Bhutan
National Human Settlement Strategy

Royal Government of Bhutan
Ministry of Works and Human Settlement

June 2017
Foreword

Ministry of Works and Human Settlement (MoWHS) adopted Bhutan National Urbanization Strategy (BNUS) in 2008 to identify potential urban centers with an objective to promote a regionally balanced development. The spatial framework proposed therein consisted of a national urban system, with a hierarchy among cities, supporting policies and strategies. However, urbanization trends since then differed from the projections made in the BNUS. Further, the BNUS primarily dealt with urban areas. Therefore, to reflect the current scenario and the emerging trends, the Ministry initiated the preparation of National Human Settlement Strategy (NHSS).

The prime objective of NHSS is to ensure an integrated and regionally balanced development, and establish a roadmap for the development of settlements, both rural and urban. Other objectives considered during formulation of the strategy include environmental conservation and preservation of culture, and decentralization to promote participatory development.

The main outputs include a framework for prioritization of areas to be developed. It illustrates a model to identify the areas that are most suitable for development, based on demographic trends, linkages with urbanizing areas and availability of developable land and water resources. Further, it includes recommendations and strategies organized under two broad categories. Firstly, the component-wise strategies include recommendations to address challenges identified in various sectors, including institutional linkage and coordination, settlement systems and planning, housing, disaster mitigation measures, tourism, etc. Secondly, the Dzongkhag-specific strategies build upon opportunities offered by the dzongkhags, and address their distinct challenges.

Operationalization of the strategy is dependent on coordination amongst agencies and developing capacities. Considering the rapid development and economic transformation, the strategies have been prioritized and grouped under two phases, I and II. However, the timing and implementation of various programmes will be decided as necessary and when the required data become available.

Analysis and projections based on population and housing data are critical to formulation of a realistic development strategy and its successful implementation. Accordingly, the preparation of the NHSS was intentionally scheduled in anticipation of the conduct of nationwide population and housing survey in 2015. However, the survey was carried out only in May 2017. Therefore, analysis in this report had to be based on the projections and the PHCB 2005. Consequently, a reliable output of potential growth areas could not be modeled and the current report contains more of study formats and modalities rather than strategies. It is planned that the re-modeling will be carried out when the PHCB 2017 results become available and the proposed recommendations and strategies shall be updated accordingly.

(Dorji Choden)
Minister
## Abbreviations

<table>
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<tr>
<th>Acronym</th>
<th>Expansion</th>
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<tr>
<td>BLSS</td>
<td>Bhutan Living Standard Survey</td>
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<td>BNUS</td>
<td>Bhutan National Urbanization Strategy</td>
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<tr>
<td>CRIS</td>
<td>CRISIL Risk and Infrastructure Solutions</td>
</tr>
<tr>
<td>DCR</td>
<td>Development control regulations</td>
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<td>DDM</td>
<td>Department of Disaster Management</td>
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<td>DHS</td>
<td>Department of Human Settlement</td>
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<td>FYP</td>
<td>Five year plan</td>
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<td>GDP</td>
<td>Gross domestic product</td>
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<td>GLOF</td>
<td>Glacial lake outburst flood</td>
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<tr>
<td>GNH</td>
<td>Gross National Happiness</td>
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<tr>
<td>GNHC</td>
<td>Gross National Happiness Commission</td>
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<tr>
<td>ICE</td>
<td>Innovation, creativity and enterprise</td>
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<tr>
<td>LFS</td>
<td>Labour Force Survey, 2014</td>
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<tr>
<td>NEC</td>
<td>National Environment Commission</td>
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<td>NHSP</td>
<td>National Human Settlement Policy</td>
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<td>NHSS</td>
<td>National Human Settlement Strategy</td>
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<td>NLC</td>
<td>National Land Commission</td>
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<td>NLCS</td>
<td>National Land Commission Secretariat</td>
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<td>PHCB</td>
<td>Population and Housing Census of Bhutan</td>
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<tr>
<td>RNR</td>
<td>Renewable natural resources</td>
</tr>
<tr>
<td>SGNH</td>
<td>Strategy for Gross National Happiness</td>
</tr>
<tr>
<td>TOR</td>
<td>Terms of reference</td>
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1. **Introduction**

Over 56% of the country’s population depend on agriculture and livestock for their livelihood, which account for only 16.8% (2014) of GDP\(^1\). The comparatively low economic returns from agriculture and livestock may have led to the increasing pace of migration from rural to urban areas. The western region, which has better infrastructure and more employment opportunities, attracted most migrants, thereby creating an imbalance in terms of population distribution across regions, while also increasing pressure on the urban centers.

To balance rapid urbanization and preservation of the country’s fragile ecology, the Bhutan National Urbanization Strategy (BNUS) 2008 was adopted. The BNUS aimed to address the growing demands of urbanization, with respect to the limited availability of serviced land. However, the development trends since 2008 have been different from that anticipated in the BNUS. The actual urbanization has been less than the projected urbanization level. Further, the BNUS focused only on urban centers, and did not include rural settlements in its scope, thus establishing the need for a review of the document and an inclusive approach to future development which covers:

i. Both urban and rural settlements in the country.

ii. Identification of potential human settlement areas considering the available land, connectivity and access, water availability, etc.

iii. Development of priority list of potential areas for development of human settlements.

iv. Identification of protected and settlement areas.

v. Recommendations for supporting policies, and institutional and regulatory frameworks to implement the human settlement policy and the strategy.

Key steps in the formulation process are:

i. Review of existing policies and documents.

ii. Review of international best practices.

iii. Review of existing reports, site visits and analysis.

iv. Development of NHSS.

v. Presentations, stakeholder consultations and review.

The objective of the strategy report is to present studies and findings, identify potential settlement and non-settlement areas and provide strategies. It also provides recommendations and proposals for the institutional and legal framework and the timeframe for the implementation of the strategies. However it is to be noted that:

- Population projections are based on 2005 census data published by the National Statistical Bureau.

- In the absence of updated data, a framework has been prepared using population projections, which will be adjusted according to the new census data, when available.

\(^1\) Bhutan at a Glance, 2015; National Statistics Bureau
During spatial mapping, gaps and inconsistencies were found in the data. These have been addressed to the extent possible with the available data. But some of these gaps need to be addressed through more detailed studies subsequent to NHSS.
2. Methodology

The following chart illustrates the various inputs and processes used to formulate NHSS.

**Figure 1: Methodology**

**Analysis**
- Review of policies & best practices
- Stakeholder consultations
- Analyses of secondary data
- Site visits & meetings

**Primary & secondary information inputs**

**Areas to be addressed in NHSS**
- Regional imbalance
- Narrow economic base
- Inter-agency coordination
- Preservation of culture and traditions

**NHSP**

**Strategic inputs & guiding principles**

**Areas to be addressed in NHSS**

**Strategic areas**

**Way forward**
- Key activities
- Phasing (short & long term)
- Workshop

Analysis of primary and secondary data has been the first step towards the formulation of NHSS. This step also included extensive meetings with stakeholders and collection of documents from Thromde, Gewog and Dzongkhag offices.

Identification of strategic thrust areas led to the formulation of component-wise recommendations and strategies which are made at national, regional and local levels. Potential areas for growth of settlements have also been identified.

Based on the strategies and recommendations, a broad implementation framework was prepared, which included the key activities and resources required along with the tentative time frames and the agency/ministry responsible for the implementation of the strategy.
3. Analysis and Observations

3.1 Settlement system

The settlement system in Bhutan comprises of villages and Thromdes which are concentrated in the central valleys and southern foothills. Traditionally, the patterns and forms of settlements were shaped by the availability and layout of the land, availability of resources, safety and security of settlements, etc. However, with the start of modern development, new forms of settlements based on trade and commerce developed. Several new towns and settlements coming up outside the existing urban centers and along the highway often does not comply or disturb the hierarchy of settlements.

Table 1: Administrative structure of settlement systems in Bhutan

<table>
<thead>
<tr>
<th>Policy/ strategy</th>
<th>Recommendations/ suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhutan Vision for Peace, Prosperity and Happiness 2020-</td>
<td>Human settlement development strategy, and regional development and growth policies should respond to economic compulsion, in order to address issues arising from rapid rural-urban migration.</td>
</tr>
<tr>
<td>BNUS</td>
<td>Need to give preference to expansion of existing centers rather than creation of new settlements, provided that the minimum requirements and basic conditions can be fulfilled.</td>
</tr>
<tr>
<td>BNUS</td>
<td>The settlement strategy should look into improving quality of urban design and planning.</td>
</tr>
<tr>
<td>BNUS</td>
<td>Regional growth centers need to be identified, especially in eastern Bhutan, as part of the urbanization strategy.</td>
</tr>
<tr>
<td>Strategy for GNH</td>
<td>Proposed functional hierarchy ranging from economic driver at national / regional level to administration/ service center for Dzongkhag Thromde; service center nodes for Yenlag Thromde; Gewog center for Gewog Thom and rural economic activity for villages and hamlets.</td>
</tr>
<tr>
<td>Strategy for GNH</td>
<td>Projected that the most likely urbanization rate to be around 50% by 2020.</td>
</tr>
<tr>
<td>Strategy for GNH</td>
<td>Development of places apart from Thimphu and Phuentsholing, should be considered; but doing so requires build-up of critical mass, as the level of services will be dependent on the size of the settlements.</td>
</tr>
<tr>
<td>Strategy for GNH</td>
<td>There is a strong relationship between level of service and attractiveness of a location for investment and living.</td>
</tr>
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</table>

3.1.1 Observations

- There is an uneven distribution of the population, with concentration in the country's western region. Settlements are mostly growing along the transport corridors, especially the national highways.

- Several areas are transitioning from rural to urban and have a semi-urbanized character. These areas are growing owing to locational advantage and access to infrastructure. Presently do not fit into the current hierarchy of settlements. If not planned properly, they might lead to unplanned and haphazard development.
• Medium and small settlements, other than Thromdes, have very low growth rate and the guidance for development is not available at this scale.

• While some settlements grow and function independently, others tend to be inter-dependent on settlements in its proximity.

3.1.2 Issues

• There is a need to meet the demands of urbanized areas that are under rural administration.

• There are no specific regulations for peri-urban areas, which are transitioning from rural to urban and have a semi-urban character.

• Fast growing areas have inadequate basic services.

• The preference for flat land for new development needs to be addressed. Some development that is possible on slopes should be allowed, to free flat land for other uses.
Map 2: Settlements in Bhutan

Legend
- Bhutan National Boundary
- Economic Centers
- Growth Centers
- Highways
- Dzongkhag Thromdes
- Dzongkhags
- Yenlang Thromdes

Slope (degree)
- Less than 30
- 30-45
- 45 Above

slopes_recl.tif

Additional annotations may be present on the map, such as city names and geographic features.
3.2 Demography

The population of Bhutan was 634,982 in 2005\(^2\), with an additional floating population of 37,443. This population was projected to increase to 757,042 in 2015\(^3\) and 886,523 by 2030\(^4\), with a growth of 40% in 25 years. The population is highly scattered and unevenly distributed, with more concentration in the western and southern belts. The uneven population distribution is largely due to migration from rural to urban areas for economic and educational opportunities.

Figure 2: Population in Dzongkhags in 2005 and projected population for 2015

A survey\(^5\) conducted in 2013 by the Ministry of Agriculture and Forests on migration of Bhutanese citizen within Bhutan revealed that about 21.4% of the estimated total population were migrants, with rural to urban migrants constituting 18.2%, while rural to rural migrants constituting 3.2%.

Further the report states that economic growth centers attract the highest number of migrants, (42%).

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\(^2\) Population and Housing Census of Bhutan, 2005
\(^3\) Population and Housing Census of Bhutan, 2005
\(^4\) Population and Housing Census of Bhutan, 2005
\(^5\) Migration in Bhutan (its extent, causes and effects), Ministry of Agriculture and Forests, Royal Government of Bhutan, 2013
BNUS 2008 suggests that rural-urban migration is also dependent on administrative decisions to locate government offices. Map 4 shows the extent of in- and out-migration to various Dzongkhags.

### 3.2.1 Observations

- The population of Bhutan is highly scattered and distributed unevenly.
- The rate of urbanization has been slower than anticipated (as estimated in BNUS).
- About 21.4% of the estimated population are migrants, with most migrants moving from rural to urban areas. The rural-urban migration has led to gung-tong or empty houses problem and shortage of farm labour.
- The migration to urban areas is mostly due to the lack of employment opportunities in rural areas and has increased pressure on infrastructure, services and affordable housing in urban areas.

### 3.2.2 Issues

- There is acute imbalance in population distribution, with concentration along the western and southern parts.
- Rural-urban migration creates:
  - i. Shortage of farm labour in rural areas.
  - ii. Increasing pressure on infrastructure in urban areas.
  - iii. Pressure on provision of housing in urban areas.
Map 3: Projected population distribution across various Dzongkhags - 2015
Map 4: Extent of migration in Bhutan

Legend
- Bhutan Boundary
- Dzongkhag boundaries

- Total out migration within Bhutan
- Total in migration within Bhutan
- % of out migration of each dzongkhag
- % of in migration of each dzongkhag

Extent of migration in Bhutan
3.3 **Socio-economic trends**

Bhutan has gradually moved from a primarily agrarian to a mixed economy. Agriculture is concentrated in the relatively flat lands in south Bhutan, with production of cash crops like cardamom and oranges on the rise. The secondary sector primarily includes hydropower projects, mining projects, agro-processing industries, and other small- and medium-scale industries. The tertiary sector primarily consisting of tourism and hospitality accounts for about 43% of GDP. With growth in tourism and commissioning of hydropower projects, the contribution to GDP from these sectors has taken precedence over agriculture. However, while agriculture, livestock and forest produce comprise about 16.8% of GDP, it supports 56.3% of the population. As economic returns from agriculture is low, people are exploring job opportunities in other sectors.

**Figure 4: Percentage share of GDP by major sector – 2014**

![Percentage share of GDP by major sector – 2014](image)

*Source: Bhutan at a glance, 2015, National Statistics Bureau*

**Figure 5: Percentage distribution of employed persons by major economic activity**

![Percentage distribution of employed persons by major economic activity](image)

*Agriculture and forestry 56.3%*

*Source: Statistical yearbook of Bhutan, 2015*

---

6 *Bhutan at a glance, 2015, National Statistics Bureau*

7 *Statistical Yearbook of Bhutan, 2015*
3.3.1 Observations

- Economic issues faced by Bhutan include narrow economic base, high rural poverty and regional inequality.
- The tertiary sector accounts for about 43% of GDP\(^8\), while the secondary sector comprises 40% share. With growth of tourism and commissioning of hydropower projects, these sectors have a larger economic contribution than agriculture. However, majority of the population (56.3%) is engaged in agriculture\(^9\).
- Issues related to unemployment has been increasing with population growth. Unemployment rates in youth are much higher than the overall average unemployment rate\(^10\). Unemployment rate is the highest in Thimphu\(^11\), which is one of the major economic centers.

