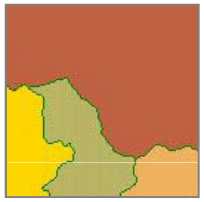
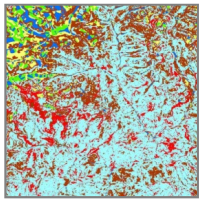
2.0 Strategy Development Process

2.1 Analysis Approach
2.2 Tourism Prospects
2.3 Demographics
2.4 Scenario Analysis



2.1 Analysis Approach

The analysis for strategic development process shall consider two major components:

- Resident Population Analysis

  Based on the Sikkim's Demographic Trends

- Floating Population Analysis

  Based on the Sikkim's Tourism Trends

While demographic analysis helps us look at the resident population projection for Sikkim when coming up with a practical demographic figure for future, tourism prospects will help us to ascertain the floating population profile which is a major contributor to Sikkim's economic development.

Building upon this, a scenario analysis is conducted to test the suitable urban development model for Sikkim's urban centers. The mobile population may not affect the overall scenario development and therefore the Scenario Analysis is largely based on the Resident Population. However, as the floating population would influence the infrastructure and facilities provisions, the later assessments for detailed development plans shall be based on these projections.

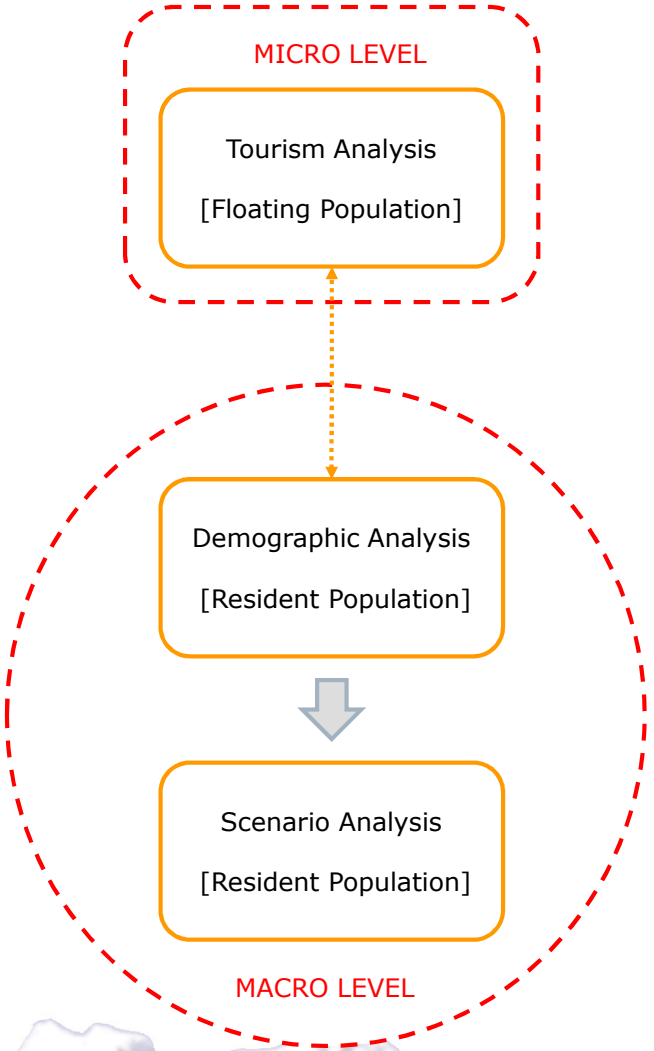


Figure 2.1.1 Analysis Approach

2.2 Tourism Prospects

Domestic Visitors

Table 2.2.1 Number of Domestic Visitors to Sikkim per Year

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Domestic	116,500	133,158	139,085	144,203	146,923	160,789	176,659	230,719	241,697	292,486	331,263

The State of Sikkim has seen tremendous growth in domestic visitor arrivals for the past decade. Data obtained from the Sikkim authorities indicated that the domestic visitor arrivals had been growing at an annualised rate of 18.4% over the past decade.

This growth rate is higher than that of the international visitor arrivals despite domestic arrivals having a much larger base. There is currently no official data on the breakdown of the domestic visitors to Sikkim by purpose of visit. However, discussions with the local travel trade suggest that the domestic Indian visitors to Sikkim can be classified in the following categories:

Day trippers: Sikkim's proximity to West Bengal and the existence of good road networks between Sikkim and West Bengal had resulted in many West Bengalis visiting Sikkim for day trips during weekends and holidays.

Summer Holidayers: The domestic visitors peak at the month of May and it was due to the fact that during summer, Sikkim's cool climate is attractive to Indians of other states who wanted to get away from the hot weather.

Religious Travelers: Sikkim's many religious sites and places of worship are important pilgrimage destinations for devotees living outside the state. There are many sacred lakes, caves, rocks and peaks in Sikkim which will attract visitors.

Visit Friends and Relatives: Many non-Sikkimese have migrated to Sikkim due to the better facilities and social welfare in the state. As a result, there are also more visitors coming to the state to visit their friends and relatives.

2.2 Tourism Prospects

Domestic Visitors

From Figure 2.2.1 on the right, it can be seen that prior to the year 2002, domestic visitor arrivals growth was confined to single digit growth. However, after 2002, growth accelerated to double digits.

While it is important to understand the reason for the surge in growth to better manage the growth in domestic travels, the future availability of more and better data on this area will assist tourism planners.

Figure 2.2.1 Graphical Representation of Domestic Visitors Arrival into Sikkim by Year

In addition, it can also be seen from the graph that the consistent growth in domestic visitors had been achieved over the past decade.

This indicates a very resilient domestic tourism market that can withstand various domestic issues such as weather changes, economic slowdown, strikes and accessibility disruptions etc.

2.2 Tourism Prospects

Domestic Visitors

Further analysis of the data also revealed that peak months for domestic visitors are April, May, October and November.

In particular, May is most popular month for travel to Sikkim with an average of about 21.21% of total annual visitor numbers over the past decade. April and October are important months with high number of visitors.

Domestic visitor arrivals to Sikkim are subject to high peaks and deep troughs.

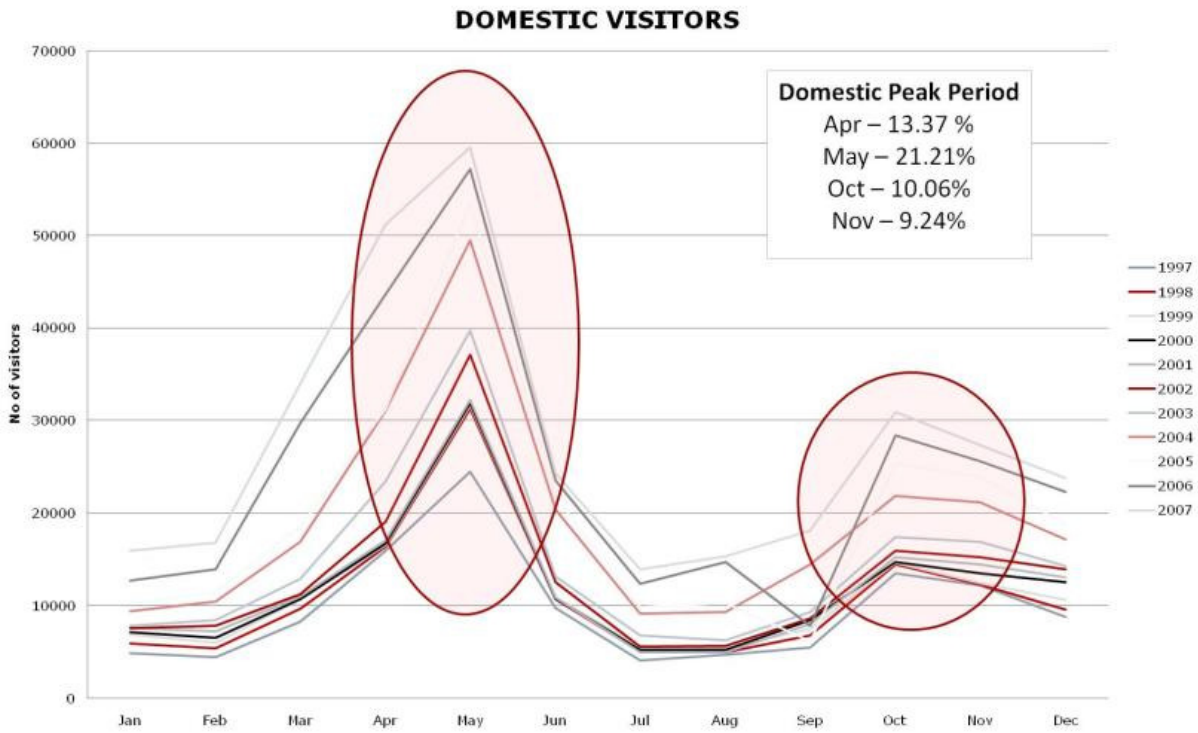


Figure 2.2.2. Graphical Representation of Domestic Visitors Arrival into Sikkim by Month

This uneven spread of demand during the year causes stress on the tourism infrastructure and public amenities and also creates a supply overhang during the months of fewer visitors.

