Increase Nepalese traditional handicrafts, shawls, scarves, silver crafts and wood carving crafts etc.

2. Integrated development of commercial, residential and historical buildings

The construction may be carried out in three phases according to the operative difficulty and operating conditions of the tourism area with consideration of the fund, construction difficulty and time of obtaining return on investment and other issues. In the first phase, tourist attractions inside and surrounding the grand palace should be restored, and sightseeing tours should be developed with emphasis. Tourism programs featured with folk customs should be appropriately developed jointly with surrounding residents. In the second phase, the function and scope should be extended outwards. The commercial shopping street should be constructed and thehigh-quality cableway tour and other tourism programs should be developed. In the third phase, the folk custom museum,exhibition center and other facilities should be constructed to upgrade the cultural tourism functions.

Restore buildings to develop sightseeing tours in the first phase, construct commercial streets to develop experience tours in the second phase, and construct cultural facilities to develop cultural tours in the third phase

3. Government management, enterprise development, villagers'participation, joint management of three parties

The government should refer to the Ancient city of Phoenix Hunan China, the model that the residents and government revenue sharing the benefits by selling tickets. The government is responsible for determining the type of permitted development projects, controlling functions of such projects, and determining project developers via calling for bids. At the earlier stage, the government offers some assistance in funds, demolition and resettlement of residents, taxation and other preferential policies. When the tourist area is put into operation, the government can profit from the tax income. The bidder needs to undertake the restoration of historic buildings, the construction of roads and public service facilities in the area, as well as the construction, development and operation of the park.The villagers should have the enthusiasm and initatives which should be exerted to encourage them to participate in the construction of the park. Local residents can participate in the development of the park by investing their land or houses into the project. On one hand, the self-built houses of villagers should be reserved as far as possible so as to construct folk customs villages and develop corresponding tourism programs. On the other hand, villagers involved in the demolition, relocation or acquisition should be compensated with land or funds, and all villagers should be allowed to participating in various activities of the park as masters and enjoy the benefit generated at later stages.

Figure: Fenghuang Ancient city Changsha Chine

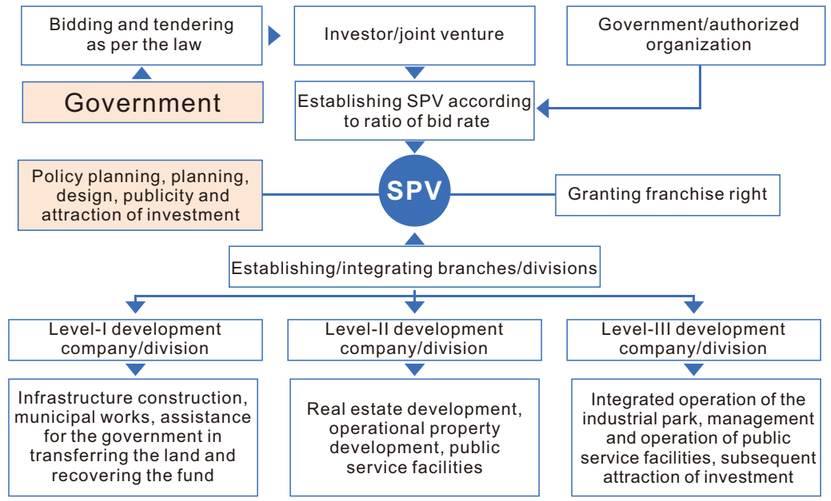


Figure: Flow Chart of Operation Mode

(II) Southern Industrial Cluster

1. Operate the new city under PPP mode via government-enterprise cooperation

Learn from Huaxia Happiness Gu'an New Industry City, playing the leading role of private enterprises under the government-enterprise cooperation is similar to the granting of franchise rights, which is a more marketing operation mode transiting from BOT to PPP.

Firstly, the investor or joint venture established by investors may participate in the tender organized by the government, and the successful bidder may establish the project company jointly with the government in accordance with a specific ratio of the bid rate.

Secondly, the project company may develop overall planning and design schemes for the concerned area in accordance with the industry orientation after obtaining the franchise right granted by the government. Then, the project company can establish branches or divisions which are responsible for attracting investment as well as developing and operating the area according to specific contents of project development.

