CHAPTER V
PERFORMANCE OF BIMSTEC IN PRIMARY SECTORS OF COOPERATION

Introduction

At the outset, six priority sectors of cooperation were identified at the 2\textsuperscript{nd} BIMSTEC Ministerial Meeting in Dhaka on 19\textsuperscript{th} November 1998. These are: trade and investment, transport and communication, energy, tourism, technology and fisheries. These priority sectors are called primary sectors. The present chapter assesses the sector-wise performance of the primary sectors of BIMSTEC cooperation and analyses the challenges and possibilities in these sectors.

5.1. TRADE AND INVESTMENT

The BIMSTEC region is one of the fastest emerging economic blocs in the world, sustaining a growth rate of nearly 6\% per annum. It brings together a 1.5 billion-strong global humanity and a combined GDP of $ 2.5 trillion world economy (RIS, 2016; Maheshwari, 2017). The countries of this region are at various levels of economic development. For example, India is the biggest and leading economy in this grouping, which embarked on its journey towards trade policy reforms in the 1990s after forty-four years of de-facto autarchy and thereby paved the way for reforms in industrial policy, large reduction in tariffs, the removal of several import restrictions, services regulation and the opening up of internal markets for services, and simplification of the trade regime (Singh, 2017). In 2016, India registered a GDP growth rate of 7.3 percent (OECD, 2016). In a similar manner, the Bangladesh economy underwent major substantial changes over the past two decades and experienced a high degree of integration with the international economy. In 2016, Bangladesh stood at the 31\textsuperscript{st} position among the world’s 32 biggest economies and its GDP growth rate reached an all-time record of 7.11 percent (Dhaka Tribune, 23 March 2017).
Similarly, Nepal initiated a number of market-oriented reforms during the mid-1980s and early 1990s. First, it introduced the ‘Trade Policy’ in 1988 which was followed by the ‘Liberal Trade Policy’ in 1992 (Pradhananga, 2007). Among the BIMSTEC countries, Nepal has a trade deficit with all the members which has further widened (Khanal, 2017). In the same manner, Sri Lanka introduced economic liberalization and policy reforms in 1977 and became the first open market economy in South Asian region. It moved towards from a centrally planned economy to a market economy which streamlined the country’s tariff structure profoundly (Sanderatne, 2012). Among the BIMSTEC states, Sri Lanka has inked its first bilateral FTA with India in 2000 (Keerthisinghe, 2016). In a like manner, in an attempt to participate in the global economy, Bhutan embarked on its basic economic reforms in the 1970s. Subsequently, the India-Bhutan Trade and Transit agreement was signed in 1972 and it set up a free-trade regime between these two countries (IDE, 2004). Since then, India remains Bhutan’s largest trading partner and the source of nearly 90 percent of its imports (Rizal, 2015).

Likewise, Myanmar economy has undergone transition from the closed, tightly-controlled, inward looking economy to a market-oriented, outward looking economy in 1988. But, Myanmar expedited her prospects for economic development and integration into the global economy only after the formation of a new regime in 2011. During this period, a series of political and economic reforms were introduced in the country (Kubo, 2012). In 2016, Myanmar has achieved GDP growth rate of 8.2 percent which is the highest among the BIMSTEC countries (OECD, 2016). In the same way, Thailand has undertaken massive economic reforms in the late 1980s and early 1990s. Consequently, these reforms paved the way for the country’s economic boom in the 1990s. But, later the Thai economy faced a difficult situation due to the 1997 global financial crisis (Aulino et al., 2014). In 2016, Thailand registered a 3.2 percent-GDP growth rate which is one of the lowest growth rates among the BIMSTEC countries (ADB, 2017). The BIMSTEC member countries have identified the trade and investment sector as a priority area of cooperation.

**Trade and investment**

This sector is divided into two categories. These are namely, (a) Goods and Services and (b) Trade and Investment Facilitation. Furthermore, the Goods and Services sector consists of eight sub-sectors and the Trade and Investment Facilitation sector comprises seven sub-
sectors. This sector is led by Bangladesh. The BIMSTEC region has enormous trade potential, but it still remains largely untapped (Rahman & Kim, 2016). Intra-regional BIMSTEC is approximately at 7 percent trade as a proportion to the total trade (Kaur, Sarin, & Dhani, 2016). The researcher has calculated the CAGR of total trade of the BIMSTEC countries by using the formula given below:

\[ \text{CAGR} = \left( \frac{\text{End Value}}{\text{Beginning Value}} \right)^{\frac{1}{n}} - 1 \]

**Trade Profile of BIMSTEC Countries**

**Bangladesh**

| Table 5.1.1: Total Trade of Bangladesh with BIMSTEC countries (US $ millions) |
|---|---|---|---|
| | Before* | After** |
| | Starting Year | Ending Year | CAGR | Starting Year | End Year | CAGR |
| Myanmar | 0.37 (1990) | 4.46 (1996) | 42.66 | 3.03 (1997) | 44.52 (2015) | 15.18 |

Source: [https://aric.adb.org/integrationindicators](https://aric.adb.org/integrationindicators)

Note:
1. * Indicates Before Formation of BIMSTEC, ** Indicates After Formation of BIMSTEC.
2. The values given in parenthesis are the years.

Table 5.1.1 exhibits the total trade conducted by Bangladesh with BIMSTEC countries, and it indicates that before the formation of BIMSTEC, the compound annual growth rate (CAGR) of Bangladesh’s total trade with Bhutan, Nepal and Sri Lanka were -5.15%, -4.33% and -4.16 % respectively which increased to 10.60%, 4.41% and 9.39% after the formation of the grouping. While the CAGR of Bangladesh’s total trade with India, Myanmar and Thailand are 27.28%, 42.66% and 11.33% which decreased to 11.06%, 15.18% and 10.72% respectively. In a nutshell, Bangladesh had negative CAGR for Bhutan, Nepal and Sri Lanka.
before formation of the BIMSTEC which turned positive after the formation. While the CAGR was positive for India, Myanmar and Thailand before the formation, it still remains positive after formation but at a reduced rate.

**Bhutan**

| Table 5.1.2: Total Trade of Bhutan with BIMSTEC countries (US $ millions) |
|-----------------|-----------------|-----------------|-----------------|-----------------|
|                  | Before*          |                  | After**          |                  |
|                  | Starting year    | Ending Year      | CAGR             | Starting year    | Ending Year      | CAGR             |
| Myanmar          | --               | --               | --               | --              | --               | --               |
| Sri Lanka        | --               | --               | --               | 0.016 (2007)     | 0.018 (2015)     | 1.37             |
| Thailand         | --               | --               | --               | --              | --               | --               |

Source: [https://aric.adb.org/integrationindicators](https://aric.adb.org/integrationindicators)

Note:
1. * Indicates Before Formation of BIMSTEC, ** Indicates After Formation of BIMSTEC.
2. -- Indicates data are not available.
3. The values given in parenthesis are the years.

Table 5.1.2 shows Bhutan’s total trade with the BIMSTEC countries. It is observed from the table that before formation of BIMSTEC, the CAGR of Bhutan’s total trade with Bangladesh is - 5.15 percent which has grown to 10.60 percent after the formation of BIMSTEC, whereas the CAGR of Bhutan’s total trade with India was 58.22 percent before the formation which declined to 17 percent after it. The CAGR of Bhutan’s total trade with these countries shows an increased trend. Regarding Myanmar and Thailand, the data for the total trade are not available. Similarly, concerning Nepal and Sri Lanka, data are not available before the formation of BIMSTEC. However, data are shown after formation of BIMSTEC, especially from 2007 to 2015. Concerning Bhutan’s total trade with India, the total trade data are available for the period of 1991-1996 before the formation of BIMSTEC. It is evident from the table that Bhutan has registered high positive trade flow with Bangladesh compared to other member countries.
India

Table 5.1.3: Total Trade of India with BIMSTEC countries (US $ millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>Before*</th>
<th>After**</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Starting Year</td>
<td>Ending Year</td>
</tr>
</tbody>
</table>

Source: [https://aric.adb.org/integrationindicators](https://aric.adb.org/integrationindicators)

Note:

1. * Indicates Before Formation of BIMSTEC, ** Indicates After Formation of BIMSTEC.
2. The values given in parenthesis are the years.

Table 5.1.3 gives an overview of India’s total trade with the BIMSTEC countries. The results revealed that before the formation of BIMSTEC, the CAGR of India’s total trade with Bangladesh, Bhutan, Myanmar, Nepal and Sri Lanka are 16.24%, 58.22%, 11.34%, 20.95% and 21.86% respectively which decreased to 11.09%, 17.00%, 11.09%, 15.25% and 14.12% after formation of BIMSTEC. While the CAGR of India’s total trade with Thailand increased from 12.74 percent to 15.24 percent. With regard to India’s total trade with Bhutan, the total trade data are shown for the period 1991-1996 before the formation of BIMSTEC. Overall, the table denotes that India has a negative trade flow with all the BIMSTEC countries except Thailand. Similarly, there has been a steep decline in India’s total trade with Bhutan.
Table 5.1.4: Total Trade of Myanmar with BIMSTEC countries (US $ millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>Before*</th>
<th>After**</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Starting Year</td>
<td>Ending Year</td>
<td>CAGR</td>
</tr>
<tr>
<td>Bhutan</td>
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</tr>
<tr>
<td>Nepal</td>
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</tbody>
</table>

Source: [https://aric.adb.org/integrationindicators](https://aric.adb.org/integrationindicators)

Note:

1. * Indicates Before Formation of BIMSTEC, ** Indicates After Formation of BIMSTEC.
2. -- Indicates data are not available.
3. The values given in parenthesis are the years.

Table 5.1.4 exhibits the total trade made by Myanmar with BIMSTEC countries and it indicates that before the formation of BIMSTEC, the CAGR of Myanmar’s total trade with Bangladesh and India were 15.48% and 15.46% respectively which declined to 15.46% and 12.08% after the formation of BIMSTEC. In contrast, the CAGR of Myanmar’s total trade with Sri Lanka and Thailand increased from -0.62% to 10.86% and -0.09% to 16.99% respectively. With regard to Bhutan and Nepal, the data for total trade are not available. As for Myanmar’s total trade with Thailand, the total trade data are shown for the period of 1990-1995 and 1999-2015. It is evident from the table that Myanmar has had both positive and negative trade flow before and after the formation of BIMSTEC. There has been a steep decline of trade with countries like India and a moderate one with Bangladesh while trade with Sri Lanka and Thailand experienced a significant boost with a massive margin.
Table 5.1.5: Total Trade of Nepal with BIMSTEC countries (US $ millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>Before*</th>
<th>After**</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Starting Year</td>
<td>Ending Year</td>
</tr>
<tr>
<td>Myanmar</td>
<td>--</td>
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</tr>
<tr>
<td>Sri Lanka</td>
<td>2.88 (1990)</td>
<td>0.8 (1996)</td>
</tr>
</tbody>
</table>

Source: [https://aric.adb.org/integrationindicators](https://aric.adb.org/integrationindicators)

Note:
1. * Indicates Before Formation of BIMSTEC, ** Indicates After Formation of BIMSTEC.
2. -- Indicates data are not available.
3. The values given in parenthesis are the years.

Table 5.1.5 gives an overview of Nepal’s total trade with the BIMSTEC countries. The results reveal that before the formation of BIMSTEC, the CAGR of Nepal’s total trade with Bangladesh, Sri Lanka and Thailand are 2.90%, -16.75% and -10.14 % respectively, which rose to 2.99%, 5.64 % and 3.95% respectively after the formation of BIMSTEC. While the CAGR of Nepal’s total trade with India was 31.87% from 1990-1996 which declined to 11.86% from 1997-2015. With regard to Bhutan, trade data are not available before the formation of BIMSTEC, but data are available only for the period 2007-2015. Similarly, as with Myanmar, the total trade data are not available. It is evident from the table that Nepal experienced both positive and negative trade flow before and after the formation of BIMSTEC. The total trade with countries like Sri Lanka and Thailand increased hugely, and in the case of Bangladesh grew marginally, whereas trade with Nepal and India has reduced drastically.
Table 5.1.6: Total Trade of Sri Lanka with BIMSTEC countries (US $ millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>Starting Year</th>
<th>Ending Year</th>
<th>CAGR</th>
<th>Starting Year</th>
<th>Ending Year</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhutan</td>
<td>--</td>
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<td>--</td>
<td>0.016 (2007)</td>
<td>0.018 (2015)</td>
<td>1.37</td>
</tr>
</tbody>
</table>

Source: [https://aric.adb.org/integrationindicators](https://aric.adb.org/integrationindicators)

Note:
1. * Indicates Before Formation of BIMSTEC, ** Indicates After Formation of BIMSTEC.
2. -- Indicates data are not available.
3. The values given in parenthesis are the years.

Table 5.1.6 shows the total trade made by Bangladesh with the BIMSTEC countries and it is observed from the table that before the formation of BIMSTEC, the CAGR of Sri Lanka’s total trade with Bangladesh and Thailand are -4.05% and 4.96% respectively which grew to 11.09% and 5.44% after the formation of BIMSTEC. The CAGR of Sri Lanka’s total trade with India and Nepal are 23.48% and 39.88% which declined to 13.10% and -2.42% respectively. On the other hand, there is not much difference in the CAGR of Sri Lanka’s total trade with Myanmar which has more or less maintained the same stability before and after the formation of BIMSTEC. Concerning Bhutan, the data are not available before the formation of BIMSTEC, but only from 2007 to 2015. During this period, the CAGR of Sri Lanka’s total trade with Bhutan has slightly increased. It is evident from the table that Sri Lanka has had both positive and negative trade flow with the BIMSTEC countries. There has been a sudden drop in trade with India and Nepal, while trade with Sri Lanka and Bangladesh has grown dramatically and with Thailand marginally.
Table 5.1.7: Total Trade of Thailand with BIMSTEC countries (US $ millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>Before*</th>
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<th>After**</th>
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<tbody>
<tr>
<td></td>
<td>Starting Year</td>
<td>Ending Year</td>
<td>CAGR</td>
<td>Starting Year</td>
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<tr>
<td>Bhutan</td>
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</tbody>
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Source: [https://aric.adb.org/integrationindicators](https://aric.adb.org/integrationindicators)

Note:
1. * Indicates Before Formation of BIMSTEC, ** Indicates After Formation of BIMSTEC.
2. -- Indicates data are not available.
3. The values given in parenthesis are the years.

Table 5.1.7 gives an overview of Thailand’s total trade with the BIMSTEC countries and it signifies that before the formation of BIMSTEC, the CAGR of Thailand’s total trade with India and Myanmar are 5.48% and -21.64% respectively, which rose to 12.13% and 17.30% after it while the CAGR of Thailand’s total trade with Bangladesh, Nepal and Sri Lanka declined from 12.80%, 16.36%, and 6.79% to 10.17%, 5.57% and 5.37% respectively. For Bhutan, the data on total trade are not available. With regard to Thailand’s total trade with Myanmar, the total trade data are available only for the period of 1990-1995 and 1999-2015.

It is observed from the table that Thailand has experienced both positive and negative trade flow. The country’s total trade with Myanmar and India has increased dramatically, whereas trade with Bangladesh, Nepal and Sri Lanka has declined moderately.

To sum up, Bangladesh had the highest trade with Myanmar before and after formation of BIMSTEC, while it has the lowest trade with Bhutan before formation, but with Nepal after the formation of BIMSTEC. Similarly, Bhutan had the highest trade with India before and after formation of BIMSTEC, whereas it had the lowest trade with Bangladesh before the formation, but with Sri Lanka after the formation of BIMSTEC. In the same
manner, India had the highest trade with Bhutan before and after the formation of BIMSTEC, while it had the lowest trade with Myanmar during the same. Likewise, Myanmar had highest trade with India before the formation, but it changed to Thailand after the formation of BIMSTEC; while it had lowest trade with Thailand before the formation, but with Sri Lanka after formation of BIMSTEC. In a similar way, Nepal had highest trade with India before and after the formation of BIMSTEC, while it had the lowest trade with Sri Lanka before the formation, but with Bangladesh after the formation of BIMSTEC. In a like manner, Sri Lanka had highest trade with Nepal before the formation, but it had largest trade with India after formation of BIMSTEC; whereas it had lowest trade with Bangladesh before the formation, but with Nepal after, the formation of BIMSTEC. Similarly, Thailand had highest trade with Nepal before formation, but with Myanmar after the formation of BIMSTEC; whereas it had lowest trade with Myanmar before the formation, but with Sri Lanka after formation of BIMSTEC.

**BIMSTEC FTA**

The BIMSTEC grouping emerged as a supranational Free Trade Agreement (FTA) through the Bangkok Declaration in 1997. With the purpose of intensifying economic, trade and investment cooperation among the member countries, the framework agreement on the BIMSTEC Free Trade Area (FTA) was inked in February 2004 in Phuket, Thailand. It was expected that the BIMSTEC FTA would be fully operationalized by 2011. However, the FTA is yet to be fully enforced due to lack of consensus among member countries on crucial issues (Islam, 2015). Unlike other FTAs, the framework agreement on the BIMSTEC FTA extends to areas of cooperation from trade in goods to trade in services and investment (BIMSTEC Secretariat, 2016). The member countries established a Trade Negotiating Committee (TNC) for accomplishing negotiations on various issues, as stipulated in the framework agreement. The TNC committee reports to the BIMSTEC Trade/Economic Ministers through the Senior Trade and Economic Officials Meeting on the progress and result of its negotiations (PIB, Govt. of India, 2015).

The BIMSTEC Trade Negotiating Committee has so far convened 20 sessions of negotiations. The 18th BIMSTEC TNC meeting took place in June 2009 in Phuket, Thailand, finalized an agreement on Trade in Goods and other provisions relating to the Rules of Origin, Operational Certification Procedures and agreements on Customs Cooperation (MEA, GOI,
The 19\textsuperscript{th} BIMSTEC TNC meeting set out amendments in the timeframe for tariff reduction and elimination (Hossain, 2013). The 20\textsuperscript{th} meeting of BIMSTEC TNC was held in Khon Kaen, Thailand in 2015. But the meeting failed to conclude the three agreements on trade in goods, services and investments including customs cooperation (Wijayasiri, 2016).

In order to attain the goal of BIMSTEC FTA, the framework agreement in the TNC meetings have devised various mechanisms such as modalities for tariff reduction and elimination, size of the negative list, criteria for rules of origin, mechanisms of settlement of disputes, safeguards measures, and customs operations. However, these mechanisms are in the process of getting final approval. These are described as follows (Hossain, 2013; Rahman & Kim, 2016; Wijayasiri, 2016).

1. **Tariff reduction and elimination**: The grouping is agreed to expedite the process of trade facilitation by reducing or eliminating trade barriers like tariffs on a fast track basis and a normal-track basis. The fast track basis will ensure the reduction of tariffs within a period of 1-5 years for both the Least Developed Countries (LDC) and the non-LDC members; on the other hand, the normal-track basis will facilitate the reduction of the remaining tariffs over an extended period of time for the same. It is also decided to liberalise certain items on a negative list basis.