Meteorological records indicate that the months from late May till September are generally wetter than other months, thus possibly contributing to these months having less visitors.

Nonetheless, current data available is unable to shed additional insight on the proportions of the domestic visitors as day-trippers, summer holiday makers, religious travelers or VFRs.

Each category of visitors has different needs and makes different demands on the tourism infrastructure and public amenities. More data need to be gathered to assess in detail their tourism requirements.

2.2 Tourism Prospects

International Visitors

Table 2.2.2 Number of International Visitors to Sikkim per Year

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Int'l	8,068	6,111	8,563	8,794	7,757	8,539	10,954	14,646	16,827	18,026	17,837

Despite the tremendous growth in global tourism, Sikkim has been relatively under-performing in attracting international visitors to Sikkim. From about 8,000 visitors in 1997, Sikkim welcomed 17,837 visitors in 2007, representing a growth rate of 12.1% that masked the low number of visitors. The proportion of international visitors as part of the overall visitors has consistently been between 4-6% (average 5.6%).

Table 2.2.3 Percentage of Domestic and International Visitors to Sikkim per Year

Year	Domestic	%	International	%	Total
1997	8,068	6.48%	116,500	93.52%	124,568
1998	6,111	4.39%	133,158	95.61%	139,269
1999	8,563	5.80%	139,085	94.20%	147,648
2000	8,794	5.75%	144,203	94.25%	152,997
2001	7,757	5.01%	146,923	94.99%	154,680
2002	8,539	5.04%	160,789	94.96%	169,328
2003	10,954	5.84%	176,659	94.16%	187,613
2004	14,646	5.97%	230,719	94.03%	245,365
2005	16,827	6.51%	241,697	93.49%	258,524
2006	18,026	5.81%	292,486	94.19%	310,512
2007	17,837	5.11%	331,263	94.89%	349,100

Average : 5.6%

Average : 94.4%

Data provided for 2002 indicated that the top overseas generating markets were the United States (860), Australia (491), Britain (1,127), France (1,041), Germany (770), Japan (391), Italy (273), Switzerland (263) and The Netherlands (365).

One important feature to note is the absence of Asian markets with only Japan the only Asian country in the list.

2.2 Tourism Prospects

International Visitors

Due to the unavailability of more detailed data on the purpose of visit of international visitors visiting Sikkim, the following deductions were made arising from discussions with the local travel trade.

The twin primary motivators that draw international visitors to Sikkim are nature and religion.

Eco Tourism: Sikkim's good climate and relatively pristine natural resources attract foreign visitors to the state. With a wide array of nature tracks, lakes, mountains and rare flora and fauna, Sikkim is a wonderful eco tourism destination. Pelling, a well-known starting point for trekkers, has a high concentration of hotels with many more being built.

Religious Tourism: According to official source in Sikkim: A Statistical Profile 2004-2005, Sikkim has 96 Monasteries, 179 Mani Lhakhangs, 35 Lakhangs & Tsamkhang, 6 Mosques, 2 Gurudwara, 1 Sai Baba Mandir 340 Mandirs and 74 Churches. Of the 39 important tourist spots cited, a large percentage are religious in nature.

Business Travelers: It is currently unclear how many visitors to Sikkim are in the state for the purpose of work and business. With the construction of the hydropower dams and frequent visits by developmental consultants, a significant proportion of the international visitor arrivals could be business travelers.

2.2 Tourism Prospects

International Visitors

From Figure 2.2.3 on the right, it can be seen that growth in international visitor arrivals is uneven, albeit on an upward trend.

It may be surmised from the drop in international arrivals in 1998 and 2001 that the Asian economic crisis in 1997 and the aftermath of the September 11 attack had significantly impacted travel of international visitors into Sikkim.

Sikkim's international markets continue to grow at a high rates since 2003.

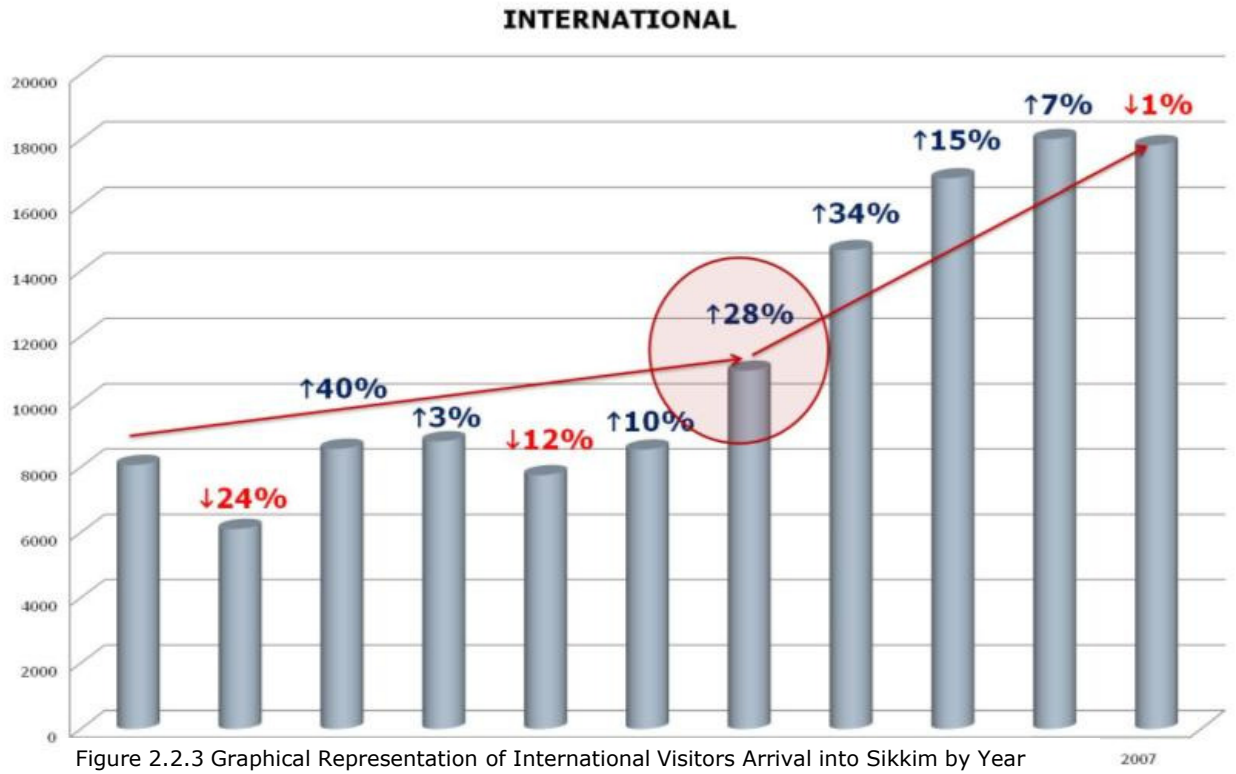


Figure 2.2.3 Graphical Representation of International Visitors Arrival into Sikkim by Year

Given that most visitors would have to travel a long distance before arriving at Sikkim, it could be reasonably assumed that they tend to stay longer in Sikkim and required hotel accommodation.

2.2 Tourism Prospects

International Visitors

Further analysis of the data also indicated that peak months for international visitors are March, April, October and November.

Unlike domestic visitors with high peaks, international visitor arrivals tend to be smoother in turns of numbers from month to month. The month of peak demand would be October with about 16.99% of the annual visitor arrivals.

Again, as in the domestic visitor arrivals, weather played an important role where the months from May till September generally had the least visitors.