3.3.2 Issues

- There is a need for skill development among the youth, to increase their prospects of employment across multiple sectors, especially sectors that lack human resources. Hydropower projects represent an emerging contributor to the economy but other economic options need to be explored.

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\(^8\) Bhutan at a Glance, 2015, National Statistics Bureau  
\(^9\) Statistical Yearbook of Bhutan, 2015  
\(^11\) Bhutan Living Standards Survey, 2012
Map 5: Major economic activities in Bhutan
Map 6: GNH index across dzongkhags

Legend
- Economic_centers
- Growth_centers
- Yenlang Thromdes
- Dzongkhag Thromdes
- Highways

GNH Index
- 0.69 - 0.70
- 0.71 - 0.72
- 0.73 - 0.76
- 0.77 - 0.80
- 0.81 - 0.86

Kilometers
Map 7: Dzongkhag-wise multidimensional poverty index

Legend

- Bhutan National Boundary
- Yenlang Thromdes
- Dzongkhag Thromdes
- Economic_centers
- Growth_centers

**Multidimensional Poverty Index**

- 3.40 - 12.04
- 12.05 - 20.68
- 20.69 - 28.32
- 28.33 - 37.96
- 37.97 - 46.60

Kilometers
3.4 Spatial planning

Bhutan is a small country, with an area of 38,394 sq. km, of which a significant portion is under forest cover, sensitive environment areas and steep terrain making land available for development scarce. At present, only 1% of the land in Bhutan is occupied by human settlements.

Figure 6: Percentage of area by land cover in Bhutan - 2010

![Percentage of area by land cover in Bhutan - 2010](source)

Source: Statistical yearbook of Bhutan, CRISIL analysis

Table 2: Key recommendation by policy and strategy documents

<table>
<thead>
<tr>
<th>Policy/strategy</th>
<th>Recommendations/ suggestions</th>
</tr>
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| Bhutan 2020 - Vision for Peace, Prosperity and Happiness | • Human settlement development strategy, and regional development and growth policies should respond to economic compulsion, in order to address issues arising from rapid rural-urban migration.  
  • Need to give preference to expansion of existing centers rather than creation of new settlements, provided that the minimum requirement and basic conditions can be fulfilled.  
  • The settlement strategy should look into improving quality of urban design and planning  
  • Regional growth centers need to be identified, especially in eastern Bhutan, as part of the urbanization strategy.  
  • The document talks about the concept of “rururbanization” that targets areas in the vicinity of towns as future focal points for urban growth, in which the benefits are broad-based and equitably shared. |
| BNUS | • Proposed Functional hierarchy ranging from economic driver at national / regional level to administration/ service center for Dzongkhag Thromde; service center for nodes for Yenlag Thromde; Gewog center for Gewog Throm and rural economic activity for villages and hamlets.  
  • Projected that the most likely urbanization rate to be around 50% by 2020. |
| Strategy for GNH | • Idea of regional balance.  
  • Development of places apart from Thimphu and Phuentsholing, should be considered; but doing so requires build-up of critical mass, as the level of services will be dependent on the size of the settlements.  
  • There is a strong relationship between level of service and attractiveness of a location for investment and living. |
3.4.1 Observations

- Only 1% of the land\textsuperscript{12} is occupied by human settlements.
- Bhutan is prone to earthquakes, landslides and GLOFs. Settlements in these areas face severe disaster risks if disaster mitigation measures are not undertaken.
- Urban areas are often susceptible to land speculation, unplanned and haphazard growth of settlements, and construction in disaster prone areas and restricted sites.

3.4.2 Issues

- Lack of basic services, especially in urban areas for the poor.
- Rapid growth of settlements around Thromdes and transport corridors lack proper management and efficient use of resources while providing infrastructure and protecting the environment.

3.5 Housing

A number of important policy and strategy documents have been prepared that would guide the strategies for housing in Bhutan. The following table summarizes some key recommendations and strategies given in the documents.

Table 3: Key recommendations by various policy and strategy documents.

<table>
<thead>
<tr>
<th>Policy/ Strategy</th>
<th>Recommendations/ Suggestions</th>
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| National Housing Policy, 2002 | - Identifies home ownership as one of the ways to reduce urban poverty, and states that the government will encourage innovation in design, materials and construction of new dwellings, and initially promote home ownership by:
  (i) Expandable and self-help units.
  (ii) Building using traditional materials and methods. |
| Land Act of Bhutan, 2007 | - It allows a landowner with only inherited chhuzhing\textsuperscript{13} in his/her thram to apply for conversion of 50 decimals in rural areas from such chhuzhing to the local authority, in a format prescribed by the Ministry of Agriculture.
  - If the remaining plot of the chhuzhing is less than 10 decimals, it may be included for conversion as residential land. |
| Strategy for GNH | - Development of places, apart from Thimphu and Phuentsholing, should be considered; but doing so requires build-up of critical mass as the level of services will be dependent on the size of the settlements.
- There is a strong relationship between level of services and attractiveness of the location for investment and living. |

\textsuperscript{12} Bhutan National Urbanization Strategy

\textsuperscript{13} Chhuzhing means irrigated and/or bench terraced agricultural land for paddy-based cropping.
3.5.1 Observations

- Owner-occupied housing is as high as 78%\(^\text{14}\) in rural areas but is less than 16% in urban areas.
- Out-migration from rural areas resulting in gung-tongs.
- Housing deficit in Bhutan is primarily in urban areas especially for middle and lower income groups.
- High cost of construction, expensive materials and labour.

3.5.2 Issues

- The housing deficit in urban areas is a major issue to be addressed, especially in the low-income segment.
- Lack of coherent Housing finance policy.
- Existing housing stock needs to be upgraded, particularly traditional housing, to ensure disaster resilience and increase durability of the houses.
- Lack of Institutions to manage housing and the real estate market – government and private sector
- Lack of research on affordable construction materials.

3.6 Environment

Bhutan has a rich environment and scenic landscape, but its fragile environment, geography and topography also makes it vulnerable to multiple disaster risk. Therefore Bhutan has always regarded it as an important factor in the wellbeing of its people. The Constitution of the Kingdom of Bhutan requires that a minimum of 60% forest cover be maintained for all times to come, which currently stands at 70.46% (LCMP 2010)\(^\text{15}\). Further Bhutan has chosen the “middle path” of sustainable development.

The following figure illustrates the major resource inputs required for development of human settlements. The main components of a settlement are physical area, services (roads water supply, sewerage and drainage networks, etc.) and economic activities, which together have impacts on land, air and water.

\(^\text{14}\) Bhutan Living Standards Survey, 2012
\(^\text{15}\) Land Cover Assessment 2010
A number of important policy and strategy documents have been prepared that would guide the strategies for environmental aspects in Bhutan.

Table 4: Key recommendations by various policy and strategy documents – Environment

<table>
<thead>
<tr>
<th>Policy/ strategy</th>
<th>Recommendations/ suggestions</th>
</tr>
</thead>
</table>
| **Strategy for Gross National Happiness** | • One of the major focus areas is environmental conservation and sustainability.  
• Generation of hydropower has been included in the document’s policies for economic growth, stating that the potential can be exploited through run-of-the-river technology, with marginal impacts to the environment.  
• Ensure that all physical infrastructure development are subjected to detailed environmental assessment and likely impact before approval. |
| **Bhutan National Urbanization Strategy** | • Adequate consideration must be given to potential environment impact to ensure that growth centers do not result in environmental damage; for example, damage that could arise from exploitation of resource.  
• Lack of adequate infrastructure and facilities for drainage, sanitation and waste disposal have adverse impact on the environment.  
• Pressures on the urban environment arise from:  
  i. Water supply.  
  ii. Wastewater collection and treatment.  
  iii. Drainage and flooding.  
  iv. Solid waste collection and disposal.  
  v. Hill cutting and erosion. |
| **Planning and Development of Human Settlements in Urban and Rural** | • Intended to protect the environment by providing policy and regulatory direction for environmentally-sensitive development.  
• Addresses site and subdivision design; works and services, infrastructure; buildings and structures; and natural environment. |
### Policy/strategy | Recommendations/ suggestions
---|---
areas of Bhutan to minimize environmental impacts | • Site assessment includes topographical survey and geotechnical assessment to identify hazardous areas.

Environment Protection Act | • To achieve sustainable development, natural resources such as forest, water, air, biodiversity, soil, minerals and overall integrity of the environment not to be degraded.
• In line with the government’s middle path strategy, economic development and environmental conservation will receive equal priority.

#### 3.6.1 Observations
- Bhutan has a rich but fragile biodiversity.
- Bhutan falls in the high seismic risk zone and is also prone to landslides, windstorms, forest fires, flashfloods, etc.
- Though Bhutan has abundant and high per capita share of water, its availability varies by location and seasons.
- Despite its exemplary environmental ethics Bhutan is vulnerable to impacts of climate change including GLOFs.

#### 3.6.2 Issues
- Conversion of farmland and forests for development of infrastructure and construction of buildings.
- Extraction and exploitation of natural resources.
- Impact of rapid urbanization and industrial development on the quality of air and water.
- Excessive tapping of surface and ground water for both drinking and irrigation purposes.
- Competing demand for limited land resulting in encroachment into environmentally sensitive and disaster prone areas.
- Lack of awareness on impact of construction in fragile and steep slopes.
Map 8: Protected areas in Bhutan
3.7 Culture and Heritage

Bhutan’s culture has both tangible and intangible aspects. Dzongs, lhakhangs, chortens, farmhouses and the settlement patterns display the physical forms while the festivals, rituals, songs, dances, folklores, etc. comprises the traditional customs. However, modernization and urbanization pose risk of adverse impacts.

Table 5: Key recommendation by policy and strategy documents

<table>
<thead>
<tr>
<th>Policy/strategy</th>
<th>Recommendations/ suggestions</th>
</tr>
</thead>
</table>
| Bhutan 2020- Vision for Peace, Prosperity and Happiness | • Agencies with extensive building and construction programmes to actively promote, Bhutanese architectural and artistic styles that make full use of local resources.  
• Maintain the relevance and vitality of our rich heritage. |
| Strategy for Gross National Happiness | • Aims to promote cultural growth and diversity, traditional architecture and methods of construction. |
| Bhutanese Architecture Guidelines | • Lays down standards for construction, repair and restoration of traditional structures. |

3.7.1 Observations

• No zoning guidelines for construction around heritage places.
• Gradual move towards modern building construction, especially in the urban areas.
• Generic nature of regulations and guidelines and their failure to provide for local contexts.

3.7.2 Issues

• Lack of awareness on the benefits of preserving the unique Bhutanese architecture in its regional and local context.
• Lack of zoning guidelines around heritage buildings and sites.
• Lack of awareness on the need of spaces for festivals and customary rituals for both cultural preservation and tourist attractions.
• Need to capitalize on the economic opportunities of traditional villages and its attractions.
Map 9: Heritage villages as identified by Department of Culture
3.8 **Tourism**

Bhutan’s natural environment and cultural heritage offer tremendous opportunity for tourism and visitors to Bhutan has been growing rapidly over the last few years. The tourism sector is also one of the biggest contributors to the national economy. It earned a gross revenue of $73.20 million in 2014\(^{16}\). However, tourism is concentrated mostly in the western region. While other regions and Dzongkhags also have potential, they lack adequate infrastructure and accommodation facilities.

**Figure 8: Total visitor arrivals**

**Figure 9: Tourist arrivals by dzongkhags**

*Source: Bhutan Tourism Monitor, 2014*

\(^{16}\) Pg. 20, Bhutan tourism monitor, 2014
3.8.1 Observations

- Visitors to Bhutan have been growing rapidly, with growth of 11.49% in 2014\textsuperscript{17}.
- Tourism in Bhutan is concentrated in the western region, with Thimphu, Punakha and Paro being the top destinations.
- Apart from cultural tourism, adventure and nature based tourism is gaining popularity.

3.8.2 Issues

- Inadequate connectivity and transportation network.
- Lack of tourism infrastructure.
- Need to diversify and identify new tourist attractions.

3.9 Infrastructure

Provision of infrastructure services is necessary for promotion of balanced socio-economic development. However, Bhutan's small population, mountainous terrain, seismic risks and weather conditions make provision and maintenance of infrastructure services challenging.

Bhutan has made committed efforts to provide both the physical infrastructure such as roads, water supply, sanitation facilities and solid waste disposal systems as well as social infrastructure such as schools, health centers, recreational areas, etc. but still challenges remain.

\textsuperscript{17} Bhutan Tourism Monitor, 2015
3.9.1 Observations

- Accessibility to most parts of Bhutan through roads has been achieved, with new roads planned under the 11th Five Year Plan.
- Provision of open spaces and drainage is a major issue.
- Two different ministries are involved in provision of water supply services, MoWHS for urban water supply and Ministry of Health for rural water supply.
- Solid waste is collected and disposed at landfill sites but it lacks scientific treatment.

3.9.2 Issues

- High cost of infrastructure given the country’s terrain, climate, sparse population and susceptibility to natural disasters.
- Need to consolidate and sustain urban amenities and services in peri-urban areas, towns, and settlements along transit corridors.
- Need to improve livability in urban areas through development of appropriate community spaces for recreation, sports and public facilities.
- Waste management is a cause of concern for urban areas in view of high cost of disposal system and emerging wastes, specifically e-waste.
Map 10: Gewog-wise coverage by mobile network
Map 11: Gewog-wise household toilet coverage
Map 12: Gewog-wise coverage by electricity
3.10 Potential settlement growth

3.10.1 Land suitability analysis

Suitability analysis is a process used to determine the appropriateness of a given area for a particular use. The basic premise used in GIS based analysis is that each aspect of the land has characteristics that are, to some extent, either suitable or unsuitable for the activities being planned. The suitability is determined through a systematic, multi-factor analysis of the different aspects of land. The inputs include a variety of physical, cultural, and economic factors.

In the absence of comprehensive data sets in GIS, various factors were assessed to evaluate the land parcels most conducive for human settlement in Bhutan. A suitability analysis was undertaken, considering the topography, existing settlement patterns, protected areas and forest cover, land availability for settlements (refer Map 13) and existing and proposed major transport corridors. The areas were then categorized according to high, low and moderate suitability.

The analysis shows that:

i. The southern belt of the country, with flatter and vacant land, has the highest suitability.

ii. Most of the northern part of the country has protected areas.

iii. Settlements will continue to grow along transport corridors.
Map 13: Land suitability for development

Legend
- Bhutan National Boundary
- Airport
- National Highway

Land Suitability
- Most Suitable
- Moderately Suitable
- Least Suitable

0 10 20 40 Kilometers

N
Map 14: Available land (as per Land Cover Map, 2010)

Map 15: Slope
Map 16: Green cover and protected areas

Map 17: Settlements
3.11 Scalogram analysis

A performance assessment index was conceptualized based on economic, socio-economic, demographic and few other indicators for the 20 Dzongkhags to:

i. Measure the performance of Dzongkhags and rank them across various indicators, thereby identifying key issues.

ii. Identify and quantify the performance gap across indicators.

iii. Monitor impact of performance improvement measures on the indicators.