2. **Rules of origin**: Like other Free Trade Agreements, the framework agreement on BIMSTEC FTA also emphasizes largely on Rules of Origin which are quite simple. By the 18\textsuperscript{th} TNC meeting in 2009, the member nations gave their consensus to domestic value addition, regional accumulation, and product-specific rules. It was approved that a product has to satisfy any of the following three conditions for obtaining the BIMSTEC FTA preferential treatment. These conditions include: first, the product has to be wholly produced or obtained in a member country; second, if the product is not wholly produced or obtained in a member country, then it has to satisfy the criteria of change in tariff sub-heading at (Harmonized System) HS 6 digit level, and create a local value addition of thirty-five percent of free on board (FOB) value. The LDC members get a concession of thirty percent of FOB value in the local value addition; and finally, under aggregate regional accumulation, the BIMSTEC content of the final goods is not less than the local value addition mentioned in the second condition. In such cases, a change in tariff sub-heading is only applicable to non-BIMSTEC originating materials.
3. **Dispute settlement procedures:** The BIMSTEC FTA arrangement also contains specific rules and agreements on dispute settlement procedures. Bilateral consultation is regarded as a tool for dispute settlement, which is to be held within 30 days upon a request for such made by any of the BIMSTEC member countries. If the issues cannot be resolved through bilateral consultation within a 60-day period, an arbitration tribunal consisting of three members will be set up upon the request of complaining member. The framework agreement requires that the findings and recommendations of the tribunal be limited to the rights and obligations of the members and these findings and recommendations are to be complied by the members. It is also stipulated that the tribunal submit these findings in a report within 120 days of the start of the proceedings. The disputing members will equally bear the cost incurred on the chair of the tribunal.

4. **Safeguard measures:** The framework agreement on BIMSTEC FTA has provisions for certain safeguard measures which allow its countries to retract tariff concessions to protect their domestic industries from huge losses arising from increased imports under the FTA. However, these measures can’t be applied in certain exceptional circumstances.

5. **Cooperation and Mutual Assistance in Customs Matters:** The BIMSTEC FTA too lays emphasis on the just application of customs laws, as such it entails the BIMSTEC member countries to impart needed executive aid to each other.

The BIMSTEC has registered a slow progress in bringing about regional economic integration through the FTA. The major hurdles in the process of the conclusion of the BIMSTEC FTA are lack of consensus on certain crucial issues like the negative list, criteria for rules of origin, Non-Tariff Measures (NTMs) and Mutual Recognition Agreements (MRA). Moreover, lack of awareness among the traders about the concessions offered by the FTAs is a major obstacle to the implementation of the FTA (Wijayasiri, 2016). In addition, PTAs are already in force among some of the BIMSTEC member countries. At present, five out of the seven BIMSTEC countries, except Thailand and Myanmar, are part of the PTAs under the aegis of the SAARC while, Thailand and Myanmar are parties to the preferential market access regime of ASEAN (Islam, 2015). Besides, the factors like neighbouring countries’ apprehension about India’s dominance, member countries’ reservations on negotiations in services, and pursuance of protectionism policy hinder the finalization of an agreement on the FTA. However, the absence of political conflict and bilateral disputes
among the member countries of BIMSTEC is a positive factor in enabling member countries to step forward towards the early conclusion of the FTA in the near future.

**Investment Policy in the BIMSTEC region**

One of the vital driving forces of economic globalization is the attracting of private capital in terms of foreign direct investment into the developing countries (Sahoo, Nataraj, & Dash, 2014). Indeed, FDI has so far played a substantial role in the monetary growth of several developing countries than developed countries (CSIRD and ICC, 2009). It offers advantages for the host countries, for example, by creating employment opportunities, technology spillovers, and promoting human capital (Rakkhumkaeo, 2016). By realising the significance of FDI for encouraging economic development, many countries, including the BIMSTEC members, have brought extensive modifications in their FDI policy environment to lure foreign investments (Sahoo, Nataraj, & Dash, 2014). For instance, in the late 1980s, Bangladesh liberalised its economy to expedite economic development and take advantage of FDI. Subsequently, in 1989, the government established the Board of Investment (BOI) with the main aim of luring and simplifying foreign investments (Rahman, 2012). In the same manner, India’s financial sector was opened up gradually to attract foreign investment in the 1990s. But, India started to lure capital inflows largely after 2005-06 (Majumdar, 2016).

Likewise, with a view to encouraging private sector participation, in 2002, Bhutan conceived the first official FDI policy and it came into force in 2005, by replacing the erstwhile case-by-case system of approving FDIs. Hence, Bhutan witnessed rapid increase in FDI inflows towards tourism, hydropower, and manufacturing and services (IBP Inc, 2015). In a like manner, with the enactment of a Foreign Investment Law in 1988 and following the formation of the Myanmar Investment Commission (MIC) in 1994, the government of Myanmar eliminated constraints on private sector involvement in both domestic and foreign trade. Subsequently, these acts paved the way for attracting FDI from abroad. However, there has been substantial increase in FDI inflows after transforming Myanmar’s economy into a market-oriented economy in 2011 (Taguchi & Lar, 2015). Similarly, Nepal has launched an open and liberal policy to attract foreign investors since the mid-1980s. The Foreign Investment and Technology Act, a specific policy towards foreign investment, was announced in 1981 and subsequently it smoothed the path for inward FDI in the Nepalese economy (Krishna, 2011).
In the same way, Sri Lanka adopted an open market economy with liberalisation of FDI in 1977. Over the years, Sri Lanka has experienced a gradual increase in FDI inflows from US$ 47 million in 1979 to US$ 681 million in 2015 (Ravinthirakumaran et al., 2015). Likewise, FDI inflows into Thailand augmented significantly in the second half of the 1980s following the country’s economic liberalization. From 1986 to 1996, Thailand received close to US$ 0.9 billion per year of net FDI flows, representing nearly 7% of private business investment. But, during 1997-98, the Thai economy faced severe setbacks in the form of Asian financial crisis (Brimble, 2002). In the post-financial crisis period, Thailand embarked on an enactment of the Foreign Business Act-1999 by replacing the previous Alien Business Law-1972, which lowered restrictions on foreign participation in the number of occupations and further it brought renewed momentum to the investment scene (Rajenthran, 2004).

**FDI Inflows in BIMSTEC**

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<td>Bangladesh</td>
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<td>2</td>
<td>9</td>
<td>72</td>
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<td>3410</td>
<td>3355</td>
<td>5859</td>
<td>9501</td>
<td>8455</td>
<td>9147</td>
<td>10705</td>
<td>12946</td>
<td>3537</td>
<td>10845</td>
</tr>
<tr>
<td>Total</td>
<td>320</td>
<td>7,957</td>
<td>9,698</td>
<td>12,589</td>
<td>31,443</td>
<td>58,316</td>
<td>39,371</td>
<td>39,492</td>
<td>46,376</td>
<td>41572</td>
<td>60856</td>
</tr>
</tbody>
</table>

**Source:** UNCTAD Trade Statistics Database

**Note:** 1. -- Indicates data are not available.
Table 5.1.8 shows the FDI inflows in the BIMSTEC region for the years 1990-2015. With regard to Bangladesh, since 1990 to 2000 the FDI inflows continuously increased and after 2000 the FDI inflows fell and later the FDI inflows increased until 2008. Again, it falls up to 2010 and later it increases suddenly in 2015. Bangladesh attracted its highest ever foreign direct investment of nearly 2,235 US$ millions in 2015. It was due to the fact that its manufacturing sectors like textiles and garments industries have witnessed robust growth in the country. In fact, Bangladesh was ranked as the world’s 2nd biggest clothing exporter after China (Rahman, 2016). As for Bhutan, since 2002 the FDI inflows rose continuously till 2006. In fact, there was a rapid increase during the years 2004-2006. Later, the FDI inflows drastically reduced from 2006 to 2008 and continued to decline till 2015. The country was at the peak point in terms of FDI inflows in the year 2006.

Concerning Myanmar, since 1990 the FDI inflows have grown continuously till 2012. However, there was a sudden surge in FDI inflows from 2006 to 2012. Later, the FDI inflows have declined sharply from 2013 to 2014, but again it increased from 2014 to 2015 and became the country’s highest FDI inflows ever recorded. It was because of increased activity in sectors like energy, manufacturing, telecommunications and transportation. Actually, these industries remained untapped before the political and economic reforms in Myanmar in 2011 and later these sectors received substantial FDI inflows (Tun, 2015). With regard to Nepal, the FDI inflows have experienced positive and negative trends. From 1990 to 2008, there was
no progress in FDI inflows. After 2008, there was a very high growth in FDI inflows which declined then. The country witnessed its highest FDI inflows in the year 2011. Regarding India, from 1990 to 2008 the FDI inflows continuously increased which then declined for two years. Later it started increasing and touched the highest level in 2008 when India experienced the highest FDI inflows. It is worth mentioning here that despite the global economic downturn in 2008, India received nearly 47 US$ billions and stood at the 13th position in terms of attracting foreign direct investment in the world when western economies were striving to expand their FDIs (ENS Economic Bureau, 18 September 2009).

As for Sri Lanka, FDI inflows have grown continuously except for the years 2008-2010 and 2011-15. The country’s FDI inflows peaked in the year 2011. The three-decade long internal civil war which prevailed in Sri Lanka has largely discouraged FDI inflows into the country (Konara, 2013). Regarding Thailand, the FDI inflows continuously increased from 1990 to 2000. Later, again there was surge in FDI inflows from 2002 to 2013, but it experienced minor fluctuations during these years. However, the FDI inflow has fallen suddenly in 2014. The country’s peak point in FDI inflows was in the year 2013. It was on account of depreciation of the Thai Baht (currency), and abundance of cheap labour which allowed the company access to low-cost factors of production (Macek, Bobek, & Vukasovic, 2015). Overall, since the formation of BIMSTEC, the FDI inflows show the growth trend. There has been a surge in FDI inflows in the BIMSTEC region from approximately US$ 320 million in 1990 to nearly US$ 60,856 million in 2015. Despite the global financial crisis of 2008, the BIMSTEC member nations have sustained a steady growth rate of close to 6% per year as compared to other emerging regional economic blocs in the world (RIS, 2016).

Problems

Infrastructure and Connectivity

High quality infrastructure increases trade output, cuts the cost of trading and boosts the investments. In addition, it renders individuals with access to basic amenities viz., health protection, literacy, and other schemes (ADB Institute, 2016). However, the BIMSTEC region lacks quality infrastructure — both hard and soft— such as all-weather paved roads, logistics, telecommunication links and uninterrupted electricity supply etc. All these problems have deterred the potential of intra-regional trade from being realized fully
Among the BIMSTEC countries, Myanmar has the poorest infrastructure and, in 2014, it was ranked as the 10th poorest infrastructure nation in the world (Daly, 2014).

**Poor Business Climate**

The World Bank’s ease of doing business index is based on 10 indicators such as starting a business, paying taxes, trading across borders, registering a property, resolving insolvency, construction permits, enforcing contracts, getting credit, getting electricity and protecting minority investors (World Bank, 2017). The BIMSTEC countries, except Thailand, ranked poorly on the overall rankings. The World Bank conducted this study by covering 190 countries in the world. According to this report, Thailand secured the highest rank and Bangladesh secured the lowest rank on the ease of doing business index among the member countries. Table 5.1.8 shows the latest index report.

<table>
<thead>
<tr>
<th>Table 5.1.9: Ease Of Doing Business Index Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
</tr>
<tr>
<td>Ease of doing business rank</td>
</tr>
<tr>
<td>Starting a Business</td>
</tr>
<tr>
<td>Paying Taxes</td>
</tr>
<tr>
<td>Trading across Borders</td>
</tr>
<tr>
<td>Registering Property</td>
</tr>
<tr>
<td>Resolving Insolvency</td>
</tr>
<tr>
<td>Construction Permits</td>
</tr>
<tr>
<td>Enforcing Contracts</td>
</tr>
<tr>
<td>Getting Credit</td>
</tr>
<tr>
<td>Getting Electricity</td>
</tr>
<tr>
<td>Protecting Minority Investors</td>
</tr>
</tbody>
</table>

The indicators like starting a business, enforcing contracts, paying taxes, trading across borders are at lower level in the BIMSTEC region for which these countries have been ranked near the bottom of the ‘Ease Of Doing Business Report 2017’ as compared to other countries across the world. In addition, bureaucratic procedures fuelled by political instability in countries like Bangladesh, Myanmar, and Sri Lanka and India have discouraged investors. As a result, the BIMSTEC countries remain one of the least investment-attractive regions in the world (Gupta & Mallick, 2014).

5.2. TRANSPORT AND COMMUNICATION

The ability of a country to take part in trade and services relies upon how effectively its transport and communications system provides full access to the global trading system. Transport infrastructure is one of the most important contributing factors for economic development of any country or region. Further, it is also vital for exploiting the gains of economic integration which arise from geographical proximity. Geographical proximity remains as an important feature among the BIMSTEC states by sharing common waters of the Bay of Bengal and, except Sri Lanka, overland contiguity. But, advantages of geographical proximity are most often lost owing to lack of adequate transportation infrastructure in this region (RIS, 2004). Hence, transport infrastructure such as all-weather paved roads, coordination of railway networks, open sky policy, modern ports etc., are essential for the BIMSTEC states to develop economic affluence and expedite the global and regional integration. Such efficient transport infrastructure can be instrumental in setting up closer contacts among people of the region. In addition, it eases free movement of persons, goods, services and capital and thus increases volume of trade and investment, social mobility and access to markets. Considering the significance of transport infrastructure, many regional and sub-regional organizations across the globe have given much importance to development of physical infrastructure in general and transport linkages in particular between the member states (Thein, 2013).

Transport and Communication is one of BIMSTEC’s primary sectors which is led by India. The BIMSTEC region lacks adequate transport infrastructure facilities among member
countries. The 1st Expert Group Meeting on the Transport and Communication Sector of BIMSTEC took place on 23rd-24th April 2000 in New Delhi. The meeting highlighted the necessity of seamless connectivity via air, sea and land routes among the BIMSTEC countries and discussed a wide range of issues, including Logistics and Multimodal Transportation, Maritime Transport, Infrastructure Development, Transportation and Cross-border Facilitation as well as Communication Linkages and Networking (BIMSTEC Secretariat, 2015). In this sub-chapter a detailed status of transport sector and its linkages between the BIMSTEC member countries are explained.

**Transport Sector in BIMSTEC region: An Overview**

The Transport sector in the BIMSTEC region consists of several modes, namely, roadways, railways, civil aviation, seaports and inland water transport.

**Bangladesh**

Bangladesh has an extensive and well-organized transport system which includes road, rail, inland waterways, seaports and airports. With regard to roadways, the Roads and Highways Department (RHD), under ministry of Road Transport and Bridges, is responsible for construction, maintenance and development of all major roads in the country. As of 2015, RHD has a total length of 21,481 km road network under its control out of which 4278 km are National Highways; 4278 km are Regional Highways; and the remaining 13,659 km are Zila roads. Further, RHD has 7,741 bridges and 13,751 culverts under its jurisdiction (Hoque, 2015; BanDuDeltAS, 2016). The Bangabandhu Bridge, having a total length of 4.8 km, is the eleventh longest bridge in the world which has been opened to traffic in June, 1998 (Discovery Bangladesh, 2017).

As for railways, the Bangladesh railway network has covered approximately 32% country’s total area. The Bangladesh Railway (BR), a state-owned enterprise, operates about 2,877 km length of railway track, linking 44 districts out of 66 in Bangladesh. There are 261 passenger trains in the country out of which 68 trains are intercity; 66 trains are mail and express trains; 127 are local trains; 55 are goods and container trains (Discovery Bangladesh, 2017). The Chittagong-Dhaka railway line is the busiest route in the country. Coexistence of several gauges is the chief characteristic of the Bangladesh Railway which has a length of
1,830 km of meter gauge; 660 km of broad gauge; and 365 km of dual gauge tracks (BanDuDeltAS, 2016).

As to Inland Waterways Transport (IWT), Bangladesh, being a riverine country, has nearly 24,000 km of inland waterway networks which render transit of passengers and goods cheaper and play an important role in communication, particularly carrying agricultural goods from one place to another (BanDuDeltAS, 2016; The World Bank Group, 2016).

Regarding seaports, Bangladesh has two ports, namely, Chittagong Port and Mongla Port. The Chittagong Port, is the largest sea port of Bangladesh, handling approximately 92 percent of the country’s maritime trade in 2015. At present, the total tonnage of seaborne trade is around 45 million tons, increasing around 10 percent every year (BanDuDeltAS, 2016).

Concerning airways, the Civil Aviation Authority of Bangladesh (CAAB), under the Ministry of Civil Aviation & Tourism, provides its services to control and improve the required aviation amenities in Bangladesh for domestic and international air passage. Currently, CAAB runs 12 airports including Short Take-Off and Landing (STOL) ports. Out of these, 3 are international airports; 7 are domestic airports; and 2 are Short Take-Off and Landing (STOL) ports (Bangladesh Economic Review, 2015). Hazrat Shahjalal International Airport (HSIA) in Dhaka is the busiest airport in the country through which 80% of the country’s total air traffic flow occurs (Hoque, 2015). Biman Bangladesh Airlines Limited is the national flag carrier of Bangladesh which plays a major role in relation to instituting air links between Bangladesh and other countries (Bangladesh Economic Review, 2015).

Putting the transport sector into the regional cooperation context, the Trans-Asian Railway-Southern Corridor (TAR-SC) Network, under the aegis of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), (TAR-S1 and TAR-S2) routes also run through Bangladesh. These are:

- Link Bn.1 starts from in the Sylhet district Shahbazpur on the northeastern border of Bangladesh to Darshana in the western border of Bangladesh in Chuadanga District.
- Link Bn.2 route connects Chittagong with Myanmar through Teknaf (Bangladesh)/Maungdaw (Myanmar).
- Link Bn.3 route links Ishurdi in Pabna district to Birol in the Dinajpur district of Bangladesh and further provides connections to Jogbani (India)/Biratnagar (Nepal) to reach Bangladesh’s ports of Chittagong and Mongla.

- Link Bn.4 route starts from Abdulpur in the Natore District to Rohanpur in the Nawabganj district of Bangladesh and provides another transit channel for Nepal’s trade passing through Birgunj (Nepal)/Raxaul (India) to have access to Bangladesh’s ports (UNESCAP, 1999; Keya, 2015).

Asian Highways (AH) Network is a regional cooperation transport project under the UNESCAP which passes through 32 Asian member countries including Bangladesh. With regard to AH network, Bangladesh has a total length of 1771 km of road networks with three routes viz., AH-1, AH-2 and AH-41. These are as follows:

- AH-1 route, a total distance of 492 km, runs between Tamabil in the Sylhet district to Benapole in the Jessore district via Sylhet, Dhaka and Jessore.

