The foregoing analysis clearly portrays the existing inter-State disparities in the development of marine fisheries in India. There are vast differences in the marine and human resources possessed, fishing crafts and gears in use, employment of fishermen and fisherwomen, infrastructure, production and export of fish and fish products and also consumption of fish in the rural and urban areas of our country.

6.1 SWOT ANALYSIS

The problems and prospects of the fishing industry in our country could be better understood in the light of a SWOT analysis. The weaknesses and threats indicate the problems and strengths and opportunities show the prospects for development of fishing industry.

6.1.1 STRENGTHS

Strengths refer to the favourable conditions prevailing in the maritime States of our country for the accelerated development of fishing industry. The following are the strengths of the marine fishing industry:
1. *Excess Human Resource*

The study of human resource is vital from the point of view of labour-intensive industry like fishery. They are not only important as instruments of production but also end in themselves. Out of 35,19,116 fisherfolk population of the country, 22,93,425 (65.17 per cent) are adults, of which 8,89,528 (38.79 per cent) are engaged in fishing, 7,56,391 (32.98 per cent) in fishery related activities and only 83,073 (3.62 per cent) are in non-fishing activities. Out of the total adults, 17,28,992 (75.39 per cent) are employed and 5,64,433 (24.61 per cent) remain without any gainful employment.\(^1\)

2. *Untapped Marine Resources*

Marine fish production from near shore waters has reached almost a plateau and, at best, only marginal increase is predicted from this zone. Major gap in total fishable potential and present production exists in deep sea and off shore pelagic resources. According to Yadhava\(^2\) (2003), an estimation of the depth-wise potential shows that about 58 per cent of the resources are available in 0-50 metre depth, 35 per cent in 50-200 metre depth and 7 per cent in depth beyond 200 metre.

3. *Number of Fishing Crafts*

India is a country with maximum number of fishing crafts, both traditional and mechanized. There are 2,38,772 fishing crafts, of which, 58,911 (24.67 per cent) are mechanized boats, 75,591 (31.66 per cent) are motorized crafts and 1,04,270 (43.67 per cent) are non-motorised crafts. Though we have maximum
number of traditional crafts and that too non-motorised, they also contribute considerably for the GDP and provide livelihood to lakhs of fisherfolk families.

4. Varieties of Fishing Gears

Fishing industry looks out for fuel efficient fishing methods like long lines and gill nets, which have scope for future development, in the present context of high cost of operation and dwindling returns.³ Marine fishermen in our country use variety of fishing gears that can be applied during different fishing seasons to sustain their fishing operations to the maximum number of days. Out of 50,45,900 units of fishing gears, 41,34,926 (81.95 per cent) are gill net pieces, 2,47,107 (4.90 per cent) are hooks and lines, 40,808 (0.81 per cent) are long lines, 1,42,259 (2.82 per cent) are fixed bag nets, 75,303 (1.49 per cent) are drift nets, 69,188 (1.37 per cent) are trawl nets and others are 3.36,309 (6.66 per cent).

5. Trends in Fish Production

Available data on fish production reveals that it has been on an increasing trend. Marine fish production has increased from 5.34 lakh tonnes during 1950-51 to 29.41 lakh tonnes during 2003-04.⁴ There was a 550.75 per cent increase in marine fish production over a period of five decades. This situation may be attributed to the on-going process of rapid motorization/mechanization of fishing crafts and ban on mechanized trawling during certain periods to achieve sustainable fisheries development.
6. Trends in Export of Fish

While the quantity of fish export increased from 15,732 tonnes during 1961-62 to 4,12,017 tonnes during 2003-04, the value of total export increased from Rs.3.92 crores to Rs.6091.95 crores during the same period. The growth rate of exports in quantity term was 18.53 whereas in value terms it was 41.91. This situation may be attributed to the heavy demand for our marine fishery products from the Western and East Asian countries.

7. Non-Governmental Organisations

The role of Governments at the centre, state and local bodies has reduced in areas like financial outlay for fisheries development and provision for formal credit through NCDC, NABARD and nationalized banks. But, there emerged NGOs like SIFFS, DFSF and FS at the regional, district and village levels respectively to undertake credit, marketing and implementation of welfare schemes in the Southern States. For instance, the successful story of providing and recovering marketing-linked credit in Kanyakumari district in Tamil Nadu provides ample testimony to the role of NGOs as a saviour of traditional fisherfolk.