This assessment would help to plan interventions to gradually bridge the performance gap.

The procedure is given in Figure 11. Firstly, a list of performance indicators under various domains were identified against which the quantitative analysis was carried out. Seven domains namely, demography, economy, housing, physical infrastructure, social infrastructure, GNH index and culture were identified, and multiple indicators under each domain were used on the basis of available data.

The domains were chosen such that they cover the factors that impact settlement patterns and growth. The indicators were chosen according to the available data and their significance in each domain. The analysis was carried out at the Dzongkhag level due to the lack of detailed data at the Gewog level. Also, the indicators have been chosen such that they can be quantified. The list of indicators is not exhaustive. However, for the purpose of the scalogram, the chosen indicators were found to be the most relevant.
Figure 11: Methodology for scalogram analysis

**Step 1: Identification of domains**
- 8 domains
- 27 indicators in total

**Step 2: Weightage to each domain**
- 20% weightage to each of the 3 main domains
- Remaining 40% divided equally among 5 domains
- Equal weightage within each domain

**Step 3: Scoring**
- Total score of 10 divided according to weightages among 8 domains

**Step 4: Normalization of values**
- Least square method to normalize the huge range of values against all indicators

**Step 5: Weighted score**
- Normalized values multiplied by respective weighted scores
- Sum of weighted scores under each domain

**Step 6: Total weighted score**
- Sum of dzongkhags according to weighted scores
- Overall and domain-wise rankings

**Ranking of 20 Dzongkhag**
- Ranking of dzongkhags according to weighted scores
- Overall and domain-wise rankings
Figure 12: Domains and indicators for scalogram analysis

Seven domains

Demography
- Estimated population 2015
- Population density
- Population growth rate

Economy
- Annual HH income
- Labor force participation rate
- Employment rate
- Agricultural land
- No. of hydropower projects
- No. of mines
- No. of industries
- No. of tourist arrivals
- No. of accommodation providers

Housing
- No. of households
- Affordability

Physical infrastructure
- Electrification
- Drinking water supply
- Latrine/toilet availability
- Internet penetration
- Road length per dzongkhag area

Social infrastructure
- No. of schools
- No. of hospitals
- No. of RNR centres

GNH Index
- Dzongkhag wise GNH Index

Culture
- No. of heritage villages
- No. of lhakhangs/temples

Weightages
- 20% weightage
- 20% weightage
- 15% weightage
- 15% weightage
- 15% weightage
- 7.5% weightage
- 7.5% weightage
Once the domains and indicators were identified, weightages were given to each domain according to their significance in settlement patterns. The two main domains, demography and economy, are given the highest weightage of 20% each. Of the remaining 60%, 15% is assigned to each of the three domains of housing, physical infrastructure, social infrastructure. The balance 15% is divided equally between domains of GNH Index and culture, giving them a weightage of 7.5% each.

A total score of 10 is then divided among the domains and their indicators according to their weightages. Within a domain, the weightage was divided equally. For example, physical infrastructure, with a weightage of 15%, has 5 indicators. The score for physical infrastructure would thus be 10, which is further sub divided equally among all indicators within the domain. Thus, electrification, an indicator under physical infrastructure, would have a weighted score of 1.5/5 = 0.30. The indicators, weightages and their weighted scores are given in table below.

Table 6: Domains for indexing

<table>
<thead>
<tr>
<th>S. NO.</th>
<th>DOMAINS AND INDICATORS</th>
<th>WEIGHTAGE</th>
<th>WEIGHTED SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>DEMOGRAPHY</td>
<td>20%</td>
<td>2</td>
</tr>
<tr>
<td>Indicators</td>
<td>Population</td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Indicators</td>
<td>Population density</td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>Indicators</td>
<td>Population growth rate</td>
<td></td>
<td>0.67</td>
</tr>
<tr>
<td>2.</td>
<td>ECONOMY</td>
<td>20%</td>
<td>2</td>
</tr>
<tr>
<td>Indicators</td>
<td>Annual household income</td>
<td></td>
<td>0.25</td>
</tr>
<tr>
<td>Indicators</td>
<td>Labour force participation rate</td>
<td></td>
<td>0.25</td>
</tr>
<tr>
<td>Indicators</td>
<td>Agricultural land</td>
<td></td>
<td>0.25</td>
</tr>
<tr>
<td>Indicators</td>
<td>Number of hydropower projects</td>
<td></td>
<td>0.25</td>
</tr>
<tr>
<td>Indicators</td>
<td>Number of mines</td>
<td></td>
<td>0.25</td>
</tr>
<tr>
<td>Indicators</td>
<td>Number of industries</td>
<td></td>
<td>0.25</td>
</tr>
<tr>
<td>Indicators</td>
<td>Number of tourist arrivals</td>
<td></td>
<td>0.25</td>
</tr>
<tr>
<td>Indicators</td>
<td>Number of accommodation providers (star category)</td>
<td></td>
<td>0.25</td>
</tr>
<tr>
<td>3.</td>
<td>HOUSING</td>
<td>15%</td>
<td>1.5</td>
</tr>
<tr>
<td>Indicators</td>
<td>Number of households</td>
<td></td>
<td>0.75</td>
</tr>
<tr>
<td>Indicators</td>
<td>Affordability</td>
<td></td>
<td>0.75</td>
</tr>
<tr>
<td>4.</td>
<td>PHYSICAL INFRASTRUCTURE</td>
<td>15%</td>
<td>1.5</td>
</tr>
<tr>
<td>Indicators</td>
<td>Electrification/ no. of households</td>
<td></td>
<td>0.3</td>
</tr>
<tr>
<td>Indicators</td>
<td>Drinking water supply/ no. of households</td>
<td></td>
<td>0.3</td>
</tr>
<tr>
<td>Indicators</td>
<td>Latrine or toilet availability/ no. of households</td>
<td></td>
<td>0.3</td>
</tr>
<tr>
<td>Indicators</td>
<td>Internet penetration</td>
<td></td>
<td>0.3</td>
</tr>
<tr>
<td>Indicators</td>
<td>Road length per Dzongkhag area</td>
<td></td>
<td>0.3</td>
</tr>
<tr>
<td>5.</td>
<td>SOCIAL INFRASTRUCTURE</td>
<td>15%</td>
<td>1.5</td>
</tr>
<tr>
<td>Indicators</td>
<td>Number of schools</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>Indicators</td>
<td>Number of hospitals</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>Indicators</td>
<td>Number of RNR centers</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>6.</td>
<td>GNH INDEX</td>
<td>7.5%</td>
<td>0.75</td>
</tr>
<tr>
<td>7.</td>
<td>CULTURE</td>
<td>7.5%</td>
<td>0.75</td>
</tr>
<tr>
<td>Indicators</td>
<td>Number of heritage villages</td>
<td></td>
<td>0.38</td>
</tr>
<tr>
<td>S. NO.</td>
<td>DOMAINS AND INDICATORS</td>
<td>WEIGHTAGE</td>
<td>WEIGHTED SCORE</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------</td>
<td>-----------</td>
<td>----------------</td>
</tr>
<tr>
<td></td>
<td>Number of lhakhangs/ temples</td>
<td>0.38</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
<td>10</td>
</tr>
</tbody>
</table>

Next step is to assign values against each indicator for each Dzongkhag. However, the values against different indicators have different units and vary across a huge range. Therefore the least square method was used to normalize the values. This method magnifies the effect of outliers and leads to relative normalization, thus quantifying absolute differences between performance indicators. "Least squares" implies that the overall solution minimizes the sum of the squares of the errors made in the results of every single equation. The formula for the least squares method is

\[ \text{Normalized value of } X_i = \frac{(X_i)^2}{(X_1^2 + X_2^2 + X_3^2 + \ldots + X_n^2) \times \text{Weighted score}} \]

Where \( n \) is the number of values, \( X_1, X_2, \ldots, X_n \), are the values for each Dzongkhag. Here, \( n=20 \) since there are 20 values for 20 Dzongkhags against each indicator.

The Dzongkhags are then ranked on each indicator on the basis of the values generated. Further an overall, domain wise rankings is done together at a comparative potential for settlement growth of each Dzongkhag.

The outcomes of the analysis under each domain is presented below.
Demography

Demography has three indicators:

i. Estimated population 2015

ii. Population density

iii. Population growth rate

Figure 13: Dzongkhag-wise ranking – Demography

Thimphu has over 15% of the country’s total population, the highest within the country. Other Dzongkhags that have high population are Chhukha, Samtse, Trashigang, and Sarpang. All these Dzongkhags, except for Trashigang, are located in the western region.
Economy
Economy has eight indicators:

i. Annual household income
ii. Labour force participation rate
iii. Agricultural land
iv. Number of hydropower projects
v. Number of mines
vi. Number of industries
vii. Number of tourist arrivals
viii. Number of accommodation providers (star category)

Figure 14: Dzongkhag-wise ranking - Economy

In terms of economy too, only the western Dzongkhags feature among the top five.
**Housing**

Housing has two indicators:

i. Number of households

ii. Affordability

**Figure 15: Dzongkhag-wise ranking - Housing**

Thimphu, Samtse and Trashigang have the highest number of households. However, with increase in population, rentals and real estate prices have risen, thus decreasing affordability.
Physical infrastructure
Physical infrastructure has five indicators:

i. Electrification
ii. Drinking water supply
iii. Latrine/toilet availability
iv. Internet penetration
v. Road length per Dzongkhag area

Figure 16: Dzongkhag-wise ranking - Physical infrastructure

Chhukha ranks the highest in terms of physical infrastructure while Samtse ranks the lowest.
Social infrastructure
Social infrastructure has three indicators:

i. Number of schools

ii. Number of hospitals

iii. Mean healthy days in a month

Figure 17: Dzongkhag-wise ranking - Social infrastructure

Trashigang and Thimphu score high in terms of social infrastructure while Dzongkhags with difficult terrains such as Gasa and Haa scored low.
GNH
The GNH Index is measured across 9 domains of GNH.

Figure 18: Dzongkhag-wise ranking - GNH index

Gasa has the highest GNH index while many Dzongkhags with better economy and infrastructure, rank lower.
Culture

Culture domain has two indicators:

i. Number of heritage villages

ii. Number of lhakhangs/temples

Figure 19: Dzongkhag-wise ranking - Culture

Lhuentse ranks highest in terms of cultural domain while Dzongkhags like Samtse, Sarpang and Tsirang rank amongst the lowest.

Overall ranking

The scalogram generated an overall ranking for all Dzongkhags.

Table 7 gives the overall rankings of the Dzongkhags as well as domain-wise ranking. As is evident from the table, the western Dzongkhags rank the highest, with Thimphu, Samtse, Chukha and Paro in the top positions. This reflects some of the reasons which induce migration from the eastern and central regions to the western side. However, these Dzongkhags are already more developed and has more population. Therefore, the Dzongkhags that score immediately below these, namely, Trashigang, Mongar, Wangduephodrang, Lhuentse, Samdrup Jongkhar and Sarpang are prioritized to be developed, so that the disparity between the Dzongkhags decrease, and regional balance is achieved.
Table 7: Ranking of Dzongkhas

<table>
<thead>
<tr>
<th>Overall Rank</th>
<th>Name of Dzongkhag</th>
<th>Demography</th>
<th>Economy</th>
<th>Housing</th>
<th>Physical infrastructure</th>
<th>Social infrastructure</th>
<th>GNH Index</th>
<th>Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thimphu</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Samtse</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>20</td>
<td>4</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>3</td>
<td>Trashigang</td>
<td>4</td>
<td>12</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Chhukha</td>
<td>2</td>
<td>4</td>
<td>18</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>Paro</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td>5</td>
<td>12</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>Mongar</td>
<td>7</td>
<td>10</td>
<td>5</td>
<td>9</td>
<td>3</td>
<td>18</td>
<td>2</td>
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<td>7</td>
<td>Wangdue Phodrang</td>
<td>13</td>
<td>8</td>
<td>8</td>
<td>18</td>
<td>6</td>
<td>15</td>
<td>3</td>
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<tr>
<td>8</td>
<td>Lhuentse</td>
<td>17</td>
<td>17</td>
<td>15</td>
<td>7</td>
<td>15</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Sarpang</td>
<td>5</td>
<td>15</td>
<td>4</td>
<td>6</td>
<td>9</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>10</td>
<td>Samdrup Jongkhar</td>
<td>9</td>
<td>9</td>
<td>6</td>
<td>17</td>
<td>7</td>
<td>14</td>
<td>11</td>
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<tr>
<td>11</td>
<td>Punakha</td>
<td>11</td>
<td>5</td>
<td>10</td>
<td>19</td>
<td>11</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>Bumthang</td>
<td>18</td>
<td>6</td>
<td>17</td>
<td>16</td>
<td>18</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>Dagana</td>
<td>10</td>
<td>11</td>
<td>13</td>
<td>10</td>
<td>17</td>
<td>12</td>
<td></td>
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<tr>
<td>14</td>
<td>Pema gatshel</td>
<td>14</td>
<td>18</td>
<td>9</td>
<td>11</td>
<td>8</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>Trashi yangtse</td>
<td>12</td>
<td>19</td>
<td>12</td>
<td>8</td>
<td>14</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>16</td>
<td>Tsirang</td>
<td>8</td>
<td>20</td>
<td>11</td>
<td>14</td>
<td>16</td>
<td>7</td>
<td>18</td>
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<td>17</td>
<td>Zhemgang</td>
<td>15</td>
<td>14</td>
<td>14</td>
<td>12</td>
<td>13</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>18</td>
<td>Trongsa</td>
<td>16</td>
<td>13</td>
<td>16</td>
<td>15</td>
<td>17</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>19</td>
<td>Haa</td>
<td>20</td>
<td>16</td>
<td>19</td>
<td>2</td>
<td>19</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>20</td>
<td>Gasa</td>
<td>19</td>
<td>7</td>
<td>20</td>
<td>13</td>
<td>20</td>
<td>1</td>
<td>16</td>
</tr>
</tbody>
</table>
3.12 Gewogs with potential for growth

The growing population of the urban centers often spill over to the hinterland. With the projected population growth in the next few decades and decreasing land availability in the existing urban centers, the Gewogs near these areas would grow in terms of settlements.