- AH-2 route, a total length of 517 km, starts from Tamabil in the Sylhet district to Banglabandha in the Panchagarh district. The road passes through the cities such as Sylhet, Dhaka, Joydevpur and Rangpur.

- AH-41 route, a length of 762 km, is connected between Teknaf in the Cox's Bazar district to Mongla in the Bagerhat district via Cox’s Bazar, Dhaka, and Khulna (RTHD, GOB, 2016).

**Bhutan**

Roadways are the major means of transport for carrying people and freight in the country, but the network is limited. Bhutan has total roadway length of 10,578 km out of which 2,438 km are national highways; 6 km are expressways; 1,178 km are feeder roads; 350 km are urban roads; 5,375 km are farm roads; and, 1,230 km are access roads (ADB, 2014). The Northern East–West Highway (NEWH), with a total distance of 546km, is the major national highway connects Thimphu, the capital city of Bhutan, to Trashigang in the far east of the country. The Southern East–West Highway (SEWH), locally known as ‘Lateral Road’, a total length 723 km, is another significant national road network which stretches from the Phuentsholing in Chukha District, near its south-western border with India to Trashigang in
The road passes through important cities viz., Paro, Thimphu and Punakha (Wangdi & Wangchen, 2013; ADB, 2014).

As to railways, there is no railway network in the country. In early 2005, the Govt. of Bhutan and Govt. of India inked an MoU for railway links to five border towns in Bhutan from their nearest railheads in India. These five links are as follows:

- Hasimara (West Bengal) – Phuentsholing (Approx. 18 km) and a bifurcation to Pasakha
- Kokrajhar (Assam) – Gelephu (Approx. 70 km)
- Pathsala (Assam) – Nanglam (Approx. 40 km)
- Rangia (Assam) – Samdrupjongkhar via Darranga (Approx. 60 km)
- Banarhat (West Bengal) – Samtse (Approx. 16 km) (MoEA, Govt. of India, 2005).

Concerning this, feasibility studies have been carried out in 2008 and the two Governments have been working hard to execute the project (MoIC, RGoB, 2015).

With regard to civil aviation, Bhutan has 4 airports. Paro airport is an international airport while Bumthang, Gelephu and Yonphula airports are domestic airports. The airline Drukair is the national flag carrier of Bhutan which provides air connectivity to nine destinations in five countries viz., India, Nepal, Thailand, Bangladesh and Singapore (Wangdi & Wangchen, 2013; MoIC, RGoB, 2015).

As for inland waterway transport and seaports, Bhutan, being a landlocked country, does not have these services and thereby is completely dependent on India for imports and exports. Kolkata, Haldia (India) and Mongla (Bangladesh) are the chief maritime ports for Bhutan’s international trade (Wangdi & Wangchen, 2013; MoIC, RGoB, 2015).

Regarding Bhutan’s participation in international transport networks, it was not part of the TAR-SC corridor. As for the Asian Highway network, Bhutan has only one route viz., AH-48 route, a stretch of 179 km, starting from Phuentsholing in Chukha District to Thimphu, the capital city of Bhutan (Galay, 2014).
India

India’s transport network, comprising of land transport, water transport and air transport, is one of the extremely large and highly diverse sectors in the world. With regard to roadways, India has been placed as the 2\textsuperscript{nd}-biggest road network, with a total length of 5.23 million kilometers, in the world. Indian roadways can be classified into three categories viz., National Highways, State Highways and District or Rural roads. Concerning National Highways, India has around 1, 00,475 km roads, constitutes 1.9\% of the total road network in the country. As to State highways, there are 1, 48, 256 km of roads which make up 3\% of the total roads in India. As for District and Rural roads, India has approximately 49, 83,579 km, accounting for 95\% of the country’s total road network (IBEF, 2017). The National Highway Authority of India (NHAI), a state-owned agency, is responsible for construction, development and maintenance of national highways in the country. The Golden Quadrilateral (GQ) and the North-South & East-West Corridor (NS- EW) are the two largest national highway networks in the country. The Golden Quadrilateral, with a total length of 5846km, runs between four principal Indian metropolises, namely, New Delhi, Kolkata, Chennai and Mumbai. The North-South & East-West Corridor (NS- EW) is the biggest ongoing highway project. This corridor, having a total distance of 7300 km with two routes, passes through 17 states and links the country’s extreme ends. The first route in the North-South corridor is connected between Srinagar in North India to Kanyakumari in South India; and the second route is East-West Corridor starting from Silchar in the Eastern part of the country to Porbandar in the Western part of the country (PIB, GOI, 2017).

As for railways, Indian Railways (IR), a state-owned institution, is the second largest railway network in the world (PIB, Govt. of India, 2017). It stretches a total length of 66,030 km of railway track, mostly broad gauge, and spread across 8,500 stations in the country. It operates more than 22,300 trains and carries over 11 million passengers and 1 million tonnes of freight daily. It has 2.45 lakh wagons, 63,045 coaches and 10,773 locomotives (IBEF, 2017).

For airports, Airports Authority of India (AAI), a state-run institution under the Ministry of Civil Aviation, is responsible for creating, financing, operating, upgrading and maintaining civil aviation infrastructure in the country. India has been ranked as the 9-th
biggest civil aviation market in the world and likely to reach the world’s 3rd largest position by 2020 (IBEF, 2017). There are 90 operational airports including 17 International, 66 Domestic, and 7 Customs Airports in India. As for International Airports, out of 17, 11 are, namely, Kolkata, Chennai, Thiruvananthapuram, Ahmedabad, Amritsar, Guwahati, Goa, Srinagar, Jaipur, Kozhikode, and Port Blair administered by the Airports Authority of India, while Indira Gandhi International Airport, Delhi, Chattrapati Shivaji International Airport, Mumbai, GMR Hyderabad International Airport, Bangalore International Airport Limited, Cochin International Airport, and Nagpur International Airports are managed by the private sector. Air India is the national flag carrier of the country (AAI, 2015).

Pertaining to IWT, the Inland Waterways Authority of India (IWAI), a premier government agency under the Ministry of Shipping, is responsible for regulation, maintenance and development of inland waterways in the country. India has nearly 14,500 km of rivers, canals, lakes, creeks, backwaters etc. Out of this 5,200 km of rivers and 4,000 km of canals are navigable (PIB, GOI, 2015). Despite having nearly 14,500 km of navigable waterways, India registered only less than 4 per cent of trade through Inland Waterways transport as against neighboring Bangladesh’s 35 per cent. India has not been able to utilize the potential to the utmost (Sinha & Gupta, 2016). In 2015, the Indian Parliament approved ‘The National Waterways Bill’ to convert 111 rivers across the country into National Waterways. On 12th April 2016, ‘The National Waterways Act’ came into effect and declared 111 new waterways as National Waterways. After the inclusion of 106 additional inland waterways to the existing five national waterways notified earlier, the total number of national waterways reached to 111 (PIB, GOI, 2016). Presently, five National Waterways are existing in India. These details are given below:
<table>
<thead>
<tr>
<th>National Waterways No.</th>
<th>Rivers and Canals</th>
<th>States</th>
<th>Length in kms</th>
<th>Year of Declaration</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW-1</td>
<td>Ganga-Bhagirathi-Hooghly rivers</td>
<td>Uttar Pradesh, Bihar, Jharkhand and West Bengal</td>
<td>1620</td>
<td>1986</td>
</tr>
<tr>
<td>NW-2</td>
<td>Brahmaputra</td>
<td>Assam</td>
<td>891</td>
<td>1988</td>
</tr>
<tr>
<td>NW-3</td>
<td>West Coast Canal &amp; Udyogmandal and Champakara Canals</td>
<td>Kerala</td>
<td>205</td>
<td>1993</td>
</tr>
<tr>
<td>NW-4</td>
<td>Godavari, Krishna rivers &amp; Kakinada, Puducherry Canals</td>
<td>Telangana, Andhra Pradesh, Tamil Nadu and Puducherry</td>
<td>1078</td>
<td>2008</td>
</tr>
<tr>
<td>NW-5</td>
<td>Brahmani river and Mahanadi delta &amp; East Coast Canal</td>
<td>Odisha, West Bengal</td>
<td>588</td>
<td>2008</td>
</tr>
</tbody>
</table>

With regard to ports, India has a total of 7,517 km of coastline along with 12 major ports and nearly 200 non-major ports (DIPP. GOI, 2016). Out of 12 major ports 6 ports, namely, Kolkata, Paradip, Visakhapatnam, Ennore (Kamarajar Port), Chennai, and Tuticorin (V.O.Chidambaranar port) are situated on the Eastern Coast of the country, while other 6 ports viz., Cochin, New Mangalore, Mormugao, Mumbai, Jawaharlal Nehru Port Trust (JNPT) or (Nhava Sheva) and Kandla ports are located on the Western coast of the country. All major ports, except Kamaraj port, are administered by Major Port Trusts Act 1963 under the jurisdiction of the Government of India, whereas Kamarajar Port is controlled under the Companies Act of 1956. Out of 200 non-major ports, one third are operational which come under the jurisdiction of the respective states’ Government Maritime Boards (GMB) (IBEF, 2017). In order to modernize maritime ports in the country, the Government of India launched an ambitious programme called the ‘Sagarmala Project’ on 31st July 2015. The main goal of this project is to advance port-led development and to make available the infrastructure to transport goods. As of December 2016, under this project, a total of 142 ports modernization projects and 30 ports connectivity projects were identified for implementation over the next 20 years or till 2035(PIB, GOI, 2016).

As for India’s involvement in TAR, there are five routes in the country. These are as follows:
● Link In.1, a total length of 1,975 km, starts from Gede in the state of West Bengal to Attari in the state of Punjab in the country.

● Link In.2 is about 2,866 km connected between Delhi to Port of Tuticorin in the state of Tamil Nadu.

● Link In.3 runs between Mathura in Uttar Pradesh state to Mumbai in the state of Maharashtra.

● Link In.4 starts from Raxaul in the state of Bihar to Sitarampur in the state of West Bengal and provides transit channel for the movement of Nepal’s cargoes (via Raxaul/Birgunj) to the Kolkata and Haldia Ports.

● Link In. 5a, a distance of 1,875 km, links Lekhapani in the state of Assam to Mughalsarai in the state of Uttar Pradesh via Siliguri in West Bengal.

● Link In.5b, a total length of 450 km, is consisted of two parts. The first part, a distance of 110 km, links Lumding with Badarpur in the state of Assam as part of the TAR-S1. The second part, a length of 340 km, is the partly-existing and partly-missing link that connects Mahisasan in the state of Assam in India to Shahbazpur in the Sylhet District of Bangladesh and Moreh in the state of Manipur in India to Tamu in the Sagaing Region of Myanmar.

Concerning Asian Highway routes, India has a total distance of 11,458 km of road networks with eight AH routes. Out of these three routes, namely, AH-45, A-46 and AH-47 remain within India (IRF Asia & Oceania Bulletin, 2008). The following AH- routes pass through India.

● AH-1 route runs between Moreh in the state of Manipur to Attari in the state of Punjab via Dhaka, Benapole (Bangladesh), Kolkata, Kanpur and New Delhi.

● AH-2 route starts from Moreh in Manipur to Attari in Punjab and passes through via cities in Bangladesh, namely, Sylhet, Dhaka, Rangpur and towns in Nepal such as Kakarbhitta and Mahendranagar (Hingkung, 2015).

● AH-42 route is about 3,754 km of roads connected between Barhi in Jharkhand and Raxaul in Bihar and which links India with Nepal.
• AH-43, a distance of 3,024 km, links Agra in Uttar Pradesh to Dhanushkodi in Tamil Nadu which connects India with Sri Lanka.

• AH-45 route, a total length of 2,030 km, passes entirely through India and links Kolkata with Bangalore via Visakhapatnam, Chennai and Krishnagiri.

• AH-46 route or the Great Eastern Highway is, a distance of 1,967 km, connected between Hazira in Gujarat and Howrah in West Bengal. The road passes through cities such as Surat and Jalgaon.

• AH-47 route, a distance of 2,057 km, runs between Gwalior in Madhya Pradesh to Bangalore in Karnataka via Dhule, Thane, Mumbai and Belgaum.

• AH-48 route, a stretch of 90 km, starts from Changrabandha in West Bengal state of India to Phuentsholing in Bhutan (India Today, 3 September 2015).

**Myanmar**

Myanmar has an extensive transport network which, however, lagged behind during the military junta rule. As for roadways, road is the major means of transport in the country. Myanmar has a total length of 157,000 km of road network out of which around 97,000 km are village and town roads under the jurisdiction of the Ministry of Agriculture, Livestock and Irrigation (MOALI) and the Township Development Committees (TDCs); nearly 40,000 km are trunk roads under the jurisdiction of the Ministry of Construction (MOC); 9,500 km are urban roads under the City Development Committees (CDCs) in Yangon, Mandalay, and Naypyidaw; and 11,000 km are other roads under the Ministry of Electrical Power and the Army Corps of Engineers. The Yangon-Mandalay Expressway, a stretch of 587 km, is the major artery which connects two largest cities viz., Yangon and Mandalay in the country (ADB, 2016).

Concerning railways, Myanmar has about 6,106 km of railway networks, operating in 11 railway divisions. Out of this, 705 km is a double track network between Yangon and Mandalay and rest of the route is a series of narrow gauge tracks. Myanmar Railways (MR), state-owned enterprise, is the sole rail operator in the country which operates 443 trains daily including 30 freight trains (ADB, 2016).
With regard to IWT, Myanmar has a total length of 6,650 km navigable river network. The Ayeyarwaddy, Chindwin, Sittaung, Thanlwin, and Kaladan are major rivers which flow from north to south in Myanmar (ADB, 2016). The state-run transport agency, the Inland Water Transport (IWT) of Myanmar under the Ministry of Transport and Communications is responsible for inland water transport of passengers and cargo in the country. At present, Myanmar has a fleet strength of 346 vessels including barges, mixed cargo and passengers’ ships. IWT annually carries nearly 15.06 million passengers and 2.07 million tons of freight (IWT, Govt. of Myanmar, 2017).

As to seaports, Sittwe, Thandwe, Kyaukphyu, Pathein, Yangon, Mawlamyine, Myeik and Kawthaung ports are the major ports situated along the country’s coastline of 2,800 km in the western and southeastern parts of the country (KPMG, 2013). In addition, the Govt. of Myanmar signed an MOU with the Govt. of Thailand to construct a deep seaport at Dawei in 2008 (Thailand Board of Investment, 2016). Yangon port is the largest port which handles 85% of the country’s total imports and exports. Myanmar Port Authority (MPA) under the jurisdiction of the Ministry of Transport and Communications is responsible for planning, regulating and administering all ports in the country (Dutch Maritime Network, 2016).

As for civil aviation, there are 69 airports in the country. Of these only 32 are operational. Yangon, Mandalay and Naypyidaw airports are the three major international airports while the fourth one, namely, Hanthawaddy international airport in the Bago region, is under construction. The Department of Civil Aviation (DCA) under the Ministry of Transport and Communications is responsible for administering and operating both domestic and international air services. Myanmar has 26 international airlines and 11 domestic airlines that operate regular flights to twenty regional destinations across the world. Myanmar National Airlines is the flag carrier of Myanmar (Frontier Myanmar Research, 2016).

Regarding Myanmar’s participation in TAR-SC project, there are three routes which pass through the country:

- **Link My.1 route**, a length of 811 km, runs between Thanbyuzayat in the state of Mon to the state of Mandalay where it merges with Links My.2 and My.3.
- **Link My.1a** starts from the Three Pagoda Pass in the southeastern border of Myanmar to Thanbyuzayat in the state of Mon.
• Link My.1b connects Bong Ti in Kanchanaburi Province to Dawei city and then on to Thanbyuzayat in the state of Mon.

• Link My.2 route runs between Lashio in the Shan State to Mandalay city.

• Link My.2a, a distance of 322 km, is a missing link. It starts from Muse to Lashio in the Shan state.

• Link My.3 route is connected between Mandalay to Kalay in the Sagaing region.

• Link My.3a, a stretch of 135 km, is a missing link. It links Kalay to Tamu in Sagaing region (UNESCAP, 1999).

Concerning the Asian Highway project, Myanmar is connected by four AH routes. These are as follows:

• AH-1 route, a length of 1650 km, runs between Myawaddy in Kayin State to Tamu in Sagaing region via Payagyi, Meiktila and Mandalay.

• AH-2 route, a distance of 807 km, starts from Tachileik in Shan State to Meiktila in the Mandalay division. The route passes through cities such as Loilem and Kyaing Tong.

• AH-3 route, a stretch of 93 km, links Mong La to Kyaingtong in Shan State.

• AH-14 route is about 453 km connected between Muse in Shan state to Mandalay city via Lashio (DoH, GOM, 2015)

**Nepal**

The major means of Nepal’s transportation is roadways, carrying 90% of the country’s total passengers and goods (ADB, 2013). Nepal has a total length of 80,078 km of road networks which can be classified into two types viz., Strategic Road Network (SRN) and Local Road Networks (LRN). Strategic Road Network is the main artery of Nepal’s road system and it is at the central level. SRN has approximately 14,490 km including national highways and feeder roads. Of these 11, 349 km are paved roads; 6,192 km are gravel roads; and 9,394 km are fair weather earthen roads. The Department of Roads under the Ministry of Physical Infrastructure and Transport is responsible for the construction, maintenance and development of roads. The SRN comprises of three strategic East-West corridors including the Mahendra Highway of 1,024 km, and a number of North-South corridors (ADB, 2015).
Feeder roads mainly connect district headquarters which are localised in nature than the national highways while Local Road Networks (LRN) have a total length of 53,143 km. The LRN is made of district roads, urban roads and rural roads including village access roads which come under the jurisdiction of the Department of Local Infrastructure Development and Agricultural Roads in cooperation with the Local District Development Committees (Investment Board Nepal, 2017).

As for airports, there are 56 airports including 6 airports under construction in the country. Tribhuvan International Airport (TIA) is the only international airport, located in the capital city of Kathmandu (Investment Board Nepal, 2017). It is served by 26 international carriers connecting 23 destinations in Asia and Europe. In 2015, the airport carried 3.21 million passengers to their destinations (FNCCI, 2016). The Govt. of Nepal has started construction of two new international airports at Pokhara and Bhairawaha which are scheduled to commence international operations in the years to come. Nepal Airlines is the flag carrier of the country (Prasain, 2016).

With regard to railways, Nepal presently has a total length of 57 km of railway networks which consists of two sections, first one, a total length of 32 km stretches from Janakpur (Nepal) to Jainagar (India); and the second one with 21 km short route spans from Janakpur to Bijalapur in Nepal, but neither section is currently functioning. At present, there is 5 km railway track route operating from Raxaul in India to Sirsiya (Birgunj) Inland Container Depot (ICD) in Nepal which acts as a connector to the Indian Railways. Further, it enables better access and direct movement of containers and other cargo services from and to the Kolkata port and other important places in India (Investment Board Nepal, 2017). The Govt. of Nepal is planning to build an ambitious railway project, the East-West Railway, parallel to Nepal’s 1030 km East –West or Mahendra Highway, to link up Mechi in the eastern Nepal to Mahakali in western Nepal. In this regard, the Govt. of India is likely to assist and construct this project (Miglani & Sharma, 2016).