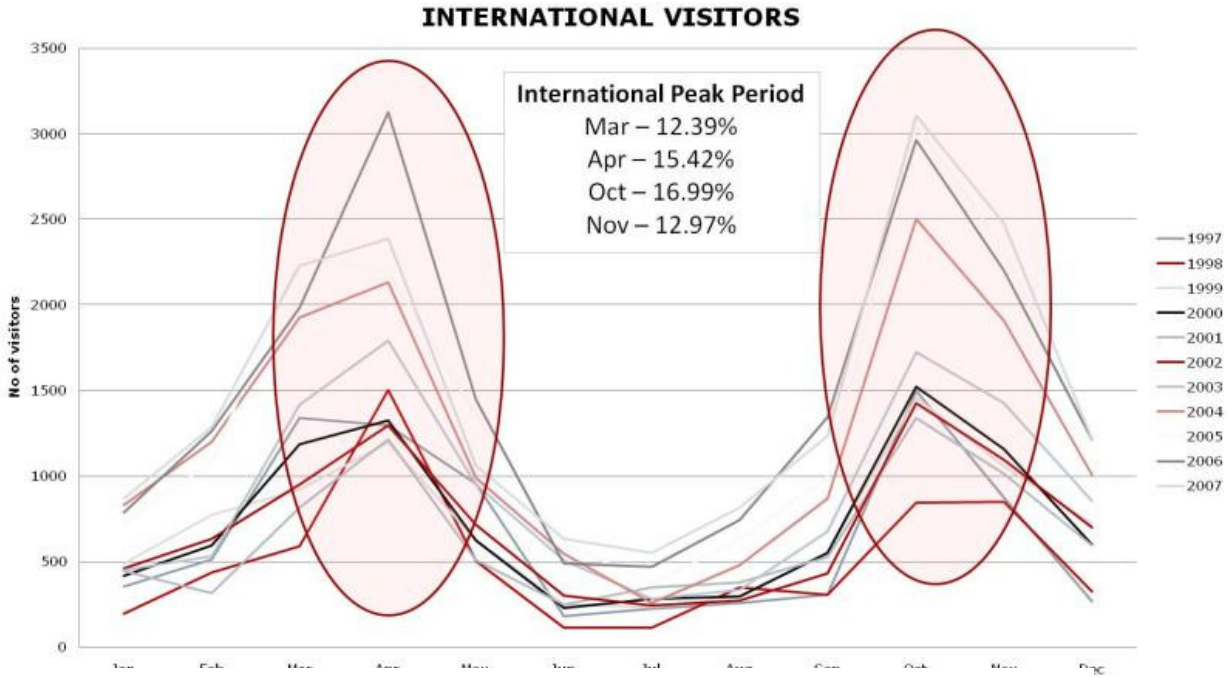


Figure 2.2.4. Graphical Representation of International Visitors Arrival into Sikkim by Month

2.2 Tourism Prospects

Domestic Visitors Projections

Table 2.2.4 Computation of the Compound Annual Growth Rate (CAGR) for Domestic Visitor Arrivals

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Domestic	116,500	133,158	139,085	144,203	146,923	160,789	176,659	230,719	241,697	292,486	331,263
4%	116,500	121,160	126,006	131,047	136,289	141,740	147,410	153,306	159,438	165,816	172,448
5%	116,500	122,325	128,441	134,863	141,606	148,687	156,121	163,927	172,124	180,730	189,766
6%	116,500	123,490	130,899	138,753	147,079	155,903	165,257	175,173	185,683	196,824	208,634
7%	116,500	124,655	133,381	142,718	152,708	163,397	174,835	187,074	200,169	214,180	229,173
8%	116,500	125,820	135,886	146,756	158,497	171,177	184,871	199,661	215,633	232,884	251,515
9%	116,500	126,985	138,414	150,871	164,449	179,250	195,382	212,967	232,134	253,026	275,798
10%	116,500	128,150	140,965	155,062	170,568	187,624	206,387	227,026	249,728	274,701	302,171
11.00%	116,500	129,315	143,540	159,329	176,855	196,309	217,903	241,873	268,479	298,011	330,793
11.01%	**116,500**	**129,328**	**143,567**	**159,373**	**176,920**	**196,399**	**218,023**	**242,027**	**268,675**	**298,256**	**331,094**
11.02%	116,500	129,341	143,594	159,418	176,986	196,490	218,143	242,182	268,871	298,500	331,395
11.03%	116,500	129,350	143,617	159,458	177,046	196,575	218,257	242,331	269,060	298,737	331,688
11.04%	116,500	129,363	143,644	159,503	177,112	196,665	218,377	242,486	269,256	298,982	331,989
12%	116,500	130,480	146,138	163,674	183,315	205,313	229,950	257,544	288,450	323,064	361,831
13%	116,500	131,645	148,759	168,098	189,950	214,644	242,547	274,079	309,709	349,971	395,467
14%	116,500	132,810	151,403	172,600	196,764	224,311	255,714	291,514	332,326	378,852	431,891
15%	116,500	133,975	154,071	177,182	203,759	234,323	269,472	309,892	356,376	409,833	471,307
16%	116,500	135,140	156,762	181,844	210,939	244,690	283,840	329,255	381,935	443,045	513,932

Calculating the compound annual growth rate (CAGR) for domestic visitor arrivals.

2.2 Tourism Prospects

Domestic Visitors Projections

Using the historical records, the growth rates of the visitors in the past decade were calculated and extrapolated to projections for 2015, 2025 and 2040.

Due to the peculiarities and differences between both the domestic and international visitor markets, the compound annual growth rate (CAGR) is calculated separately for each market.

For the domestic market, we are assuming a CAGR or 11.01% till 2015. 11.01% was obtained by calculating the growth rate over the past decade (see previous page).

The CAGR is then adjusted to 7.5% till 2015 and further adjusted downwards to 4% till 2040. This assumption is based on the continued growth in domestic visitor arrivals without any interference from the Sikkim authorities.

To adjust for the big increase in the base numbers over the years, the CAGR is adjusted downwards to 4% to reflect the median growth rate before 2002.

The resulting projection in domestic visitor arrivals can be seen in the table below.

Table 2.2.5 Computation of the Compound Annual Growth Rate (CAGR) for Domestic Visitor Arrivals at Year 2015, 2025 and 2040

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	116,500	133,158	139,085	144,203	146,923	160,789	176,659	230,719	241,697	292,486	331,263
CAGR	2008	2009	2010	2011	2012	2013	2014	2015			
11.01%	367,735	408,223	453,168	503,062	558,449	619,934	688,189	763,958			
CAGR	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
7.50%	821,255	882,850	980,051	1,087,955	1,207,739	1,340,711	1,488,323	1,652,187	1,834,093	2,036,027	
CAGR	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	
4.00%	2,117,468	2,202,167	2,444,625	2,713,778	3,012,565	3,344,249	3,712,451	4,121,192	4,574,935	5,078,635	
CAGR	2036	2037	2038	2039	2040						
4.00%	5,281,780	5,493,052	5,712,774	5,941,285	6,178,936						

2.2 Tourism Prospects

International Visitors Projections

Table 2.2.6 Computation of the Compound Annual Growth Rate (CAGR) for International Visitor Arrivals

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
International	8,068	6,111	8,563	8,794	7,757	8,539	10,954	14,646	16,827	18,026	17,837
4%	8,068	8,391	8,726	9,075	9,438	9,816	10,209	10,617	11,042	11,483	11,943
5%	8,068	8,471	8,895	9,340	9,807	10,297	10,812	11,352	11,920	12,516	13,142
6%	8,068	8,552	9,065	9,609	10,186	10,797	11,445	12,131	12,859	13,631	14,449
7%	8,068	8,633	9,237	9,884	10,576	11,316	12,108	12,955	13,862	14,833	15,871
8.00%	8,068	8,713	9,411	10,163	10,976	11,855	12,803	13,827	14,933	16,128	17,418
8.10%	8,068	8,722	9,428	10,192	11,017	11,910	12,874	13,917	15,044	16,263	17,580
8.20%	8,068	8,730	9,445	10,220	11,058	11,965	12,946	14,007	15,156	16,399	17,743
8.25%	**8,068**	**8,734**	**9,454**	**10,234**	**11,078**	**11,992**	**12,982**	**14,053**	**15,212**	**16,467**	**17,826**
8.30%	8,068	8,738	9,463	10,248	11,099	12,020	13,018	14,098	15,268	16,536	17,908
8.40%	8,068	8,746	9,480	10,277	11,140	12,076	13,090	14,190	15,382	16,674	18,074
9%	8,068	8,794	9,586	10,448	11,389	12,414	13,531	14,749	16,076	17,523	19,100
10%	8,068	8,875	9,762	10,739	11,812	12,994	14,293	15,722	17,294	19,024	20,926
11%	8,068	8,955	9,941	11,034	12,248	13,595	15,091	16,750	18,593	20,638	22,908
12%	8,068	9,036	10,120	11,335	12,695	14,219	15,925	17,836	19,976	22,373	25,058
13%	8,068	9,117	10,302	11,641	13,155	14,865	16,797	18,981	21,448	24,237	27,387
14%	8,068	9,198	10,485	11,953	13,627	15,534	17,709	20,188	23,015	26,237	29,910
15%	8,068	9,278	10,670	12,270	14,111	16,228	18,662	21,461	24,680	28,382	32,640
16%	8,068	9,359	10,856	12,593	14,608	16,946	19,657	22,802	26,450	30,682	35,591

Calculating the compound annual growth rate for international visitor arrivals.