The following analysis determines the potential of Gewogs to develop in future. Factors used to rank Gewogs are:

i. Population
ii. Proximity to existing Thromdes
iii. Water availability
iv. Land availability

Figure 20: Procedures for prioritization of Gewogs around Thromdes for development

i. Population

Gewogs with population higher than the median population of the 205 Gewogs have been identified for potential growth. In the absence of recent census data, estimated population figures by the National Statistics Bureau have been used.

ii. Proximity to existing Thromdes

To understand the growth potential of Gewogs, the growth patterns of Thromdes around which these Gewogs are located are studied. The following factors are considered in prioritizing the Thromdes which are expected to grow:

i. Population of the Thromde
ii. Population density
iii. Investments per capita (as proposed in the five-year plan)
Recent census data and information on Thromde-wise allocation of resources are currently not available. Therefore Thromdes are prioritized qualitatively according to the existing estimated population, location and economic opportunities. The priority Dzongkhag Thromde are:

**Table 8: List of priority Dzongkhag Thromdes**

<table>
<thead>
<tr>
<th>Dzongkhag Thromdes</th>
<th>Dzongkhag</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Thimphu</td>
<td>Thimphu</td>
</tr>
<tr>
<td>2 Phuentsholing</td>
<td>Chukha</td>
</tr>
<tr>
<td>3 Gelephu</td>
<td>Sarpang</td>
</tr>
<tr>
<td>4 Samdrupjongkhar</td>
<td>Samdrupjongkhar</td>
</tr>
<tr>
<td>5 Paro</td>
<td>Paro</td>
</tr>
<tr>
<td>6 Punakha</td>
<td>Punakha</td>
</tr>
<tr>
<td>7 Wangduephodrang</td>
<td>Wangduephodrang</td>
</tr>
<tr>
<td>8 Trashigang</td>
<td>Trashigang</td>
</tr>
<tr>
<td>9 Bumthang</td>
<td>Bumthang</td>
</tr>
<tr>
<td>10 Zhemgang</td>
<td>Zhemgang</td>
</tr>
</tbody>
</table>

Similarly, the following Yenlag Thromdes are prioritized

**Table 9: List of priority Yenlag Thromdes**

<table>
<thead>
<tr>
<th>Yenlag Thromdes</th>
<th>Dzongkhag</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Khasadrapchu</td>
<td>Thimphu</td>
</tr>
<tr>
<td>2 Nganglam</td>
<td>Pemagatshel</td>
</tr>
<tr>
<td>3 Sarpang</td>
<td>Sarpang</td>
</tr>
<tr>
<td>4 Rangjung</td>
<td>Trashigang</td>
</tr>
<tr>
<td>5 Lobeysa</td>
<td>Punakha</td>
</tr>
</tbody>
</table>

The proximity of each Gewog to the Dzongkhag Thromde (DT) and Yenlag Thromde (YT) prioritized above is analyzed. Gewogs which are within 15 km of Dzongkhag Thromde or 10 km of Yenlag Thromde are shortlisted.

**iii. Water availability**

The total water requirement for entire projected population, for a period of 20 years is calculated based on the per capita requirement of 135 lpcd.

**iv. Land Availability**

The last step ranks the shortlisted gewogs for prioritization on the basis of land availability, which is calculated as:

\[
\text{Available land area of a Gewog} = \text{Total area of Gewog} - \text{Land under protected areas/ biological corridor} - \text{other land on slopes above 50%}
\]
Table 10: Gewogs with high growth potential - population above median population or located near priority Dzongkhag Thromde or priority Yenlag Thromde

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name Of gewog</th>
<th>Dzongkhag</th>
<th>S.No.</th>
<th>Name Of gewog</th>
<th>Dzongkhag</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chang</td>
<td>Thimphu</td>
<td>44</td>
<td>Dekidling</td>
<td>Sarpang</td>
</tr>
<tr>
<td>2</td>
<td>Narang</td>
<td>Mongar</td>
<td>45</td>
<td>Gongdue</td>
<td>Mongar</td>
</tr>
<tr>
<td>3</td>
<td>Uesu</td>
<td>Haa</td>
<td>46</td>
<td>Jigmecholing</td>
<td>Sarpang</td>
</tr>
<tr>
<td>4</td>
<td>Korphu</td>
<td>Trongsa</td>
<td>47</td>
<td>Langthel</td>
<td>Trongsa</td>
</tr>
<tr>
<td>5</td>
<td>Limbu</td>
<td>Punakha</td>
<td>48</td>
<td>Udzorong</td>
<td>Trashigang</td>
</tr>
<tr>
<td>6</td>
<td>Balam</td>
<td>Mongar</td>
<td>49</td>
<td>Phuntshothang</td>
<td>Samdrup Jongkhar</td>
</tr>
<tr>
<td>7</td>
<td>Nahi</td>
<td>Wangdue</td>
<td>50</td>
<td>Yoeseltse</td>
<td>Samtse</td>
</tr>
<tr>
<td>8</td>
<td>Gasetsho Wom</td>
<td>Wangdue</td>
<td>51</td>
<td>Shaba</td>
<td>Paro</td>
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<tr>
<td>9</td>
<td>Goenshari</td>
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<tr>
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<td>Phangyul</td>
<td>Wangdue</td>
<td>53</td>
<td>Martshalla</td>
<td>Samdrup Jongkhar</td>
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<tr>
<td>11</td>
<td>Jamkhar</td>
<td>Trashiyangtse</td>
<td>54</td>
<td>Shompangkha</td>
<td>Sarpang</td>
</tr>
<tr>
<td>12</td>
<td>Doteng</td>
<td>Paro</td>
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<td>Gangzur</td>
<td>Lhuentse</td>
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<td>Umling</td>
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<td>Kanglung</td>
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<td>14</td>
<td>Tang</td>
<td>Bumthang</td>
<td>57</td>
<td>Ge-nyen</td>
<td>Thimphu</td>
</tr>
<tr>
<td>15</td>
<td>Rubesa</td>
<td>Wangdue</td>
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<td>Tashicholing</td>
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<td>Taksha</td>
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<td>Gelling</td>
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<td>Lokchina</td>
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<tr>
<td>19</td>
<td>Chongshing</td>
<td>Samdrup Jongkhar</td>
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<td>Sampheling</td>
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<td>Lhamoizingkha</td>
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<td>21</td>
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<td>Gasetsho Gom</td>
<td>Wangdue</td>
</tr>
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<td>Kabjisa</td>
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<td>Hungrel</td>
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<td>Tongzhang</td>
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<td>Karmaling</td>
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<td>Lungnyi</td>
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<td>Pemathang</td>
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<td>Chokhorling</td>
<td>Pemagatshel</td>
</tr>
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<td>Bartsham</td>
<td>Trashigang</td>
<td>78</td>
<td>Chhubu</td>
<td>Punakha</td>
</tr>
<tr>
<td>36</td>
<td>Dungmin</td>
<td>Pemagatshel</td>
<td>79</td>
<td>Talog</td>
<td>Punakha</td>
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<td>Yalang</td>
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<td>80</td>
<td>Orong</td>
<td>Samdrup Jongkhar</td>
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<td>Bjena</td>
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<td>39</td>
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<td>Shenga Bjimi</td>
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<td>Mongar</td>
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<td>Shumar</td>
<td>Pemagatshel</td>
</tr>
<tr>
<td>43</td>
<td>Goshi</td>
<td>Dagana</td>
<td>86</td>
<td>Pemaling</td>
<td>Samtse</td>
</tr>
</tbody>
</table>
The scalogram analysis indicates that western Bhutan is fairly developed but there is a need for regional balanced development. Trashigang, Mongar and Wangduephodrang have potential for human settlement development. Trashigang is located at the intersection of east-west and Trashi gang-Samdrupjongkhar highways and it is one of the highest populated Dzongkhag in eastern Bhutan. The growing population has had a spillover effect in the neighboring areas, especially along the Trashigang-Samdrupjongkhar highway.

As evident from the land-suitability analysis, Samdrupjongkhar and Pemagatshel in the southern belt have flatter terrain, fertile lands, and are strategically located in terms of access from India, which provides trade opportunities. An integrated check post has been proposed in Nganglam (Pemagatshel), which is expected to increase the flow of people, and thereby boost economy growth. Samdrupjongkhar and its neighboring areas like Jomotsangkha and Samdrupchoeling have fertile lands for agriculture, and an industrial estate has been proposed at Matanga, near Samdrupjongkhar.

Further to the west, Gelephu, Sarpang is witnessing growth of settlements, due to its connectivity, locational advantages and availability of fertile lands. Being centrally located, it can cater to both eastern and western regions. Processing plants for fruits and agricultural products are being proposed.

According to the analysis for the growth potential of Gewogs, the Gewogs near Bumthang, Trashigang, Chukha, Wangduephodrang and Trashigang Dzongkhags have more development potential. However, this is also subject to the availability of land and infrastructure. Water availability has been identified as a major factor influencing the growth
potential of an area based on which the possibility of identifying alternate water sources shall be explored for areas with low water availability.

The Gewogs which have the most potential for development considering all the aforementioned factors are Chhoekhor (Bumthang), Shongphu (Trashigang), Phuentsholing (Chukha), Gasetsho Wom (Wangduephodrang) and Samkhar (Trashigang).
4. Proposals

4.1 Inter-agency coordination

The widening scope of development and the emergence of new policies, technical and social fields of engagement have created many development institutions. With the increasing quantum of development works, the chances of duplication of efforts, wasteful use of limited resources and programmatic contradictions also increase manifold. Lack of coordination between agencies and compartmentalization are major issues plaguing the governance system. It is imperative to develop and strengthen inter-agency coordination and collaboration to reduce these risks, develop synergy, optimize resources and achieve sustainable human settlement.

A multi-sector committee with members from relevant agencies such as the MoAF, MoEA, MoHCA, MoIC, NLCS, NECS, etc. is proposed to deliberate and decide on issues of cross-sectorial significance. The secretariat of the committee will also be at the MoWHS. A technical secretariat, established under the MoWHS and staffed by technical specialists will assist the committee in reviewing the technical issues, in addition to its main task of research, analysis, reports publication and data management.

Table 11: Inter-agency coordination – key activities

<table>
<thead>
<tr>
<th>Key activities</th>
<th>Level-National/Regional/Local</th>
<th>Implementing agency</th>
<th>Activities</th>
<th>Policy areas addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination with all departments of MoWHS and other stakeholders</td>
<td>National</td>
<td>MoWHS</td>
<td>Coordinate with other departments. Organize regular meetings for consultations.</td>
<td>Mechanism for review of human settlement issues.</td>
</tr>
</tbody>
</table>
4.2 Partnership with the private sector

Collaboration with the private sector for infrastructure service delivery should be prioritized. Various avenues of public-private partnerships are being explored to achieve sustainable development.

4.3 Human resource and capacity building

There should be regular capacity building and training programs for the government officials. The programs could include seminars, workshops, construction techniques, project management, municipal finance and affairs to enable the officials to carry out their tasks smoothly. Another way of capacity building and knowledge exchange could be through field trips. Officials from transitioning/growing administrative offices should be sent for study visits to Dzongkhags, Gewogs or Thromdes that are performing well.

The government will ensure that the learning from the capacity building programs are gradually integrated within the systems at all levels by carrying out regular employee assessments and departmental audits and reviews.

Further, due to limited human resources, officials are burdened with technical as well as administrative work. Authorities at Dzongkhag, Gewog and Thromde levels should recruit technical advisors/staff on a short-term basis to fill the resource gaps.

Table 12: Human resource and capacity building – key activities

<table>
<thead>
<tr>
<th>Key activities</th>
<th>Level - National/ Regional / Local</th>
<th>Implementing agency</th>
<th>Activities</th>
<th>Policy areas addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training programs for officials</td>
<td>National/ Local</td>
<td>MoWHS</td>
<td>Organize seminars, workshops for training of officials.</td>
<td>Appropriate institution for human settlement development.</td>
</tr>
<tr>
<td>Regular assessment of officials</td>
<td>National/ Local</td>
<td>MoWHS</td>
<td>Employee assessments, departmental audits and reviews.</td>
<td>Appropriate institution for human settlement development.</td>
</tr>
<tr>
<td>Hiring external resources</td>
<td>Local</td>
<td>MoWHS</td>
<td>Recruitment of technical staff as per requirement.</td>
<td>Appropriate institution for human settlement development.</td>
</tr>
<tr>
<td>Regular knowledge exchange and visits</td>
<td>Local</td>
<td>MoWHS</td>
<td>Adopt best practices from other Dzongkhags and Thromdes.</td>
<td>Appropriate institution for human settlement development.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Organize study tours and visits for exposure to new practices and technologies.</td>
<td></td>
</tr>
</tbody>
</table>
4.4 Land use designation

Major part of Bhutan’s area is covered by forests, high mountains, protected areas and farmlands. Hence, it is critically important to ensure efficient and optimal use of the scarce land resources. The issue needs to be addressed through two main approaches. First, there must be thorough deliberation on the prioritization of plans and programs, the need for land and the identification of the most appropriate land for the agreed uses. Second, there must be constant oversight and monitoring to ensure that the land so designated, including change of land uses are used for the purposes they are designated and there are no unauthorized conversions. The NLCS, MoAF, the respective local government and the MoWHS will be involved in identification of appropriate land while the MoWHS and the respective LGs will collaborate on the designation of land uses for settlement planning and development.

4.5 Disaster Mitigation

Bhutan is a disaster-prone country, with risks of various disasters like earthquakes, GLOFs, windstorms, flashflood, forest fires etc. Therefore, disaster mitigation is necessary at both macro and micro levels. Detailed vulnerability mapping, especially in areas suitable for human settlements, should be executed at the macro level and human settlements should be made disaster-resilient at micro level.