Concerning the Inland Waterway Transport, Nepal does not have navigable waterways owing to mountainous terrain and unfavourable weather condition (Styles, 2016).

As to seaports, Nepal, being a land-locked country, has no seaports and thereby depends on the Kolkata Port of India, the nearest outlet to the sea, for handling practically all of its sea freight imports (Cochran, 2016).
Regarding TAR-SC network, Nepal does not take part in this project. Concerning AH network, Nepal has a total distance of 1,321 km of road networks with two routes, namely, AH-2 and AH-42.

- **AH-2 route**, a total length of 1027 km, starts from Kakarbhitta in Jhapa District to Brahmadevmandi in Kanchanpur District of Nepal. The road passes through important towns such as Itahari, Pathlaiya, Nayanghat, Kohalpur, and Mahendranagar.

- **AH-42 route**, a stretch of 297 km, connects Birgunj in Parsa District to Kodari in Sindhupalchok District via Narayanghat, Kathmandu, Bhaktapur, Panchkhal and, Barabise (Sharma, 2013).

**Sri Lanka**

The transport sector of Sri Lanka consists of a number of modalities. As for roadways, they are the major means of transport in the country and can be classified into national, provincial, and local authority roads based on their functionality and ownership. Of the total road network length of about 132,693 km, nearly 12,379 km comprises of national roads which comprise Class ‘A’ (trunk roads), class ‘B’ (main roads) and class ‘E’ roads (Expressways). The Colombo–Matara Expressway or the Southern Expressway, a length of 124 km, is the largest expressway which links Colombo with Matara via Galle(RDA, GoS, 2017). The Road Development Authority (RDA), a state-owned institution, is responsible for the maintenance and development of class ‘A’, class ‘B’ and class ‘E’ roads in the country. About 15,975 km are provincial roads which include class ‘C’ and ‘D’ road networks, administered by the respective provincial councils. Nearly 80,000 km are local roads in both urban and rural sectors, and are managed by local body authorities. The remaining roads, a total length of 24,000 km, are owned and managed by irrigation, wildlife, and land development authorities (ADB, 2014).

As regards railway networks, Sri Lanka has a total length of 1,561 km of rail networks. Sri Lanka Railways (SLR), a state-owned agency under the jurisdiction of the Ministry of Transport, operates around 411 passenger trains and 26 freight trains and carries about 3.72 million passengers daily. The Northern Railway line, a stretch of 339 km, is the longest railway in the country, connecting Polgahawela Junction in the Northwestern
Province to Vavuniya in the Northern Province of Sri Lanka (Samarasinghe, 2015; Sri Lanka Railways, 2016).

Concerning IWT, there is a total length of 160 km inland waterways, predominantly on rivers, in the southwest region of Sri Lanka.

With regard to seaports, the ports of Colombo, Galle, Trincomalee, Hambantota (Magam Ruhunupura Mahinda Rajapaksa-MRMR Port), Kankesanthurai, Oluvil and Point Pedro are the major ports in the country. The Sri Lanka Ports Authority (SLPA), the state-run institution, is responsible for constructing, maintaining and operating all ports in the country. The Colombo Port, the country’s major international port, handled nearly 5.1 million twenty-foot equivalent unit (teu) freight in 2015 (Sri Lanka Ports Authority, 2016).

Regarding airports, Sri Lanka has two international airports and thirteen domestic airports. Bandaranaike International Airport (BIA) in Colombo and Mattala Rajapaksa International Airport (MRIA) in Mattala (Hambantota) are international airports, while Ratmalana, Palaly (Jaffna), Ampara, Koggala, Anuradhapura, China Bay (Trincomalee), Weerawila, Batticaloa, Hingurakgoda, Iranamadu, Katukurunda, Sigiriya, and Vavuniya Airports are domestic airports in the country. In addition to this, two more domestic airports viz., Kandy Airport and Palavi Airport are currently under construction. Sri Lankan Airlines is the national flag carrier of the country (KPMG, 2015).

Concerning Sri Lanka’s involvement in TAR-SC project, Sri Lanka could be linked to the Trans-Asian Railway-Southern Corridor network with two alternative routes viz., the shipping link, a distance of 280 km from Tuticorin in India to Colombo in Sri Lanka, and a ferry link, a stretch of 35 km, between Rameswaram in India to Talaimannar in Sri Lanka.

- Link Sl.1 route, a total length of 159 km, runs between Matara in the Southern Province to Colombo in the Western Province.
- Link Sl.2 route, a total distance of 337 km, starts from Talaimannar Pier in Mannar Island to Colombo in the Western Province (UNESCAP, 1999).

With regard to AH network, Sri Lanka has a stretch of a road network of 650 km with two routes viz., AH-43 and AH-44.
• AH-43 route runs between Talaimannar in Mannar Island to Matara in the Southern province via Medawachchiya, Dambulla, Kurunegala, Colombo and Galle.

• AH-44 route is connected between Trincomalee in the Eastern Province to Dambulla in the Central province of the country (Yogendra, 2013).

Thailand

Thailand has an extensive, well-equipped and modern transport network. As for roadways, the country has a total length of 462,133 km of road networks (APEC Secretariat, 2015). Of these, 66,794 km are national highways. The Department of Highways (DOH) under the Ministry of Transport (MOT) is responsible for construction and maintenance of these roads; approximately 47,916 km are local roads which come under the jurisdiction of the Department of Rural Roads (DRR) of MOT; nearly 352,157 are municipality roads which come under the purview of the Bangkok Metropolitan Administration (BMA) in Bangkok and DRR in other municipalities; and around 207 km are Express Highways, the Expressway Authority of Thailand (EXAT) under MOT is responsible for maintenance of these highways (JICA, 2014).

Concerning railways, Thailand has a total distance of 4,469 km in railway networks. Of these 3,755 km are single-track; 173 km are double track; 107 km are triple track and the remaining are railway station track lines. The country’s railway network is divided into five lines viz., the Northern line, North-eastern line, Eastern line, Southern line, and the Maeklong Line. The State Railway of Thailand (SRT), a government-run institution, operates all railway lines in the country. Presently, the railway network serves only 47 of the country’s total 77 provinces. The Govt. of Thailand has inked an MoU with the Govt. of Japan to invest and construct a high-speed rail project, with a total length of 745 km, between Bangkok and Chiang Mai in Thailand. This project is expected to be completed by 2020 (APEC Secretariat, 2015).

For seaports, there are 8 seaports in Thailand. Khlong Toei (Bangkok), Laem Chabang, Sriracha Harbour Deep Seaport, Sattahip, Phuket, Ranong, Songkhla, and Map Ta Phut are the major ports in the country. The port of Laem Chabang is Thailand’s largest and deepest seaport and is ranked as the 22nd busiest container port in the world. The Port
Authority of Thailand, a state-owned institution, operates all ports in the country (Thailand Board of Investment, 2016).

Pertaining to IWT, Thailand has a total length of 6,000 km of navigable waterways out of which merely 1,750 km can be used for transportation of passengers and cargo. The Chao Phraya, Tha Chin, Mae Klong, Bang Pakong, and Pa Sak rivers are the major inland water transport routes in the country (IBP Inc., 2015).

Regarding airports, Thailand has 38 airports including 7 international airports. The Suvarnabhumi, Phuket, Chiang Mai, Don Mueang, Hat Yai, and Mae Fah Luang-Chiang Rai Airports are the six major international airports which are operated by the Airports of Thailand (AOT), a state-owned enterprise under the Ministry of Transport, while the Pattaya International Airport is owned and managed by the Royal Thai Navy. As for domestic airports, The Department of Airports (DOA) is responsible for maintaining and operating all airports. Suvarnabhumi International Airport, Bangkok, is one of the busiest airports in the world which handled about 52 million passengers and 1.2 million tons of cargo in 2015. Thai Airways is the national flag carrier of the country which operates its services to 76 cities in 35 countries across the world (BIO Thailand, 2016).

Concerning Thailand’s participation in TAR-SC network, the route links in Thailand are:

- Link Th.1a, a length of 153 km, starts from Nam Tok in Thailand to the border checkpoint of Three Pagoda Pass in Myanmar.
- Link Th.1b, a stretch of 40 km, connects Nam Tok in Thailand to Bongty in Myanmar (SRT, GOT, 2015).

With regard to Asian Highways, Thailand has approximately 5,499 km of road network with nine AH routes. These are as follows:

- AH-1 route, a total length of 699 km, which starts from Aranyaprathet in Sa Kao Province to Mae Sot in Tak Province via Hin Kong, Bang Pa In and Nakhon.
- AH-2 route, a total distance of 1,913 km, which runs between Sadao in the Songkhla Province to Mae Sai in the Chiang Rai province. The route passes cities such as Hat Yai, Bangkok, Bang Pa In and Lampang.
- AH-3 route is about 121 km which connects Chiang Khong to Chiang Rai.
• AH-12 route, a stretch of 571 km, links Nong Khai in the Nong Khai Province to Hin Kong in the Saraburi province.

• AH-13 route, a total length of 550 km, starts from Nakhon Sawan in the Nakhon Sawan province to Huai Kon in the Nan province.

• AH-15 route, a stretch of 249 km, connects Nakhon Phanom in the Nakhon Phanom province and Udon Thani in the Udon Thani Province.

• AH-16 route, approximately 703 km, links Tak in the Tak province to Mukdahan in the Mukdahan Province via Khon Kaen and Phitsanulok.

• AH-18 route, a total distance of 311 km, runs between Su-ngai Kolok in the Narathiwat province and Hat Yai in the Songkhla province.

• AH-19 route is, a stretch of 364 km, connected between Bangkok city and Nakhon Ratchasima in the Nakhon Ratchasima Province via Laem Chabang (Phromsorn, 2015).

**Transport Sector of BIMSTEC**

i) Kaladan Multi-modal Transit Transport Project (KMTTP)

With a view to enhancing seamless connectivity between the mainland of India and its North Eastern Region (NER), the Government of India in collaboration with the Government of Myanmar mooted the Kaladan Multimodal Transit Transport Project in 2009. This project links the Kolkata Port in India with the Sittwe Port in Myanmar and further to the North-Eastern states of India via Myanmar by using sea, inland waterway and road transport modes. The KMTTP is likely to enhance the development and economic growth of the North Eastern Region of India, by opening up the maritime trade route for goods and services. In the light of severe pressure on the Siliguri Corridor or ‘Chicken’s Neck’, this project paves the way for an alternative route to India’s North Eastern Region (Pandit & Basu, 2014).

The project is being built from Kolkata port to Sittwe port, a distance of 539 km, across the Bay of Bengal and then the route, a stretch of 158 km, links Sittwe port to Paletwa in western Myanmar through Kalandan River. Further, the route, with a length of 210 km of roadway, continues from Paletwa to Lawngtlai in the Mizoram state of India. The major components of this project are: “building of an integrated port and an inland water transport (IWT) terminal at Sittwe; development of a navigational channel along the Kaladan River...
from Sittwe to Paletwa; construction of an IWT-highway transhipment terminal at Paletwa; and construction of six IWT barges, each with a 300-ton capacity, for transportation of cargo between Sittwe and Paletwa” (MDoNER, GOI, 2014). The new link between India’s North Eastern Region and Myanmar marks a new era of trade and economic relations and facilitates maritime and strategic links at the bilateral level. This project is expected to be completed by April 2019 (MEA, GOI, 2016). Figure 5.2.1 shows the Kaladan Multimodal Transit Transport Project.

Figure: 5.2.1

ii) India–Myanmar–Thailand Trilateral Highway (IMT-TH):

The India–Myanmar–Thailand Trilateral Highway is a prestigious cross-border road project which was put forward during the trilateral ministerial meeting of India-Myanmar-Thailand on transport linkages in Yangon in April 2002 (MEA, GOI, 2012). The highway covers a
total distance of 1360 km and links Moreh in the Manipur state of India to Mae Sot in Thailand via Bagan and Mandalay in Myanmar. The road alignment of this project falls within the AH-1 and AH-2 routes (De, 2014). The Trilateral Highway is a significant initiative and represents a path-breaking step in enhancing the connectivity and movement of people and ideas among the countries. The main aim of this project is to connect the North Eastern Region of India with Southeast Asia. In order to assess the project status and deliberate future steps regarding this trilateral highway, a Joint Task Force Meeting took place in New Delhi on 10th-11th September 2012. Furthermore, during the 14th ASEAN-India Summit in Vientiane, Laos, the Indian Prime Minister recommended setting up a joint task force on connectivity to pursue the exploratory work on extension of the India-Myanmar-Thailand trilateral highway to Lao PDR, Cambodia and Vietnam, with a view to increasing the momentum of the developing trade and investment ties between the ASEAN countries and India (MEA, GOI, 2016). The construction of the project began in 2012 and was scheduled to be completed by the end of 2015. But, lack of coordination between the countries, inadequate institutional support and complicated procedural issues caused slow progress of this project (De, 2014). As stated by an official from the Ministry of External Affairs, the Government of India, the project is now expected to become operational in 2020 (MEA, GOI, 2016). Figure 5.2.2 shows India–Myanmar–Thailand Trilateral Highway.
The BIMSTEC Transport Infrastructure and Logistics Study (BTILS) Project

The ADB has become a worthy partner to BIMSTEC in its development approach and also a funding source for its various projects particularly in the areas of transport and infrastructure. This regional financial body became BIMSTEC’s development partner in 2005 and since then it is offering very valuable guidance and financial assistance to BIMSTEC in its policy-making and policy execution for inclusive development in the region.

The BTILS project was carried out with the financial aid of the ADB on enhancement of intra-regional transport infrastructure and its Final Report with recommendations were endorsed at the 12th BIMSTEC Ministerial Meeting in December 2009. The study was directed towards exposing the logjams in the trade of goods and services and travel among people along the boundaries and then taking proper steps for getting rid of them in order to facilitate interregional integration. This can be accomplished through the modernization of transport infrastructure and logistics. The project is of greater prominence to BIMSTEC as it would assist the latter in working out appropriate and practical policies and tactics to jettison these detected constrictions and in outlining a proposed action plan for modernizing transport in the region. The recommendations of the first BTILS report includes establishment of the conference of concerned ministerial sector committees and expert groups for ensuring and fortifying synchronisation of various projects and monitoring of the progress of implementation of these projects in the transport sector within the agenda of BIMSTEC.

The second BTILS study was conducted by the ADB under the title of “Updating and Enhancement of the BIMSTEC Infrastructure and Logistics Study” in 2014. The report of the study incorporated the changes ensued so far and proposed extending the planning timeschedule up to 2020. Focussing its whole attention on the area of connectivity, it formulated a long list of projects (165) and a short list (66) of priority projects. It also concluded a Monitoring and Follow up mechanism for execution of projects and ascertained creating an Institutional Mechanism for monitoring the Proposed Work Plan for 2014-20. BTILS identified 35 projects in the Road Sector, 12 projects in the Railway Sector, 9 projects under
the Aviation Projects; 10 projects in marine transport, and 9 projects for trade facilitation (Rahman, 2014).

The success of these projects of transport infrastructure enhancement are in need of an expanded and more active role of the ADB in granting financial aid and providing necessary logistical assistance to BIMSTEC. Since the region has meagre accomplishment in Information and Communication technology, there needs to be a collective approach towards innovation of expertise and proficiency in this particular sector. Furthermore, on the political front, the national governments must have a wilful inclination towards implementation of these projects.

5.3. ENERGY

In the present global scenario, every country is consuming massive amounts of energy. Population growth, rapid industrialization, inadequate energy infrastructure, lack of investment, low levels of technology and other factors have contributed towards energy shortage in every nation. Therefore, energy security has emerged as a major concern. Energy security assumes greater importance and lies at the heart of the transformation of bilateral, regional and global economic affairs of every country in this world. It plays a strategic role in ensuring country’s economic development, prosperity, and stability as well as the wellbeing of the people. The current quest for sustainable and renewable energy as a prerequisite of energy security has demonstrated the necessity of a stable and affordable energy supply without causing environmental and health-related hazards (Tanabe, 2011, p. 88). There is now a greater concern among all the states, whether developed or developing, about how to ensure the accessibility of affordable, sufficient and useful energy to each and every section of the population without compromising with the energy needs of future generations (Pandey, 2006). Regional cooperation can be instrumental in enhancing energy security. BIMSTEC is one such sub-regional grouping which provides opportunities for member countries to meet its energy needs through regional energy cooperation (ESMAP, 2008). Some of the BIMSTEC countries are endowed with abundant natural resources which could be efficiently utilized to partly satisfy each member country’s energy requirements.
The energy sector is one of the important identified sectors for cooperation within BIMSTEC with the principal objective of ensuring energy security of its member countries.

**Energy Endowments of BIMSTEC Region**

The geographical region covering the BIMSTEC member states has an enormous potentiality in energy resources. For example, Nepal and Bhutan possess abundant hydropower resources while Myanmar has ample natural gas reserves beyond their use. Due to geographically scattered positions, a large portion of these resources are still untapped among these countries. There is a need for effective regional cooperation in order to develop, distribute and ensure efficient utilization of these resources among the member countries. If the resources are efficiently and effectively utilized, it will be extremely beneficial and subsequently reinforce energy security among the member countries (RIS, 2004, p. 47).