2.2 Tourism Prospects

International Visitors Projections

Using the historical records, the growth rates of the visitors in the past decade were calculated and extrapolated to projections for 2015, 2025 and 2040.

For the international market, we are assuming a CAGR of 8.25% till 2040. 8.25% was obtained by calculating the growth rate over the past decade (see previous page).

Due to the small base in international visitors and impending opening of Natula Pass and the airport at Pakyong, it was decided that the CAGR will not be adjusted.

The resulting projection in international visitor arrivals can be seen in the table below.

Table 2.2.7 Computation of the Compound Annual Growth Rate (CAGR) for International Visitor Arrivals at Year 2015, 2025 and 2040

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	8,068	6,111	8,563	8,794	7,757	8,539	10,954	14,646	16,827	18,026	17,837
CAGR	2008	2009	2010	2011	2012	2013	2014	2015			
8.25%	19,309	20,902	22,626	24,493	26,513	28,700	31,068	33,631			
CAGR	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
8.25%	36,406	39,409	42,661	46,180	49,990	54,114	58,579	63,412	68,643	74,306	
CAGR	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	
8.25%	80,436	87,072	94,256	102,032	110,449	119,562	129,425	140,103	151,661	164,174	
CAGR	2036	2037	2038	2039	2040						
8.25%	177,718	192,380	208,251	225,432	244,030						

2.2 Tourism Prospects

Total Visitors Projections

Table 2.2.8 Projected Number of Visitors at Year 2015, 2025 and 2040

Visitor Projections			
	2015	**2025**	**2040**
Domestic	763,958	2,036,027	6,178,936
International	33,631	74,306	244,030
Total	797,590	2,110,333	6,422,966

Table 2.2.9 Projected Monthly Number of Visitors at Year 2015, 2025 and 2040

Peak Period Projections - Domestic					
		2008	2015	**2025**	2040
Apr	13.37%	55,424	102,141	272,217	826,124
May	reduced to 19%	71,252	145,152	386,845	1,173,998
Oct	10.06%	-NA-	76,854	204,824	621,601
Nov	9.24%	-NA-	70,590	188,129	570,934

Peak Period Projections - International					
		2008	2015	**2025**	2040
Apr	15.42%	2,411	5,186	11,458	37,629
May	7.70%	1,857	2,590	5,722	18,790
Oct	16.99%		5,714	12,625	41,461
Nov	12.97%		4,362	9,637	31,651

The tourism component of this study will also use the stages used by the urban planning document for its planning purposes: Short Term by Year 2015, Medium Term by Year 2025 and Long Term by Year 2040.

Collating the numbers from the two markets, the visitor projections for 2015, 2025 and 2040 are reflected in the table above. To assist in calculating the demand for rooms by these visitors, we chose the most busy month to calculate the maximum stress that the visitors will impose on the facilities. May is used as the reference month for calculation.

The following assumptions were made.

Domestic visitors

- assuming 20% as day-trippers, visitors visiting friends and relatives and religious travelers staying with monasteries who do not require accommodation;
- the month of May to remain as peak month for visitors but its percentage share as a proportion of annual visitor arrivals is reduced to 19% to reflect current and future efforts to diversify Sikkim's attractions and encourage visitors to visit Sikkim in non-peak months;
- average stay of about 7 nights.

International visitors

- average stay of about 7 nights.

2.2 Tourism Prospects

Hotel Statistics

According to a detailed census survey conducted by the Department of Economics, Statistics, Monitoring and Evaluation (DESME) in early 2008, there are currently 543 hotels located in Sikkim. The majority of the hotels are located within the East District. Table 2.2.10 below shows the current distribution of hotels in Sikkim.

Table 2.2.10 Current Distribution of Hotels in Sikkim

Number of Hotels by District		
District	**Total**	**%**
East	322	59.3%
North	69	12.7%
South	34	6.3%
West	118	21.7%
State	**543**	**100%**

From the data provided, it can be observed that the East district has 59.3% of the hotels in Sikkim while the South district has only 6.3% (which is less than half of the north district with 12.7%).

This is the result of Gangtok being the administrative and commercial centre of Sikkim, where most visitors have to come to Gangtok, in turn creating much higher demand for hotels as compared to other districts.

When viewed using the statistics on beds available, the concentration of beds available becomes even more pronounced within the East district having 68.5% of the beds available in Sikkim and the South district's portion reduced to 4.8%.

Table 2.2.11 Current Distribution of Number of Beds in Sikkim

Number of Beds by District		
District	**Total**	**%**
East	8,954	68.5%
North	1,147	8.8%
South	624	4.8%
West	2,346	17.9%
State	**13,071**	**100%**

It can be deduced that larger hotels are prevalent in Gangtok given that the beds concentration is higher than the hotels concentration. Typically, a larger hotel with more beds will have more amenities (restaurants, business desk etc). This confirms the observation that hotel developments in Gangtok are more sophisticated with where visitors are demanding better services / amenities (which are more easily provided by larger hotels).

2.2 Tourism Prospects

Hotel Statistics

According to the DESME findings, a total of 2,501 staff worked in the hotel sector in Sikkim. 42% (1,051) are locals while 58% (1,450) are non-locals. 74.8% of these staff are employed in the East district, again demonstrating the economic dominance of the East District.

Table 2.2.12 Existing Number of Hotel Staff by District

Number of Staff Employed in Hotels by District		
District	**Total**	**%**
East	1,871	74.8%
North	180	7.2%
South	80	3.2%
West	370	14.8%
State	**2,501**	**100%**

We reviewed the staffing ratios (i.e. the number of staff available per bed/room/hotel) for each district and noted that again the East District has the highest staffing ratio.

Table 2.2.13 Existing Staffing Ratio by District

District	Staff/Bed	Staff/Room	Staff/Hotel
East	0.21	0.47	27.81
North	0.16	0.33	16.62
South	0.13	0.30	18.35
West	0.16	0.34	19.88

Noting the current standards of hotels in Sikkim, it is assumed that the East District offers the highest standards in hospitality services. To achieve a higher standard of hospitality services throughout Sikkim, it would be important for the other states to attain a staffing ratio closer to that of the East district.

2.2 Tourism Prospects

Hotels and Beds Projections

Table 2.2.14 Projected Number of Rooms Required During Tourism Peak Months

Peak Period Rooms Projection - Domestic					
Assumptions - Assume average length of stay = 7 nights; Using peak month (May) as reference point					
		Current 2008	**2015**	**2025**	**2040**
May	reduced to 19%	71,252	145,152	386,845	1,173,998
Deducting 20% non hotel users		57,002	116,122	309,476	939,198
Tourist stay	Nights	399,011	812,852	2,166,333	6,574,388
Beds required	Beds / Month	332,509	677,377	1,883,767	5,976,716
Beds required	Beds / Night	10,726	21,851	60,767	192,797

Peak Period Rooms Projection - International					
Assumptions - Assume average length of stay = 7 nights; Using domestic peak month (May) as reference point					
		Current 2008	**2015**	**2025**	**2040**
May	7.70%	1,857	2,590	5,722	18,790
Tourist stay	Nights	12,999	18,127	40,051	131,532
Beds required	Beds / Month	12,999	18,127	40,051	131,532
Beds required	Beds / Night	419	585	1,292	4,243

Total Beds Required	**11,145**	**22,436**	**62,059**	**197,040**

Based on the assumptions provided previously, the number of beds required per night during the peak period is calculated at 22,436 beds in 2015, 62,059 beds in 2025 and 197,040 beds in 2040.

In addition to deducting 20% for non-hotel users for domestic visitors, we also noted from discussions with travel agents and hoteliers that domestic travelers tend to have more persons staying in a room. Adjusting for this practice, we have further reduced the beds required by another 20%.

However, as the Indian economy grows and with increasing affluence of the Indian travelers in the future, we expect their demands on hotel services to increase as well. The adjustment on beds required is reduced to 15% in 2025 and 10% in 2040 to reflect future developments.

International visitors are assumed to require one bed per person.