6.1.2 WEAKNESSES

Weaknesses refer to the unfavourable conditions, which become impediments for the development of fishery sector. The following are the weaknesses prevailing in the marine fishing industry:
1. **Over Population**

   Generally, the pressure of over population is acting as a depressing factor for the backward status of fisherfolk. The total fisherfolk population is 35,19,116 and the average family size is 4.7 with a minimum of 3.7 in Union Territory of Pondicherry and a maximum of 5.7 in Karnataka State.

2. **Lack of Technical Knowledge**

   Poor quality of human capital, i.e., lack of required technical knowledge is also a weakness for the development of marine fishing industry. Of the total marine fishing population, 56.5 per cent of fisherfolk are literates, of which 28.6 per cent have primary education, 22.2 per cent have secondary education and only 5.6 per cent have above secondary level education. Too much of illiteracy (43.5 per cent) may be attributed to the socio-economic backwardness of fisherfolk.

3. **Composition of Crafts**

   There are 2,38,772 fishing crafts in operation, of which 58,911 (24.67 per cent) are mechanised boats, 75,591 (31.66 per cent) are motorized crafts and the remaining 1,04,270 (43.67 per cent) are non-motorised traditional crafts. Out of 7,56,212 fishermen families, 4,66,676 (61.72 per cent) have no fishing crafts of their own but engaged in fishing. Further 9,389 (1.24 per cent) families have crafts, but do not go for fishing in the turbulent sea. (Census, 2005)
4. **Stage of Mechanisation**

The implementation of the programme of craft mechanization in India was broadly divided into a "Base" and four-development phases, namely,

<table>
<thead>
<tr>
<th>Base</th>
<th>Country craft</th>
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<tbody>
<tr>
<td>1st Development phase</td>
<td>Country Craft motorization</td>
</tr>
<tr>
<td>2nd Development phase</td>
<td>Introduction of Small Mechanized Boats</td>
</tr>
<tr>
<td>3rd Development phase</td>
<td>Introduction of more Specialised Boats</td>
</tr>
<tr>
<td>4th Development phase</td>
<td>Broadening into Fishing Fleet</td>
</tr>
</tbody>
</table>

India has reached only to the second phase of development in the programme of mechanization of fishing crafts.

5. **Absence of Infrastructure**

There are also wide disparities in the construction of fishing harbours and landing centres in the maritime States of India. The East coast area which possesses maximum number of fishing crafts (59.68 per cent) has only 18 (47.36 per cent) minor ports and four (26.66 per cent) minor ports are under construction and in the case of landing centres also, it possesses only 57 (40.14 per cent) of the total (142). This is one of the reasons for the migration of fishermen from Tamil Nadu, especially from Kanyakumari district to the West coast upto Gujarat.

There are 112 boat yards (50 per cent), 315 (34.81 per cent) ice factories, 31 (28.7 per cent) cold storages, 56 (49.56 per cent) freezing plants, 414 (41.73 per cent) curing yards and 153 (52.22 per cent) peeling sheds available in Kerala only. In the case of curing yards, 930 (93.75 per cent) out of 992 yards have been
established in Gujarat and Kerala. Only 2546 (79.51 per cent) fishermen villages have been connected by roads, 2,067 (64.55 per cent) have hospital facilities, 1336 (41.72 per cent) have banking facilities and there are 4,781 co-operative societies in all fishermen villages. Out of 2067 hospitals, only 316 (15.28 per cent) and out of 1336 banks, only 193 (14.45 per cent) are in the East coast. But, out of 4781 Fisheries Co-operative Societies, 3596 (75.21 per cent) are in the East coast areas.

6. Fishermen and Fisherwomen Co-operatives

Only one out of five fisherfolk is a member of some co-operative society (fisheries or others). About 15 per cent of the fisherfolk have membership in fisheries co-operative societies. Significant percentage of co-operative membership was recorded in Tamil Nadu, Pondicherry, Kerala and Karnataka. Dormant stage of Fishermen and Fisherwomen Co-operatives both in marine and inland sectors is another weakness.

