CHAPTER – IV
Impact of Tourism on Physical and Human Environments

4.1 Impact of tourism on Economic Development

Tourism development invariably leads to economic growth of the given area, which is manifested in terms of increase in income and employment opportunities, infrastructural growth, improvement in the standard of living, etc. (Joshi and Dhyani, 2009). Its "multiplier effects" (when the tourists spend on goods and services) for the host communities are enormous and have a wider distribution. It influences the economy of the region in two forms directly and indirectly. One of the chief reasons for which governments support and promote tourism throughout the world is that it has positive impact upon economic growth and development (Ivanov, and Webster, 2006).

Tourism became the boon to the mountainous state like Sikkim with limited scope of industrial development due to topographical constraints. Its natural beauty and rich culture have been attracting large number of visitors to the state through decades. As it is the fastest growing industry, the government has identified it as one of the thrust areas. In response to the pattern of tourist flow and profile of the tourist visiting the state, various plan effort were made to promote and develop tourism in the state. The increase in the number of tourists visiting the state resulted into creating demands for goods and services leading to increase in employment opportunities and income generation along with the growth of infrastructure. However, the real effort of development of tourism consciousness, building, awareness, initiative of the government and community level started recently, in the 1990's. The economic growth rate of transport, communication, real estate, legal and business services slowed down considerably in the late 90s. As a matter of fact, since 1996-97 the growth rate of trade, hotels and restaurant started picking up and continued to grow consistently. In addition to this, trade and commerce, banking and insurance also grew very satisfactorily from that year. From 2000-01, transport and communication have also been growing consistently. Growth has been more pronounced in the sectors where government is playing a direct role. This may be portrayed as the beginning of the end of government sponsored growth story and rapid expansion of tourism activities may be viewed as one of the prime
contributors towards this positive turn around in sustaining overall growth of the economy (Chakrabarti, 2007).

4.1.1 Role of Tourism in generating income and employment

The growth of tourism industry with increased inflow of the tourists in Sikkim, has provided significant mark in the advantage of the regional economy. It is one of the important service-providing industries in the state, which is generating income and employment to the local community people of the state. It is estimated that presently the Sikkim tourism sector employs around 40,000 people directly and indirectly (Sikkim Development Report, 2001): Increasing inflow results in more expenditure by the tourists in the state. As a result of spending by tourists in Sikkim state, the hotel industry and other livelihoods of the people, like handicraft industry is prospering in the region (Rizal and Asokan, 2012).

The following Table shows the composition of Gross State Domestic Product (GSDP) by industries from 2004-05 to 2011-12.

Table 4.1: Composition of GSDP at Constant Prices (%)

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary, of which</td>
<td>18.71</td>
<td>17.74</td>
<td>16.76</td>
<td>16.18</td>
<td>14.56</td>
<td>8.74</td>
<td>8.32</td>
<td>8.04</td>
<td>10.09</td>
</tr>
<tr>
<td>Agriculture</td>
<td>18.59</td>
<td>17.63</td>
<td>16.65</td>
<td>16.07</td>
<td>14.40</td>
<td>8.65</td>
<td>8.22</td>
<td>7.94</td>
<td>9.89</td>
</tr>
<tr>
<td>Mining &amp; Quarrying</td>
<td>0.12</td>
<td>0.11</td>
<td>0.11</td>
<td>0.11</td>
<td>0.15</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.20</td>
</tr>
<tr>
<td>Secondary, of which</td>
<td>28.72</td>
<td>29.25</td>
<td>29.54</td>
<td>30.18</td>
<td>34.94</td>
<td>55.03</td>
<td>54.67</td>
<td>54.16</td>
<td>59.57</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>3.86</td>
<td>3.60</td>
<td>3.66</td>
<td>3.90</td>
<td>3.65</td>
<td>28.44</td>
<td>26.88</td>
<td>25.84</td>
<td>35.37</td>
</tr>
<tr>
<td>Electricity &amp; Water supply</td>
<td>5.62</td>
<td>5.78</td>
<td>6.44</td>
<td>7.59</td>
<td>15.76</td>
<td>16.69</td>
<td>17.54</td>
<td>17.64</td>
<td>10.35</td>
</tr>
<tr>
<td>Tertiary, of which</td>
<td>52.58</td>
<td>53.01</td>
<td>53.70</td>
<td>53.64</td>
<td>50.51</td>
<td>36.22</td>
<td>37.01</td>
<td>37.80</td>
<td>30.34</td>
</tr>
<tr>
<td>Transport</td>
<td>2.69</td>
<td>2.63</td>
<td>2.59</td>
<td>2.48</td>
<td>2.26</td>
<td>1.61</td>
<td>1.60</td>
<td>1.59</td>
<td>1.66</td>
</tr>
<tr>
<td>Trade, Hotel and Restaurant</td>
<td>5.19</td>
<td>4.84</td>
<td>4.62</td>
<td>4.51</td>
<td>4.07</td>
<td>2.43</td>
<td>2.30</td>
<td>2.22</td>
<td>2.64</td>
</tr>
<tr>
<td>Banking &amp; Insurance</td>
<td>2.58</td>
<td>2.95</td>
<td>3.59</td>
<td>4.04</td>
<td>3.64</td>
<td>2.60</td>
<td>3.12</td>
<td>3.74</td>
<td>3.00</td>
</tr>
<tr>
<td>Other Services</td>
<td>16.09</td>
<td>16.52</td>
<td>16.41</td>
<td>15.81</td>
<td>14.70</td>
<td>10.93</td>
<td>11.45</td>
<td>11.57</td>
<td>7.49</td>
</tr>
<tr>
<td>GSDP Growth Rate</td>
<td>8.45</td>
<td>4.53</td>
<td>6.53</td>
<td>14.81</td>
<td>71.59</td>
<td>6.90</td>
<td>6.93</td>
<td>7.62</td>
<td></td>
</tr>
</tbody>
</table>