An industrial park should be constructed within the concerned area to develop concentrated and mature industries gradually so as to upgrade the whole area, and investors can benefit from development and operation profits at all levels.

2 . Land stock cooperation and preservation of land ownership

As to Southern Cluster, it is recommended that the government should acquire and store the land uniformly and promote the implementation of the land stock cooperation system to develop joint-stock cooperative economy.

The government established a specialized land reservation center to acquire and reserve land. A specialized land reservation agency should be established as the executor who undertakes the land acquisition, land purchase, land reservation and other related tasks so as to obtain the land ownership. The land reservation agency should act as the executorwho carries out the preliminary land development. The land reservation agency should transfer and allocate the reserved land to obtain incomes.

Private person retain the ownership right and transfer the management right.

The government or farmers may set up cooperatives or other economic organizations to acquire the land by means of the redemption of the government or the voluntary land sale of peasants to achieve the transfer of the management right of rural land. Peasants can use their land to buy a share and obtain dividends at the end of the year according to the productive and management benefits, or choose to work in the industrial park or the community to obtain salaries, or use the land to exchange for social benefits such as the old-age pension and social insurance.

Chapter VI

Suggestions on Planning System

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I. The existing planning system

(I) Current planning characteristics

Nowadays, it is found that documents and regulations stipulated by Nepal to guide the urban development and construction can be generally divided into the three types, namely the plans, policies and standards. Plans include the land use planning, overall traffic planning by region, regional climate and energy planning etc. Policies include the industry policy and land use policy etc. Standards include the road construction standard and planning standard, covering the land use, traffic, environment and sanitation and infrastructure etc. Those documents are mainly prepared by the ministries and commission as well as the special committees, and the planning can be divided into three levels, namely national/federal planning, regional/provincial planning, and municipal planning.

Table--Categories of Existing Planning Documents

Type	Name of planning	Preparer	Planning level
Plannings	Land Use Policy and Planning	Food and Agriculture Organization of the United Nations UN Complex	National level
	National Energy Strategy of Nepal	Government of NepalWater and Energy Commission Secretariat	National level
	Sanitation And Hygiene Master Plan	Steering Committee For National Sanitation Action	National level
	District Transport Master Plan	Ministry of federal affairs and local development office of district development committee	National level
	District Climate And Energy Plan Nuwakot District	District Development Committee, Nuwakot	Provincial/ Regional level
	Resettlement Planning Document	Ministry of Physical Planning and Works, Department of Roads	Municipal level
	Road Connectivity Sector/Project		Municipal level
Policies	Industrial Policy, 2011	www.lawcommission.gov.np	National level
	Land ues policy	Ministry of Land Reform and Management	National level
Standards	Nepal-Road-Standard-2070-1	Government of Nepal Ministry of Physical Infrastructure & Transport Department of Roads Planning and Design Branch Road and Traffic Unit	National level
	Planning Norms and Standards	Government of Nepal Ministry of Urban Development Department of Urban Development and Building Construction	National level

(II) Problems and shortcomings

1. Lack of development planning that systematically guides urban functions

Currently, the special development planning, development policies and relevant engineering standards are mainly used to guide the urban construction while it is lack of systemic and comprehensive planning and guidance for the city function, land use and ecological protection etc.

2. Lack of guidelines for land use layout that connects development planning with facility strategies

Currently, land use policies, partition standards and development suggestions have been put forward at the macro level. At the micro level, construction standards, financing means and resettlement planning are also made available. However, it is lacking in the overall land use layout and overall planning for land functions at the meso level, leading to insufficient planning communication and disordered construction.

3. Lack of standards that can directly guide urban construction

There is insufficient convergence between standards and actual conditions, so it is hardly to effectively guide city construction. Although it was put forward some corresponding planning standards for education, medical, and sport facilities etc, the standards still stays at the allocation standard at the overall planning level. It lacks of cities that can be relegated to the community-level. Moreover, it lacks of control over planning quality standards of various facilities. What's more, special standards are set up separately, which is not systematic and lacks of special category standard.