7. Uneven Spread of Fishing Crafts

Maharashtra (13,053) and Gujarat (13,047) account for 44.5 per cent of the mechanized crafts in the fishing industry. Out of 29,241 trawlers in the maritime States/Union Territories, Gujarat (8,002) accounts for the maximum followed by Tamil Nadu (5,300), Maharashtra (4,219), Kerala (2,425) and other States. Out of 8,862 Dolnetters, 4,400 are in Maharashtra, 2,425 are in Gujarat and 1692 are in West Bengal. The States of West Bengal (4,355), Maharashtra (2,550), Gujarat (2,363) and Orissa (1,750) account for 80 per cent of gillnetters (13,864) in our country. Nearly two-third of the motorized crafts is found in Tamil Nadu (22,478),
Andhra Pradesh (14,112) and Kerala (14,151). The maritime States on the East coast account for about 73 per cent of the non-motorised fishing crafts. Andhra Pradesh (24,386) and Tamil Nadu (24,231) being the lead States. (Census, 2005)

8. Absence of Repairing and Fuel Stations adequately

The rocky bottom of the sea in the near-shore area affects both fishing gears and also outboard engines (OBEs). The latter requires workshops locally to avoid unnecessary wastage of working days and also too much of transport cost. Moreover, only few villages in a coastal district have fuel stations. Though fuel cost amounts to one-third of the total cost of production, it increases still further because fuel is being supplied by private individuals at a higher price. This is one of the reasons for the growing indebtedness of the fisherfolk.

9. Absence of Group Lending

In the later part of 1980s and the beginning of 1990s, the National Co-operative Development Corporation (NCDC) sanctioned group loans with subsidy in order to speed up the process of motorization. The group lending system is not in practice now. Individual ownership of crafts paves the way for exploitation of one fisherman by another while collective ownership encourages prompt repayment. But, absence of follow up actions and insufficient staff in the Assistant Director of Fisheries Office increased the defaults in such loans and put an end to this system.
10. **Predominance of Informal Credit**

Earlier studies (Kader, 1989; Eugine, 1990; Senthilathiban & Selvaraj, 1990; Stephen, 1993; Pazhani, 1998) reveal that the availability of formal credit is inadequate and informal credit plays an important role in the credit market structure of fishing economy. For instance, the findings of Pazhani's (1998) study reveal that informal credit agencies like village moneylenders and NGOs contribute 72 per cent of total credit requirements of fishermen in Kanyakumari District, Tamil Nadu. Various studies on fisheries credit reveal that there exist two types of credit linkages in the fishing economy. They are: (i) labour-linked credit and (ii) Marketing linked credit. In both the linkages, fishermen are being exploited in different ways.

11. **Absence of Fuel Subsidy**

No uniform policy is followed in the maritime States of India regarding fuel subsidy. Some States provide fuel at subsidized rate to both traditional and mechanized boats (MBs) operators while others provide it only to MBs. But, the Central Government provides 250 litres per day for 6 days in a week (1500 litres of diesel per month). There is no such provision for the traditional craft operators, who use kerosene for operating their crafts.

12. **Absence of Minimum Price to Labour and Fish**

Every year we could see news through different dailies and monthly magazines regarding the agitations regarding bonus for industrial workers, reducing the prices of inputs for agricultural production and also fixing minimum
prices for the output produced by both agriculture and industry. But, there is no such Minimum Price Legislations to support either fishing labourers or fish producers.

14. Sethu Samuthiram Programme

With the depleting fish resources of the sea and the presence of foreign trawlers, fishing communities are facing a crisis. The execution of Sethu Samuthram Channel (SSC) Project would aggravate this crisis. The SSC authorities have acknowledged that the entire stretch of the channel (164 km) will not be available for fishermen to cast their nets.\(^8\) Along the loss of fishing ground, the constant dredging (the channel has to be perennially dredged to maintain its depth) will affect fish breeding. The increased movement of large vessels will pose a threat to small fishing crafts and fishing nets. Further, the increased depth of the SSC will enable large foreign fishing trawlers to enter the Gulf of Mannar, the Palk Bay and the Bay of Bengal.

15. Rigid Plan Outlay

Available statistics on financial outlay and expenditure for fisheries development reveals that actual expenditures are less than outlay in all the five year plans. Further, the percentage of outlay for fisheries development has been less than 0.5 per cent of the total Plan outlay and the percentage of fisheries outlay to agriculture and allied activities has been less than six per cent.
6.1.3 OPPORTUNITIES

Opportunities mean the prospects for marine fisheries development in our country. They are:

1. Human Resource

As per Marine Fisheries Census 2005, there are 22,93,425 adults, of which 17,28,992 are employed in fishing, fishery related and non-fishing employments. As such, 5,64,433 persons remain without any gainful employment. They can be better employed if all the fishery infrastructure – fishing, marketing and exporting, are established in each district in maximum numbers.