2.2 Tourism Prospects

Hotels and Beds Projections

Table 2.2.15 Projected Percentage Distribution of Beds by District at Year 2015, 2025 and 2040

Projected % Distribution of Beds by District				
District	**Current 2008**	**2015**	**2025**	**2040**
East	68.5%	67.5%	64.5%	61.0%
North	8.8%	9.0%	10.0%	11.0%
South	4.8%	5.5%	7.0%	9.0%
West	17.9%	18.0%	18.5%	19.0%

Table 2.2.16 Projected Distribution of Beds by District at Year 2015, 2025 and 2040

Projected Distribution of Beds by District				
District	**Current 2008**	**2015**	**2025**	**2040**
East	8,954	17,699	45,074	129,367
North	1,147	2,360	6,988	23,328
South	624	1,442	4,892	19,087
West	2,346	4,720	12,928	40,295
State	**13,071**	**26,221**	**69,882**	**212,077**

Table 2.2.17 Projected Distribution of Hotels by District at Year 2015, 2025 and 2040

Projected Distribution of Hotels by District				
District	**Current 2008**	**2015**	**2025**	**2040**
East	322	735	1,873	5,375
North	69	98	290	969
South	34	60	203	793
West	118	196	537	1,674
State	**543**	**1,089**	**2,903**	**8,811**

While it is expected that the supply of accommodation available in all the districts will increase, the North, South and West districts should increase at a faster rate compared to the East district as the development strategy of decentralising tourism activities outside Gangtok takes effect and the tourism attractions in and around Namchi are completed and gain in awareness.

With the increasing importance of tourism attractions in Pelling, Namchi, Ravongla, Lachen, Lachung and Tsongo Lake, there will be more hotels being constructed within these areas to meet the needs of the visitors.

The projections of the number of hotels required is derived from the projected bed demand divided by 24, the current average number of beds per hotel.

2.3 Demographics

Past Population Growth Profile

As highlighted earlier, population is the key factor dictating urban development and hence future demography has to be examined first. The demographic analysis will discuss the long-term resident population size as well as floating population due to the highly important tourism industry for Sikkim

In last few decades, Sikkim's population grew by decennial rates consecutively with an average annual growth rate of 3%. Though the population increases in reducing rates, the absolute growth in terms of person is still positively expanding.

- 1961 - 137725
- 1971 – 209843
- 1981 – 316385
- 1991 – 406457
- 2001 – 540851
- 2006 – 581546

The State density per square km has increased from 57 to 76 persons over last decade.

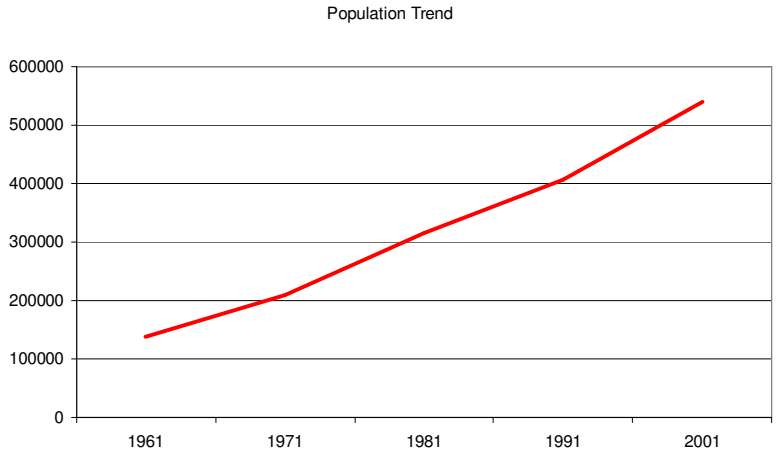


Figure 2.3.1 Graph Showing Population Growth in Sikkim from Year 1961 to 2001

Source : UDHD

Based on the population projection by Shristi Urban Infrastructure Development Ltd which was engaged by UDHD for the City Development Plan of Gangtok, the state population of Sikkim is estimated to reach 852,000 people by Year 2041. The substantial growth will push pressure on urban development when urban growth is increasingly enlarging over time.





2.3 Demographics

Current Population Distribution

The existing population distribution within the State points to an imbalance of spread. There is a high concentration of population (density of 257persons/sq km) in East District with lesser land area, while low population concentration (density of 10 persons/sq km) is recorded in North District which accounts for the largest share of the State land area (as in the diagram).

Past studies revealed that in 2001, more than 80% of the State population were rural dwellers and 11% of the State urban population inhabited in 8 urban centers. A huge disparity is observed in the urban population distribution between these 8 urban centers. While East District accounts for a majority 88% of urban dwellers, most are staying in the State Capital, Gangtok. This pattern reflects an imbalance of town hierarchy and needs to be addressed by revisiting the possibilities of decentralizing population from Gangtok and East District by accelerating growth of major towns in other Districts.

The discussion with the local officials has further revealed that the percentage share of urban population is much higher than 11% in reality as the urban figures published in the various reports only reflect the population within the notified town boundary which however has already been expanded to cover a larger population. Therefore, the current total urban population including undeclared urban areas is estimated to have reached between 25% and 30%.

With the rapid urbanization, the percentage share of urban population is expected to increase beyond 30%. Hence, it is essential to identify the urban population growth anticipated in future and put in place the growth management strategies in terms of urban land expansion and facilities that are required to support the inevitable growth.

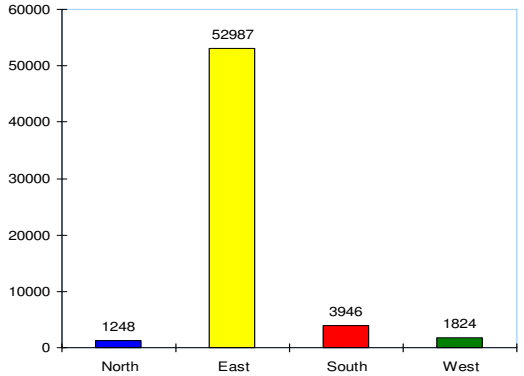


Figure 2.3.2 Graph Showing Urban Population Distribution among the 4 Districts in Sikkim

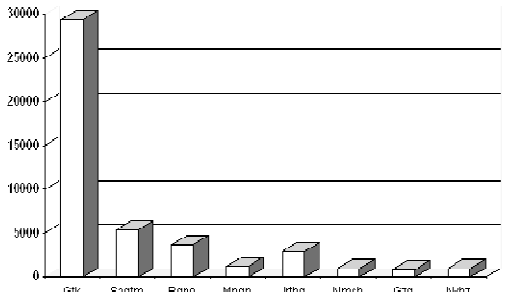


Figure 2.3.3 Graph Showing Urban Population Distribution in the 8 Established Towns

2.3 Demographics

Future Population Growth – Projection Analysis

Projected Resident Population In Sikkim

Table 2.3.1 Three Methods used for Projecting Resident Population Growth

Year	State Population	Arithmetic Progression Method	Incremental Increase Method	Geometrical Increase Method
2006	581546			
2015		682556 (18%)	**659331 (13%)**	969657 (67%)
2025		794789 (17%)	**787865 (20%)**	1711288 (77%)
2040		963138 (21%)	**1063769 (35%)**	4012177 (135%)

Based on the most recent population of 581546 in the year 2006 as base year, three projection methods are used to project the long-term population by Year 2040. The Arithmetic Progression Method gives a total population of over 960,000 by 2040, while the Geometrical Increase Method results in an extreme size of 4 million people. The Incremental Increase Method, which is commonly used by Ministry of Urban Development, Government of India, produces a moderate and realistic population size of over 1,060,000 by 2040.

After comparison of the 3 projection methods, it is generally agreed that **1.1 million** is considered logical and can be adopted for the long term strategic planning. Of this 1.1 million people within Sikkim, it is essential to further identify the scale of urban population anticipated in future and then to put in place growth management strategies in terms of urban land needs and facilities in order to support the gradual growth.

Projected Urban Population

Table 2.3.2 Existing and Projected Urban and Rural Population Distribution

Year	Urban Population (%)	Rural Population (%)
1991	9	91
2001	11	89
2005	25-30	70-75
2015	**40**	**60**
2025	**45**	**55**
2040	**50**	**50**

Given the fast pace of urbanization taking place in Sikkim, the urban population is expected to account for an increasing percentage share of the total State population beyond 30%. With reference to the UN Habitat Report, by the year 2050, some 6 billion people representing two-thirds of humanity will be living in towns and cities. 60% of the world's population will have been urbanized by 2030. In Asian context, urbanization is expected at a conservative rate of 55%. Since urban centers in Sikkim are not as mature as other world's cities, its pace of urbanization should be slower. Therefore, the urban population rate of **50% by Year 2040 (i.e. 550,000)** is considered more realistic with a gradual increment from 25-30% to 40% and 45% in 2015 and 2025 respectively. The assumption of 50:50 urban-rural population ratio is a balanced split and is desired in order to protect the rural natural environment of Sikkim.

2.3 Demographics

Floating Population

In addition to the resident population stated earlier, the overall planning will have to take into consideration the floating population arising especially from the flourishing tourism in Sikkim because this floating population would have to be catered for in terms of facilities and infrastructure provisions for the State.