Source: State Income Unit, DESM&E, Government of Sikkim
In the table above two major trends are visible in the growth pattern of the economy of Sikkim since 2004-05. The primary sector has been declining over the years and the share of mining and quarrying activities remained very small. However, the agriculture has shown improvement during 2011-13. From 2004-05 to 2008-09 the tertiary sector was the dominant contributor among the three sectors. It accounted for more than half of the GSDP till 2008-09 with 50.1% but declined to about 38% in 2011-12. At the same time the relative share of the secondary sector grew to about 54%, which increased mainly under manufacturing, construction and power sectors. Secondary sector contributed largely to the growth of economy from the year 2009 - 2013 due to the higher growth in the power sector with installation of hydro-power units. The power projects, small-scale industries and pharmaceutical industries also helped the growth process. Since the three sectors contributed in GSDP for the economic development the Tertiary sector (mostly trade, hotels and restaurants) contributed markedly and constantly to the economy with the growth of tourist arrival in the consecutive years. Now, if the variables like transport and communication, trade, hotels and restaurants, and banking and insurance are considered as proxy for the growth of tourism, then the contribution of these sectors to GSDP would partly explain the contribution of tourism towards revenue generation in the state.

The table below gives the account of the occupational structure of the people of Sikkim in the last three decades.

Table 4.2 Occupational structure of Population of Sikkim 1981-2011

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Population</td>
<td>3,16,385</td>
<td>4,06,457</td>
<td>5,40,493</td>
<td>6,10,577</td>
</tr>
<tr>
<td>2</td>
<td>Main Workers</td>
<td>1,47,436</td>
<td>1,64,392</td>
<td>2,12,478</td>
<td>2,30,397</td>
</tr>
<tr>
<td></td>
<td>(a) Cultivators</td>
<td>88,610</td>
<td>97,834</td>
<td>1,31,422</td>
<td>1,17,401</td>
</tr>
<tr>
<td></td>
<td>(b) Agricultural Labourers</td>
<td>4,887</td>
<td>13,793</td>
<td>16,939</td>
<td>25,986</td>
</tr>
<tr>
<td></td>
<td>(c) Worker in Household Industry</td>
<td>1,586</td>
<td>1,309</td>
<td>3,250</td>
<td>5,143</td>
</tr>
<tr>
<td></td>
<td>(d) Other Workers</td>
<td>52,353</td>
<td>55,785</td>
<td>1,11,709</td>
<td>1,59,608</td>
</tr>
<tr>
<td>3</td>
<td>Marginal Workers</td>
<td>5,378</td>
<td>4,329</td>
<td>50,842</td>
<td>77,741</td>
</tr>
<tr>
<td>4</td>
<td>Non Workers</td>
<td>1,63,571</td>
<td>2,37,736</td>
<td>2,77,173</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5</th>
<th>Increase in 2011 over 2001</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(i) Main Workers</td>
<td></td>
<td></td>
<td>17,919</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Cultivators</td>
<td></td>
<td></td>
<td>-14,021</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b) Agriculture Labourers</td>
<td></td>
<td></td>
<td>90,47</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(c) Household Industry</td>
<td></td>
<td></td>
<td>1,893</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(d) Other Workers</td>
<td></td>
<td></td>
<td>47,899</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(ii) Marginal Workers</td>
<td></td>
<td></td>
<td>26,899</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(iii) Non-Workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The account of the occupational structure of the people as presented in the Table 4.2 unveils that along with the growth of population there has been a steady growth in the occupational structure in the successive years. Also, observation on the three groups of workers it shows that the sector of main worker continued to increase but the sector of marginal worker has shown a leap in the growth from 50,842 in 2001 to 77,741 in 2011. Occupational structure through sectoral divisions shows that the working population has shifted their interest from primary to the tertiary and secondary sectors with significant growth. The sectoral shift of occupation to tertiary sector has grown much faster with the growth of tourism and the infrastructural development taking place around.

So it can be said that tourism has a wide economic impact on Sikkim. The increasing inflow of tourists in destinations has been providing employment opportunities to the local people and it results in the increasing income of the people and increasing sales of goods in the market. Livelihood strategies of the local community people in tourists’ destinations largely depend on the tourism related activities. Greater the number of tourists more will be the economic benefit of the local community. The tourism sector also encompasses all other related business and provides indirect employment in other sectors of the economy.