II.Construction principles

Recently, it has almost internationally formed the planning system which is constructed by the socio-economic development planning and space development planning. The socio-economic development planning guide the city's development goals and position and formulate development strategies, and the space development planning guide the land layout, which can guarantee the reasonable layout and ecological protection of each functional area. It has the following characteristics:

The first is to combine the special planning system with administrative system, such as Indonesia, that established three levels of spatial planning: national, provincial, and city. According to the administrative system, China established five levels: national, provincial, city (country), town (township), and village. The second is to focus on planning and implementation and is to guide the land use layout, such as Vietnam, that proposes detailed planning and guides the layout of specific land use. Focus on inter-sectoral coordination. The third is to transfer the planning which is limited to vertical planning and management of different departments into the planning which is paid more attention to horizontal coordination between departments. The urban and rural housing construction department, as the competent department in China's urban planning system, coordinates with transportation department, development Committee, environmental protection departments, and other departments. Vietnam has Ministry of construction as its core that coordinates with planning, investment department, and other special department.

Combined with the initial stage of development in Nepal, it is encouraged municipal governments to actively carry out urban construction, meet the reasonable allocation of urban and rural planning, achieve the purpose of protecting urban and rural space resources, and determine the principles for building Nepal's planning system.

(I) Delegating the power and unifying the standard

It is suggested that the power of city planning and construction should be decentralized to municipal governments at all levels that should organize, approve and manage various plans, forming state-local level control. The nation is responsible for the formulation of the relevant content standards for urban and rural construction, such as urban infrastructure, roads, houses, etc.

(II) Good connection and combination

The administrative system should be the management level, the administrative area should be the implementation unit, and the corresponding plans should be compiled. The stare uses the planning with state-level, while the municipal uses the planning with municipal-level. The planning with lower level must correspond to the planning content formulated with higher level. The planning formulated should take the present needs of urban development as core and meet the long-term needs of urban development.

(III) Following one Pricipal regulation and other regulations as supplement

With a comprehensive plan as its core, the other specific plans at the same level should all be coordinated. The special planning content should be comprehensive, covers extensively, has a clear thought of global development, proposes framework of development, and guide the next specific plan. Other specific plans are the plans that guides the implementation of all kinds of special projects and the detailed plans (rezoning planning), such as integrated traffic planning, green park space plans, historical conservation plans, and industrial plans, etc.

(IV) Being simple and efficient to ensure the implementation

According to the actual situation in Nepal, the main purpose is that the planning level should guide the implementation of various types of land use, combine with various functional departments of the government, and build a plan system with clear hierarchy, specific main body contents, briefness, efficiency, and easy implementation.

III. Suggestions on the planning system

(I) Constructing state-city-(township) village three-level planning system in the near future

It is recommended that Bidur (Nepal) should develop the overall development concept consisting of the federal/national planning, provincial/regional planning and district/municipal planning. And the Village Development Committee (VDC) can be the minimum planning body and implementation unit. This three-level planning system can conduct and refine the contents of the previous level of planning to guide the implementation of the plan.

The national/federal level plan mainly constructs two major aspects: one is to guide the national development framework; the other is to formulate standards and norms for relevant special plans.

The municipal level planning is the key level of planning and implementation with spatial planning and strategic planning as the core. It will define urban development goals and development strategies, refine functional divisions at the municipal level, and compiling various special plans.

The (town) village-level planning is mainly to guide the detailed planning of the city's specific implementation and construction. It is an important means to directly manage urban functions, guide urban construction and implement land resources.

(II) Constructing federation/state-province-district/city-(township) village four-level planning system in the long term

According to the future urban development stage and needs, the provincial/regional planning level is reserved. The provincial/regional planning is mainly used to coordinate regional development, coordinate regional functional and economic development, and improve regional competitiveness and development level.

(III) Forming spatial planning and strategic planning combined planning preparation system

Strategic planning and spatial planning are formed at different levels. The strategic planning is planned planning, which clarifies economic and social development goals, strategies and development ideas. The spatial planning guides the specific land use layout.