The tourism analysis suggests that tourism in Sikkim will grow in coming years due to key factors such as global tourism trends, new tourism products, and improved accessibility to Sikkim. Based on the historical tourism peak period in May as the reference month, the maximum visitors per month is projected to hit as much as 1.3 million people, of which 98% is expected to be domestic tourists (see Table 2.3.3). More than 70,000 rooms will be required during the tourism peak.

This projected 1.3 mil people could represent a substantial share of the floating population in Sikkim by 2040, given the important tourism share of Sikkim's GDP. Such huge scale will add pressure on the provisions of hotel and commercial facilities as well as infrastructure services.

In addition to tourists as the main source of floating population, there may be foreign workers seeking employment from the growing manufacturing sector in Sikkim. However, the quantum is not expected high and significant enough to influence the key facilities' provisions, since Sikkim is not considered a manufacturing base as substantial in size as other major industrial bases in India.

Table 2.3.3 Projected Peak Number of Visitors at Year 2015, 2025, 2040

Visitors Projections (at Peak Period)			
	2015	**2025**	**2040**
Domestic - May - 19.00% of year total	145,152	386,845	1,173,998
International - May - 7.70% of year total	2,590	5,722	18,790
Total Rooms Required	22,436	62,059	197,040

2.4 Scenario Analysis

Key Assumptions

As mentioned in Section 2.3, the projected State population by Year 2040 adopted for this Strategic Urban Plan is about 1.1 million (rounded up for ease of planning – see Table 2.4.1).

Following the recommended ratio of urban to rural population, the preferred urbanization pattern of agglomeration and magnitude of urban density across different urban centers, 2 possible planning scenarios will be analyzed by outlining different permutations for desired urban population distribution among the 4 districts by Year 2040. A suitable scenario will be defined and recommended as the basis for further infrastructure planning.

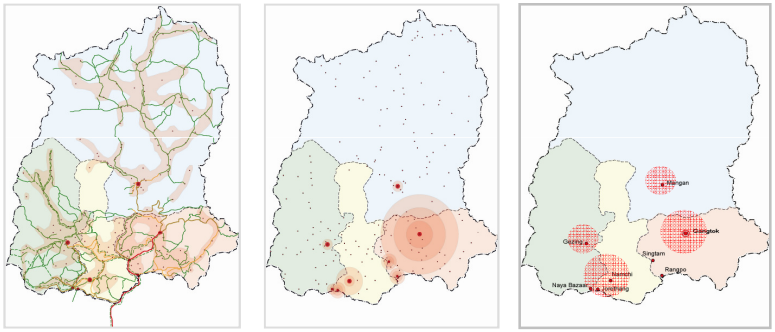
Table 2.4.1 Projected State, Urban and Rural Population for year 2015, 2025 and 2040

Year	State Population	Incremental Increase Method	Urban Population (%)	Rural Population (%)
2006	581, 546			
2015		659, 331	40	60
2025		787, 865	45	55
2040		1, 063, 769	50	50

2.4 Scenario Analysis

Planning Parameters

Urban Agglomeration



Existing Habitat Pattern | Existing Urban Focus | Desired Urban Mass

Figure 2.4.1 Current and Desired Urbanization Pattern in Sikkim

The existing habitat pattern indicates multiple linear developments of settlements along the rivers & roads, which is a natural and common phenomenon for hillside developments against steep slopes. However, such largely unregulated linear form of developments should be controlled and made to form a structured network of local connections such that those unsuitable accesses or abrupt dead-end roads within the settlements can be avoided.

Nevertheless, urbanization in the pattern of agglomeration has been seen in and around Gangtok. Such pattern is preferred as urban center model because of its key strength of efficient use of resources within a controlled physical space, especially in a highly space constraint area like Sikkim.

Urban Density

Urban density dictates land requirement for a given population. 3 population density models are identified and evaluated in order to determine the most appropriate scale of urban development for each major town in Sikkim.

2000 / sq km

Model One : This Rural Oriented Model is appropriate for lower level urban centers of rural character and atmosphere.

4000 / sq km

Model Two : The desired scale of density for Namchi is to match the city such as Zurich @ 4000 persons/sq km. It is appropriate for major urban centers of medium density.

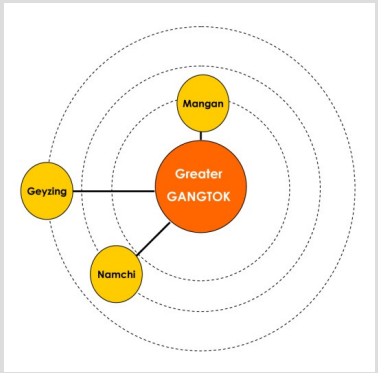
6000 / sq km

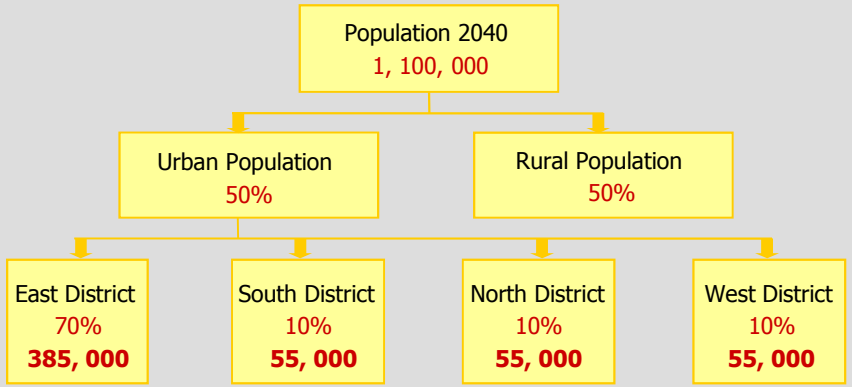
Model Three : The current density of Gangtok is around 6000 persons/sq km. Such density is generally found in High Density Urban Area (Current Darjeeling @ 8000 & Singapore @ 6600) and is appropriate for urban cores to enable optimal and efficient use of resources.

2.4 Scenario Analysis

SCENARIO ONE :

Mega Town Structure





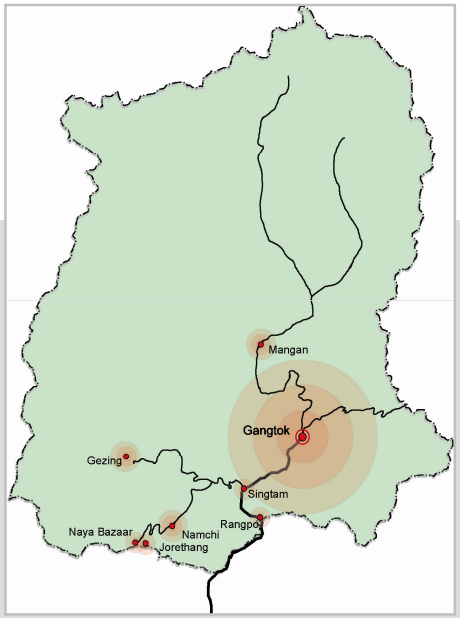


Figure 2.4.2 Mega Town Structure - Suggested Urban Population Distribution among the 4 Districts by 2040

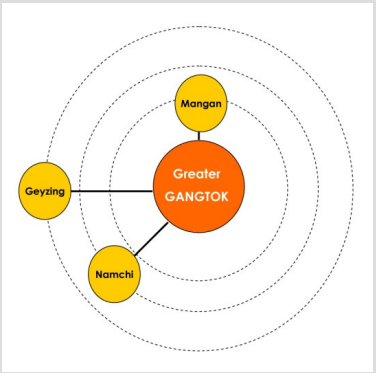
Concept

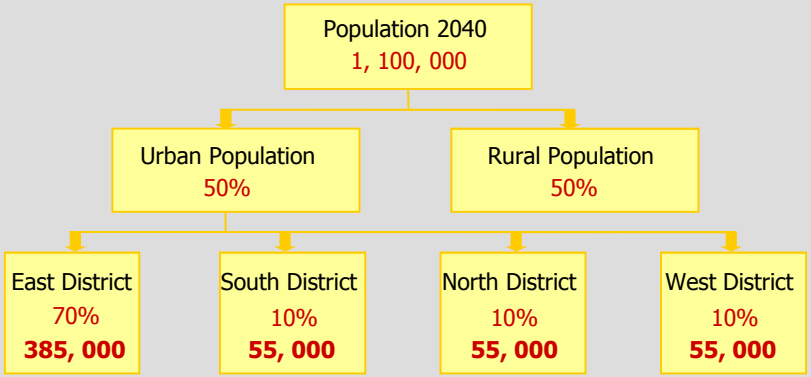
- In recognition of the established scale of development at Gangtok, the idea is to consolidate and enhance the status of Gangtok as the most important urban center in Sikkim by making it a dominant and mega town in the State with continuous expansion in the future.
- As the dominant urban center in the State, Gangtok will account for 70% of the urban population with the State.
- The other 3 key towns, namely, Namchi, Geyzing, and Mangan, will continue its role as district headquarters and will be categorized as the 2-tier urban center with 10% of urban population each. They will play a supporting role to the State capital of Gangtok.