4.1.2 Infrastructural development
• For any economy proper infrastructure is the backbone of development, in which tourism also contributes. With the steady growth of tourist arrivals in Sikkim, growing pressure for provisions of more tourism infrastructure as the support facilities are needed. So a significant step was taken by the Government in 2001-02 with the mission to fill up the tourism infrastructure gap by creating Engineering Cell in the Tourism Department, which projected effective plan, conceptualized, implemented and commissioned the tourism related infrastructure to fulfill the demand and supply of tourism facilities.
• The tourism infrastructure planning processes are now being guided with the best practices to bring a distinct visibility of Sikkim in the national and International Tourism Map. The tourist circuits and destinations in the state are being strengthened with optimum environmental care and keeping in view the principles of conservation and sustainability. The forthcoming proposals for tourist infrastructure building are expected to be more innovative and futuristic to fetch the need of international visitors. The State is also harnessing the vast
untapped Rural Tourism potential by giving higher impetus on rural tourism so that its multiplier benefits are percolated directly to the rural masses.

• There has been constant need for addition of new tourism infrastructure and improve existing facilities at various tourist destinations and circuits. With the growth of global economy, there emerges growing demands for qualitative tourism products. Therefore, it has also become very pertinent to bring about more innovative tourism products to ensure higher marketing prospects. At the same time there has been constant challenge to propel Sikkim ahead of other major competing neighbours like Nepal and Bhutan. Therefore, it is essential to put in place some world-class and landmark tourism products that would be a unique brand of Sikkim. The strategy of tourism infrastructure planning is also to render multiple visitor experience for the tourists. While planning of tourism infrastructure, due care is taken to ensure that the tourism products are self-sustained and in harmony with the nature, culture and heritage of Sikkim. The tourist circuits and destinations are being strengthened with optimum environmental care based on the principles of conservation and sustainability. Wide spectrums of tourism infrastructure sanctioned during the 11th Plan period have been either completed or underway. With the addition of tourist amenities, the state has witnessed record increase in tourist arrivals over past few years and the inflow crossing 7 lakh in 2010 has outnumbered the total population of Sikkim, which by itself sets a new record. While, most of tourism infrastructure products are financially supported by the Ministry of Tourism, a few projects are also being assisted under BADP, NLCPR, TFC and ADB (under SASEC) and the State Plan Sector. The infrastructures are also being promoted on the concept of Green tourism, Wellness tourism, Spa tourism, Tea tourism and specific interest tourism under CFA of different sponsoring Ministries. (Tourism Annual Plan Report, 2012).

There are various areas where infrastructural development has taken place through tourism in the recent past years. They are as follows:

➢ Development of Hospitality Section: The hospitality section is entrusted with the responsibility of registration of hotel accommodation, restaurant, travel agency and other firms related to tourist trade and business. Regular inspection is conducted to ensure proper management, safety and providing quality services to tourist. The present scenario of hospitality section shows Sikkim with total 656 registered hotels, 103 home-stays and 260 travel agents. An account of this has been displayed in the table given below.
Table 4.3: Details of the registered hotels in Sikkim (district wise) in 2012

<table>
<thead>
<tr>
<th>Districts</th>
<th>Number of Hotels</th>
<th>Number of Rooms</th>
<th>Number of Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Sikkim</td>
<td>397</td>
<td>4,378</td>
<td>9,075</td>
</tr>
<tr>
<td>West Sikkim</td>
<td>132</td>
<td>1,113</td>
<td>2,227</td>
</tr>
<tr>
<td>North Sikkim</td>
<td>87</td>
<td>608</td>
<td>1,216</td>
</tr>
<tr>
<td>South Sikkim</td>
<td>40</td>
<td>324</td>
<td>609</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>656</strong></td>
<td><strong>6,424</strong></td>
<td><strong>13,127</strong></td>
</tr>
</tbody>
</table>

*Source: Tourism Annual plan - 2012-2013*

The above table gives the account of the registered hotels of the state till 2012. The number of hotels has increased with period of time and contributed to multiple construction of building resulting in urban development. It can be seen that the East Sikkim district has the highest number of hotel followed by the West, North and South Sikkim districts. The East Sikkim district is the administrative headquarter with Gangtok as the capital of the State and the entry point for most of the tourists coming to Sikkim this state is the cause of the concentration of largest number of hotels (397). The West district is famous for trekking and aesthetically attractive places that draws both domestic and foreign tourists and thus ranks the second in grade. The North district, being endowed with spectacular scenery and beautiful lakes, has now started to attract more tourists under some relaxation in the inner-line permit system which resulted into growth of hotels and development of the place. This district ranks third place in importance.

**Transport:** Located in the Eastern Himalaya in the north east of India, nestled between Nepal, Tibet (China) and Bhutan, the pattern convenience of access to Sikkim are a matter of a major consideration for the development of tourism in the state. The facilitation of better road, rail and air connectivity into and within the state is certainly the priority. Sikkim has developed more in tourism sector and attracting more tourists from various parts of the world, resulting in increasing inflow of tourist every year. Tourism in Sikkim entirely depends upon the road transport system which plays the dominant role as the other means of transportations are insignificant. Sikkim Taxi Services are the main form of transport for visitors to and within the state, playing a vital role in transportation. The National Highway (31A) connects Sikkim with the others neighboring states. The state has a considerable length of total road network of with State Highways (186kms), Major District Highways (442kms) and Other District Highways (1104kms).
The number of vehicles is increasing every year. Gangtok, being the capital of the state and a major tourist spot, has 30,000 vehicles entering and exiting its limits per day. The growth rate of vehicles between 2005 and 2010 averaged to 13% per annum with a total of 70% increase in the number of registered vehicles in 2010 as compared to 2005 (Sikkim Action Plan on Climate Change, 2011).