Table 13: Disaster Mitigation - Key activities

<table>
<thead>
<tr>
<th>Key activities</th>
<th>Level- National/ Regional/ Local</th>
<th>Implementing agency</th>
<th>Activities</th>
<th>Policy areas addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vulnerability mapping</td>
<td>National</td>
<td>Department of Disaster Management.</td>
<td>Identify risk zones and produce a vulnerability map.</td>
<td>Risk assessment for river basins.</td>
</tr>
<tr>
<td>Formulation of architecture and development guidelines in disaster risk-prone areas</td>
<td>Local (Dzongkhag)</td>
<td>To be guided by DDM and to be framed by Dzongkhag (for Gewogs, peri-urban and semi-urban areas) and Thromde administrations (for Thromdes).</td>
<td>According to the vulnerability mapping, various. Dzongkhags may fall in disaster-risk zones. Separate architecture and development guidelines are to be formulated for these areas.</td>
<td>Develop building codes and standards.</td>
</tr>
<tr>
<td>Setting up of early awareness centers</td>
<td>National</td>
<td>Locations to be decided by DDM, land to be approved by the National Land Commission.</td>
<td>Early awareness centers, seismic activity detection centers to be set up at high-risk locations.</td>
<td>Risk assessment for river basins.</td>
</tr>
<tr>
<td>Capacity building for disaster preparedness</td>
<td>Local (Dzongkhag)</td>
<td>To be executed by DDM for Dzongkhag officials.</td>
<td>Capacity-building at local level Mechanism for responding to</td>
<td>Risk assessment for river basins.</td>
</tr>
<tr>
<td>Key activities</td>
<td>Level - National/ Regional/ Local</td>
<td>Implementing agency</td>
<td>Activities</td>
<td>Policy areas addressed</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>-----------------------------------</td>
<td>---------------------</td>
<td>-----------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Identification of urbanizing areas</td>
<td>National</td>
<td>MoWHS</td>
<td>Peri-urban area - Areas that have developed along the peripheries of Thromdes.</td>
<td>Settlement types.</td>
</tr>
</tbody>
</table>

### 4.6 Management of urbanizing areas

Apart from Dzongkhag and Yenlag Thromdes, which are both essentially urban in character, there are towns/settlements that are in a transition stage from rural to urban. These may be small commercial centers located close to transportation corridors, or Thromdes. Some settlements develop as a result of development projects such as hydropower, mining, industrial estates, quarries or road projects. While some of these settlements may be temporary in nature and may fade out once the project is over, some continue to exist even after the completion of the project owing to the change in economic dynamics. To facilitate planned development and management of such settlements, urbanizing areas may be defined as:

1. **Peri-urban areas** (PU area) - Areas that have developed along the peripheries of Thromdes and have strong inter-dependence on the Thromdes which also act as a rural-urban interface.

2. **Semi-urban areas** (SU area) – Areas that have developed along transit/economic corridors or as a by-product of an economic activity (e.g., industrial estates) or development projects (e.g., hydropower projects)

### Table 14: Settlement systems - Key activities

<table>
<thead>
<tr>
<th>Key activities</th>
<th>Level - National/ Regional/ Local</th>
<th>Implementing agency</th>
<th>Activities</th>
<th>Policy areas addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification of urbanizing areas</td>
<td>National</td>
<td>MoWHS</td>
<td>Peri-urban area - Areas that have developed along the peripheries of Thromdes.</td>
<td>Settlement types.</td>
</tr>
<tr>
<td><strong>Semi-urban area - Areas that have developed along transit/economic corridors or as a by-product of an economic activity.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|---|---|---|---|---|

| Development plans for urbanizing areas identified. | Local | MoWHS, Dzongkhag administration | Within 15-20 years. To be prepared by the Dzongkhag administration. In case of lack of capacity, to be prepared by MoWHS (during Phase 1). During Phase 1, Dzongkhag administration to build capacity to prepare such plans. The development plans of these areas should refer to the structure plans of the nearest Thromde. | Development of medium and smaller sized settlements. |
Map 18: Gewogs with access to National highways
4.7 **Location of institutions outside larger towns**

The towns and settlements in Bhutan grew around the administrative centers and the government institutions. The location of administrative centers and government institutions therefore influence the growth of towns and settlements. In order to bring about a balanced development, the location of institutions is recommended to be outside the larger towns. The larger towns could be those which already have the required institutional establishments or the ones which have grown to the planned potential.

4.8 **Housing**

Housing is not a problem in the rural areas but it is emerging as a major issue in the urban sector. A clear enabling strategy has to be developed to increase the housing stock, home ownership and housing finance. Preparation of structure plans will facilitate identification of land for different kinds of housing that has to be developed by housing agencies along with required physical infrastructure. The practice of owning land and individual construction will be gradually replaced by mass construction and apartment ownership that will require organized construction modalities, a clear ownership modalities and management strategies.

The key activities in the housing sector will be to:

i. Mobilize of land for housing schemes particularly for those which cannot be met by the open market.
ii. Identify real estate developers to provide infrastructure and develop housing schemes for sale /allotment to potential buyers.
iii. Develop criteria to allocate houses to the potential buyers/allotted.
iv. Develop a clear housing finance policy and coordinate with financial institutes to provide housing finance at a subsidized rate for residential housing to identified group.
v. Monitor housing stock, ownership issues and obligations of the people who were allotted houses through housing schemes.
vi. Develop database for housing stock and home loan information.
vii. Enhance the system for releasing land for urban development and housing.
viii. Research on construction materials and techniques for cost reduction and promotion of affordable housing.

4.9 **Tourism**

Most visitor of Bhutan are cultural tourists. Heritage villages can be developed into tourist destinations for eco-tourism or rural tourism. Community members should be trained and certified to regulate tourism and to preserve the cultural richness. A global marketing and branding strategy for eco village and cultural tourism needs to be developed.

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18 *Bhutan Tourism Monitor, 2014*
Table 15: Tourism - key activities

<table>
<thead>
<tr>
<th>Key Activities</th>
<th>Level- National/ Regional/ Local</th>
<th>Implementing Agency</th>
<th>Activities</th>
<th>Policy areas addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing heritage villages to eco-tourism villages</td>
<td>National</td>
<td>Tourism Council of Bhutan</td>
<td>Identify potential heritage villages that can be developed as eco-tourism. Marketing strategies to be adopted to promote these villages.</td>
<td>Creation of employment for local communities.</td>
</tr>
<tr>
<td>Providing tourism infrastructure in eco-tourism villages</td>
<td>Local (Dzongkhag)</td>
<td>Dzongkhag and Gewog administrations</td>
<td>Regulations for tourism activities. Provisions of homestays, Other public infrastructure for tourism to be provided by the Dzongkhag and/or Gewog administrations.</td>
<td>Promotion of community tourism.</td>
</tr>
</tbody>
</table>

4.10 Industries

In the process of development, industrial estates are being developed in different parts of the country to meet the increasing internal needs, create employment and enhance the national income. Availability of hydropower energy plays a crucial role in determining the type and location of industries.

A national decision has been taken to establish industrial estates at Bondeyma, Damdhum, Jigmeling and Motanga with identified areas and types of industries. These are located in the midst of populated areas and will have big impact in the settlements in the vicinity. If adequate employment opportunities are provided to the local people, employment pattern will change with the risk that farming in the adjoining areas might get affected while the income in general will be enhanced. However, the educated unemployed youths of the locality need not migrate to other regions seeking employment. Besides the normal employment, other packages like micro financing and housing need equal focus. The hydropower projects in the past have not provided adequate employment opportunities to the local youths and experts. In the forthcoming projects, priority should be given to local populace to provide labour to the extent possible and even the goods and services. Labour, goods and services should be imported only if the locals are not able to provide.

4.11 Incentives and levies

Development in urban and rural settlements of Bhutan is characterized by land and building uses of all kinds despite rules and regulations and the settlement plans being in place. This has been often seen to create conflict of uses. Further, there is no system to attract development that could
enhance economy of an area. Therefore, a system of incentive and levies in the form of taxation and fees should be instituted to foster a planned development.

4.12 Potential growth areas

Bhutan seeks to promote regionally balanced development. However, prevailing and emerging trends show significant migration from eastern region to urban centers in the western region. While migration cannot be stopped entirely, it can and must be managed. Appropriate management mechanism includes creation of economic opportunities, infrastructure development and integration of Thromdes and its peripheral areas which augment each other’s economy. Therefore, the following potential growth centers and corridors are prioritized for development.

i. Kanglung –Trashigang – Rangjung

ii. Nganglam

iii. Samdrupchoeling

iv. Gelephu

v. Wangdue and Punakha

4.12.1 Kanglung - Trashigang – Rangjung Corridor

Trashigang town is well-connected by road and air with the Yongphula airport, 20 km away. Though it has limited area for expansion it has Kanglung and Ranjjung within a radius of about 15 km. Kanglung is already being developed as a regional hub and an educational center for the entire eastern region. On the other hand, Rangjung is the yenlag thromde for Trashigang Dzongkhag and physical infrastructure has already been developed in preparation for taking the spillover effect of Trashigang. It also has adequate land for development.

Connecting the three centers of Kanglung, Trashigang, and Rangjung through an economic corridor will provide the necessary facilities and social infrastructure required for any economy (Map 19).

4.12.2 Nganglam

Nganglam is the Yenlag Thromde for Pemagatshel Dzongkhag. It is being developed as a regional hub. Some strengths and potentials of Nganglam include:

a. Nganglam has a cement factory with a high production capacity.

b. The Nganglam - Panbang corridor and its connection with Mongar which will further enhance its strategic location.

c. A few factories are proposed in Nganglam and a hydropower project is in pipeline in the vicinity of Nganglam.

d. An auction center for crops is also being proposed in collaboration with the Food Corporation of Bhutan.
e. An integrated check post is under construction in Nganglam for entry to the eastern Dzongkhags.

These projects will create employment and commercial opportunities thereby leading to increase in the population. Therefore, Nganglam is proposed as a potential settlement growth center.

### 4.12.3 Samdrupchoeling

Samdrupchoeling together with Jomotsangkha and the corridor in between has potential to develop as an agro-processing center. The region has flatter terrain and high agricultural production capacity. The government has taken initiatives to promote dairy farms, fishery and other agro-based products.

**Map 19: Proposals for settlements - Eastern Bhutan**

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**4.12.4 Gelephu as a major urban center**

Gelephu, located on south central Bhutan has a good topography and the highest land availability among the urban centers in the country. It is well connected to the rest of the country through road and domestic airport. A regional hospital is under construction at Gelephu. It has also been
identified as a special economic zone. Gelephu also has a huge hinterland that produce a lot of agro-products making it a suitable center for agro-based processing plant.

4.12.5 Wangdue and Punakha

Wangdue and Punakha are not only agriculturally productive Dzongkhags but they also have numerous sacred and cultural sites and tourist attractions. Their proximity to Thimphu as well as the international airport make them convenient tourist destinations. Currently the local economy is driven largely by hydropower projects along Punatsangchhu. However, agriculture and tourism will be the mainstay of its economy in the long term. Therefore, the strategy is to focus on agriculture along with tourism development. The entire Punakha-Wangdue-Tsirang stretch is agriculturally productive and should be considered for agro-based economic activities. Wangdue–Punakha stretch has the potential to take the spillover effect of Thimphu. (Capital Region Development).

Map 20: Proposals for settlements - Central Bhutan
### Table 16: Settlement planning – key activities

<table>
<thead>
<tr>
<th>Key activities</th>
<th>Level</th>
<th>Implementing agency</th>
<th>Activities</th>
<th>Policy addressed areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of Trashigang-Rangjung-Kanglung as growth corridor (GC 1)</td>
<td>Regional</td>
<td>MoWHS</td>
<td>Infrastructure assessment according to population projections.</td>
<td>Integrated development of settlements.</td>
</tr>
<tr>
<td>Development of Khaling – Wamrong as growth corridor (GC 2)</td>
<td>Regional</td>
<td>MoWHS</td>
<td>Infrastructure assessment according to population projections.</td>
<td>Provisions for all settlements.</td>
</tr>
<tr>
<td>Development of Nganglam as potential settlement growth center</td>
<td>Local (Dzongkhag)</td>
<td>MoWHS and Dzongkhag administration</td>
<td>Infrastructure assessment according to population projections.</td>
<td>Integrated development of settlements.</td>
</tr>
<tr>
<td>Development of Bangtar (Samdrupchoeling) and Jomotsangkha as centers with potential for agriculture</td>
<td>Local (Dzongkhag)</td>
<td>MoAF, Dzongkhag administration</td>
<td>Potential for agriculture, agro-based industries.</td>
<td>Integrated development of settlements.</td>
</tr>
<tr>
<td>Key activities</td>
<td>Level - National/ Regional/ Local</td>
<td>Implementing agency</td>
<td>Activities</td>
<td>Policy areas addressed</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>---------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Development of Gelephu as major urban center</td>
<td>Local (Dzongkhag and Thromde); impact would be regional</td>
<td>MoWHS, MoAF</td>
<td>Market for agricultural produce from nearby Dzongkhags (Zhemgang, Tsirang). Entry point from India - an advantage</td>
<td>Provisions for all settlements.</td>
</tr>
<tr>
<td>Development of Wangdue and Punakha as centers for agro-based produce</td>
<td>National and regional Dzongkhag administration</td>
<td>MoAF, DoI, Dzongkhag administration</td>
<td>Agriculture and agro-based industries may be promoted as alternative economic opportunities in these areas apart from hydropower projects. Also concentrate on tourism by providing tourism infrastructure through community (homestays etc.)</td>
<td>Integrated development of settlements.</td>
</tr>
</tbody>
</table>
4.13 Dzongkhag-wise recommendations

4.13.1 Bumthang

**Analysis**

- There is a potential for development of tourism, as it is endowed with rich historical and spiritual legacy.
- Two-third of the Dzongkhag in the north falls within the Wangchuck Centennial Park, buffered by pockets of biological corridors, while southern Bumthang is part of Thrumshingla National Park.
- Bumthang Valley Development Plan identifies settlement and non-settlement areas which needs to be followed. The potential in agriculture and livestock production and the specialized art of weaving yathra could be explored and developed into cottage, small and medium industries.
- With the construction of airport and operation of regular flights, there is an impact on the hospitality industries.
<table>
<thead>
<tr>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Development of customized tourism such as eco-tourism, hiking and trekking, and cultural and historical excursions. Training of local communities and entrepreneurs for the service industry and development of tourism infrastructure. Improve connectivity to tourist spots through eco-friendly means like cycle tracks or smart taxis, and inclusion of way finding for tourists.</td>
</tr>
<tr>
<td>• An institute of hospitality management to address lack of hospitality professionals in the region (Bumthang, Trongsa, Lhuentse and Trashigang).</td>
</tr>
<tr>
<td>• Bumthang can be projected for sustainable practices, including outdoor activities, merchandising of local products and handicrafts, relaxation, spirituality and wellness, as well as seminar stays, which will utilize the potential of the culture and natural landscape.</td>
</tr>
<tr>
<td>• Separation between the settlement zones and the landscape, as per Bumthang Valley Plan, will be maintained. The three main areas of Chamkhar, Gongkhar/Jalikhar and Dekiling, which have been put forward for development, will have concentrated settlement development and function as local and regional centers. The necessary infrastructure for provision of utilities and waste disposal will be planned early on alongside development of roads. Long term, ideas are particularly necessary for discharging of untreated wastewater and for supply of drinking water.</td>
</tr>
<tr>
<td>• In the development area of Jalikhar/Gongkhar, existing workshops will be expanded. This area is suitable for small- and medium-sized handicraft businesses. The Dzongkhag also has the potential for agro processing, dairy products and wine – including storage, packaging and marketing. Access to credit for entrepreneurs will be improved.</td>
</tr>
<tr>
<td>• Archeological sites (identified and potential) will be zoned as ‘no construction zones’.</td>
</tr>
</tbody>
</table>
Map 21: Bumthang - potentials, challenges and strategies
4.13.2 Chhukha

Analysis

- The Dzongkhag consists of one of the most important industrial and trading hub of the country, i.e. Phuentsholing.
- Significant housing shortage in Phuentsholing forces some residents to live across the border.
- The city experiences considerable freight traffic, leading to congestion of the main roads.
- Development activities are spreading towards the hillsides of Phuentsholing. There are many areas within the Thromde which are not optimally used.