2. Deep-Sea Resources

It is estimated that 1.6 million tonnes could be exploited annually from the deep sea and oceanic waters, where the present level of exploitation is marginal. The demersal, pelagic and oceanic stocks contribute 49.3, 44.4 and 6.3 per cent, respectively to the potential of the deep sea and oceanic waters. The resources in the deep sea sector can be classified into (i) exploited resources offering scope for further exploitation, and (ii) unexploited/underexploited resources. The partially exploited resources offering scope for further exploitation are the threadfin breams mackerel, horse mackerel, scads, ribbon fishes and sciaenids. The second category of fishes is of non-conventional varieties identified from the deep sea sector. Among the crustaceans, deep sea shrimps and deep sea lobsters are available in good concentration between 120-500 m depth zone along the south west coast of Kanyakumari (Wadge Bank) the area of Point Calimere and of Mandapam (Gulf of
Mannar) and around Andaman and Nicobar Islands. The spear lobster along with other species of deep sea lobsters occurring between 150-500 m depth in the Andaman waters would be of special interest for development of lobster fishery.

3. Fishery Infrastructure

The number of minor fishing harbours (38) and fish landing centres (142) commissioned is insufficient compared to the total fisherfolk population and also the number of fishing crafts operating in our country. The development of these infrastructure with all modern facilities will increase fish production and employment opportunities of the fisherfolk and also other people.

4. Importance to Exports

The Marine Products Export Development Authority (MPEDA) gives maximum importance to boost exports. But, the facilities available for increasing exports are less compared to total fish production in majority of the maritime States. There is further scope for the development of the exports of fishery products for increasing employment opportunities and also to earn the much needed foreign exchange.

5. Prawn Culture

Encouraging prawn culture in the inshore area, seaweed collection, manufacture of seashell products etc. to generate employment to fisherwomen is the need of the hour. They are completely neglected when compared to East Asian countries like Taiwan, Vietnam and Korea.
6. Fishermen Migration

Seasonal nature of employment, ban on mechanized fishing for certain specific periods, overcrowding of fishing crafts and fish famine have been making the fishermen to migrate to other States both in the East and West coasts. This situation has helped the fisherfolk to increase the number of working days, the amount of income, saving and debt settlements.

7. Marine Resource Management

Though fishery resources are replenishable in nature, they could not be exploited without any limit. Fishing industry is, now, facing three main problems - (a) problem of speedy depletion of marine resources; (b) class conflict among the users of marine resources and (c) threat to the livelihood of fishermen. Considering these facts, six villages in Kanyakumari district entered in an agreement on 20th August 1993. This type of voluntary steps for the sustainable use of marine resources is the need of the hour. But, vested interest and political influence have made the authorities concerned to reduce the ban only for a period of 45 days (from 15th April) and there is no time limit for fishing. This has greatly affected the traditional craft operators.

8. Resources in Andaman and Nicobar Islands

Andaman and Nicobar Islands have 23.55 per cent (1912 kms) of coastline of our country. But, they have 6.60 per cent (35000 sq. kms) of continental shelf, 2.98 per cent (57) of landing centres and 1.18 per cent (45) of fishing villages.
This situation shows that there is much amount of untapped marine resources, which could be better utilized if the concerned authorities plan properly.

9. Fish Consumption

The per capita consumption of fish in the maritime States and also in interior States remains very low. It ranges from 64 and 59 per 1000 households in rural and urban Gujarat respectively and 920 and 878 in rural and urban West Bengal. This situation indicates the available chances to increase fish consumption so as to increase the demand for fish in order to uplift the socio-economic status of the fisherfolk. (Handbook, 2004)

6.1.4 Threats

Threats are the severe and burning problems prevailing in the coastal villages that hamper the growth of the fishing industry and also its dependents.

1. Class Conflict

Fishery resources are a common property. It is an industry where there is free entry and exit of firms since there is competition. If few firms feel that the resources are depleting rapidly, they cannot do anything on their own. But, after the introduction of the process of motorization/mechanization of fishing crafts, the traditional fishermen felt much about the depletion of marine resources in the inshore area due to indiscriminate fishing by the mechanized boats. It led to class conflicts and also formation of separate unions to establish their rights. It paved the way for seizing and setting fire on the captured boats in the mid-sea by the
traditional fishermen, who are actually affected by the indiscriminate fishing operations of mechanized boats.