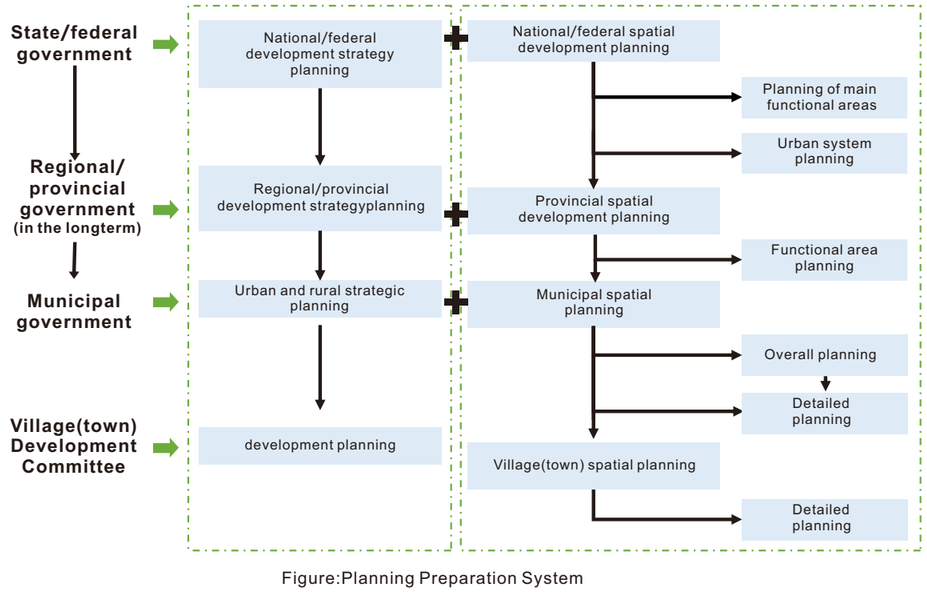

Figure:Planning Preparation System

(IV)Forming municipal level master/strategic planning, detailed planning and action plan combined planning preparation system

1.Overall/strategic planning

The overall/strategic planning refers to the macro-level, strategic and comprehensive planning guiding the long-term development of the city. It should be compiled by the municipal government and reported to the higher-level department (the Ministry of Urban Development) for approval. After adoption, it will be implemented and managed by the people's governments. It is the overall plan for the development of urban and rural prospects, and the planning period should be 15-20 years.

The planning content should include the proposed urban and rural development goals and strategies; determine the protection objectives, requirements and control scope of the ecological environment, land and water resources, forest resources; predict the population size and urban development scale; determine the urban development boundary and concentrate the construction area; determine functional zoning,

layout and construction standards; determine the layout of major infrastructure and public service facilities at the municipal level and various special planning requirements.It is also necessary to clarify the development timing and prepare a recent construction plan.

2. Action planning

The action plan is an arrangement for the construction goals, development layout and implementation of major construction projects in the short term. It is an important step in the implementation of the city's master plan.It is prepared by the municipal government and the planning period should be consistent with the government's term of administration, usually 5 years.

The planning contents include the recent population and land use scale, the scope and layout of construction land in the near future, the recent road traffic planning, and the layout of various infrastructures etc.At the same time, a project library is established to estimate the required funds. When the action plan expires, the next five-year development plan should be compiled according to the city master plan.

3. Detailed planning

The detailed planning of the city is the detailed arrangements for various control indicators and other planning management requirements for construction land, or direct arrangements and planning for the construction project, which is based on the master plan. The detailed planning shall be compiled by the land redrawing area or the (town) village development committee (VDC) and reported to the municipal government for approval.The detailed planning of key areas should be prepared by the municipal government, and the planning period should be consistent with the overall plan.

Detailed planning should include determining the boundaries of different functional land use in the planning scope, determining the types of buildings suitable for each type of land, determining the building height, floor area ratio, building density, and construction forms and determining the building volume, size, colors of each block etc. It should guide the implementation of specific projects.

Table--List of municipal planning categories in Nepal

Planning Type	Main Formulation	Approval Units	Planning Scope	Planning Years	Intensive Planning content
General/ strategic planning	Municipal government and relevant departments	National department of urban development	Population	15-20 years	Urban and rural development goals, development strategy, population size, Scale of urban development, determination of the urban development boundaries, definition of the city functional zoning layout and construction standards, layout of municipal major infrastructure and public service facilities,special planning requirements, chronological order of urban development
Action Plan	Municipal government and relevant departments	Municipal government	Population	5 years（consistent with tenure）	Recent population and land use scale, recent scope and layout of construction land in the future, recent road traffic planning, layout of various infrastructure and other content, establish a library of recent projects
Detailed Plan	Municipal government /（VDC）	Municipal government	Population	15-20 years	Boundaries of land use, types of suitable buildings for various types of land use, block building height, plot ratio, building density, distance between buildings and roads, determination of the building volume shape color

IV. Method to prepare master/strategic planning

The overall integrated planning system consisting of the development strategy planning, land use planning, action plans in the near future and policy implementation guarantees should be established to plan and manage the use of land in urban and rural areas uniformly.