Strategies

- Warehouses and industrial uses from prime locations within Phuentsholing will be relocated to the industrial area outside the city (Passakha Industrial Estate).
- Creation of additional housing to meet the increasing demand. Develop commercial and recreational facilities along the Amo Chhu River.
- Traffic management initiatives to separate freight traffic from the city's main roads.
Map 22: Chhukha - potentials, challenges and strategies

Potential:
- Major Industrial hub
- Mega hydropower projects
- Rich Flora and Fauna

Challenges:
- Significant housing shortage
- Traffic congestion due to heavy freight traffic
- Unapproved development

Proposed Strategies:
- Relocation of industries and warehouses
- Creation of additional housing
- Initiate Traffic management

Land Use:

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Area</td>
<td>86%</td>
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<td>Agriculture Area</td>
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<tr>
<td>Meadows</td>
<td>2%</td>
</tr>
<tr>
<td>Shrubs</td>
<td>5%</td>
</tr>
<tr>
<td>Water Bodies</td>
<td>1%</td>
</tr>
<tr>
<td>Snow Cover</td>
<td>1%</td>
</tr>
<tr>
<td>Others</td>
<td>1%</td>
</tr>
</tbody>
</table>

Legend:
- Forest areas
- Agriculture land
- Water bodies
- Snow cover
- Others
### 4.13.3 Dagana

#### Analysis
- Dagana has favorable climate and fertile land for agriculture but still is one of the least developed Dzongkhags.
- The Dzongkhag gets cut off frequently during the monsoons due to landslides, as the only connection is the Dagana-Sunkosh highway.
- The proposed Sunkosh hydroelectric project and the Lhamoizingkha-Dagapela road would have positive impact for the Dzongkhag.

#### Strategies
- Enhance agriculture, livestock and non-wood forest production. Support in the form of land terracing, rehabilitation and plantation of citrus and cardamom, supply of high quality disease-resistant seeds and seedlings, supply of labour-saving farm machinery, irrigation and capacity development, such as cooperatives, awareness, advanced training on farming and marketing skills, will be provided. Mandarin and cardamom can be considered for cash cropping.
- Alternate connectivity options should be considered during the monsoon season.
- Bird watching and orchid tours can be organized in Gesarling and Tashiding gewogs. Wachey cave in the same region can also be made into a tourist attraction.
Map 23: Dagana - potentials, challenges and strategies

**Potential:**
- Variety of tourism products
- Sankosh Hydroelectricity project
- Rich flora and fauna

**Challenges:**
- High poverty rate
- Remote locations
- Poor agriculture production
- Lack of irrigation and storage facilities

**Proposed Strategies:**
- Alternate Transportation
- Sustainable agricultural practices
- Development of residential colonies

**Land Use:**

<table>
<thead>
<tr>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>87%</td>
<td>4%</td>
<td>0%</td>
<td>5%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>
4.13.4 **Gasa**

**Analysis**

- Despite being located at a high altitude (1,500-4,500 meters) and harsh climate, the Dzongkhag has the lowest level of poverty, owing to non-agricultural forest produce, namely cordyceps.
- Key opportunities are in the areas of livestock and non-wood forest products (NWFP) production.
- The Dzongkhag has strong tourism potential as it falls under the Jigme Dorji Wangchuck National Park. It also has hot springs and several menchus (medicinal springs). Owing to the difficult terrain, climate and remoteness, the Dzongkhag has poor access to health and educational facilities.

<table>
<thead>
<tr>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Establish commercial livestock farming and facilitate breed improvement to enhance livestock productivity. Ensure sustainable management of forest and forestry products through implementation of community and private forestry establishment, afforestation and reforestation programmes, watershed management and conservation.</td>
</tr>
<tr>
<td>- Develop Gasa as a tourism destination, considering the rich flora and fauna and number of menchus and nyes (religious sites).</td>
</tr>
<tr>
<td>- Ensure necessary infrastructure and resources to improve service delivery.</td>
</tr>
</tbody>
</table>
Map 24: Gasa - potentials, challenges and strategies

**Potential:**
- Sustainable NWFP farming
- Rich flora and fauna
- Leisure tourism products

**Challenges:**
- Difficult terrain and climate
- Poor social infrastructure
- Low literacy rate

**Proposed Strategies:**
- Commercial livestock farming
- Afforestation programs
- Development of Religious tourism Products
- Enhancing tourism infrastructure

**Land Use:**

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>26%</td>
</tr>
<tr>
<td>Agriculture</td>
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</tr>
<tr>
<td>Meadows</td>
<td>8%</td>
</tr>
<tr>
<td>Shrubs</td>
<td>20%</td>
</tr>
<tr>
<td>Water Bodies</td>
<td>1%</td>
</tr>
<tr>
<td>Snow Cover</td>
<td>26%</td>
</tr>
<tr>
<td>Others</td>
<td>19%</td>
</tr>
</tbody>
</table>
### 4.13.5 Haa

#### Analysis
- Livestock rearing is an important economic activity, with majority of the northern Gewogs depending on livestock products.
- Significant number of people have wood-based small scale enterprises.
- Rare white poppy, found only in Haa valley, the wooded hills for hiking and mountain biking, religious and cultural sites, yak and cattle shows, and the annual summer festival provides opportunities for further development of tourism.

#### Strategies
- To enhance agricultural yield, support in the form of supply of high quality disease-resistant seeds and seedlings, farm mechanization, capacity development through cooperatives formation, awareness, advanced training on farming and marketing skills will be facilitated.
- The potential for service workshop for wood-based industrial equipment can be explored.
- Community-based tourism can be enhanced through development of home-stays and farm-stays. Development of new tourism products unique to Haa such as trekking, mountain biking, white poppy (Meconopsis superba) tours, religious and cultural tours should be explored. The Dzongkhag, in collaboration with the community, will facilitate development of tourism infrastructure and services, including training of communities in tourism hospitality and services.
Map 25: Haa - potentials, challenges and strategies

Potential:
- Rare flora
- Various tourism sites
- Development of tourism

Challenges:
- Human Wildlife conflict
- Shortage of man power
- Inadequate irrigation and storage facilities

Proposed Strategies:
- Support and enhance agriculture
- Community based tourism development
- Hospitality and service training

Land Use:

<table>
<thead>
<tr>
<th></th>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65%</td>
<td>1%</td>
<td>8%</td>
<td>18%</td>
<td>0%</td>
<td>5%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Legend:
- Tourist routes
- Hydroelectric
- Forest
- Grain storage
- Economic centers
- Roads
- Buffer
- Tourist camps
- Economic centers
- Biological Corridors
- Mines/Mineral
- Maroo valley
### 4.13.6 Lhuentse

**Analysis**
- There are several historical and religious sites in Lhuentse which could be explored for development as tourism places, both for domestic and international tourists.
- The prospect of developing small scale agro processing/cultural product could be explored; agriculture and non-wood forest produce can be explored to enhance incomes.

<table>
<thead>
<tr>
<th>Strategies</th>
<th>The unique weaving product of the Dzongkhag, i.e. Kishuthara textile weaving, should be promoted as a tourism product among others such as farm/home stays, historical and religious sites, and trekking routes. This will be facilitated simultaneously with the development of tourism infrastructure, mainly accommodation, by encouraging local communities to develop community lodges, home stays and farm lodges.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To enhance agricultural productivity, infrastructure will be strengthened, such as farm roads, irrigation channels, storage and market facilities, farm mechanization and formation of cooperatives or farmers group for organized sales.</td>
</tr>
<tr>
<td></td>
<td>Some of the non-wood forest produce that can be considered are pa-tsha, naka pani, black pepper and amla.</td>
</tr>
<tr>
<td></td>
<td>The Dzongkhag administration will also focus on development of cottage and small industries by making finance, land, raw materials, storage and marketing services accessible for entrepreneurs.</td>
</tr>
</tbody>
</table>
Map 26: Lhuentse - potentials, challenges and strategies

**Potential:**
- Fertile and arable land
- Potential to grow cash crops
- Unique tourism products

**Challenges:**
- Human-Wildlife conflict
- Shortage of man power
- Inadequate irrigation and storage facilities
- Lack of tourism facilities

**Proposed Strategies:**
- Promotion of unique tourism products
- To develop tourism facilities
- Strengthen infrastructure for agriculture development

**Land Use:**

<table>
<thead>
<tr>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>61%</td>
<td>2%</td>
<td>3%</td>
<td>12%</td>
<td>0%</td>
<td>13%</td>
<td>9%</td>
</tr>
</tbody>
</table>

**Legend:**
- Tourist routes
- Hydroprojects
- Agriculture land
- Vegetation classes
- Forested areas
- Settlements
- Buffer
- Tourist spots
- Shrubland
- Wetland
- Water bodies
- Snow cover
- Others

**Map Notes:**
- 15 km
- 10 km
### 4.13.7 Mongar

#### Analysis
- Completion of the Gyelposhing-Nganglam highway and construction of Bondeyma industrial estate complement the advantages of being close to the two domestic airports in Bumthang and Yonphula, agro-processing potential and reliable electricity supply.
- The Dzongkhag has the potential for production of barley, maize, potatoes and fruits.
- Traditional festivals and practices include Drameste Ngacham and Yagang Tsechu, and religious sites are Aja Ney, Ken Gkhar Gewog.

#### Strategies
- Develop Mongar as an industrial hub for east and central Bhutan. Development of clean and green industries such as agro-processing, cultural industries based on handicrafts production, and tourism and hospitality industries will be explored.
- Agricultural products like paddy, barley, maize, potatoes and fruits can give good yields. Simultaneously, the government will work on constructing irrigation channels, storage and market facilities. Guava, oranges and hazelnut will be explored as cash crops.
- Other clean and green industries, based on cultural tourism, hospitality and handicrafts production, will be explored and promoted.
Map 27: Mongar - potentials, challenges and strategies
4.13.8 Paro

**Analysis**
- Paro has very fertile land and amenable terrain for agricultural activity.
- Tourism is a major source of income and employment. The Dzongkhag has many tourist attractions like Paro Dzong, National Museum of Ta Dzong, the ruins of Drugyel Dzong, Paro Taktshang (Tiger's Nest), Kyichu Monastery, etc. Paro has the country’s only international airport, which makes it very accessible for international tourists.
- Urban growth has put pressure on the physical infrastructure. The Dzongkhag faces water shortage for drinking and irrigation.
- Rapid land conversion from agricultural to residential land use is rampant in many parts. The building bylaws have also been ignored in certain areas.

<table>
<thead>
<tr>
<th>Strategies</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Paro will be developed as a meeting, incentive, conference and exhibition destination by developing suitable infrastructure facilities.</td>
<td></td>
</tr>
<tr>
<td>• To promote tourism, infrastructure like washrooms, drinking water facilities and way-finding should be developed.</td>
<td></td>
</tr>
<tr>
<td>• Additional water sources should be found to ease infrastructure pressure.</td>
<td></td>
</tr>
<tr>
<td>• There is a need for a monitoring mechanism to keep track of land conversion cases and imposition of fines, should there be non-compliance to guidelines and building bylaws.</td>
<td></td>
</tr>
</tbody>
</table>
Map 28: Paro - potentials, challenges and strategies

Potential:
- Major tourist Destination
- International Airport
- Fertile land

Challenges:
- Pressure on Physical infrastructure
- Rapid land conversion
- Water scarcity

Proposed Strategies:
- MICE destination
- Enhance tourism infrastructure
- Water management

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>61%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>5%</td>
</tr>
<tr>
<td>Meadows</td>
<td>6%</td>
</tr>
<tr>
<td>Shrubs</td>
<td>22%</td>
</tr>
<tr>
<td>Water Bodies</td>
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<tr>
<td>Snow Cover</td>
<td>4%</td>
</tr>
<tr>
<td>Others</td>
<td>2%</td>
</tr>
</tbody>
</table>

Legend:
- Tourist routes
- Heritage Villages
- Gneus
- Hydro projects
- Settlements
- Economic Centers
- Lhakhang Chhu
- Dzongkha Chhu
- Khu Chhu
- Above 45 degree or above 50%
- 30-45 degree or 33.33%
- 10-45 degree or below 33.33%
- < 10 degree or 0-33%
- injured areas
- Biological Corridors
- Mine Area
- Mriminal Areas
- Bhumla NH
4.13.9 Pemagatshel

Analysis

- Completion of Gyelposhing–Nganglam highway and Tsebar-Mikuri–Durungri feeder road, commencement of Dungsam cement project, feasibility of establishing a regional hub at Nganglam, construction of Pemagatshel Dzong, and development of new township at Rinchenthang, Nganglam and Denchi are some of the major projects in the Eleventh Plan, which will increase economic opportunities in the Dzongkhag.

- Denchi has potential to develop as the Dzong is expected to be shifted.

Strategies

- The Dzongkhag is famous for production of items such as jaling, dhung, thonphu poe, nyashing jurma tea leaves, thonsa kamthap and yurung bura. The possibilities of establishing organized small and medium industries will be explored in cooperation with Agency for Promotion of Indigenous Crafts, which will facilitate product development, quality assurance, marketing of the products, and sustainable management of raw material and establishment of raw material banks in the Dzongkhag.

- The Dzongkhag will focus on enhancing agricultural productivity. Efforts to enhance production of maize, paddy, cardamom, ginger, vegetables and tropical fruits will be made by investing in facilities such as irrigation, storage, packaging and marketing, facilitating establishment of farmers' groups/cooperatives.

- An integrated check post at Nganglam with logistics hub and warehousing facilities will cater to all freight entering Bhutan from the south eastern side. Few factories and a high school have been proposed, which will increase the town's population.

- For settlements, Denchi is a good option, considering it is also the administrative capital and has availability of land.
Map 29: Pemagatshel - potentials, challenges and strategies

**Potential:**
- Potential Horticulture region
- Potential for cash crops cultivation
- Rich mineral resources

**Challenges:**
- Scarce water resources
- Labour shortage
- Human-wildlife conflict
- Insignificant transformation of livelihood

**Proposed Strategies:**
- Hub for small and cottage industries
- Enhancing irrigation facilities
- Integrated Check post and Logistics hub in Nganglam

**Land Use:**

<table>
<thead>
<tr>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>88%</td>
<td>5%</td>
<td>0%</td>
<td>5%</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
</tr>
</tbody>
</table>
4.13.10 **Punakha**

**Analysis**
- The Dzongkhag is one of the largest producers of rice in the country. A conducive climate enables production of surplus rice, fruits and vegetables, which are sold in neighboring Dzongkhags.
- The Dzongkhag has the potential to be developed as a unique tourist destination for international and domestic tourists. Due to its proximity to Thimphu and Paro, it is easily accessible.
- The town has a popular school and a 40-bed general hospital, which also caters to Wangduephodrang.