2.4 Scenario Analysis

SCENARIO ONE :

Mega Town Structure





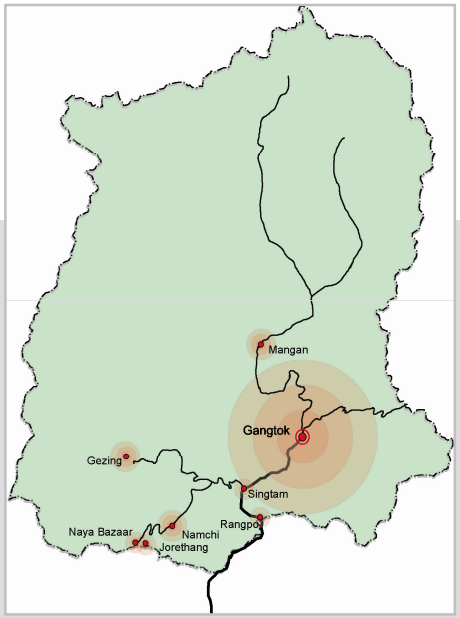


Figure 2.4.2 Mega Town Structure - Suggested Urban Population Distribution among the 4 Districts by 2040

Strengths

- Single focus on Gangtok by riding on the established structure and developments there.
- Consolidation of resources for quality infrastructure.
- External linkage boosted by new Airport at Pakyong.

Weaknesses

- Excessively urbanized at the expense of other township growth.
- Existing overcrowding problems to be aggravated

Opportunities

- Capitalize on Gangtok's existing infrastructure.
- Stretching the development limit of Gangtok and hence making it a well-known city representing Sikkim in the world map.

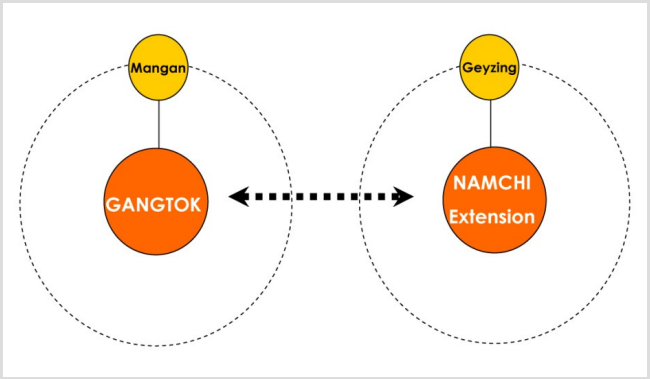
Threats

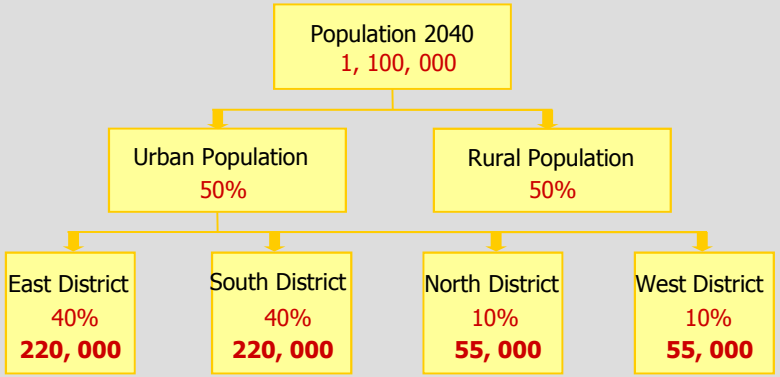
- Imbalance of development across the State to continue and hence to cause social and physical problems in Gangtok and other towns.
- Added stress on the already insufficient infrastructure in Gangtok.

2.4 Scenario Analysis

SCENARIO TWO :

Multiple Nuclei Structure





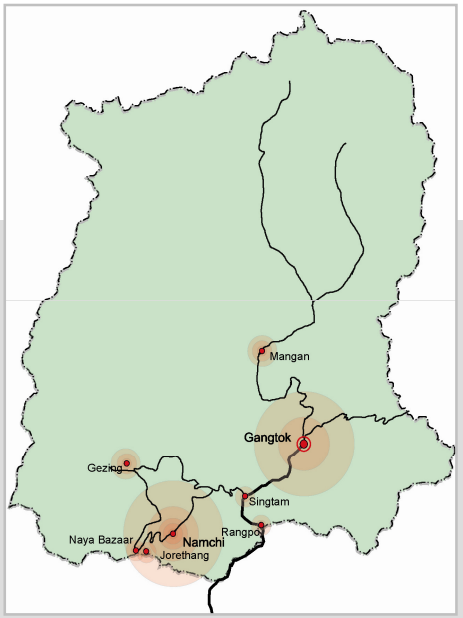


Figure 2.4.3 Multiple Nuclei Structure - Suggested Urban Population Distribution among the 4 Districts by 2040

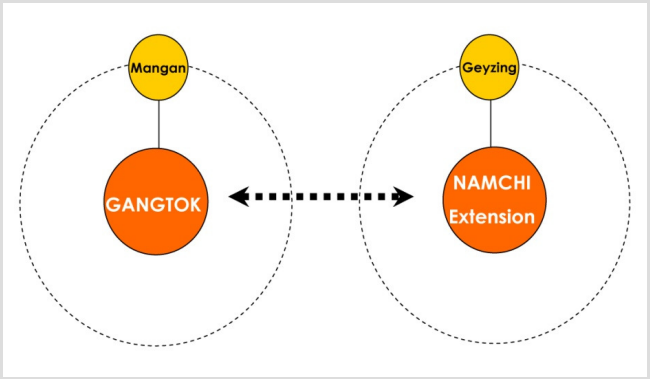
Concept

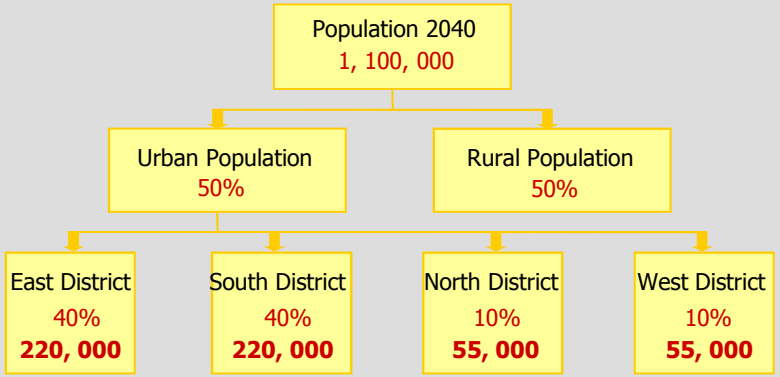
- The idea is to accelerate the growth of Namchi as a new satellite urban center to overcome the current lopsided growth of Gangtok.
- In terms of geographical distribution, the 2 multiple nuclei approach will result in a much balanced urban development across the State. Namchi may be seen as a core urban center serving the southern and western part of Sikkim, while Gangtok already being the State capital may serve the eastern and northern part of Sikkim.
- The township hierarchy will emerge such that Gangtok and Namchi are the 1st Tier urban center followed by Mangan and Geyzing as the 2nd Tier urban center. Mangan and Geyzing will play a supporting role to Gangtok and Namchi respectively.
- In terms of urban population distribution, Gangtok and Namchi will take the largest share of 40% each. Mangan and Geyzing will be given 10% each.

2.4 Scenario Analysis

SCENARIO TWO :

Multiple Nuclei Structure





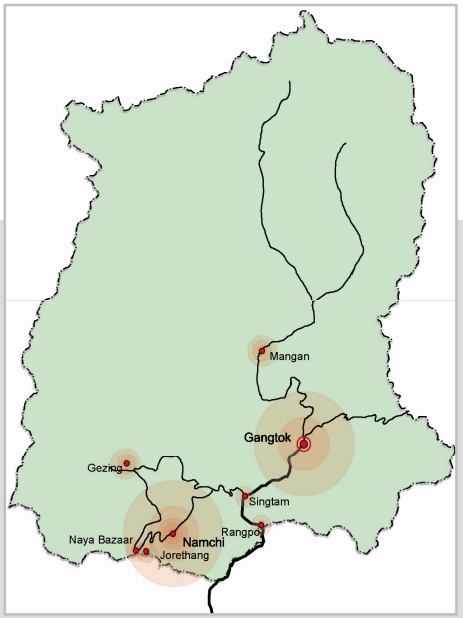


Figure 2.4.3 Multiple Nuclei Structure - Suggested Urban Population Distribution among the 4 Districts by 2040

Strengths

- Opening up new growth center to avoid over concentration of development in Gangtok.
- Resulting in a balance of urban development across the State with multiple high level urban centers catering to smaller towns.