The following Table shows the growth rate in the number of tourists and the number of registered taxis in Sikkim from the year 2005 to 2010.

Table 4.4: Tourist inflow and total number of registered taxis in Sikkim from 2006 to 2007

<table>
<thead>
<tr>
<th>Sl no.</th>
<th>Year</th>
<th>Tourist inflow (in number)</th>
<th>Tourist inflow (%)</th>
<th>Total no. of registered taxi (in number)</th>
<th>Total no. of registered taxi (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2006</td>
<td>4,39,992*</td>
<td>15.65</td>
<td>60,52#</td>
<td>17.83</td>
</tr>
<tr>
<td>2</td>
<td>2007</td>
<td>4,83,041*</td>
<td>17.19</td>
<td>64,99#</td>
<td>19.15</td>
</tr>
<tr>
<td>3</td>
<td>2008</td>
<td>5,33,535*</td>
<td>18.98</td>
<td>67,45#</td>
<td>19.87</td>
</tr>
<tr>
<td>4</td>
<td>2009</td>
<td>6,33,358*</td>
<td>22.53</td>
<td>71,80#</td>
<td>21.15</td>
</tr>
<tr>
<td>5</td>
<td>2010</td>
<td>7,20,768*</td>
<td>25.65</td>
<td>74,67**</td>
<td>22</td>
</tr>
</tbody>
</table>

Source: Rizal and Asokan, IJIRD (2013)

**Road Transport Year Book (2007-09), Ministry of Road Transport and Highway, Government of India.

Motor Vehicle Division, Transport Department, Government of Sikkim, 2012

Table 4.4 as above clearly explains the growing pattern of inflow of tourists from 4,39,992 in 2006 to 7,20,768 in 2010. Similarly, the total numbers of taxis increased from 6,052 in 2006 to 7,467 in 2010.

In Figure 4.1 it can be observed that both tourist inflow and the total numbers of registered taxis in Sikkim are increasing every year. As is seen from the data available for the period from 2006 to 2008, the growth of registered taxis was higher than the number of tourists but after 2008 the number of tourists exceeded the number of taxis. It is observed that
an average annual growth percentage rate of tourist inflow in Sikkim state is 12.76% whereas, the numbers of registered taxis of only 4.67%. The percentage rate of increase in taxis should have been equal to the percentage increase in the rate of tourists to meet the requirement proportionally. The demand of tourism transport therefore is highly required to catch the optimum economic benefit of tourism. Although the larger number of transport vehicles on the roads would contribute some negative impacts on the environment it will open the avenue of income for the people helping them for economic prosperity.

Till now Sikkim is not connected by direct rail network. Recently in November 2009, the foundation stone for railway line up to Rangpo was laid down and target was to complete the work by 2015 and in the next phase, it may be up to Gangtok and thereafter to Nathula. However, airport catering to ATR aircrafts is in the offing, and the construction of civil air-base is in Pakyong. Construction of Sikkim (Pakyong) Airport is likely to be completed as per schedule and on completion the state will have further advantages of having easier and quicker route to connect the other parts of the country. With the increasing inflow of tourist and the expected growth in tourist inflow, the numbers of vehicles, especially public transport and other tourist vehicles, is expected to increase to meet the demand of increasing tourist in the future. On the other hand the demand of tourism has stimulated the rapid development of transportation.

- **Development and beautification of urban area:** Remodeling of Mahatma Gandhi Marg in Gangtok and Namchi Bazar township has already been done and it is being followed in other market places and towns of Sikkim. Mall roads, Branded shopping streets and malls in all the urban towns have been planned and are under implementation.

- **Shopper’s Paradise:** The shopping is recognized as an integral part of the tourism experience and a most valuable contributor to employment, income and revenue. The development of dedicated shopping centers for traditional crafts, costumes, jewelry etc. designed on the lines of ethnic village haat, Shilpa busty (Craft Village) will be developed and encouraged with incentives from the Government in the initial stage. The availability of information on where to procure is very important and it will be made available in the form of a Directory and “Made in Sikkim” shall be controlled through regulation and quality control.
4.1.3 Preservation of Heritage and Environment

Tourism helps preserve several places which are of historical importance by declaring them as heritage sites and also helps in conserving the natural habitats of many endangered species. Sikkim has unique cultural heritage, a land with variety of Monuments, Pilgrimage places, Historical sites and other cultural sites as well as vast expanse of natural places, some of which has developed as Tourist Interest places. Tourism department along with different departments mainly (i) Cultural Affairs and Heritage Department, Govt. of Sikkim (ii) Archaeological Survey of India, Govt. of India (iii) Forest, Environment and Wildlife Management Department, Govt. of Sikkim have been working jointly in this area preserving, maintaining and developing the sites.