<table>
<thead>
<tr>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punakha and Wangduephodrang being interdependent should be addressed together.</td>
</tr>
<tr>
<td>Punakha can have an agro processing unit catering to the western and central regions.</td>
</tr>
<tr>
<td>Allied tourism services should be promoted, such as cafeterias, pubs, clubs, etc. to cater to tourists and locals.</td>
</tr>
<tr>
<td>To make the city more vibrant, recreational and sporting facilities should be included.</td>
</tr>
<tr>
<td>Punakha and Wangduephodrang Thromdes, both being important urban centers, will see expansion and development in the area in between the towns. This needs to be controlled.</td>
</tr>
</tbody>
</table>
Map 30: Punakha - potentials, challenges and strategies

**Potential:**
- Unique tourist destination
- Salubrious climate, high agriculture yield.
- Largest Rice producer

**Challenges:**
- Glacial Lake Outburst Floods
- Unplanned development
- Water scarcity
- Human Wildlife conflict

**Proposed Strategies:**
- Agro processing Hub
- Promotion of tourism allied services
- Inclusion of better social infrastructure to make city vibrant

**Land Use:**

<table>
<thead>
<tr>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>76%</td>
<td>5%</td>
<td>2%</td>
<td>10%</td>
<td>1%</td>
<td>7%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Legend**
- Forest
- Agriculture
- Meadows
- Shrubs
- Water Bodies
- Snow Cover
- Others

- Tourist routes
- Heritage Village
- Hydro projects
- Economic centers
- Bhutan rivers
- 30-45 degrees or 35-60%
- Above 45 degrees or above 65%
4.13.11 Samdrupjongkhar

Analysis

- Samdrupjongkhar is the gateway for the five eastern Dzongkhags. The Thromde has seen accelerated urbanization, playing the role of a trading hub, administrative center and transit point.
- The Dzongkhag has flat arable land with adequate irrigation facilities and close proximity to India, making it a conducive production and marketing center for agricultural produce. Besides farm products, sustainable harvesting of non-wood forest products (NWFP) such as chirata, rubia and satuwa, and livestock products such as milk, pork, fish, chicken and beef have potential to enhance household incomes.

Strategies

- Samdrupjongkhar and Dewathang are most viable for settlements, given that vacant lands having slopes less than 30% is around 142 hectares and 95 hectares, respectively.
- Also, Samdrupjongkhar can be developed as an industrial hub of the east as it has mineral reserves like coal, dolomite and high grade limestone. Setting up of an industrial estate at Motanga will aid industrial development.
- As Samdrupchoeling and Jomotsangkha have good connectivity, the two will be promoted as centers for agro-based and packaging industries for dairy, fishery, rice, NWFP, etc.
- Samdrupjongkhar Dzongkhag offers wildlife sanctuaries, bird sanctuary, and appropriate terrain for trekking, river rafting in the monsoon and gliding.
Map 31: Samdrup Jongkhar - potentials, challenges and strategies

**SAMDRUP JONGKHAR**

**Potential:**
- Proximity to Indian Markets
- Well Connected farms
- Sustainable Harvesting of NWFP
- Rich mineral base

**Challenges:**
- Human-wildlife conflicts
- Labour Shortages
- Inadequate Irrigation facility
- Inadequate marketing facility

**Proposed Strategies:**
- Adventure tourism hub
- Industrial Hub aiding
- Agro Processing and Packaging Hub
- Viable region for settlement

**Land Use:**

<table>
<thead>
<tr>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>87%</td>
<td>4%</td>
<td>0%</td>
<td>6%</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
</tr>
</tbody>
</table>

**Legend:**
- Forested areas
- Agricultural lands
- Meadows
- Shrubs
- Water bodies
- Snow cover
- Others
4.13.12 Samtse

**Analysis**
- Warm climate, flat and rich fertile land make Samtse conducive to increase cash crop production and double cropping. The Dzongkhag also has rich forest resources such as bamboo, cane and incense plants.
- The Dzongkhag Thromde Samtse is not well connected with other cities of Bhutan, and does not have an adequate market area.
- Major economic centers in the Dzongkhag are Samtse, Sipsu and Gomtu. These have good access to health facilities. Educational facilities in the Dzongkhag can be improved.

<table>
<thead>
<tr>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 342.8 sq km of industrial area called Damdhum industrial estate is proposed near the river in Samtse town, which will be a catalyst for economic growth. Damdhum can have mineral-based, agro-based or wood/ cane-based industries.</td>
</tr>
<tr>
<td>- To increase agricultural produce, farm mechanization is suggested for cereal crops like paddy, maize, wheat, buckwheat, barley and millet.</td>
</tr>
<tr>
<td>- The urban core area of Samtse Thromde has been proposed to be developed as an arcade which will act as a market for the Dzongkhag.</td>
</tr>
<tr>
<td>- Educational facilities in the Dzongkhag will be improved in collaboration with Ministry of Education to ensure adequate educational infrastructure, teachers and teaching material.</td>
</tr>
</tbody>
</table>
Map 32: Samtse - potentials, challenges and strategies

**Potential:**
- Proximity to Indian Markets
- Fertile and Flat arable land
- Proposed Samtse-Phuentsholing highway and Dandhum industrial estate

**Challenges:**
- Human-wildlife conflicts
- Labour Shortages
- Illiteracy and unemployment
- Inadequate Irrigation facility
- Inadequate marketing facility

**Proposed Strategies:**
- Agro and Wood based industrial hub.
- Farm Mechanization
- Market Arcade in the urban area

**Land Use:**

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>78%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>13%</td>
</tr>
<tr>
<td>Meadows</td>
<td>1%</td>
</tr>
<tr>
<td>Shrubs</td>
<td>4%</td>
</tr>
<tr>
<td>Water Bodies</td>
<td>3%</td>
</tr>
<tr>
<td>Snow Cover</td>
<td>0%</td>
</tr>
<tr>
<td>Others</td>
<td>1%</td>
</tr>
</tbody>
</table>

**Legend:**
- Forest
- Agriculture
- Meadows
- Shrubs
- Water Bodies
- Snow Cover
- Others
- Tourism routes
- Heritage Villages
- Growth centres
- Biological Corridors
- Mining Locations
-Hydropower projects
- Economic centres
- Buffer Zone
- Urban Settlement
- <30 degree or 0-31%
- 30-45 degree or 32-60%
- Above 45 degree or above 60%
4.13.13  **Sarpang**

**Analysis**

- The Dzongkhag’s proximity to Indian markets, availability of vast flat land, air connectivity, and reliable electricity supply with the completion of Tsirang-Jigmeling electricity transmission line provides significant economic opportunities for Sarpang.
- Gelephu is strategically located and has adequate land for development with amenable terrain.
- Development of Jigmeling Industrial Estate, establishment of dry port, upgradation of the domestic airport to international standards and completion of Lhamoizingkha-Sarpang and Gelephu-Panbang highways (parts of southern east-west highway) are expected to boost the comparative advantage of the Dzongkhag.

**Strategies**

- Owing to its proximity to the Indian border and other factors, Gelephu has developed as a market town, attracting people from the country as well as from across the border for trading purposes.
- Gelephu has provision for showrooms, corridor for star hotels, financial institutions and dry port (having sheds and warehouses), which can be used when the town grows to a certain extent.
- The Jigmeling Industrial Estate will have processing industries for the region’s produce while Gelephu will act as a market for adjoining Dzongkhags like Zhemgang and Tsirang.
- Sarpang, being the regional headquarter, will continue to be a major service center for the region. The elegantly designed monastery in Sarpang Tar will be connected with a continuous community space (running along the river, unifying market areas and other public elements).
- Keeping the river as a central element, recreational activities can be designed along it, like food joints, archery fields, play areas, etc.
Map 33: Sarpang - potentials, challenges and strategies

**SARPANG**

**Potential:**
- Jigmeling Industrial Estate
- Upgradation of Airport to international
- Sustainable Harvesting of NWFP

**Challenges:**
- Human-wildlife conflicts restraining agriculture
- Inadequate irrigation facility
- Inadequate marketing facility

**Proposed Strategies:**
- Regional center for services
- Processing Industries
- Business center for neighboring Dzongkhag

**Land Use:**

<table>
<thead>
<tr>
<th>Land Use Type</th>
<th>Area Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Area</td>
<td>88%</td>
</tr>
<tr>
<td>Agriculture Area</td>
<td>4%</td>
</tr>
<tr>
<td>Meadows</td>
<td>0%</td>
</tr>
<tr>
<td>Shrubs</td>
<td>0%</td>
</tr>
<tr>
<td>Water Bodies</td>
<td>2%</td>
</tr>
<tr>
<td>Snow Cover</td>
<td>0%</td>
</tr>
<tr>
<td>Others</td>
<td>1%</td>
</tr>
</tbody>
</table>

**Legend:**
- **Airport**
- **Heritage Village**
- **Gaming centers**
- **Economic centers**
- **Shrubland**
- **Trembling thronle**
- **Above 45 degree or above 50%**
- **Shrubland**
- **Tourist route**
- **Hydropower**
- **Tourist spots**
- **Tourist centers**
- **Biological corridor**
- **Roofs**
- **Wires Location**
- **Houses Settlement**
- **Less than 30 degree or 0-33%**
- **30-45 degree or 33-50%**
- **Above 45 degree or above 50%**

---

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### Analysis

- Rapid migration has put immense pressure on infrastructure facilities (physical and social). Migrant workers and economically weaker sections have poor access to housing, and services like water and sanitation.
- There is unplanned growth in adjoining areas such as Khasadrapchu, Kawang and Depsi.
- The remote Gewogs of Thimphu Dzongkhag are engaged in agriculture and livestock farming. They also grow vegetables and fruits.

### Strategies

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategies</strong></td>
<td><strong>Regularization of existing housing by providing access to adequate services will be considered. The administration will assemble land for housing programs, with focus on the lowest income groups. Land banks will be created, reserving at least 15% land for affordable housing.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Regulations to control unplanned growth in peripheral areas should be devised and enforced. The cases of land conversion from agricultural to residential land-use will be monitored and the owner penalized if the guidelines and bylaws are not followed.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Alternative means for water supply will be identified to cater to all settlements which come under the municipal boundary.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>With rising pollution in the Thromde, eco-friendly options and smart vehicles will be incentivized.</strong></td>
</tr>
</tbody>
</table>
Map 34: Thimphu - potentials, challenges and strategies

**Potential:**
- Fertile and arable land
- Sustainable Harvesting of NWFP
- Better economic opportunities

**Challenges:**
- Land Conversions
- Poor HH infrastructure facilities
- Housing and water shortage

**Proposed Strategies:**
- Adequate services to Households
- Creation of Land Banks
- 15% of land for affordable housing

**Land Use:**

<table>
<thead>
<tr>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>43%</td>
<td>1%</td>
<td>10%</td>
<td>21%</td>
<td>0%</td>
<td>15%</td>
<td>9%</td>
</tr>
</tbody>
</table>

**Legend:**
- Tourism roads
- Heritage Village
- Economic centers
- Residential settlement
- Non-tourist roads
- Stupas
- Wooden Gompa
- Growth centers
- ‘30 degree or <33%
- ‘30-45 degree or 33.50%
- ‘45 degree or above 50%
### 4.13.15 Trashigang

**Analysis**
- Trashigang Dzong, Kanglung Zangdopelri, the unique architecture of Mithidrang town, Tshechu, and pastoral communities of Merak and Sakteng attract significant tourists to the Dzongkhag.
- Kanglung is being developed into a regional hub in the east (as an educational hub).
- Yongphula Airport, 20 km away from Trashigang town, is also connected by road.
- Ranjjung is a yenlag thromde, and has land available for settlement development and to accommodate spillover from the Dzongkhag Thromde.
- Wamrong serves as a commercial center for inter-Dzongkhag buses plying on the route.

**Strategies**
- Trashigang-Ranjung-Kanglung growth corridor will be developed as an economic corridor which will provide all ancillary facilities and social infrastructure required for an economy to thrive.
- Improve tourism infrastructure and hospitality services, in addition to developing tourism products such as identifying trek routes, developing nature tours, culture tours and adventure tourism.
- Undertake infrastructure assessment according to population projections for the Dzongkhag and identification of new water supply sources, especially in Kanglung.
- While Trashigang-Ranjung-Kanglung is proposed to be developed in the first phase, Khaling-Wamrong corridor is proposed to be developed in the second phase.
Map 35: Trashigang - potentials, challenges and strategies

**Potential:**
- Various tourist destinations
- Rich flora and Fauna
- Ready Manpower

**Challenges:**
- Rural-Urban migration
- Fallow agriculture land
- Human-Wildlife conflict
- Water Shortage

**Proposed Strategies:**
- Development of economic corridor
- Enhancing tourism facilities
- Infrastructure assessment and augmentation

**Land Use:**
<table>
<thead>
<tr>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>71%</td>
<td>2%</td>
<td>1%</td>
<td>14%</td>
<td>1%</td>
<td>11%</td>
<td>0%</td>
</tr>
</tbody>
</table>
### 4.13.16 Trashiyangtse

#### Analysis
- Agriculture and livestock are main sources of livelihood.
- Kholong chhu hydropower project will boost the economy through setting up of small and medium enterprises.
- The Dzongkhag is a center for traditional handicrafts such as wooden bowl (dapa) and daphne paper (desho).
- Trashiyangtse is also has cordyceps in pastoral areas.
- The Dzongkhag has numerous heritage sites, and festivals such as Gomphu Kora and Chorten Kora can attract tourists. In addition, Chazam (Iron Bridge), black-necked cranes and handicraft tours can draw tourists.