Weaknesses

- Limiting growth in the established town of Gangtok by spreading and stretching the tight resources elsewhere.

Opportunities

- Forming multi focused urban developments allowing more choices of urban centers for people to settle in.
- Assigning special roles and functions for different towns, e.g. Gangtok as State Administrative Centre and tourist center; Namchi as Centre for Trade & Commerce.

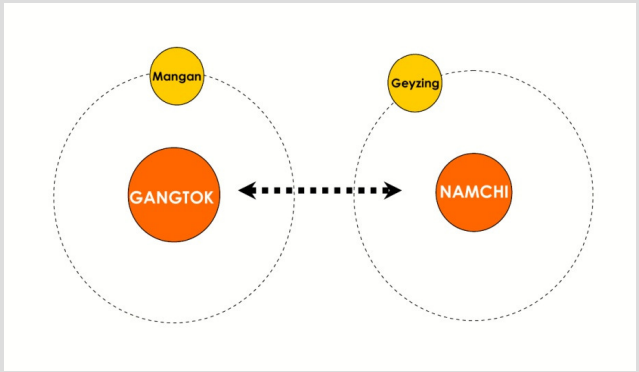
Threats

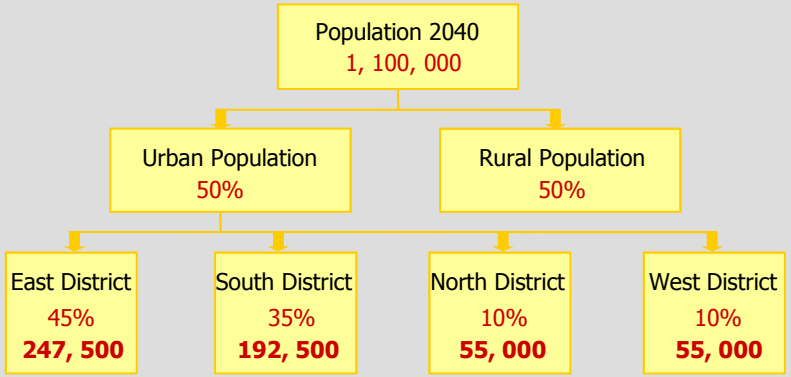
- Gangtok to be limited to rejuvenation more than expansion as focus shifts to Namchi.
- Requiring more urgent improvement to the existing inter-town road linkages in order not to result in 2 isolated urban centers.

2.4 Scenario Analysis

MODERATED SCENARIO:

Multiple Nuclei Structure





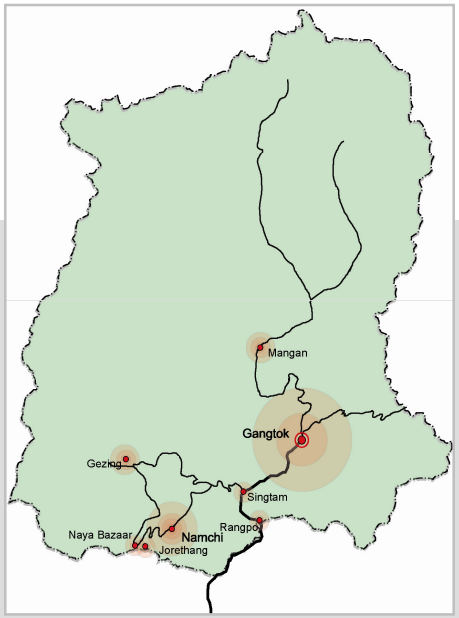


Figure 2.4.4 Moderated Multiple Nuclei Structure - Desired Urban Population Distribution among the 4 Districts by 2040

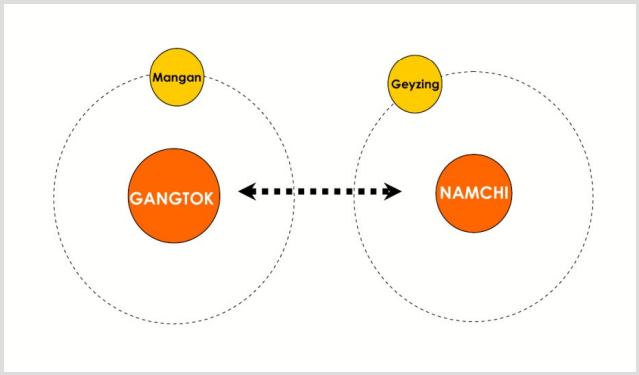
Concept

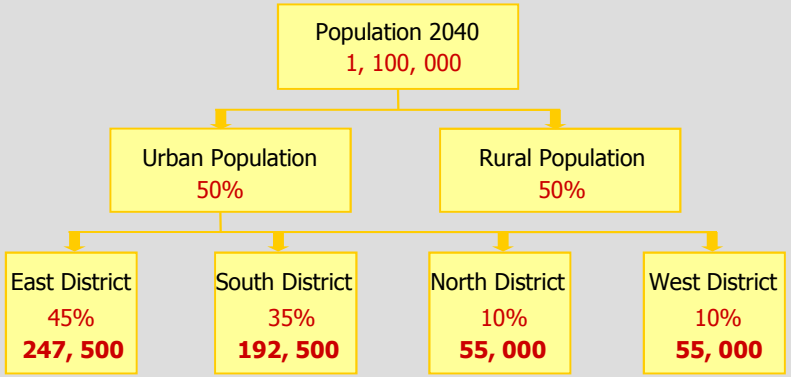
- After weighting the pros and cons of Scenarios One and Two, a recommended scenario should, on the one hand, allow rapid growth of another new urban center comparable to the scale of Gangtok in order to balance the overall urban development across the State, and on the other, give more rooms for Gangtok to expand in order to ride on the established physical infrastructure and urban development.
- The final recommendation is therefore to adopt and moderate the "multiple nuclei structure" for the State; i.e. to grow Namchi as a new center and also to give Gangtok a slightly larger share of urban population in recognition of its status as the State capital.
- The township hierarchy will emerge such that Gangtok and Namchi are the 1st Tier urban center followed by Mangan and Geyzing as the 2nd Tier urban center. Mangan and Geyzing will play a supporting role to Gangtok and Namchi.
- In terms of urban population distribution, Gangtok and Namchi will take the largest share of 45% and 35% respectively. Mangan and Geyzing will be given 10% each.

2.4 Scenario Analysis

MODERATED SCENARIO:

Multiple Nuclei Structure





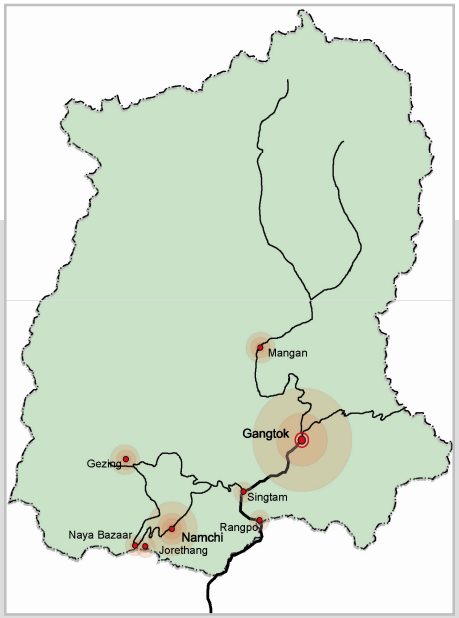


Figure 2.4.4 Moderated Multiple Nuclei Structure - Desired Urban Population Distribution among the 4 Districts by 2040

Strengths

- Spreading growth focus on both Gangtok & Namchi and hence enabling decentralization from the overcrowded Gangtok.
- Enabling greater infrastructure improvement in southern and western towns.
- Having multiple high level urban centers catering to smaller towns.
- Giving a more balanced and non-dominant township hierarchy.

Opportunities

- Forming multi focused urban developments allowing more choices of urban centers for people to settle in.
- Still allowing Gangtok to grow and capitalize on its existing infrastructure.
- Assigning special roles and functions for different towns, e.g. Gangtok as State Administrative Centre and tourist center; Namchi as Centre for Trade & Commerce.