<table>
<thead>
<tr>
<th>Countries</th>
<th>Population</th>
<th>Coal</th>
<th>Oil</th>
<th>Gas</th>
<th>Biomass</th>
<th>Hydropower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>161665000</td>
<td>5.47</td>
<td>0.08</td>
<td>0.12</td>
<td>0.00</td>
<td>0.002</td>
</tr>
<tr>
<td>Bhutan</td>
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<td>0</td>
<td>0</td>
<td>34.01</td>
<td>38.37</td>
</tr>
<tr>
<td>India</td>
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<td>74.40</td>
<td>4.71</td>
<td>0.03</td>
<td>0.11</td>
<td>0.12</td>
</tr>
<tr>
<td>Myanmar</td>
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<td>3.11</td>
<td>0.22</td>
<td>NA</td>
<td>1.94</td>
</tr>
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<td>Nepal</td>
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<td>0</td>
<td>0.97</td>
<td>2.97</td>
</tr>
<tr>
<td>Sri Lanka</td>
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<td>0.09</td>
</tr>
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<td>7.59</td>
<td>0.21</td>
<td>NA</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Sources: 1. Compiled from ADB 2014; Statistical Review of World Energy June 2015
2. (Population) Compiled from latest censuses of the countries concerned.
Table: 5.3.2 Energy Resource Endowments land area per square km in the BIMSTEC region

<table>
<thead>
<tr>
<th>Countries</th>
<th>Land (Sq. Ft/ Km)</th>
<th>Coal</th>
<th>Oil</th>
<th>Gas</th>
<th>Biomass</th>
<th>Hydropower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>147570</td>
<td>5990.38</td>
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<td>140.28</td>
<td>0.54</td>
<td>2.23</td>
</tr>
<tr>
<td>Bhutan</td>
<td>38394</td>
<td>52.10</td>
<td>0</td>
<td>0</td>
<td>692.81</td>
<td>781.38</td>
</tr>
<tr>
<td>India</td>
<td>3287000</td>
<td>27406.45</td>
<td>1734.10</td>
<td>11.87</td>
<td>42.29</td>
<td>45.63</td>
</tr>
<tr>
<td>Myanmar</td>
<td>676578</td>
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<td>17.44</td>
<td>NA</td>
<td>147.80</td>
</tr>
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<td>Nepal</td>
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<td>0</td>
<td>0</td>
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<td>Sri Lanka</td>
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<td>2286.23</td>
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<td>Thailand</td>
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<td>974.43</td>
<td>27.29</td>
<td>NA</td>
<td>29.52</td>
</tr>
</tbody>
</table>

Source: The World Bank Surface Area 2015 (for Land Area)

Table above tables show energy resource endowments per million population as well as energy resource endowments land area per square km in the BIMSTEC region. India, being an enormous energy-resource rich country, is far behind, except in coal, in the energy resource endowments list owing to its large population. With regard to oil, Thailand stood in the top position in terms of population per million, while Sri Lanka occupied first place in terms of land area per square km in the list. In the case of natural gas, Myanmar is ranked in the 1st position in terms of population per million whereas Bangladesh is placed at the highest position in terms of land area per square km in the list. As for hydropower and biomass, while Bhutan, being small in terms of population and land area, stood in the highest position in both in terms of population per million as well as land area per square km in the list. Likewise, Nepal occupied the 2nd position in energy resource endowments in the BIMSTEC region list.
Bangladesh

Bangladesh has huge potential reserves of natural gas which is by far country’s main energy resource, accounting for 71% of total country’s commercial energy consumption. (Rahman M. S., 2013, p. 1). At the end of 2014, twenty-Six hydrocarbon fields, an estimated 27.12 trillion cubic feet (tcf) of gas, have been discovered in the maritime zone of Bangladesh. So far, Bangladesh has extracted natural gas from 20 hydrocarbon fields out of 26. As of July 2016, Bangladesh has 20.77 proven recoverable gas reserves and the total gas production is 13.52 tcf (Daily Sun, 25 July 2016). With regard to coal and oil, Bangladesh has modest reserves. As for biomass, it is a major primary energy supply in the rural areas of Bangladesh. Approximately 70% of the country’s energy requirements are met through biomass. Agricultural crop residues, wood, jute sticks, rice husks, animal manure and municipal solid waste are the main sources of biomass energy in the country (Huda, Mekhilef, & Ahsan, 2014, p. 507). In the case of hydropower, Bangladesh has an estimated potential capacity of 350 MW. Karnafuli hydroelectric power plant is the only hydropower station in the country with a power generation capacity of 230 MW. Furthermore, there are some micro and mini hydropower generation stations, with capacity of 10 KW to 5 MW, in Bangladesh (Chowdhury, 2015, p. 3).

Bhutan

Bhutan does not have any non-renewable energy sources, namely oil, petroleum and natural gas, and thereby heavily depends on India for importing coal, petroleum and natural gas products. As for biomass, it is the main energy source of Bhutan, where approximately 90% of the country’s total household energy requirements are met through biomass, particularly from wood fuel (ADB, 2012, p. 5). With regard to hydropower, Bhutan is endowed with abundant resources which have an estimated usable hydropower potential of 30,000 MW. In addition, six mega hydropower projects with an installed capacity of 5000 MW are in the different stages of construction. But, as of 2015, only 6% of hydropower resources have been captured. Arguably, Bhutan is the only country in the BIMSTEC region to have surplus hydroelectric power generation. At present, Bhutan’s electricity generating capacity is 1614 MW. In 2014, this sector contributed a substantial income to Bhutan’s national economy by generating 72.5% of export earnings, 20% of government revenues and 14.15% of gross domestic product (GDP(ADB, 2014, p. 1; Gyeltshen, 2015).
Hydropower sector plays a key role between Bhutan-India bilateral relations. India has helped Bhutan in developing its hydropower projects for decades. The surplus hydropower of Bhutan is exported to India. This amounts to about more than 84% of total hydro power generation capacity of the country (Bhandari, 2014). Both governments have already taken the decision to further expand trade in electricity with the target of generating 10,000 MW of power by 2020 after the first bilateral Empowered Joint Group of Ministers meeting which took place in March 2009 in New Delhi. Some of the important hydropower projects which are already supplying electricity from Bhutan to India are Chukha, Tala, and Kirruchi power projects. Furthermore, seven more projects that are under construction include: Punatsangchhu I, Punatsangchhu II, Sunkosh Reservoir Chamkarchhu-I, Amochhu, Kholongchu etc. which will supply electricity to India from 2018 onwards. In the hydropower sector, India-Bhutan energy cooperation is a perfect win-win situation for both the countries (Bisht, 2011).

India

With regard to coal, India holds world’s 5th largest reserves and ranks as the 3rd biggest consumer behind China and the United States in the world (BP, 2015, p. 30). The Geological Survey of India (GSI) under the Indian Ministry of Coal estimated that the total proven coal reserves in India as on 1/04/2014 is 125.90 billion tonnes (Ministry of Coal, Govt of India, 2014). However, it is noteworthy that compared to other BIMSTEC countries India has huge coal reserves but, it is not tapped to the utmost potential. Coal, being the most ample resource in India, is widely used in its power generation sectors which account for around 70 percent of the country’s total coal use. Since power plants largely depend on coal, India is unable to provide sufficient coal supply for its growing demand and is thereby facing severe coal deficiency. Consequently, there is low performance in electricity generation and concomitant power cuts throughout the country (Shah, 2016).

In the case of oil, as of 2014, India held approximately 5.7 thousand million barrels of proven reserves (BP, 2015, p. 6). In 2015, India was elevated to the 4th position among the world’s largest oil-consuming nations, behind the United States, China, and Japan, with its oil consumption of around 4.1 million barrels per day. It is expected that India will soon overtake Japan as the third biggest oil consumer in the world. Furthermore, India became the
third biggest oil importer in the world by surpassing Japan in 2015. India imports around 80% of its crude oil needs from the Middle Eastern countries (Sen & Sen, 2015; Snyder, 2015).

As for natural gas, at the end of 2014, India possessed 1.4 trillion cubic metres (tcm) of proven reserves. A significant chunk of natural gas reserves are found in the western coast offshore of India. The two dominant state-owned oil companies, namely Oil and Natural Gas Corporation (ONGC) and Oil India Limited (OIL) hold the largest share in the country’s upstream gas sector (EIA, 2014, p. 14; BP, 2015, p. 20; IBEF, 2015, p. 7). Natural gas has begun to serve as an alternative for coal in electricity generation and as a substitute for Liquefied Petroleum Gas (LPG) in fertilizer production in India. Until 2004, India’s Natural Gas Sector achieved self-sufficiency and met its own energy needs (EIA, 2014, p. 11). Later, the consumption has witnessed an increasing trend. In addition to that, the Indian hydrocarbon sector has not been exploited to the utmost; with approximately 70% of Indian gas basins remaining underexplored. As a result, India has begun to rely on gas imports for meeting its growing domestic demand. In 2015, India has been ranked as the world’s 15th biggest consumer of natural gas with a consumption of 51 billion cubic metres (bcm) as well as the world’s 4th largest importer of LNG sourcing 18.9 bcm (livemint, 23 September 2015). In 2015, India produced 33.66 bcm of natural gas which is likely to increase to 33.73 bcm in 2016. Concerning Nuclear power, it is the 4th biggest source of electricity after thermal, hydropower and other renewable energy sources in India. In 2015, India stood 12th in the world’s leading positions in terms of electricity generation from nuclear energy (PIB, Govt of India, 2015). As of March 2016, India has 21 nuclear reactors at 7 operating nuclear power plants, with an installed capacity of 5,780 MW of nuclear power which accounts for only 2 per cent of the total installed capacity. In addition, six more nuclear power plants are in different stages of construction across India, with a total capacity of around 4 GW (Chawla, 2016). Furthermore, India has ambitious plan to generate and meet 25% of the nation’s total electricity needs through nuclear energy by 2050 from a mere 3% in 2015 (Spencer, 2016). The Nuclear Power Corporation of India Limited (NPCIL) operates all nuclear plants in the country (IEA, 2015, p. 135). Pertaining to biomass, India’s total potential capacity is approximately 30,000 MW, but currently it has an installed capacity of 3000 MW, leaving 90% of the country’s total biomass resources untapped (SICOM, 2016).

As to hydropower, as of June 2015, India’s installed capacity is approximately 41,997 MW which accounts for 17.6% of India’s total electricity generation. India stood at the 5th
position in terms of exploitable hydroelectric potential at the global level. At the end of June 2015, India has 190 hydropower stations; most of them are located in the northern region of the country. National Hydroelectric Power Corporation (NHPC) and Satluj Jal Vidyut Nigam (SJVN) Limited are the two largest hydropower companies in India (IBEF, 2016, p. 14). After coal, hydropower is the most widely used and the second-biggest form of energy source in India. India was ranked as the world’s sixth biggest producer in hydroelectricity generation after China, Canada, Brazil, USA and Russia in 2014 (EMIS, 2015, p. 21). India is blessed with a vast amount of hydroelectricity potential approximately 84,000 MW at 60% capacity factor, which is conducive for economic exploitation. Furthermore, through Small (up to 25 MW), Mini (up to 2 MW) and Micro (up to 100 KW) hydropower schemes a potential of 6780 MW installed hydroelectricity capacity have been assessed. In addition, in order to meet the peak electricity demand and water pumping for irrigation, several pumped storage sites, with a total installed capacity of 94,000 MW, have been identified (IBP Inc., 2015).

**Myanmar**

Myanmar is blessed with ample natural energy resources such as natural gas, coal and hydropower. Myanmar is ranked as the 10th biggest natural gas producer in the world and 90% of its total petroleum products are based on natural gas. Myanmar has an estimated proven natural gas reserve of 11.8 trillion cubic feet (tcf) (ADB, 2016, p. 1). In 2016, Myanmar Oil and Gas Enterprise (MOGE) projects that the country’s total gas production is likely to reach 689.8 billion cubic feet (bcf) in the fiscal year of 2016-2017, out of which 515 bcf will be exported to countries like Thailand and China. The Yadana and Yetagun are two major offshore gas fields of Myanmar, situated in the Andaman Sea. These are country’s biggest source of revenue, contributing to its economy (Asia News Network, 20 June 2016). Myanmar has an estimated hydropower potential of 108,000 MW. So far, the government has identified 92 large-scale hydropower potential projects with a total installed capacity of 46000 MW. As for oil, Myanmar has 160 million barrels of proven oil reserves. In the case of coal, Myanmar has estimated coal reserves of 540 million tons in 33 coal deposits (Latt, 2015; Shin, 2016). Also, biomass has historically served as an important energy source for the residential sector of Myanmar. It is estimated that biomass accounts for approximately 65% of Myanmar’s primary energy supply and about 12 million people depend on it as their source of fuel for cooking and lighting (Nam, Cham, & Halili, 2015, p. 1).
Nepal

Biomass is by far the most widely used energy resource in Nepal, where more than 80% of the country’s total population is highly dependent on solid biomass such as, wood, animal dung, charcoal, and crop residues. As for hydropower, Nepal is bestowed with abundant resources having an estimated potential of 83,000 MW. At present, Nepal’s total installed hydropower capacity is around 750 MW, leaving 99% of the country’s total hydropower resources unexploited (The Kathmandu Post, 29 July 2016). With regard to coal, Nepal possesses some low-grade lignite coal, which was extracted in the Dang district of Nepal. In the case of Petroleum and Natural gas, Nepal imports mainly from India and other countries (NPC, Govt. of Nepal, 2013, p. 16).

Sri Lanka

Sri Lanka has no proven fossil fuel resources, relying almost solely on imports to meet its growing energy needs. However, in 2011, Sri Lanka has discovered eight hydrocarbon blocks in the Mannar Basin in the north-western coast of Sri Lanka which has a potential capacity of more than 2 trillion cubic feet of natural gas (Pieris, 2016). With regard to biomass, it is the only major indigenous available energy source in Sri Lanka, meeting around 53% of the country's total energy requirements, particularly in the rural domestic energy sector. As for hydropower, Sri Lanka has an estimated potential capacity of around 2000 MW. In addition, Sri Lanka has allowed private sector companies to generate hydroelectricity through mini hydropower projects (up to 10 MW). In 2015, the generating capacity of these mini hydropower projects from 150 plants was 293 MW, out of the total estimated potential power generation capacity of 873 MW (Wickramasinghe & Narayana, 2014; Daily FT, 17 May 2016).

Thailand

Thailand has a reasonable amount of proven fossil fuel reserves, namely natural gas, oil and coal. With regard to natural gas, Thailand possesses 14 trillion cubic feet (tcf) of reserves, out of which around 90% of the country’s natural gas reserves are located offshore in the Gulf of Thailand. In 2014, Thailand’s total natural gas consumption amounted to around 4,669 million standard cubic feet per day (MMscfd), but domestic natural gas production was approximately 4,073 MMscfd. As a result, Thailand still remains dependent on natural gas
imports in order to bridge the increasing demand-supply gap and to meet its growing energy needs. Thailand started importing natural gas from Myanmar through pipelines since 2011 (Ministry of Energy, Govt. of Thailand, 2015, p. 113). Pertaining to oil, as of 2014, Thailand has 0.5 thousand million barrels of proven oil reserves and Thailand’s total oil production was around 453 thousand barrels per day (BP, 2015, p. 6).

In the case of coal, as of 2014, Thailand’s total proven coal reserves are estimated to be of 1,239 million tons and coal consumption was 18.4 million tons. As for hydropower, Thailand possesses an estimated potential of about 15,155 MW. As of 2014, Thailand’s total installed hydropower capacity was 3,444 MW. As for biomass, Thailand holds an estimated installed capacity of around 400 MW. In 2014, biomass accounted for 2,452 MW of Thailand’s total electricity production. The Alternative Energy Development Plan (AEDP) 2015, of the Ministry of Energy of Thailand has put up an ambitious target to generate 5,570 MW capacity of biomass energy by 2036(Achawangkul, 2015).

**Energy Sector of BIMSTEC**

Energy sector is one of the important sectors among the fourteen BIMSTEC identified sectors which is led by Myanmar. This sector is consisted of two sub-sectors, namely; i) Oil and Gas and ii) Power. The prime objective of the energy sector of BIMSTEC is to ensure energy security of its member nations. As of 2016, Myanmar hosted 5 Expert Group Meetings on the Energy Sector. Till date, the BIMSTEC Energy Ministers have met twice- in Oct 2005 in New Delhi, India and in March 2010 in Bangkok, Thailand (MEA, Govt. of India, 2014). The current important projects endorsed in the energy sector are the Trans BIMSTEC Gas Pipeline Project, the Trans BIMSTEC Power Exchange and Development project, and BIMSTEC Energy Centre in Bangalore and the energy trading networks between members (BIMSTEC Secretariat, 2016).

1) **The Trans BIMSTEC Gas Pipeline Project**

The Trans BIMSTEC Gas Pipeline Project is an important project under the Oil and Gas sub-sector. Thailand carried out a feasibility study and convened a Task Force meeting in March 2001, in Bangkok, Thailand. Furthermore, in order to finalize the Terms of References on the Trans BIMSTEC Gas Pipeline project a Task Force meeting took place on 28th-29th June, 2006, in Bangkok, Thailand. At the same time, the Workshop on Petroleum Reserves in the
BIMSTEC Region was also held (BIMSTEC Secretariat, 2016). Also, Thailand has agreed to share the technology and knowledge of converting natural gas resources into saleable products with other countries in the region. It is estimated that Myanmar has huge untapped gas reserves which can be tapped with the help of energy deficient countries like India, Bangladesh, Sri Lanka and Thailand for mutual benefit. This initiative will result in attaining energy security in the region and subsequently will contribute towards the socio-economic development of the member states (BIMSTEC Energy Centre, n.d.). However, this project has not materialized so far, even though the project has been proposed during the First Energy Ministers Meeting in 2005.

2) The BIMSTEC Trans Power Exchange and Development Project

The BIMSTEC Trans Power Exchange and Development Project is a major initiative under the power sub-sector of BIMSTEC. It is initiated for accelerating the power trade among the member countries. Thailand was entrusted with the responsibility of preparing the Terms of Reference for the Task Force and of providing technical knowhow and expertise in the field of power exchange and development to member states by conducting training programmes on power planning and maintenance (BIMSTEC Secretariat, 2016). This initiative will ensure energy security and thereby offers a win-win situation in the region as it will allow the member countries to share their surplus hydroelectric power with each other. In order to start the BIMSTEC Trans Power Exchange and Development Project, a workshop on Harmonisation of Grid Standards took place on 6th February 2006 in New Delhi, India, in which the host country drafted an MoU on this project. However after a long interval, the member countries finalized the negotiations for drafting an MoU on the BIMSTEC Trans Power Exchange project at the 5th BIMSTEC Task Force meeting on Trans Power Exchange on 16th March, 2015 in Dhaka, Bangladesh (Karim, 2015). The MoU provides a broad framework of cooperation for the implementation of the power grid interconnection with the aim of boosting balanced power transmission in the BIMSTEC region. Guided by the principles of mutual cooperation and sustainable development, the member countries are eager to create a grid interconnection for stable, reliable and economical electricity supply at an affordable cost to the consumers in the region (BIMSTEC Newsletter, August 2011).

In 2006, India hosted a Workshop on Sharing Experience in Developing Hydropower Project with focus on remote area electrification. It is estimated that the BIMSTEC countries
have an immense hydropower potential of about 260,000 MW (bdnews24.com, 17 March 2015). Except Bangladesh and Sri Lanka, other member countries are endowed with abundant hydropower potential. Myanmar has proposed to initiate hydropower projects in collaboration with Thailand, Bangladesh and India. The countries like India and Bangladesh are already experiencing an increase in demand for hydropower and this increased demand is more likely to exceed the hydropower potential of these countries. Fortunately BIMSTEC is blessed with enormous hydropower potential which needs to be tapped and developed through regional cooperation in order to fulfil the increased hydroelectricity demand. It has been realized that hydropower, if effectively developed, can contribute towards more electricity generation and sort out the problem of electricity scarcity in the region when other renewable energy sources like wind and solar power are comparatively too costly to be utilized (Hossain, 2015).