#### Strategies
- Small and cottage industries specializing in wooden products, handmade paper, agricultural products and medicinal plant products will be developed. Training programs will be carried out for local artisans so that the knowledge and techniques of traditional crafts are carried forward.
- Tourism infrastructure like hotels, lodges, guesthouses, hostels will be established to increase the staying time of tourists in the Dzongkhag. Tours to heritage sites and visits during major festivals will be promoted in collaboration with the Tourism Council of Bhutan.
Map 36: Trashiyangtse - potentials, challenges and strategies

**Potential:**
- Domestic airport
- Heritage Sites
- Ready manpower

**Challenges:**
- Decrease in cottage industries
- Lack of tourism amenities
- Human-wildlife conflicts restraining agriculture

**Proposed Strategies:**
- Enhancing small and cottage industries
- Tourism Infrastructure development

**Land Use:**

<table>
<thead>
<tr>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>82%</td>
<td>3%</td>
<td>3%</td>
<td>10%</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

**Legend:**
- Forest
- Agriculture
- Meadows
- Shrubs
- Water Bodies
- Snow Cover
- Others

- Tourist routes
- Heritage Village
- Geotourism centers
- Economic centers
- Reserves
- Grazing reserves
- Mining reserves
- Mining NM

- Buffer
- Growth centers
- Buffer reserves
- Grain storage
- Mining reserves
- Mining NM
### 4.13.17 Trongsa

**Analysis**

- The Dzongkhag has suitable climate for horticultural and livestock.
- Trongsa has an eco-tourism trail, which connects sacred places like Nabji Lhakhang, Kubra, Ugen Drak and Phumzur Lhakhang. A Royal Heritage Trail from Bumthang to Trongsa has helped boost tourism in both Dzongkhags. The Dzongkhag faces shortage of hospitality and other tourist facilities and services.
- The economy of Trongsa town has benefitted from ongoing construction of two hydropower projects - Mangdechhu and Nikachhu. But after the completion of the projects, the Dzongkhag could see an outward migration.

| Strategies | Touring infrastructure will be built upon in order to increase the dwelling time of tourists in the Dzongkhag. Hotels, lodges, hostels, cafeterias and pubs will be established in collaboration with the Tourism Council of Bhutan. Setting up of service and hospitality industries will give a boost to the economy once construction of the hydropower projects is complete. |
Map 37: Trongsa - potentials, challenges and strategies

**Potential:**
- Major tourist destination
- Eco tourism trail
- Heritage tourism trail

**Challenges:**
- Acute shortage of tourism facilities
- Issues with land holding and production
- Lack of marketing facility

**Proposed Strategies:**
- Enhancing tourism facilities
- Enhancing hospitality and service industry

**Land Use:**

<table>
<thead>
<tr>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>87%</td>
<td>1%</td>
<td>3%</td>
<td>6%</td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
</tr>
</tbody>
</table>
Tsirang

Analysis

- Agriculture and livestock are the two major sources of livelihood. It is the largest orange grower in the country. Livestock products include eggs, cheese, chicken and local meat processing.
- There are no opportunities for further education after school, which leads to migration of the youth.
- Strengthening of the local government is essential. Currently, due to low capacity of the local governments, funds allocated are not spent.

Strategies

- Establish a degree college to facilitate higher studies.
- Establish processing units for the abundant agricultural produce and promote cash crops.
- River rafting and kayaking on Sunkosh River will be explored. In addition, biking, trekking and flower tourism will be promoted.
- Staff training and capacity building of administrative authorities will be undertaken.
Map 38: Tsirang - potentials, challenges and strategies

Potential:
- Divers climate to support agriculture
- Proposed power supply projects
- Various tourism products

Challenges:
- High poverty rate
- Water shortage
- Infrastructure Management problems

Proposed Strategies:
- Establishment of degree college
- Establishment of processing units
- Capacity building programs

Land Use:

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>87%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>7%</td>
</tr>
<tr>
<td>Meadows</td>
<td>0%</td>
</tr>
<tr>
<td>Shrubs</td>
<td>3%</td>
</tr>
<tr>
<td>Water Bodies</td>
<td>1%</td>
</tr>
<tr>
<td>Snow Cover</td>
<td>0%</td>
</tr>
<tr>
<td>Others</td>
<td>1%</td>
</tr>
</tbody>
</table>

Legend:
- Forest
- Agriculture
- Meadows
- Shrubs
- Water Bodies
- Snow Cover
- Others
- Forest
- Agriculture
- Meadow
- Shrubs
- Water Bodies
- Snow Cover
- Others
### 4.13.19 Wangduephodrang

#### Analysis

- The Dzongkhag has rich agricultural land and favorable climate.
- Construction of Punatsangchhu I and II have greatly benefitted the local economy.
- Tourists are drawn to Phobjika for bird watching. Historical monuments, heritage structures, religious sites and the annual black crane festival present other tourism opportunities.

#### Strategies

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Upon completion of</strong></td>
<td>Upon completion of construction of the hydropower projects, agriculture will be</td>
</tr>
<tr>
<td><strong>construction of</strong></td>
<td>explored as an alternate employment source.</td>
</tr>
<tr>
<td><strong>the hydropower</strong></td>
<td></td>
</tr>
<tr>
<td><strong>projects,</strong></td>
<td>Production of cash crop will be increased through training of farmers, encouraging</td>
</tr>
<tr>
<td><strong>agriculture will</strong></td>
<td>the establishment of rural agro-based enterprises and cooperatives, and promoting</td>
</tr>
<tr>
<td><strong>be explored</strong></td>
<td>better farming techniques and practices. Livestock productivity will be further</td>
</tr>
<tr>
<td><strong>as an alternate</strong></td>
<td>expanded through introduction of improved and increased access to breeding programs,</td>
</tr>
<tr>
<td><strong>employment</strong></td>
<td>feed and fodder, and animal health.</td>
</tr>
<tr>
<td><strong>source.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eco-tourism will also be explored and promoted. The endangered black-necked crane and</td>
</tr>
<tr>
<td></td>
<td>revival of local festivals can increase tourism.</td>
</tr>
</tbody>
</table>
Map 39: Wangduephodrang - potentials, challenges and strategies

**Potential:**
- Various tourism products
- Favorable climate for agriculture
- Opportunity to improve SMEs

**Challenges:**
- Land conversions
- Fragmented land holdings
- Poverty

**Proposed Strategies:**
- Promotion of agriculture
- Establishment of rural agro-based enterprises
- Exploring Eco-tourism

**Land Use:**

<table>
<thead>
<tr>
<th></th>
<th>Forest Area</th>
<th>Agriculture Area</th>
<th>Meadows</th>
<th>Shrubs</th>
<th>Water Bodies</th>
<th>Snow Cover</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65%</td>
<td>2%</td>
<td>7%</td>
<td>9%</td>
<td>0%</td>
<td>16%</td>
<td>1%</td>
</tr>
</tbody>
</table>

**Legend:**
- Tourist routes
- Hydroprojects
- Economic centers
- Buffer
- Protected areas
- Mining locations
- Biological corridors
- Shitang forest
4.13.20 **Zhemgang**

**Analysis**
- Has economic opportunities, in terms of market for farmers to supply agricultural and livestock products, local business, employment opportunities. Enhanced reliability of electricity supply will promote SMEs, particularly agro-based and cane and bamboo products.
- Potential to become Bhutan’s bird watching centre, offering bird watching treks, e.g. Yebilapcha-Tshangla Dzong-Subrang-Zhurphe-Gongphu road head. Zhemgang also has high potential for adventure sports, such as rafting, fly fishing and trekking. Has potential for production of bamboo, cane and handicraft products.
- Agriculture, horticulture, livestock, weaving and handicrafts, particularly bamboo products, are main sources of livelihood.

**Strategies**
- Rufous-necked hornbill, Blythe kingfisher, Green cochooa, Purple cochooa, Chestnut breasted partridge are some of the species found in the area.
- Production of bamboo and cane handicrafts will be scaled up. Training of communities and organizing workshops, exhibitions through Agency for Promotion of Indigenous Craft will be carried out.
- The Chamkharchhu hydroelectric project is expected to facilitate supply agricultural and livestock products. Cash crops like oranges and cardamom will be encouraged.
Map 40: Zhemgang - potentials, challenges and strategies

Potential:
- Abundant economic opportunities
- Enhanced electric supply
- Rich flora and fauna

Challenges:
- Human wildlife conflict
- Shortage of Marketing facilities
- Shortage of water and irrigation resources

Proposed Strategies:
- Bird watching treks
- Production of bamboo based handicrafts
- Training and workshops

Land Use:

<table>
<thead>
<tr>
<th>Land Use Type</th>
<th>Area Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Area</td>
<td>88%</td>
</tr>
<tr>
<td>Agriculture Area</td>
<td>2%</td>
</tr>
<tr>
<td>Meadows</td>
<td>2%</td>
</tr>
<tr>
<td>Shrubs</td>
<td>6%</td>
</tr>
<tr>
<td>Water Bodies</td>
<td>1%</td>
</tr>
<tr>
<td>Snow Cover</td>
<td>0%</td>
</tr>
<tr>
<td>Others</td>
<td>1%</td>
</tr>
</tbody>
</table>

Legend:
- Agriculture land
- Forest
- Meadows
- Water bodies
- Snow cover
- Others
- Tourist routes
- Hydroelectric plants
- Hydroelectric reservoirs
- Buffer
- Village
- Settled area
- Buffer
- Settled area
- Village
- Forest
- Agriculture land
- Water bodies
- Snow cover
- Others
- Settled area
- Forest
- Agriculture land
- Water bodies
- Snow cover
- Others

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5. Implementation Plan

5.1 Timeframe and implementing agency

NHSS has identified a number of strategies and activities to be carried out in a phased manner, phase I of 0-5 years and phase II of 5-10 years. The key activities and the phases they are proposed to be implemented in are given in the tables below.

Table 17: Phasing and implementation plan for activities;

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Key activity</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Implementing agency</th>
<th>Level of implementation</th>
<th>Priority level</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Inter agency coordination</td>
<td></td>
<td></td>
<td>MoWHS</td>
<td>National</td>
<td>High</td>
</tr>
<tr>
<td>1</td>
<td>Establishment of a Technical Secretariat under MoWHS.</td>
<td></td>
<td></td>
<td>MoWHS</td>
<td>National</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Constant monitoring of human settlement issues.</td>
<td></td>
<td></td>
<td>MoWHS</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>3</td>
<td>Coordination with all departments of MoWHS and other stakeholders.</td>
<td></td>
<td></td>
<td>MoWHS</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>4</td>
<td>Periodic review of taxation policy.</td>
<td></td>
<td></td>
<td>MoWHS</td>
<td>National</td>
<td>High</td>
</tr>
<tr>
<td>II</td>
<td>Partnership with private sector</td>
<td></td>
<td></td>
<td>MoWHS</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>5</td>
<td>Partnership with private sector.</td>
<td></td>
<td></td>
<td>MoWHS</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>III</td>
<td>Human resource and capacity building</td>
<td></td>
<td></td>
<td>MoWHS, Dzongkhag administration</td>
<td>Local</td>
<td>High</td>
</tr>
<tr>
<td>6</td>
<td>Training programs for officials.</td>
<td></td>
<td></td>
<td>MoWHS, Dzongkhag administration</td>
<td>Local</td>
<td>High</td>
</tr>
<tr>
<td>7</td>
<td>Regular assessment of officials.</td>
<td></td>
<td></td>
<td>MoWHS</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>8</td>
<td>Hiring external resources.</td>
<td></td>
<td></td>
<td>MoWHS</td>
<td>Local</td>
<td>Low</td>
</tr>
<tr>
<td>S. No.</td>
<td>Key activity</td>
<td>Phase 1</td>
<td>Phase 2</td>
<td>Implementing agency</td>
<td>Level of implementation</td>
<td>Priority level</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------</td>
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<td>----------------------</td>
<td>-------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>9</td>
<td>Regular knowledge exchange and study visits.</td>
<td></td>
<td>✓</td>
<td>MoWHS</td>
<td>Local</td>
<td>Low</td>
</tr>
<tr>
<td>IV</td>
<td><strong>Settlement systems</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Identification of urbanizing areas.</td>
<td></td>
<td>✓</td>
<td>MoWHS</td>
<td>National</td>
<td>High</td>
</tr>
<tr>
<td>11</td>
<td>Guidelines for development of urbanizing areas.</td>
<td></td>
<td>✓</td>
<td>MoWHS</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>12</td>
<td>Preparation of development plans for urbanizing areas identified.</td>
<td></td>
<td>✓</td>
<td>MoWHS</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>V</td>
<td><strong>Housing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Preparation for National database for housing.</td>
<td></td>
<td>✓</td>
<td>Technical secretariat under MoWHS.</td>
<td>National</td>
<td>High</td>
</tr>
<tr>
<td>14</td>
<td>Promotion of affordable housing.</td>
<td></td>
<td>✓</td>
<td>MoWHS</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>15</td>
<td>Review and strengthening of housing finance institution.</td>
<td></td>
<td>✓</td>
<td>Ministry of Finance (MoF) and MoWHS with financial institutions.</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>16</td>
<td>Research on construction materials and techniques for cost reduction and promotion of affordable housing.</td>
<td></td>
<td>✓</td>
<td>MoWHS</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>VI</td>
<td><strong>Disaster mitigation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Vulnerability mapping of settlement areas in environmentally sensitive areas.</td>
<td></td>
<td>✓</td>
<td>Ministry of Home and Cultural Affairs (DDM under MoHCA))</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>S. No.</td>
<td>Key activity</td>
<td>Phase 1</td>
<td>Phase 2</td>
<td>Implementing agency</td>
<td>Level of implementation</td>
<td>Priority level</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------------------------------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>18</td>
<td>Formulation of architecture and development guidelines in disaster risk-prone areas.</td>
<td></td>
<td></td>
<td>Ministry of Home and Cultural Affairs (DDM under MoHCA))</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>19</td>
<td>Setting up of early warning centres in situations of natural disasters.</td>
<td></td>
<td></td>
<td>Ministry of Home and Cultural Affairs (DDM under MoHCA)</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>20</td>
<td>Strategy formulation for capacity building for disaster preparedness.</td>
<td></td>
<td></td>
<td>Ministry of Home and Cultural Affairs (DDM under MoHCA).</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td>21</td>
<td>Research on traditional methods of disaster resilience.</td>
<td></td>
<td></td>
<td>Ministry of Home and Cultural Affairs (DDM under MoHCA).</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td><strong>VII</strong> Tourism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Providing tourism infrastructure in eco-tourism villages.</td>
<td></td>
<td></td>
<td>Dzongkhag and Gewog administrations.</td>
<td>Local (Dzongkhag)</td>
<td>High</td>
</tr>
<tr>
<td>23</td>
<td>Developing few heritage villages as eco-tourism or rural tourism villages.</td>
<td></td>
<td></td>
<td>Tourism Council of Bhutan.</td>
<td>National</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td><strong>VIII</strong> Incentives and Levies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Introduction of incentives and betterment levy in urban areas.</td>
<td></td>
<td></td>
<td>MoWHS at National level, Dzongkhag administration at local level, as applicable.</td>
<td>National, Dzongkhag</td>
<td>Low</td>
</tr>
</tbody>
</table>
6. Way forward

Individuals decide on residing in an area based on its economic potential and infrastructure. While migration cannot be completely stopped, the report recommends strategies to develop destinations in the central and eastern regions. Given the cost and resources required to improve services and connect settlements, it may not be possible to upgrade infrastructure and living conditions throughout the country, but strategic interventions could lead to desired results. Such interventions must be guided by findings from the analysis of reliable data which, unfortunately, could not be made available for the study. With the conclusion of PHCB 2017 survey, new data and projections can be made available and used to arrive at more realistic recommendations and strategies. These recommendations and strategies must then be translated into programmes of successive five year plans. Other priority programmes include streamlining the coordination mechanisms, capacity development at local and national level, mobilization of resources and eventual implementation of the prioritized programmes.
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