- Sites which are National Heritage and famous tourist interest places under preservation and maintenance in technical collaboration with the Archeological Survey of India are as follows:
  - Dubdi Monastery at Yuksom, West Sikkim
  - Coronation Throne, Yuksom, West Sikkim
  - Rabdentse Ruins, the old capital of Sikkim, West Sikkim

- Some important tourist cultural and historical sites preserved and maintained under Government of Sikkim are as follows:
  - Nathula and Jelepla Passes, East Sikkim
  - Rumtek Monastery, East Sikkim
  - Namgyal Institute of Tibetology, East Sikkim
  - Drol Dru Chorten Monastery, East Sikkim
  - Kabi Lungtsok, North Sikkim
  - Pemayangtse Monastery, West Sikkim
  - Sri Sathya Sai Sarva Dharma Kendra (Ecumenical centre for all religions), Daramdin, West Sikkim.

- Some important natural sites preserve and maintained under Government of Sikkim are as follows:

  1) **Lakes:** There many beautiful lakes in Sikkim, out of which some of them Sikkim has taken care of for their religious acridity and environment conservation purpose.
     - Tsomgo Lake, East Sikkim
- Memencho Lake, East Sikkim
- Gurudongmar Lake, North Sikkim
- Kheolpelri Lake, West Sikkim

2) **Biosphere reserves**: Large percentage of the state’s land area is protected area. The government, in collaboration with GBPIHED (Sikkim unit), is currently in the process of getting this biosphere reserve listed among the “World Network of Biosphere Reserves” of UNESCO. The process is also underway for its inscription as a World Heritage Site. Sikkim has also many wetlands, which provide habitat for some endangered species of bird. Process of applying for Ramsar site status for three wetland complexes has been initiated. (Environment and Wildlife Management Report, Sikkim Biodiversity Action Plan, 2012)

- Kanchenjunga National Park, North and West Sikkim
- Shingba Rhododendron Sanctuary, North Sikkim
- Barsey Rhododendron Sanctuary, West Sikkim
- Kyongnosla Alpine Sanctuary, East Sikkim
- Fambong Lho Wildlife Sanctuary, East Sikkim
- Maenam Wildlife Sanctuary, South Sikkim
- Pangolakha Wildlife Sanctuary, East Sikkim
- Kitam Wildlife Sanctuary, South Sikkim

The Department of Tourism, along with government of Sikkim, has been working in many ways in preserving the sites in which tourists are attracted and has been contributing to the economy as well. The deep-rooted relationship of tourism and culture, traditions, monuments, heritage, natural resources, environment, forests, wildlife and ecology will be fully recognized and provided for improvement, enrichment and upgradation and it will be considered as a linchpin of the tourism industry (Dept. of Tourism and Civil Aviation Tourism Mission Report, 2015).

4.2 **Impact of Tourism on Physical environment**

Tourism and environment are intricately related and is also complex. Quality of the environment, both natural and man-made, is essential for development of tourism. It involves many activities that can have adverse environmental effects. Glasson et al. (1995) observed that tourism is, by its very nature, an agent of change. Some of the impacts of change may be
controlled, regulated or directed. If properly managed, tourism has the potential of being a renewable industry, where resource integrity is maintained or even enhanced. If mismanaged, or allowed to expand within short-term goals and objectives. It has the capability of destroying the very resources upon which it is built. According to (UNEP Report, 2001) many impacts are linked with the construction of general infrastructure such as roads and airports, and of tourism facilities including resorts, hotels, restaurants, shops, golf courses and marinas. The negative impact of tourism can gradually destroy the environmental resources on which it depends. On the other hand, tourism has the potential to create beneficial effects on the environment by contributing to environmental protection and conservation. It is a way to raise awareness of environmental values and it can serve as a tool to finance protection of natural areas and increase their economic importance. Carter (1991) notes that the concept of sustainable development is thus important to tourism development since the destruction of tourism resources for the short-term gain will deny the benefits to be gained from mobilization of those resources in the future.

Tourism depends ultimately upon the environment, as it is a major tourism attraction itself, or is the context in which tourism activity takes place. Likewise Sikkim being the biodiversity hotspot and its rich cultural diversity provide congenial conditions for the growth of tourism. The growth in the number tourists and the prevailing tourism opportunities in Sikkim, correspond to the ‘Development’ stage, which in turn suggests a hospitable and friendly atmosphere for tourist host interactions, ideal stage for the development of tourism-related infrastructure and increase in growth of annual tourist visits (Joshi and Dhyani, 2009). It has been realized that for Sikkim traditional mass market tourism which mainly aims for profit maximization was environmentally unsuitable creating undesirable impacts which destroyed the very resource base. The results of undesirable impact are as follow:

- **Carrying capacity**

Sikkim has emerged as a very popular tourist destination in recent years. Unplanned tourism largely depending in domestic and international tourism resulting into inappropriate planning and limited implementations have gone into regulating their movement. Tourism is largely blamed for degradation of environment with growing infrastructural facilities like construction of hotels and resorts for the accommodation, road development for mode of
transport, life style including generation of garbage, solid waste disposal etc. The population growth including the floating population in the form of tourist has resulted in over exploitation of natural resources with little consideration of maintaining the ecological balance resulting into drought accelerated soil erosion etc. Such processes reduce agricultural productivity (Sattar, 2010). As forest cover dominates with limited availability of non-forest land, the increasing demand of land by various sector and Tourism led to rising trend of share of land to put in development projects resulting affect in the physical environment. Even the agricultural fields have been encroached upon by construction of roads and buildings for hotels, lodges and resorts.