5.4. TOURISM SECTOR

There is a popular tendency that tourism can be regarded as an engine of growth for developing and underdeveloped countries to achieve cultural and socioeconomic developmental goals which are as a job producer, economic fighter and cultural campaigner (Zhang, 2009, p. 32). The United Nations Development Programme (UNDP), World Bank and International Monetary Fund (IMF) acknowledge that problems like poverty, hunger, economic inequalities and cultural differences can be eradicated by promoting tourism around the world (Okello & Novelli, 2014, pp. 1-2). Tourism is one of the fastest emerging sectors and secures the fifth position after fuels, chemicals, food and automotive products in the global exports sector which has immense multiplier and positive spillover effects than other economic sectors (Archer & Owen, 1972; Rasul & Manandhar, 2009, p. 189). The World Tourism Organization (WTO) and World Travel and Tourism Council (WTTC) assesses that “for each job created in the tourism industry, five to nine jobs are generated in other areas” (Rasul & Manandhar, 2009, p. 189). Whenever a tourist visits particular country, he/she needs other tourism affiliated amenities like shelter, food, transportation, tourist guide assistance, recreation and entertainment, and handicraft items. Therefore, in this way, tourism generates jobs to unemployed youth, provides seasonal livelihood to women
and elderly persons and brings income and foreign exchange earnings to the governments to strengthen economic development (Oo, 2008, p. 3; Rasul & Manandhar, 2009, p. 188). BIMSTEC has identified tourism is one of its primary important sectors which is led by India.

**Tourism Sector Progress in the BIMSTEC Region**

The BIMSTEC region is known as the Buddhist Heartland where more than 70 per cent of the total population (except India, Nepal and Bangladesh) are Buddhists (Koirala, 2014). But, the sizable population and the holy Buddhist sites are located in the rest of the member countries such as India, Nepal and Bangladesh. Furthermore, this region is endowed with beautiful landscapes, highest mountain ranges like Everest, Karakoram and Hindu Kush, plentiful wildlife, stunning bays, sandy beaches, beautiful coves, the Sundaraban mangrove forests, massive archeological sites, ancient Buddhist pagodas and Hindu temples, and so forth. In addition, medical and wellness tourism are other important aspects of this region which attract a sizable number of international tourists to visit this region for Ayurveda, yoga, meditation and massage therapies (Rasul & Manandhar, 2009, p. 189). The 3rd BIMSTEC summit took place on 3rd–4th March 2014 at Naypyidaw, Myanmar where leaders of the member countries gathered and declared that 2015 would be the BIMSTEC tourism year (PIB, GOI, 2014).

Despite the fact that this region is endowed with many tourist attractions and abundant natural resources, the BIMSTEC member countries neglected the development of the tourism sector for so many years. But, since the early 1990s, these member countries recognized tourism as a key sector to achieve socio-economic growth of their respective nations. Thus, in 1990, after adoption of the market-oriented economic policy, the Government of Myanmar formulated Tourism Law which was revised in 1993 in order to speed up the tourism growth and strengthen private sector partnership (Nag & De, Asian Integration Process and BIMSTEC, 2007). But, in fact, the tourism industry of Myanmar has gained momentum when the civilian government assumed the office in 2011. In the same manner, in 1992, the Bangladesh government formulated a National Tourism Policy and subsequently in 1999 announced tourism as a thrust sector under the industrial policy of Bangladesh (Ali & Parvin, 2010, p. 5). Similarly, in order to promote India as one of the top global tourist destinations, the Government of India unveiled the ‘Incredible India’ campaign programme in 2002 and ‘Find What You Seek’ and ‘Go Beyond’ campaigning programs in 2012 (PIB, GOI, 2012).
Likewise, in a bid to attract more foreign tourists to its region, the Government of Nepal announced 2011 as the Nepal Tourism Year and 2012 as the Visit Lumbini Year campaigning programs (*The Kathmandu Post*, 8 September 2012). In the same way, in 2011, the Government of Thailand initiated the National Tourism Development Plan (2012-2016) in order to improve the competitiveness of the tourism industry and place Thailand as one of the top five destinations in Asia (Wattanacharoensil & Schuckert, 2014). In Sri Lanka, after the end of a 26-year long internal civil war, the Ministry of Economic Development launched the National Tourism Development Strategy (2011-2016) in 2011 and set a target of 2.5 million international tourist arrivals to the country by end of 2016 (Lokuhetty, A, Jayawardena, C. & D. Mudadeniya, 2013).

<table>
<thead>
<tr>
<th>Table 5.4.1: Distribution of International Tourists arrivals by Country</th>
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<tbody>
<tr>
<td><strong>International Tourist Arrivals (1000)</strong></td>
</tr>
<tr>
<td>Bangladesh</td>
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<tr>
<td>Bhutan</td>
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<tr>
<td>India</td>
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<td>Myanmar</td>
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<td>Nepal</td>
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<td>Sri Lanka</td>
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<td>Thailand</td>
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<tr>
<td>BIMSTEC</td>
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<tr>
<td>Asia-Pacific</td>
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<tr>
<td>World</td>
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</tbody>
</table>

**Source:** World Tourism Organization (UNWTO), 2016.

*Note:* 1. * Indicates latest data,
2. -- Indicates data are not available.
The above table and figure show the distribution of international tourist arrivals in the BIMSTEC region for the years 1990-2015. In 2015, the number of international tourist arrivals to this region was 45.09 million which accounted for less than 4 per cent of the world’s total of 1,186 million and less than 17 per cent of the Asia-Pacific region’s total of 279.02 million. In 2015, among the member countries, Thailand has consolidated its number one position as the most-visited tourist destination in the BIMSTEC region. In terms of tourist arrivals Thailand accounted for 66.25 percent of BIMSTEC’S total respectively. Likewise, the sub-region’s largest country India has attracted 8.02 million tourist arrivals which amounted to 17.79 percent of this region’s total. In the same manner, Myanmar has experienced a spectacular growth in tourist arrivals and welcomed 4.68 million tourists in 2015 as compared to 3.08 million in 2014. While Nepal experienced negative growth rate which attracted only 555000 international tourists in 2015 as compared to 790000 in tourist arrivals in previous year (UNWTO, 2016). It was the massive earthquake which occurred in April 2015 that has completely devastated the tourism industry in Nepal (Bennett, 2016). Ecotourism, shopping, golf, health and wellness, weddings and honeymoons and aggressive tourism campaigns are the main factors which have fuelled the significant number of international tourist arrivals to Thailand(Ruggia, 2013). Similarly, medical tourism, historical sites and political stability are underlying factors which have attracted more foreign tourist visitors to India (Economy Watch, 29 June 2010).
### Table 5.4.2: Distribution of International Tourism receipts by country

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</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>11</td>
<td>50</td>
<td>87</td>
<td>129</td>
<td>153</td>
<td>148</td>
<td>15.68</td>
<td>-3.37</td>
<td>0.20</td>
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<tr>
<td>Bhutan</td>
<td>2</td>
<td>10</td>
<td>35</td>
<td>63</td>
<td>73</td>
<td>71</td>
<td>13.69</td>
<td>50.67</td>
<td>0.09</td>
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</tr>
<tr>
<td>India</td>
<td>1,513</td>
<td>3,460</td>
<td>14,490</td>
<td>18,397</td>
<td>19,700</td>
<td>21,013</td>
<td>6.61</td>
<td>6.24</td>
<td>29.45</td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td>9</td>
<td>162</td>
<td>72</td>
<td>959</td>
<td>1,612</td>
<td>2,092</td>
<td>40.50</td>
<td>22.94</td>
<td>2.93</td>
<td></td>
</tr>
<tr>
<td>Nepal</td>
<td>64</td>
<td>158</td>
<td>343</td>
<td>438</td>
<td>487</td>
<td>481</td>
<td>10.06</td>
<td>-1.24</td>
<td>0.67</td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>132</td>
<td>248</td>
<td>576</td>
<td>1,715</td>
<td>2,431</td>
<td>2,981</td>
<td>29.45</td>
<td>18.45</td>
<td>4.17</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>4,326</td>
<td>7,483</td>
<td>20,104</td>
<td>41,780</td>
<td>38,423</td>
<td>44,553</td>
<td>-8.73</td>
<td>13.75</td>
<td>62.45</td>
<td></td>
</tr>
<tr>
<td>BIMSTEC</td>
<td>6,057</td>
<td>11,571</td>
<td>35,707</td>
<td>63,481</td>
<td>62,879</td>
<td>71,339</td>
<td>-0.95</td>
<td>11.85</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Asia-Pacific</td>
<td>46800</td>
<td>91200</td>
<td>275681</td>
<td>396614</td>
<td>420067</td>
<td>418270</td>
<td>5.58</td>
<td>-0.42</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>World</td>
<td>264000</td>
<td>476000</td>
<td>927000</td>
<td>1197000</td>
<td>1245000</td>
<td>1260000</td>
<td>3.85</td>
<td>1.19</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** World Tourism Organization (UNWTO), 2016.

Note: 1. * Indicates latest data.

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![Graph: International Tourism Receipts in the BIMSTEC region](image)

**Figure: 5.4.2**

The above table and figure show the distribution of international tourism receipts in the BIMSTEC region for the years 1990-2015. In terms of international tourism receipts, the BIMSTEC region amounted to US$ 71.33 billion which accounted for around 5.7 per cent of the world’s total of US$ 1,260 billion and 17.05 per cent of the Asia-Pacific region’s total of US$ 418.27 billion. In 2015, among the member countries, Thailand accounted for 62.45 per cent in tourism receipts of BIMSTEC’s total respectively. Similarly, India has received US$ 21.01 billion tourism receipts which amounted to 29.45 per cent of this region’s total.
Interestingly, it has been observed that, although in absolute terms Thailand has registered the largest increase in tourist arrivals among the BIMSTEC member countries, Bhutan has recorded relatively the highest increase in tourism receipts than Thailand. The gap between tourist arrivals and receipts occurs due to fact that the cost of living and accommodation are higher in Bhutan as compared to Thailand. In the same manner, Myanmar has witnessed solid growth rate in international tourism receipts which received US$ 2,981 million in 2015 as compared to US$ 2,431 million in 2014. Similarly, in 2015, the Bangladesh tourism sector faced a difficult situation where tourism receipts decreased by around 3.4 percent from US$ 153 million in 2014 to US$ 148 million in 2015 (UNWTO, 2016). It was because of the political unrest which prevailed in the country (Mukul, 2015).

Factors Constraining the Growth of Tourism in the BIMSTEC Region

1. Political Instability

It has been acknowledged that there is an inter-relationship between political instability and success of tourism (Scheyvens & Russell, 2009, p. 39). The BIMSTEC region is often prone to political instability which has been reflected in the past and present political scenario too. In Nepal, since 1990, after the introduction of democracy, twenty governments have changed which seems political instability is a chronic problem in this Himalayan nation. In 2011, the Government of Nepal set a target of one million tourist arrivals to its region and officially declared 2011 as the Nepal tourism year, but it was affected by political instability (Loh & Rai, 2011). Similarly, in Thailand, the 2008 anti-government protests have debilitated the tourism industry and shocked the entire world where more than 350,000 passengers were trapped at Bangkok’s two airports for one week (Voice of America, 2 November 2009). Furthermore, since the bloodless Siamese revolution of 1932, Thailand has experienced 12 multiple military coups, more than any other country in the world. The 2006 and 2014 military coups have had a major impact on the tourism industry which resulted in a sharp decline in tourist arrivals to Thailand (Tipchanta & Kaiser, 2014). Due to these incidents, many countries have issued travel warnings and advised their citizens stay away from the anti-government demonstrations in Thailand.
In the same manner, in Myanmar, the political conflict between then ruling military junta and the pro-democracy leader Aung San Suu Kyi has crippled the tourism industry during the period 1998-2011. The military government suppressed the pro-democracy movement and violated human rights on a large scale which shocked the entire international public. As a result, Myanmar’s relations with the world were frozen and many countries imposed sanctions on the military junta rule which were subsequently lifted in 2011. As a consequence, the Myanmar tourism industry has not achieved its full potential (Pirogova, 2012). Likewise, in Bangladesh, the 2013-14 political unrest between the ruling Awami League party and the Bangladesh Nationalist Party (BNP) has claimed more than 500 lives and paralyzed the entire tourism business which was the worst political crisis since its independence in 1971(Gowen, 2014). The same way, in 2006, after the end of nearly a century old absolute monarchy rule, the Bhutan government has begun to transform gradually from monarchy to democracy (Adhikari & Thapa, 2009). Due to these uncertainties, the member countries neglected the tourism sector. As a result, the foreign tourists have shown interest in visiting other countries except the BIMSTEC nations.

2. Pandemic Diseases

The BIMSTEC region has been threatened by pandemic diseases such as Severe Acute Respiratory Syndrome (SARS), swine flu and Ebola which destabilize and disrupt the trade as well as tourism activities in this region. The outbreak of the SARS epidemic during the period 2002-2004, in Hong Kong, shocked entire globe. Within a short span of time, the deadly viral disease has spread to mainland China and subsequently the entire world (Khan, Khan, Chotani, & Laaser, 2003). In the BIMSTEC region, in 2003, fourteen SARS cases were been reported in Thailand (Beirman, 2009) and one case was confirmed in India (The Guardian, 17 April 2003). Due to the SARS crisis, the Thai tourism industry has experienced its largest ever fall in percentage. The number of international tourist arrivals at Bangkok airport declined by 41 percent for the first three weeks of April 2003 as compared to same period in 2002(Muqbil, 2003).

Similarly, swine flu is also a notorious deadly epidemic disease which has severely hampered the tourism business all over the world. Mexico City was the epicentre of the swine flu outbreak in 2009 which spread across the globe and caused tens of thousands of deaths (BBC News, 3 May 2009). In view of this, the BIMSTEC countries took adequate measures
to combat swine flu influenza in this region. However, swine flu has recurred in India during December 2014 (Osborne, 2015). As of 2015, the swine flu onslaught claimed more than 2,000 lives and affected over 35,000 people (CHSS, 2015) which created panic in India and her neighbouring countries. Because of the influenza outbreak, international tourists are reluctant to visit this region.

Another worsening deadly pandemic disease is the Ebola virus which struck the economy of the globe and economy of the African continent in particular. The Ebola virus outbreak of 2014 that has been reported in West Africa has crippled the entire West African economy. Not a single Ebola death case has been reported across the BIMSTEC region, but there is a sign of nervousness among this region’s leaders that a sudden widespread outbreak of Ebola can infect this region. Furthermore, in view of rampant Ebola cases in West African region, the BIMSTEC member countries have cancelled flights to West African countries and vice versa. As a result, the tourists who come from West African countries to this region for medical and tourism services have either cancelled or postponed their trips. Owing to this, international tourist arrivals to this region have significantly declined (Anon., 2014).

3. Complicated Travel Procedures

Cross-border travelling is still a very difficult task in this region which consists of customs and border formalities, cumbersome visa processes, free movement of people and goods within certain areas, and so forth. Travel procedures and requirements have not yet been fully simplified for both international and intra-regional travelers among member countries. For example, to visit some states of northeastern India and the Northern Province of Sri Lanka as well as the northern region of Myanmar, especially Kachin state, one should need special permits apart from country entry visa (Anon., 2008; Rasul & Manandhar, 2009, p. 198).

In this region, the visa process is full of pitfalls i.e., a more expensive and laborious task due to its bureaucratic red tape and lengthy procedures. As mentioned in a travel guide to India ‘getting your visa will probably be your first encounter with the morass of Indian bureaucracy’ (Finlay, Crowther, Thomas, & Wheeler, 1993, p. 89; Bhattacharyya, 1997, p. 378). But there are some positive developments regarding visa facilities. Some of the member countries such as Thailand, Sri Lanka and recently India have launched Visa on Arrival Scheme which enables international tourist flows to this region (Mangla, 2014). Furthermore,
India has announced immediate medical and business visas to all SAARC countries at the 18th SAARC summit in 2014 at Nepal which reduces red tape, strict protocols and stringent procedures (Business Line, 26 November 2014).

4. Poor Connectivity

Connectivity is essential for any regional and sub-organizations of the world. In this region, connectivity links such as air, road, railway and shipping connectivity are still tenuous and underdeveloped. On the other hand, ASEAN and EU have achieved tremendous benefits due to better connectivity. The BIMSTEC region also can achieve these benefits if it develops better connectivity in its region. Poor cross-border connectivity remains one of the main stumbling blocks for tourists among these member countries. During the British Raj, there was direct rail connectivity among countries of the Indian sub-continent, i.e. India, Sri Lanka (with ferry service connecting railheads at Talaimannar and Dhanushkodi), Bangladesh and Nepal. Later, those routes either have been shut down or devastated by natural calamities. After being closed for nearly 43 years, in 2008, train service between India and Bangladesh was revived. However, little progress has been achieved.

With regard to bus services, there are only a few services which operate on a limited scale among member countries such as India-Bangladesh and India-Nepal. Two passenger buses ply between India and Bangladesh in two different routes such as Kolkata-Dhaka and Agartala-Dhaka routes (Sobhana, 2012). In the same way, two regular bus services run between India and Nepal in two separate routes, these are the Delhi-Kathmandu and Varanasi-Kathmandu routes (The Times of India, 5 March 2015). In relation to Bhutan, there is no bus service because the Bhutanese government doesn’t allow tourists to enter into her territory through land routes, one has to fly through air service to reach Bhutan (Rasul & Manandhar, 2009, p. 199). So far, there is no road connectivity between Thailand and the rest of the BIMSTEC countries, but, the ongoing India-Myanmar-Thailand trilateral highway can fill the gap which will be completed by 2020 (MEA, GOI, 2016).

Similarly, air accessibility is also one of the inhibiting factors in this region. Despite civil aviation having been liberalized and low cost carriers (LCC) having been operational and air transport networks having developed to some extent, there are no direct and frequent air services among the BIMSTEC member countries, for example between Sri Lanka and
Nepal for nearly two and a half decades (*The Kathmandu Post*, 19 December 2014). In the same manner, shipping connectivity is also inadequate in this region. But, there is some positive development. In 2008, the Government of India in collaboration with Myanmar started the Kaladan Multi-modal Transit Transport Project (KMTTP) in a bid to facilitate and promote shipping transportation, including ferry services between north-eastern India and the Kolkata Port. This project will be fully operationalized by 2019 which starts from Kolkata and passes via the Sittwe Seaport in Myanmar to Mizoram in North-eastern India (MDoNER, GOI, 2014; MEA, GOI, 2016). Hence, KMTTP may enhance maritime connectivity between member countries.