2. **Increase in Fishing Intensity**

The active fishers' population increased from 2,34,478 in 1961-'62 to about one million in 1996-'97. The active fishermen population of India was 8,89,528 (Census, 2005). The increase in the number of active fishers' population implies less fishing area per fisherman. The total number of fishing crafts decreased from 2,40,578 during 1994-'95 to 2,38,772 during 2003-'04. But, the number of mechanized boats has increased from 46,918 to 58,911 and motorized crafts from 31,626 to 75,591 during the same period. This has paved the way for an increase in fishing intensity, which has resulted in an overall depletion of marine resources.

3. **Intrusion of Foreign Vessels**

There is intrusion of large commercial fishing vessels (foreign) into our fishing grounds, which eats into the daily catch and earnings of fisherfolk in our country. This intrusion mainly happens in the Eastern region, especially near Andaman and Nicobar Islands and Wadge Bank area during the ban period.

4. **Problems Related to Migration**

Though migration of fishermen increases employment, income and livelihood of the fisherfolk, it also generates problems like conflict between the migrants and the fishermen at the destination, which sometimes emerges as inter-State problems as the case between Kerala and Tamil Nadu. If migration is
restricted, it will reduce employment, fish production and also foreign exchange earnings. On the other hand, international migration of fishermen leads to rural-urban migration of fishermen, socio-economic and cultural changes and also investment in non-fishing activities. This situation becomes an impediment for fisheries development.

5. **Status of Fishermen and Fisherwomen Co-operative Societies**

The total adult population of the fisherfolk is 22,93,425, of these only 7,49,056 (32.66 per cent) are members of various co-operative organizations. Moreover, fisherwomen co-operatives have not been established in many States. Further, in States like Tamil Nadu, where more number of fishermen and fisherwomen are members of these co-operatives, such co-operatives are functioning only as fair price shops and collecting and disbursing Saving-cum-Relief Fund. They are not performing any necessary functions like providing credit, undertaking marketing of fish, supplying fishery inputs and doing welfare programmes for the benefit of the poor fisherfolk.

6. **Mounting Overdues in Formal Credit**

Most of the studies related to the socio-economic conditions of fisherfolk reveal that there were mounting overdues in formal credit especially in the coastal villages of maritime States. This situation reduces the supply of loanable funds and formal credit agencies stop lending for fisheries development. This situation may be attributed to poor economic conditions of fishermen and also the loan waiver policies followed by the Central as well as the State governments.
7. Globalisation – Ban and Anti-dumping Measures

India’s marine exports were subjected to automatic detention during 1996–97 as a part of quality testing, which delayed marketing, increased storage costs and also led to refusal of consignment. This was followed by a ban on Indian fisheries products by the European Commission in August 1997 on the grounds of deficiencies with regard to infrastructure and hygiene in fishery establishments; potentially high risk for public health with regard to the production and processing of fisheries products; and above all, contamination by micro-organisms which might have constituted a hazard to human health.

The ban was lifted after four months, but not without considerable losses to the importers, and only after the Government of India (and the seafood exporters associations) undertook to improve the quality standards in line with the EU Regulations. At the same time, Japan—the last of the three major nations importing seafood from India—also imposed strict standards on shrimps imported from India in 2002, and made it mandatory for consignments to be accompanied by a certificate stating that the material was free of antibiotics. In 1998–99, that is, in the wake of the EU sanctions on Indian seafood, the seafood sector is reported to have lost 21.48 per cent in export quantity and 14.58 per cent in dollar value. The sector responded to this and the successive SPS measures by investing in upgrading the processing infrastructure. Gains were made in terms of improvement of local standards to international levels, whilst fallout in terms of high cost of upgrading the industry, loss of livelihoods and reduced profitability were also experienced.\(^\text{13}\)
The TBT measures, which affected India, is in the form of a ban on shrimp exports to the US for not using appropriate measures to reduce turtle mortality caused by trawlers, but this measure had little impact upon the sector. In fact, in 1996, the year in which the US imposed the ban, exports of shrimps from India showed a modest increase in terms of quantity. Since US had imposed the ban only on captured shrimps and not on cultured shrimps, there was a switch from captured shrimps to cultured shrimps destined for the US market. Since then, Indian shrimp exports have been increasingly dominated by cultured shrimp. In 2001, for instance, cultured shrimp accounted for more than 60 per cent of the overall exports.\textsuperscript{14}

The above analysis gives a bird’s eye view of the problems of and prospects for the development of fishing industry of our country. It shows that the number of weaknesses and threats are greater in number than strengths and opportunities available. This situation also portrays the backward condition of the fishing industry in India. Considering all these facts, necessary suggestions emerging out of the study are summarized in the last chapter.
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