- **Air pollution and noise pollution**

  It is a certain fact that due to its entire location in the nature of the Himalaya very few polluting agencies prevail in Sikkim. Along with the demand of various commercial activities, defense, day to day activities and tourism have caused an exponential growth in vehicular traffic. Mainly due to rapid expansion of domestic tourism, a large number of vehicles ply every day consuming tons and tons of fossil fuel and causing air pollution as well as noise pollution, which in long term can affect fauna and their propagation, especially along the fringe areas of the protected areas and reserve forests. State Pollution Control Board has been working and monitoring the different selected urban zones but other places are still under negligence. As ecotourism is being seen as the alternate tourism through sustainable development the problem of this pollution is a great threat in future aspect.

- **Solid waste and Littering:**

  According to the survey conducted by Central Pollution Control Board with the assistance of NEERI for the year 2004-05, in Sikkim, the per capita generation of waste is approximately 0.44kg/day. The growth of population along with the increase flow of tourists lead to overcrowding with lack of appropriate and systematic approaches. The main contributors of solid wastes include hotels and restaurants along with both residential areas and development areas. With the tourists some amount of plastic, polythene bags and plastic bottles which are found as non-biodegradable wastes, are brought with into the state from outside. The resultant effect is dumping of plastics bottles and bags alongside the roads and *Jhoras* (small stream) and in turn contamination of water making the environment unsuitable.
Plate 4.1: Jhora contamination by solid waste disposal

According to report rain swollen drains, choked by plastic bags, contribute to the series of landslide in Gangtok. Since the late 1990s a ban has been imposed on use of plastic bags within the city and then the law has been extended to the other parts of the state declaring Sikkim a Plastic Free State (since 1997). As a result of these initiatives there has been minimization in landslide events. Gangtok city faced the problem of serious environmental degradation on several counts with top being the inefficient solid waste management and plastic hazard. According to the study carried out by the State Pollution Control Board, the major sources of solid wastes in Gangtok town has been domestic waste, followed by commercial and institutional wastes and a very small proportion of the waste is from agricultural and industrial sources (Pradhan, et al., 2004). The organic waste generated from households, in particular accounts bulk.

Table 4.5: Average composition of solid waste disposal of Gangtok Town

<table>
<thead>
<tr>
<th>Types of Waste</th>
<th>% By Weight(2001)</th>
<th>% By Weight(2004)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Waste</td>
<td>32.12</td>
<td>51.50</td>
</tr>
<tr>
<td>Paper</td>
<td>21.13</td>
<td>10.80</td>
</tr>
<tr>
<td>Plastics</td>
<td>17.18</td>
<td>0.50</td>
</tr>
<tr>
<td>Metal</td>
<td>4.50</td>
<td>0.60</td>
</tr>
<tr>
<td>Glass</td>
<td>2.32</td>
<td>0.40</td>
</tr>
<tr>
<td>Textile</td>
<td>1.80</td>
<td>_</td>
</tr>
<tr>
<td>Inorganic Substances</td>
<td>20.95</td>
<td>1.60</td>
</tr>
</tbody>
</table>

source: SPCB, Govt. of Sikkim(2007), Sikkim Study series.
Geography and Environment, Volume-1, Government of Sikkim.
With high concentration of tourist activities in Gangtok and in some other popular tourist destinations in Sikkim, waste disposal becomes a serious problem due to the increase in the amount of garbage deposited during peak tourist seasons. The Gangtok Municipal Corporation (GMC) has approached the problem with a combination of improved collection services and the threat of fines and penalties anyone seen dumping. The steps are also taken to double the area of what the UD & HD used to cover in the past.

Plate 4.2: Government initiative to approach the problems

Due to the lack of manpower the GMC have also started with ‘out-sourcing’ the collection and disposal through private parties. Trekking activities is the other area that generates a great deal of waste with Tourists leaving behind their garbage, oxygen cylinders and even camping equipment. Recently with ecotourism in remote areas that have few garbage collection or disposal facilities are also facing problem of solid waste with environmental and aesthetics degradation of the areas. However, the tourists are given code of conduct and also informed in advance about not disposing the plastic bags in the open. Awareness among peoples both locals and the tourists are created and there are spontaneous public response to the government initiatives.