### 5. Safety and Security

The success or failure of any tourist destination depends on safety and security which are always indispensable prerequisites. Terrorist attacks, crimes, internal civil wars, natural disasters, political upheavals and pandemic diseases have exposed the security vulnerabilities of this region. The deadly 26/11 Mumbai terror attacks in 2008 and the 2012 Delhi Nirbhaya gang rape incident have tarnished India’s image as a safe destination for tourists, particularly women tourists and it has made the lists as an unsafe country to visit (*The Times of India*, 22 August 2014). Likewise, human trafficking, especially that of women and children, has been widely prevalent across Thailand which has downgraded the country’s status in the world’s list of tourist destinations. According to the U.S. Department of State’s ‘Trafficking in Persons Report 2014’, Thailand is listed in the lowest “Tier 3” ranking along with Malaysia and Venezuela which are world’s worst centres for human trafficking and are lawless, oppressive and dysfunctional states (*CNBC News*, 21 June 2014). Similarly, twenty-five years of prolonged internal civil war between the minority Tamils and the majority Sinhalese in northern Sri Lanka have caused human rights violations and some of the heinous atrocities of the 21st century (Think Again - Sri Lanka Campaign for Peace and Justice, n.d.). As a result, some of the western countries imposed sanctions on the Sri Lankan government which resulted in a sharp decrease in foreign tourist arrivals to Sri Lanka. In the wake of these incidents, the BIMSTEC region ranked poorly on the safety and security index which was conducted by the World Economic Forum 2013. According to this report Sri Lanka secured the highest rank and Nepal secured the lowest rank on the safety and security index among member countries. Table 5.4.3 shows the latest index report.
<table>
<thead>
<tr>
<th>Country</th>
<th>Overall Index</th>
<th>Safety and Security</th>
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<tbody>
<tr>
<td>Bangladesh</td>
<td>123</td>
<td>83</td>
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<tr>
<td>Bhutan</td>
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<tr>
<td>India</td>
<td>65</td>
<td>74</td>
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<tr>
<td>Myanmar</td>
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<tr>
<td>Nepal</td>
<td>112</td>
<td>109</td>
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<tr>
<td>Sri Lanka</td>
<td>74</td>
<td>35</td>
</tr>
<tr>
<td>Thailand</td>
<td>43</td>
<td>87</td>
</tr>
</tbody>
</table>

Note: Travel and Tourism competitiveness index is based on 14 pillars and covered 140 countries in the world. Two pillars are selected among fourteen for research interest.

6. Low level of technology

Inadequate technological facilities are also one of the hindrances to the development of the tourism sector in this region where most of the tourist places are not well connected with technological facilities such as internet and mobile phone networking services. Tourists those who come from technologically advanced countries may face difficulties in order to cope with these situations. As a result, the BIMSTEC region became a less favourable destination for them. For example, in Myanmar in the year 2012, a study conducted by a global think tank reports that merely 1 per cent of the Burmese people had internet access facilities. Min Than Htut, a Yangon-based young tour travel operator points out about the internet connection “it used to be so slow, it used to take me almost one hour to reply to one email sometimes! (to my tourist customers across the globe)” (Long, 2014).

5.5. TECHNOLOGY

Technology is regarded as the physical tool used for transformation of any resource. Possession and application of technology has been imperative for the achievement of major goals of economic growth and development for any country across the globe. According to Schumpeter, “institutions, entrepreneurs, and technological change are at the heart of
economic growth” (Kabir, 2012, p. 2). Technology moulds the political, economic, and socio-cultural systems of the country. It is said that “technology does not cause society, nor does society cause technology. Rather, technology is developed in society, in the complex interplay of social factors and actors that are at the same time both cause and effect” (Servaes, 1990, p. 11). Technology is not simply technical equipment, but rather it is knowledge in all its diverse applications.

Technology has four fundamental elements such as (Islam, 2007, pp. 6-8):

1. Product tools and facilities — it is also known as ‘Technoware’. It consists of all physical facilities essential for the transformation manoeuvre, namely, instruments and factories. The effective usage of this element requires operators with certain capabilities as a minimum condition.

2. Production skills and experience — it is also called as ‘Human ware’, comprising expertise, diligence and many other features. This is likely to generate, operate and maintain all transformation facilities.

3. Production facts and information — this stands for document-embodied technology or ‘inforware’ including all accumulated facts and figures required for the transformation operation such as designs, specifications, observations, relations, equations, charts and theories. It stocks accumulated knowledge for time compression by individuals in learning and doing. This accumulated knowledge needs to be regularly updated for its usefulness.

4. Production arrangements and linkages — it is also known as ‘Orgaware’, involving the grouping’s allocations and organizations. It helps in planning, organizing, activating, motivating and controlling transformation operations.

These above-mentioned elements are complementary to each other. The absence of any of these four elements can hinder processing of natural resources to finished goods. These elements also interact with one another in a complex mode; hence the proper choice of technology can be made by understanding the nature of these interactions (Islam, 2007, p. 8). In this context, it is also important to understand about how technology is developed.
Development of Technology

Development of technology is closely interlinked with development in science. Until the 19th century, technological development occurred at a sluggish speed because of the lack of scientific knowledge. With gradual advancement in science in the later stages, a remarkable progress has been witnessed in the technology sector. Subsequently, this led to the emergence of effective engines and machines which in turn paved the path for large-scale industrialization throughout Europe and America. Furthermore, there was also an upsurge in the production of energy due to availability of alternative sources of energy thanks to improvements in technology. Technological progress brought about speedy innovations in the manufacturing and transportation sectors which consecutively proliferated in the form of industrial revolution. Hence, technology is indispensable for industrial growth.

The foundation for the development of technology is generally laid down in research which must be systematically carried out. Research is undertaken by both state owned and privately owned enterprises like industries, factories, research organizations and universities with the help of substantial investment. Technology carries certain legal obligations such as patent law. A patent having a specific time period of validity is intended to give opportunity to the inventor to earn and make profit out of the invention. Each newly invented technology has a patent lifetime. With expiry of the patent lifetime, others can use technology legally without getting the consent of the owner. Technologies invented through researches have commercial implications.

Development of technology is not at the same pace in the developed and the developing countries. While in developed countries, private sector organizations hastily carry out major research activities and acquire patents for their output and apply them for commercial purposes, in developing countries, universities and Research & Development (R&D) organizations are the main research centres where the majority of research activities are executed and not much of the research output obtains patent. Moreover, in developed countries, production enterprises like industry and factories take a lead in carrying out research, but in developing countries, these production enterprises are not so dynamic in undertaking considerable research, thereby leading to slow progress in these countries. Again, developing countries make less investment in R&D than developed countries. For import of technology, these countries are mainly dependant on advanced countries to meet
their needs and most often, they get outdated technology which further hampers their growth. It is suggested that developing countries should follow the model of technology-based development of developed countries (Islam, 2007, pp. 8-9).

Transfer of Technology

The concept of technology transfer emerged around the 1960s; since then it has received much attention in the academic sphere. Technology transfer is generally understood as the transfer of industrial technology from developed to developing economies for technology based development. Transfer of technology takes place from the place of its origin to another place of application. It is also defined as a “process of transferring skills, knowledge, technologies, methods of manufacturing, samples of manufacturing and facilities among governments or universities and other institutions” (Kabir, 2012, p. 2).

The main purpose of technology transfer is development and commercialization and as such it is aimed at developing inventions from the lab into marketable products so that the general public at large can benefit from the research as quickly and as efficiently as possible (NRDC, 2017). This is important for all sectors of economic development such as agriculture, industry and service sectors. Technology transfer takes place not only in the international sphere but also in the domestic sphere of a country. It is called ‘In country Technology Transfer’ when technology transfer takes place within the country and ‘International Technology Transfer’ when it happens in the international sphere across boundaries. Furthermore, technology transfer takes place only after a reasonable payment is made by the recipient country for the transferred technology. It mainly takes place through modalities such as joint ventures, FDIs, personal contacts, or a knowhow agreement ("Note on Technology Transfer Issues", n.d.). Besides, there are certain other modalities for transfer of technology as follows:

Technology transfer is mainly a commercial deal which takes place between a buyer and seller. Technology transfer deal has not occurred between two governments i.e., donor and recipients; rather it takes place between individuals and firms. In such deals, government plays a role of promoter, facilitator and regulator (Islam, 2007, p. 12). There is a gamut of formal and informal cooperation between technology exporters and technology importers. Technology Transfer is made possible through certain agents which are involved in developing new technologies. These agents mainly comprise R&D Units, Universities, Public
Research Centres, and Technology Institutes, namely, institutions and labs. There is no fixed price for different components of technology, since it is subject to the bargaining competence of the buyers and sellers as well as their conditions. Depending upon the nature of flow, there are two types of technology flows *viz.*., vertical technology flow and horizontal technology transfer, which are illustrated as follows (Mansfield, 1975; Rastogi, 2014),

- Vertical tech flow starts from R&D and ends at the final buyer. It helps in applying knowledge from basic science in applied research, contributing towards product development and finally production.

- Horizontal Tech transfer takes place from lab to lab, from factory to factory and from country to country. This implies transfer of technology from one place to another of the same nature. For instance, it happens when Multi-National Corporations (MNCs) establish subsidiaries in foreign countries.

**Information technology**

The area of science-based high-end technology includes communication and information technology (hardware and software), space technologies (design, launch and operation of various types of satellites to acquire and utilize the relevant data), pharmaceuticals and fine chemicals, biotechnology and superconductors. Electronics has been the principal catalyst of innovation since the inventory of the transistor around 1950. There has been a rapid expansion in the use of Information Technology in every sector of development. India has leverage in the use of software technology (Hanna, 1994).

**Status of the Technology Sector in the BIMSTEC region**

**Bangladesh**

In Bangladesh, the potential of Science &Technology (S&T) remained neglected by policy makers, bureaucrats, scientists and government machineries until 1986 due to the absence of a credible pledge at all levels. It is only in the year 1986 that Science and Technology Policy was adopted for the purpose of development of indigenous technology and adaptation of foreign technology. But, this policy has failed owing to improper implementation at the ground level (Rouf, n.d.). However, in 2013, Matrix Solutions Limited, first technology transfer service provider in the country, commenced its activities under company Act, 1994.
of Bangladesh contingent upon ‘A New (Matrix) Method of Economic Analysis’ and it initiated development schemes for civic services delivery. Similarly, The Innovation & Innovator Cell (IIC) has been set up at Khulna University of Engineering & Technology contingent upon the Structure of ‘The IIC development under Public Private Partnership’, for developing technology transfer and novelty management of national Science & Technology and Intellectual Property development (CPR, GoB, 2016).

With regard to ICT sector, in 2002, the government of Bangladesh has ratified the National ICT policy with a view to expand ICT industry within the framework of comprehensive national development. Later, again, in 2009, the National ICT Policy has been largely revised in many fields including science & technology, academic learning development, infrastructural development, agriculture, health and nutrition. At present, approximately 1000 registered software companies are functioning by hiring around 70,000 ICT professionals in the country (Ahamed, 2014).

**Bhutan**

Bhutan started planned development in 1961. The forces of globalization since the early 1990s have driven the need for development and use of Information and Communication Technology (ICT) in the country. The national ICT policy process initiated in 2003 became the foundation for an “inclusive and consultative process for formulating a new strategic framework for ICT in Bhutan” (MoIC, Govt. of Bhutan, 2009, p. 15). Institutional capacity has been built to standardise, harness and support ICT activity (MoIC, Govt. of Bhutan, 2009, p. 12). Bhutan has achieved remarkable progress in upgrading the infrastructure and capitalisation of mature technologies despite being a relatively late entrant. With its immense hydropower generation capacity, the country has begun to take the main technological initiatives in the South Asian region in recent times. However, the challenges such as geo-demographic constraints, limited resources, small scattered population, inadequate ICT and knowledge-workers, limited size of the domestic ICT market, limited access to capital, young and small ICT private sector and poor enforcement of intellectual property rights are among others in restricting the expansion of ICT businesses in the country (MoIC, Govt. of Bhutan, 2009).
India

At present, India has observed an exponential growth in technology thanks to its endeavour to open its economy to the global economic forces. Technology has been the key to the expansion and progress of the Indian economy. With the introduction of the Indian economy to the Liberalization, Privatization and Globalization (LPG) policies in 1991, several Indian companies have prioritized different types of financial, technical and other forms of collaborations by entering into proper technology transfer agreements, though some were not successful. In general, there are two means through which technology can be acquired. First, technology can be produced by a country through its own research and development. And second, it can be procured from indigenous or imported sources. The procurement of technology is also referred to as 'Technology Transfer' and it is facilitated by a technology transfer agreement. In this case, India has preferred a judicious blend of indigenous and merchandized technology (Lakshminarayanan, 2011).

There exists a legislation since 2008 for developing technology transfer in the country. Now-a-days there is more emphasis on Research & Development, opening Technology Transfer Offices, Universities, and institutions. In India, the agricultural industry plays a prominent role in technology transfer besides the other sectors, namely, telecom and space technology. At present, in terms of global research and development expenditure, India’s share is 3.7%, amounting to 1% of its national GDP on research. According to a report, India’s performance has improved as there has been an upsurge in the number of patent applications from 11,000 in 2001 to 42,291 in 2011 (Rath et al., 2014, pp. 1058-59). The Govt. of India now emphasizes upon incentivizing public–private partnerships to enhance successful technology transfer.

Myanmar

Myanmar’s isolation for a long time contributed towards its non-access to modern technological infrastructure. Technology development and technology transfer have remained largely neglected in the country. In addition, it lacks a strategic innovation policy in technology sector. Furthermore, the country also lacks a coordinated and coherent policy framework to support technology developments in universities, research and development centres, laboratories and incubators. Even it has legislations on IPR but with weak enforcement. The other challenges for the country in areas of technology development are as
follows, absence of government grants or incentives for initiating technology development related activities, ultimate dependency on foreign funding, lack of connectivity between universities and research centres, and slow speed of broadband network. However, in the direction of encouraging technology development and innovation, certain collective efforts have already been initiated (Chang, 2013).

**Nepal**

Participation in the process of global integration is pertinent upon scientific and technological progress. Nepal has made certain progress in the sector of IT thanks to multiple approaches undertaken by the Nepalese Government. The country has witnessed the emergence of an indigenous computer profession and capabilities of national IT companies in the global market. The government adopted an information technology policy in 2000, with objectives to strengthen employment via reaching IT among the common people ("Note on Technology Transfer Issues", n.d.). However, the country still lags in this sector. It has to concentrate more on meeting necessary conditions for technology acquisition and development.

**Sri Lanka**

The possession and procurement of advanced technology is a decisive factor in the economic growth of any country. Sri Lanka, being a lower middle income country, has been deprived of high-end technology. The country’s production and export is mainly dependant on simple technology for which it can easily be kicked out of the competition in the world markets (Wijewardene, 2015). Regarding science and technology, it was in the year 1978, the first policy statement was developed in the country. Since 1991, a presidential task force has been authorized for the development of an open Science & Technology policy. Similarly, in 2014, in order to line up the activities of the Science and Technology institutions in relation to national development, the Ministry of Technology and Research devised a R&D Investment Framework of 2015-2020. Under this plan, ten achievable interventions have been identified for narrowing the gap between research and development in 10 main focus areas of national development (Ratnasiri, 2015).
Thailand

Thailand has witnessed rapid growth in the ICT sector and the consequent spurt in new knowledge and innovation in the past few decades. In Thailand, there has been a proliferation in the total number of ICT employed persons, mainly because of the surge in awareness among people about the use of technology and more emphasis on the ICT professional. Furthermore, there has also been a slow but steady increase in the use of computers and internet as well as in the internet access of the household due to advance in ICT infrastructure of the country (Santipaporn, 2010, p. 7). Technology transfer has been relevant in Thailand in dealing with climate change issues such as inventory and mitigation, vulnerability and adaptation. The country has attached importance to cooperation in research work on climate change and in this regard it has accessed “soft technology” in research methodologies (Wangwacharakul, n.d., p. 4).

Besides, it has also stressed the urgency of developing technology and facilitating technology transfers in the spheres of industry including cement, steel industry and others, as well as transportation, communication, renewable energy in energy sector, and capacity building. The Thai nation has recognized that the areas which are more likely to be subject to vulnerability and adaptation (covering rice, water resources, forest, coastal and health) need to be prioritized for soft technology transfer into these areas. Yet, Thailand faces some challenges like controversy over property rights and patent issues in the case of hard technology transfer which needs to be resolved wisely (Wangwacharakul, n.d., p. 8). However, to date, Thailand has been consistent in its attempt to enhance national ICT governance and ICT professionals (Santipaporn, 2010, p. 2). It is also concerned with developing the potential of international co-operation and facilitating technological transfer.

Technology Sector of BIMSTEC

This sector is led by Sri Lanka and it can be divided into two sub-sectors. These are, (i) Cooperation on technology transfer and (ii) Information Technology Products and Services.

(i) Cooperation on technology transfer

There is an enormous scope for cooperation in the area of technology transfer in this region. Till date, 3 Expert Group Meetings on the establishment of the BIMSTEC Technology Transfer Facility (BIMSTEC-TTF) took place in Colombo in March 2009, May 2011 and
August 2015, respectively. The BIMSTEC-TTF will enhance the technology bases and develop a mechanism for the transfer of available technology among the member states.

(ii) Information Technology Products and Services

India and Thailand have achieved tremendous growth in Information Technology. For example, India has become one of the world’s super powers in the software industry, while Thailand has acquired specialization in hardware assembling. Collective efforts are required to better utilize IT services and products such as e-governance, e-commerce and creating a knowledge-based society among the BIMSTEC member countries.

In the end, it can be concluded that advancement in technology is indispensable for development and prosperity in the region. In this regard, the BIMSTEC countries need to focus upon developing cooperation in science-based high technologies through R & D. In addition, efforts must be made to develop a common strategy to facilitate FDI-induced tech transfer and adopt a comprehensive and effective Intellectual Property Rights protection policy to promote foreign investment in technology. Furthermore, effective collaboration is required among various agents involved in the technology transfer process, namely, R&D Units, Universities, Public Research Centres, and Technology Institutes. In a nutshell, the BIMSTEC states must emphasize upon further collaboration in research and development, technology transfer and private sector participation in order to expand the technology sector for mutual benefit.

5.6. FISHERIES

Fisheries sector holds a strategic position in both the economic and social development of any nation. It plays a leading role in the economic activity of many countries in terms of bringing foreign exchange revenues, generating employment opportunities, contributing to families’ food security and nutritional status and providing livelihood for a huge segment of the economically deprived population (Singh et al., 2006; Prathap, 2011). Over the last five decades, the world fish production has increased gradually, with food fish supply growing at an average annual growth rate of 3.2 percent, leaving behind the global human population growth at 1.6 percent (FAO, 2014). In 2014, the world’s total fisheries production touched
167.2 million tonnes. Of these nearly 93.4 million tonnes were obtained from marine and inland capture fisheries industry and nearly 73.8 million tonnes from the aquaculture industry. The average annual per capita global apparent fish consumption has increased significantly i.e. twofold from an average amount of 10 kg in the 1960s to nearly 20 kg in 2014. The factors like increasing rapid population growth, expansion of urbanization, growing households’ incomes, and coupled with improved aquaculture production and reduced waste have contributed towards remarkable progress in the fisheries sector (FAO, 2016). Keeping in view the important role played by the fisheries sector in providing food supply and ensuring food security of the global population, the BIMSTEC countries identified fisheries as one of their important priority sectors of cooperation (DOF, Govt. of Thailand, 2008, p. i).