(I) Organization mode:

The principle of the leadership of experts, governmental organization, and public consultation should be followed. The government should be responsible for organizing the planning preparation, providing relevant information and participating in decision-making. The planning should be prepared by professional agencies, and the public consultation should be enhanced by organizing public hearings, briefing sessions, community counseling etc.

(II) Preparation process:

1. Current situation research

Field surveys, questionnaire surveys, interviews and other methods should be used to carry out field investigations, collect economic data, population data, and social development data over the past 5-10 years, including the quantity and distribution of hospitals, schools and cultural facilities, the distribution and quantity of historical resources, the distribution of ecological resources such as rivers, protected areas, mountains and forests, the basic information of municipal infrastructure constructions, major urban projects and their development objectives. Then, the map of existing conditions and the current situation research report should be prepared and made public to solicit opinions from citizens on urban development.

2. Planning preparation

The planning preparation stage includes the formulation of development strategies, spatial layout, planning and action plans in the near future and implementation policies. (Refer to the next section for details)

3. Publicity and review

The reporting and review should be arranged at the preliminary stage, intermediate stage and final stage according to the work schedule to ensure the preparation and implementation of the planning. At the preliminary stage, the current situation research report and development strategies should be reviewed. At the intermediate stage, the development scale, layout of land use, action plans and other aspects should be reviewed. At the final stage, the complete information should be submitted and reported. The review should be divided into the government review and public review.

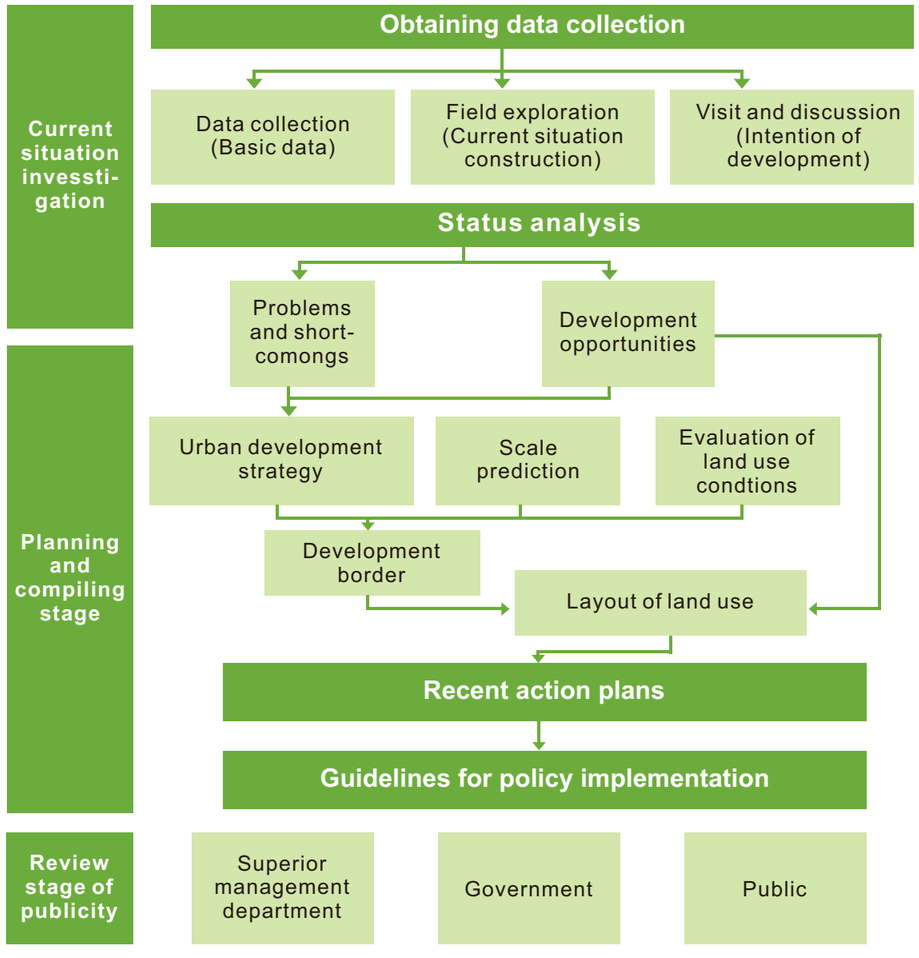

Figure:Technical roadmap for Nepal master plan preparation

(III) Contents of planning preparation:

1. Determine the urban development direction by focusing on strategic planning

The overall development strategy planning is of great significance in guiding the direction and ideas of urban development. The social economy, infrastructure, land use, public service, environmental protection and other aspects of the city should be summarized to identify current problems of urban development. The SWOT analysis should be conducted to make a judgment on opportunities, challenges and problems of urban development so as to put forward development goals, development strategies and development priorities, as well as provide guidance for functional zoning.

2. Use land use planning to guide the use of urban and rural land

Firstly, the current situation research should be carried out to understand functions of existing land. **Secondly, the land use should be evaluated** to determine the eco-functional zoning of the city. **Thirdly, the development scale should be forecasted** to determine the appropriate size of the population and land to be used. **Fourthly, the land use layout should be defined.** Basing on current land use information and future development perspective, the land use layout should be put forward to divide the usable land, unusable land and the land to be protected. **Fifthly, the special planning** for the population distribution, road system, public service facilities, infrastructure, cultural protection and ecotourism should be determined to specify the layout of urban communities, public service facilities, infrastructures and other supporting facilities of the city. **Lastly, the overall urban design** should be guided. To be more specific, control standards for urban constructions should be put forward to provide guidelines for the height, type and other aspects of regional buildings as well as the construction of specific land plots. The urban construction and development should be guided by a planning map comprehensively.

3. UseFive-year action plan to define city specific construction content

Under the guidance of the development strategy and land use layout, each department should formulate the action plan and construction sequence according to the development period and the development priorities at different stages, and steadily advance the urban construction in the form of a project library. The action plan should include the industrial action plan, infrastructure construction plan, environment improvement plan, housing construction plan, transportation development plan and other plans. The construction standards, construction methods, and funding requirements should be specified, too.

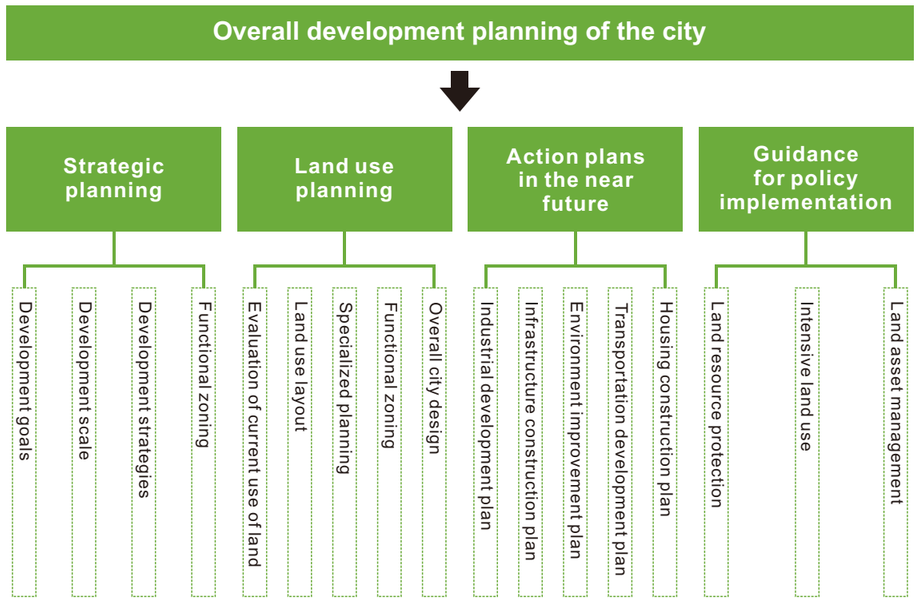

Figure:Contents of Overall Planning of Nepal

4. Guide urban land resource use by implementing policies

It should be emphasized that the protection of land resources is the baseline of construction, and methods of protecting the cultivated land and guaranteeing the ecological land should be put forward. The intensive use of land should be regarded as the development goal, and the source of land for urban construction should be guaranteed. The land should be managed properly to ensure urban construction land resources.