- **Deforestation**

  Despite the high percentage of forest of the State, deforestation and loss of habitats emerge as constant threats, which are mainly due to need of forest resources by the urban and semi urban population, development projects and power projects, and tourism along. As trek tourism in Sikkim has increased the use of trees for fuel wood and leaving of charcoal, non
biodegradable waste and litter behind are the results. Infrastructure for tourism has also consumed Sikkim forests. According to S.C Rai of Sikkim unit of GB Pant institute of Himalayan Environment and Development (GBPIHED) a primary survey has shown that fuel wood consumed by hotels and lodges is about 40kg per day and when the Himalayan Mountaineering Institute runs its courses, average consumption of fuel wood grows as high as 240kg per day by each group. It was estimated that over 593.78 hectares of forest land was converted to Alpine meadow over the last few decades for development related activities. The largest share of forest area approved for diversion was for the purpose of construction of buildings, complex, and playgrounds, and their construction was partially meant for serving the demand from the tourism sector (Sikkim Development Report, 2001).

Presently all effort in Sikkim are made on development of environmental friendly segments with sustainable tourism along with eco-tourism and rural tourism. Tourism Department along with the state government has taken major steps in conservation and protection of the environment which are as follows:

- Solid waste management at all the tourist spots /destinations/centers has been given top priority.
- Systematic collection and disposal of solid waste through SWMP, “Spit & Litter Free Zone, Garbage bags in all the vehicles. A good example can be seen through " M.G Marg spit free and litter free zone", which is one of the main attractions of Tourist coming to Gangtok.
- Ban on the use of non-biodegradable products like plastic bags to protect the environment has increased but expected to receive threats from increased tourism related activities. Landscape beautification of numerous parks, gardens and other aspects of urban areas including those of tourist importance have been carried out throughout the State for the purpose of aesthetic and recreation as well as for education and awareness.
- The State has been organized a Tourism Orientation Program for transport operators and taxi drivers with a view to motivate them to enhance their professionalism and make them realize the importance of their relationship with the tourists.
- State’s forest cover has increased from 42.3 % in 1991 to 45.97 % in 2005-06 through afforestation planning. Adoption and enforcement of the Forest, Environment, and
Wildlife Policy in 1999 has been ensured. This has been a very significant step taken to protect its environment and conserve forests and wildlife. Sikkim is perhaps the first State in the country to adopt this all encompassing policy.

- Continued increase in forests cover: In 1987 it was 38.84% and in 2005 it rose to 46.28%, which appears as the best example of sustainable development in any part of the world.

- Organic State to promote the local organic products and cuisine: As Sikkim welcomes tourists from all over the world; the department is focusing in encouraging Sikkimese local cuisine at its best with local organic food product.

- “Smriti Van (SV)” or Memorial Forest concept by the Chief Minister, Pawan Chamling has been a grand success. “Smriti Vans” are located at various places of social, religious, and other important areas as a part of Green Sikkim effort by involving all segments of the society. People from all walks of life responded to his call with great enthusiasm. Under this program, social, religious, educational institutions, defense, police, tourism, NGOs and Government agencies have voluntarily come forward and undertook initiative for plantations in different parts of the State in memory (smriti) of their near and dear ones.

- Grazing for domestic and semi-domestic animals in reserve forest areas has been restricted in many places of the State, even at political risk.

- Promoting Ecotourism through Community-Based Ecotourism (CBET) particularly using latest approaches of Participatory Management for sustainable development of the resources and thereby generating employment, income and revenue for the State. ECOSS, JICA, STDC, CBO etc. are some of the Organisations that are working with Tourism Department for encouraging ecotourism development in Sikkim.

- Special thrust imparted to Village/Rural tourism, Home Stay and tourism in small settlements, where sizeable assets of our cultural and natural wealth exist.

- The tourist industry, Hotels and travel agents are given Code of Ethics (CEs) and their infringements are firmly dealt with suitable legislation, rules and guidelines. Recently ecotourism code of conduct was formulated in 2014.
Sikkim has taken up aggressive marketing strategy in India and abroad to promote Sikkim as a brand name and the ‘Ultimate Eco-Tourism Destination’.

**4.3 Impact of Tourism on Socio-cultural Environment**

Socio-cultural impacts of tourism are described as the effects on host communities of direct and indirect relations with tourists and of interaction with the tourism industry. Matheison and Wall (1982) states that social impacts can be thought of ‘as changes in the lives of people who live in destination communities, which are associated with tourist activity’ in regard to moral conduct, creative expressions. Cultural impacts can be thought of as the changes in the arts, traditional ceremonies, customs and rituals and architecture of people that result from tourism activity. Witt (1992) claims that the greater the difference between the host community and the tourists, the greater will be the effect of tourism on the society. The impacts arise when tourism brings about changes in value systems and behaviour and thereby threatens indigenous identity. Furthermore, changes often occur in community structure, family relationships, collective traditional life styles, ceremonies and morality. But tourism can also generate positive impacts as it can serve as a supportive force for peace, foster pride in cultural traditions and help avoid urban relocation by creating local jobs. As often happens when different cultures meet, socio-cultural impacts are ambiguous: the same objectively described impacts are seen as beneficial by some groups, and are perceived as negative, or as having negative aspects, by other stakeholders.