An Overview of the Fisheries Industry in BIMSTEC region

An estimation of around 30 percent of global fishermen are residing in the littoral countries of the Bay of Bengal (PIB, GOI, 2016). With relatively small economies, marine living resources are the main source of livelihoods of a large number of people of the coastal community along with their countries in the form of foreign exchange earnings of this region (DOF, Govt. of Thailand, 2008, pp. i-ii; Harakunarak, 2016). Hence, cooperation in the sustainable development of fisheries and upgrading of the fishing industry in this region has enormous potential which can significantly contribute towards guaranteeing food security and enhancing the living standards of people (PIB, GOI, 2016). It is reported that the BIMSTEC countries contribute nearly 10% of the total world fisheries export (RIS, 2016).

Bangladesh

Bangladesh, with its perennial rivers viz., the Brahmaputra, the Padma, the Teesta, the Meghna and the Jamuna and abundant inland water bodies, is regarded one of the extremely appropriate regions for fish farming in the world. The country has an enormous quantity of both inland and marine capture fisheries and aquaculture potential (Shamsuzzaman et al., 2017). The fisheries sector’s impact on Bangladesh’s national economy is considerable. During the period of 2004-05 to 2014-15, the fisheries growth rate remained constant at an average of 5.38% per annum whereas aquaculture indicated a growth performance of 8.2% (Hussain, 2016). In 2016, it contributed 3.65% to the total GDP of the nation and it accounted
for 23.78% of country’s overall agricultural products. In 2015, Bangladesh stood at the 4th position in the world in terms of inland capture fisheries production. With regard to aquaculture output, Bangladesh is ranked in the 5th position in the world, representing 55.15 percent of the country’s total fish production (Bangladesh Economic Review, 2016).

**Bhutan**

Bhutan, being a land-locked country, is deprived of marine capture fisheries resources. But, aquaculture is the main source of livelihood for the rural populace in some parts of the country. At present, in Bhutan, the demand for fish is greater than the domestic output. In 2014, the country’s total fish production accounted for only 119 metric tonnes while the annual fish imports amounted to 3,101 metric tonnes from abroad, at a cost of Bhutanese Ngultrum (Nu.) 394 million (Bhutan RNR Statistics, 2015). Annual per capita fish consumption in the country is 5.58 kg, whereas fish represent around 3.18% of all essential protein consumed (FAO, 2014). In order to reduce fish imports from neighbouring countries and achieve self-sufficiency in the domestic fish sector, the Govt. of Bhutan established the National Centre for Aquaculture (NCA) under the jurisdiction of the Department of Livestock (DoL), Ministry of Agriculture and Forests (MoAF), whose primary aim is developing fish farming or aquaculture in the country (NCA, RGoB, 2013).

**India**

Fisheries is one of the highly profitable industries in the country and it is a major source of livelihood for the approximately 14.49 million populace involved altogether. Over the past six and one-half decades, the Indian fisheries sector transformed completely from the traditional to the commercial scale which has led to a huge surge in fish output from a mere 7.5 lakh tonnes in 1950-51 to nearly 107.95 lakh tonnes in 2015-16, whereas the export income from the sector touched about 33,441 crores in 2014-15 (DADF, GOI, 2016). During the 12th Five Year Plan, the fisheries growth rate was fairly steady at an average of 6 percent per annum. In 2014, India is ranked as the world’s 2nd biggest fish producer, behind China, and accounted for approximately 6.30 percent of the world’s fish production and nearly 5 percent of global trade. Similarly, India stood at the world’s 2nd largest position in terms of aquaculture production, only next to China. In 2006, the Govt. of India set up the National
Fisheries Development Board (NFDB), a special purpose vehicle, for achieving enhanced and viable growth of fisheries and aquaculture (DES, GOI, 2016).

**Myanmar**

After rice, fish is the next important diet of Myanmar’s households. Over the past five years, the fisheries sector influenced Myanmar’s economy to a large extent. In fact, it is the fourth largest contributor to Myanmar’s national GDP and the fourth biggest source of foreign exchange revenues (ODM, 2016). It is estimated that Myanmar holds one of the highest levels of fish and seafood consumption of any nation in the globe (Belton et al., 2015). In 2011, the country’s annual per capita fish consumption was 55 kg per person. In 2014, Myanmar attained the second place in terms of inland capture fisheries production in the world. Likewise, since 2004, aquaculture or farmed fish have increased at a rate of approximately 9 percent per annum in the country. In 2014, Myanmar has been ranked as the world’s 12th biggest aquaculture producer as well as the 9th largest producer in terms of marine captured fisheries (FAO, 2016).

**Nepal**

Nepal, being a landlocked state, does not have access to oceanic capture fisheries resources. However, aquaculture is a major source of fish farming in the country. The country’s total fish farming output has substantially risen to an 8-9 percent annual growth rate and touched 77,000 metric tonnes in 2014-15. But, the domestic output of fish and seafood is not adequate to meet the households’ demand in the country and thereby Nepal imports large quantities of fisheries products from neighbouring countries. Nepal imported approximately 11,176 metric tons of fish and seafood products from India in 2014-15. At present, the fisheries industry in Nepal comprises 1.32% of its national GDP and 4.22% of its agricultural domestic products (DoFD, GoN, 2016; Kafle, 2016). Over the past three decades, the country’s annual per capita fish consumption has seen a six-fold increase from 0.33 kg per head in 1982 up to 2.10 kg in 2013. In fact, it is one of the lowest per capita fish consumptions growth rate in the BIMSTEC region (Gurung, 2016).
Sri Lanka

The fisheries sector plays a crucial role in the Sri Lankan economy by offering employment opportunities for around 2.72 million marginal people as well as catering to the protein content requirements of approximately 60 percent of the populace in the country. In 2015, the country’s total fish production reached 5,20,190 metric tonnes. Of these 4,52,190 metric tonnes were obtained from marine fisheries and the remaining 67,300 metric tonnes from inland and aquaculture fisheries. The fisheries sector in Sri Lanka contributed 1.3% to its national GDP and it attained the world’s 33rd position in terms of captured fish production in 2015 (NARA, GoS, 2016). Over the years, Sri Lanka’s per capita fish consumption has increased rapidly. As reported by the Sri Lankan Ministry of Fisheries and Aquatic Resources Development, the country’s per capita fish consumption level stood at 46.7 g in 2016. The Sri Lankan fisheries industry has received US$ 266.5 million in export earnings in 2014, comprising 2.4% of the country’s total export earnings (MoFARD, GoS, 2017).

Thailand

Thailand is endowed with ample reserves of marine and freshwater living resources. For the first time, in 2002, Thailand has been placed in the top-ten world’s largest fishing producing countries list (Mahasarakarm, 2007). In 2014, Thailand’s total fish production was around 26,67,309 metric tonnes. Out of this, marine capture fisheries output alone amounted to nearly 15,59,746 metric tonnes and it stood at the world’s 14th largest position in terms of marine capture fisheries producing countries. Similarly, aquaculture production was made of 8,97,763 metric tonnes and it was ranked the 13th biggest aquaculture producing nation in the globe. Thailand’s annual per capita fish and seafood products consumption was 31.4 kg in 2011 and it accounted for 11.7% of total protein content consumption in the country (FAO, 2016). In 2013, Thailand has been placed at the world’s 3rd position in terms of fisheries exports, constituting 56 percent of the country’s total fisheries output. In fact, Thailand has experienced a phenomenal growth rate in fish and fishery products exports due to the rapid development of marine fisheries in the country over the past two decades (SEAFDEC, 2017).
Scenario of Fisheries Production of BIMSTEC Countries

Capture Fisheries

Table 5.6.1: Capture Fisheries Production by BIMSTEC Countries between 1997 – 2014 ( Million Tonnes )

<table>
<thead>
<tr>
<th>Year</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>India</th>
<th>Myanmar</th>
<th>Nepal</th>
<th>Sri Lanka</th>
<th>Thailand</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>829426</td>
<td>260</td>
<td>352348</td>
<td>780800</td>
<td>11230</td>
<td>275609</td>
<td>2902898</td>
</tr>
<tr>
<td>1999</td>
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<td>920010</td>
<td>12752</td>
<td>319098</td>
<td>2952308</td>
</tr>
<tr>
<td>2001</td>
<td>1068417</td>
<td>240</td>
<td>3777092</td>
<td>1187880</td>
<td>16700</td>
<td>309885</td>
<td>2833974</td>
</tr>
<tr>
<td>2003</td>
<td>1141241</td>
<td>240</td>
<td>3712149</td>
<td>1343860</td>
<td>18888</td>
<td>331217</td>
<td>2849670</td>
</tr>
<tr>
<td>2005</td>
<td>1333866</td>
<td>220</td>
<td>3691362</td>
<td>1732250</td>
<td>19983</td>
<td>216280</td>
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<td>2007</td>
<td>1494199</td>
<td>200</td>
<td>3953476</td>
<td>2235580</td>
<td>20100</td>
<td>297448</td>
<td>2304951</td>
</tr>
<tr>
<td>2009</td>
<td>1821579</td>
<td>180</td>
<td>4066756</td>
<td>2766940</td>
<td>21500</td>
<td>330782</td>
<td>1870702</td>
</tr>
<tr>
<td>2011</td>
<td>1600918</td>
<td>160</td>
<td>4301534</td>
<td>3332979</td>
<td>21500</td>
<td>431753</td>
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<td>3579250</td>
<td>21500</td>
<td>473832</td>
<td>1719628</td>
</tr>
<tr>
<td>2013</td>
<td>1550446</td>
<td>3</td>
<td>4645182</td>
<td>3786840</td>
<td>21500</td>
<td>492103</td>
<td>1824829</td>
</tr>
<tr>
<td>2014</td>
<td>1591190</td>
<td>3</td>
<td>4718821</td>
<td>4083270</td>
<td>21500</td>
<td>535050</td>
<td>1769546</td>
</tr>
</tbody>
</table>

Source: Food and Agriculture Organization, 2016

Figure 5.6.1

Table 5.6.1 shows capture fisheries production by the BIMSTEC countries for the years 1997-2014. As for Bangladesh, since 1997 to 2009 the capture fisheries production continuously increased and decreased after 2009. In 2009, Bangladesh produced its highest ever marine capture fisheries output of around 1,821,579 metric tonnes. Concerning Bhutan,
since 1997 the capture fisheries production has continuously decreased. In fact, there was a drastic decline for the years 2011-2014. Due to this Bhutan does not have oceanic fisheries resources (NCA, RGoB, 2013). With regard to Myanmar, from 1997 the capture fisheries production rose dramatically till 2014. The country’s peak point in terms of capture fisheries output was in the year 2014. For Nepal, the capture fisheries production witnessed a positive growth trend. The production rate remained the same during the period of 2009-2014. As for India, from 1997 to 2001 the capture fisheries output has constantly grown which then declined for the next four years. Later it started increasing and touched the country’s highest-ever level in 2012 which then again fell till 2014. Regarding Sri Lanka, the capture fisheries production has increased continuously except for the years 2005-09. This was due to the tsunami catastrophe in 2004 which completely devastated the Sri Lankan coastal communities and its fisheries sector. The worst affected coastal areas populace who were directly and indirectly engaged in the fisheries sector production (Wanninayake, 2017). As for Thailand, from 1997 to 2014 the country has experienced largely negative growth in capture fisheries output, except some fluctuations during these years. It was owing to environmental degradation and reduced overfishing in the Gulf of Thailand (SEAFDEC, 2017). Overall, since the formation of BIMSTEC, the capture fisheries production demonstrates the growth trend, except for Thailand and Bhutan. Among the BIMSTEC countries, in terms of capture fisheries production, India stood at the top of the list and Bhutan at the bottom of the list.

**Aquaculture**

<table>
<thead>
<tr>
<th>Year</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>India</th>
<th>Myanmar</th>
<th>Nepal</th>
<th>Sri Lanka</th>
<th>Thailand</th>
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<tbody>
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<tr>
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<td>91114</td>
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<tr>
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<td>2119839</td>
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<td>3610</td>
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<tr>
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<td>30</td>
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<td>17680</td>
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<tr>
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<td>882091</td>
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<td>485220</td>
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<td>4304</td>
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<tr>
<td>2007</td>
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<tr>
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<td>1201455</td>
</tr>
<tr>
<td>2012</td>
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<td>8840</td>
<td>1272100</td>
</tr>
<tr>
<td>2013</td>
<td>1859808</td>
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<td>4555209</td>
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<td>-</td>
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<tr>
<td>2014</td>
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<td>962156</td>
<td>43400</td>
<td>34211</td>
<td>934758</td>
</tr>
</tbody>
</table>

Source: Food and Agriculture Organization, 2016  
Note: 1. -- indicates data are not available.
Table 5.6.2 shows aquaculture production by the BIMSTEC countries for the years 1997-2014. Regarding Bangladesh, since 1997 the aquaculture production has witnessed a gradual increase and this trend continued till 2014. It was because Bangladesh is regarded as one of the highly pertinent countries for cultivating small-scale aquaculture due to its favourable resources and agro-climatic conditions (Rahaman et al., 2012). As to Bhutan, the country’s aquaculture output has experienced positive growth trends during 1997-2014. For India, the aquaculture production has constantly risen except for the years 2009-2011. The country’s peak point in aquaculture output was in the year 2014. Concerning Myanmar, since 1997 the aquaculture output has unceasingly increased till 2014. The country was at the peak point in terms of aquaculture production in the year 2014. As for Sri Lanka, the country’s aquaculture output has grown continuously except for the years 1999-2003, 2009-10 and 2012-13. In fact, there was sudden surge during the years 2013-2014. The country reached its highest-ever level in 2014. With regard to Thailand, the aquaculture production has witnessed positive and negative growth trends. From 1997 to 2009 the aquaculture output grew continuously which then declined till 2014. The country was at the peak point in terms of aquaculture production in the year 2009. On the whole, since the formation of BIMSTEC, the aquaculture output shows the growth trend. Countries like Bangladesh, India and Myanmar have witnessed rapid growth in aquaculture production whereas Thailand and Sri Lanka have experienced both positive and negative growth trends.
Fisheries Sector within the framework of BIMSTEC

Within BIMSTEC, this sector is led by Thailand. So far, only one Expert Group Meeting was held on the Fisheries Sector in February 2001 in Bangkok, Thailand. Furthermore, in order to achieve sustainability in the fisheries sector, the Thailand Fisheries Department has proposed the “Ecosystem based Fishery Management in the Bay of Bengal” as an important project. In this connection, Thailand finished the work and published its report in September 2008. Also, Thailand hosted a BIMSTEC Meeting on ‘Sustainable Fisheries in the Bay of Bengal’ on 20-22 January 2009 in Bangkok. On the other hand, Bangladesh has put forward two other pertinent projects viz., (i) Study on the Impact of Offshore Oil and Gas Drilling on the Marine Fisheries Resources in the Bay of Bengal and (ii) Marine Fisheries Stock Assessment, Management and Development of New Fisheries in the Bay of Bengal. With regard to aquaculture, Thailand conducted the BIMSTEC International Training Program on Advanced Aquatic Plants Tissue Culture in August 2013 in Bangkok, Thailand (BIMSTEC Secretariat, 2016).

To sum up, the fisheries sector is rapidly developing in the BIMSTEC region due to increasing demand for fish and fishery products in the international market which is a major source of export earnings in most of the littoral countries of the Bay of Bengal. However, because of dearth of scientific information on fisheries stock assessment, it is very tough for the BIMSTEC member countries to efficiently deal with their fisheries. In addition, inadequate capital support, natural calamities like the tsunami in 2004 in the BoB region and the earthquake in Nepal in 2013, lack of technology and poor market access are some of the obstacles which have hindered the growth of the fisheries sector. Hence, efforts must be made for the development and transformation of the fisheries sector which has enormous potential to contribute towards augmenting national economies and promoting living conditions in the BIMSTEC region.

In conclusion, the BIMSTEC region has huge potential for growth and development in the primary priority sectors of cooperation. The fruitful cooperation among the member countries in these sectors would certainly result in the prosperity of the region. Therefore, BIMSTEC countries must concentrate upon the expansion of potentialities in each of these sectors. For example, in trade and investment sector, over the past one and a half-decade, intra-BIMSTEC trade has increased marginally from 3.6% in 2002 to 4.3% in 2014.
Likewise, the FDI inflows have grown from approximately US$ 320 million in 1990 to nearly US$ 60,856 million in 2015. But, the full potential of BIMSTEC intra-regional trade has remained largely untapped. In addition, the BIMSTEC FTA is still not operationalized. In this context, matters associated with non-tariff measures have to be ironed out. Also, Trade facilitation should be expedited in order to reduce trade cost and attain trade potential. Similarly, in transport sector, providing seamless connectivity is a major challenge before BIMSTEC. In this industry, approximately 160 projects were identified at the expense of around USD 45 billion. Development of cross border infrastructure is an important priority of this sector. However, issues related to transport sector, namely, transportation safety and services, regulation and conveyance agreements need considerable attention.

In the same manner, in energy sector, the geographical region covering BIMSTEC member states has an enormous potentiality in energy resources. For example, Nepal and Bhutan possess abundant hydropower resources while Myanmar has ample natural gas reserves beyond their use. There is a need for effective regional cooperation in order to develop, distribute and ensure efficient utilization of these resources among the member countries. If the resources are efficiently and effectively utilized, it will be extremely beneficial and subsequently reinforce energy security among the member countries. In a like manner, tourism industry, in the BIMSTEC region, has realized unequal development. For instance, Thailand and, to some extent, India achieved tremendous progress while Bangladesh, Bhutan and Nepal have remained at the lower stage of the development. In addition, intra-regional tourism within this region has to be improved. In this context, in order to promote tourism in this region, collaborative partnership is needed in some of the areas viz., creating and implementing single common visa & open borders, upgrading of infrastructure, using a single common currency, improving air linkages, initiating collective cooperation and promoting religious and medical tourism.

Likewise, in technology sector, innovation and technology transfer are considered as important factors in determining the economic growth of today’s global economy. However, most of the BIMSTECT countries are in infancy stage with respect to technology development and technology transfer. In this regard, BIMSTEC countries need to focus upon developing cooperation in science-based high technologies through R & D. In addition, efforts must be made to develop a common strategy to FDI-induced tech transfer and adopt a comprehensive and effective Intellectual Property Rights protection to promote foreign
investment in technology. Furthermore, in fisheries sector, BIMSTEC region possesses abundant fisheries resources. But, the issues like lack of technical know-how, inadequate capital and poor market access are the major obstacles which have hindered fisheries sector progress. In this context, there must be sustainable efforts for development and transformation of the fisheries sector under the aegis of BIMSTEC so as to enhance fruitful cooperation among the member states in this sector. To sum up, BIMSTEC as an organization should work towards expediting cooperation and collaboration among its member-states in all these primary priority areas of cooperation for achieving concrete results.

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