Tourism is an activity that converts the natural and cultural resources of Sikkim into dynamic economic activities and marketable assets by bringing tourist to Sikkim. It is estimated that 7,00,000 tourists, those who visit Sikkim annually in the present time contributes 6.5% of GSDP of the state only through trade, hotels and restaurants every year. This is a real money brought from outside by tourists and spent in Sikkim on accommodation, food, transport, entertainment, purchase of souvenirs and so on. The above expenditure of tourists has generated direct employment for about 40,000 persons in the hotels, transports and travel agency sector but the indirect economic benefits in the form of multiplier effects are much more. For example, the commercial activities among the suppliers of vegetables, eggs meat etc. to hotels, restaurants during the tourist sessions and film studios thrives on tourists. The impacts of tourism are as follows:
• **Increasing population**

As Sikkim is one of the least populated states in India. The growth rate in the period of 1991-2001 shows high rate with 32.98 % (decadal growth rate) due to the migration toward the state because of industrial as well as developmental work expansion. Possibly, it might have also greatly attracted due to liberalization, privatization and globalization. It is regarded mainly due to the in-migration to the state for employment influenced by the tourism sector.(Sikkim Express). During 2001-2011 the population growth slowed down to a considerable rate to 12.89 % per annum due to out-migration for higher education, jobs in cities, lower rate of infant mortality, etc. The growth rate was lower as compared to previous decade but the population was still increasing along with the increase in tourist arrival year after years boosting the economy.

A comparison between the decadal population and tourist influx pattern is given the table below:

<table>
<thead>
<tr>
<th>Sl no.</th>
<th>year</th>
<th>Population (in lakh)</th>
<th>Tourist arrival</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1991</td>
<td>4.64</td>
<td>61,425</td>
</tr>
<tr>
<td>2</td>
<td>2001</td>
<td>5.41</td>
<td>1,52,997</td>
</tr>
<tr>
<td>3</td>
<td>2011</td>
<td>6.11</td>
<td>5,52,453</td>
</tr>
</tbody>
</table>

*Source: census of India, Dept. of tourism and civil aviation*

The table as given above shows that how with increasing population the tourist arrival pattern increased through the decades. It can be stated that with the growth of tourism, more employment opportunities have been opened to the people of the state. With the development of tourism industry the people from the plains have opened various businesses in Sikkim and have been living as a permanent settlers as well as increasing their family business further contributing to population growth. For the sake of employment many people from the neighbouring states of West Bengal (particularly from Darjeeling, Kalimpong and the Dooars areas), Assam and Bihar are attracted for working in shops, hotels, restaurants and as taxi driver. This shows that tourism has been contributing directly to the growth of population in Sikkim through temporary migration from outside the state.
• **Change in occupational structure**

Tourism in Sikkim is one of important sectors which provides livelihood to the local people in and around various tourist destinations. It is a major mode of income and employment for the people. Tourism sector industries have been generating a large number of diversified jobs in different branches of activities such as hotels, restaurants, travel agencies, tour operators, leisure activities and transport (Basu, 2012). When the sectoral composition of occupation structure of Sikkim is analysed, it is revealed that there has been a certain shift of occupational structure to tertiary sector mainly to trade, transport, hotel and restaurant, which are the tourism sectors. Also the initiative of people to private entrepreneur in shops, travel agencies, home-stays and transport business has contributed to change in occupational shift. Tourism offers employment to all categories and people in all the sections of the society, i.e., skilled and unskilled, men and women. The women’s empowerment in the state is also contributes to tourism. As per the study conducted 34% of female population is directly linked with the tourism industry in this state. Out of the total direct employment through tourism, 34% of the employees are female against 66% of male employee, which is higher than the average percentage share of total (Rizal and Asokan, 2013).

• **Improved standard of living**

The growth of tourism sector has contributed largely to the standard of living to the locals giving opportunities of employment, enhancing their standard of living and thus improving the states’ economy. It is praiseworthy that the standard of living of the people has been improving rapidly with the adoption of modernity. However, in the initial phase despite the gradual growth of per capita income, the proportion of population living below income poverty went up from 36% in 1987-88 to 41% in 1993-94. In 1993-94 only 8 per cent of the urban population lived below the poverty line. The corresponding figure for rural areas was more than five times higher, at 45%.

Gangtok, the capital city, has benefited the most from the rapid expansion in economic and social opportunities. Equal gains are yet to reach in all other places with a decentralized and improved manner.

It is often apprehended that the unlimited influx of tourists may create an adverse impact on the local culture. The local people may be influenced by the food habits and imported cultural pattern from the visitors. However, in the case of Sikkim, the experience
has been quite positive till date. The interest of the tourists to experience and examine the
culture of the local inhabitants has, in fact, helped revival of indigenous culture. Sikkim
Tourism has been organizing Tourism Festival since last three years where local traditional
dance and music are displayed through the main thoroughfare of the Gangtok town. Various
ethnic groups of Sikkim participate in these cultural carnivals with great enthusiasm. Thus
tourism has created revival of interest and pride among local people on their culture. Sikkim
Tourism is perhaps one of the first states in India to prepare a Master Plan for Tourism. All
tourism development plans in Sikkim are being taken up as per recommendation in the
Master Plan where adequate measures about the protection of environment have been insisted
on. Hence, the strategy of the Government is to develop tourism in Sikkim in a sensibly and
consciously moderate pace, so that the impact on the carrying capacity of the overall
environment can be constantly monitored.
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