CHAPTER - VII
SUMMARY AND CONCLUSION

The main objectives of the policy of mechanisation of fishing crafts in India have been (1) improving the income levels and living conditions of fishermen community, (2) increasing fish production and (3) increasing foreign exchange earnings. In spite of a phenomenal increase in fish production, the gap between the demand and supply of fish persists. A major part of the fishery resources of the country has remained unexploited, creating a gap between the potential resources and the actual yield. Therefore, there is an imperative need for further mechanisation of fishing crafts and improvement of marine fishing technology. A unique feature of mechanised fishing in India is that the mechanisation of fishing crafts has not affected personal identification of the fishermen with the product. Therefore, mechanisation unlike industrialisation has not reduced creativity and status of the fishermen. Mechanisation of fishing is a spectacular change in the implements of production only.

The programme of planned fisheries development was initiated in early fifties by the National Planning Commission. It embodied a three pronged strategy: institutionalisation of the knowledge of fishery related activities, adoption of the modern techniques of fishing used in maritime countries of Europe and Scandinavia, and creation of a fishery bureaucracy. The thrust in modern technology for fish harvesting was two fold, the change of materials used in craft-gear construction and the substitution of human and wind energy by mechanical energy for the purpose of propulsion. The progress of mechanisation proved that a much neglected resource had the potential to yield higher incremental benefit. In the context of the enormous growth of
mechanisation and the resultant growth in fish catches and foreign exchange earnings, the study of economics of mechanisation and its impact on the conditions of fishermen has assumed greater relevance for which the present study is undertaken

7.1 Main Findings:

1 Although mechanised fishing had received the attention of our planners right from the First plan and has recorded remarkable success, the gap between the demand and supply of fish still persists. Of late, the attention of the planners has been diverted towards aquaculture which is land based and lucrative. But except in the field of shrimp farming, India as well as Orissa has not made any significant progress in coastal aquaculture. Farming of marine fish such as sea bass, sea bream, shappers, grouper mullets and milk fish has not yet begun. One major bottleneck in the aquaculture is the lack of a viable technology for commercial production.

2 In spite of the significant progress of mechanised fishing there exists a gap between the potential marine resources and the actual yield. This calls for further mechanisation of fishing crafts and improvement of the existing marine fishing technology.

3 Mechanisation of fishing has not reduced the status of fishermen to mere operators. Mechanisation is a spectacular change in the implements of production. It has in no way reduced the creative talent of the fishermen.

4 Mechanised fishing is highly capital intensive and hence is beyond the capacity of the traditional fishermen who have not yet been able to join
the ranks of owners of mechanised crafts. Poverty and illiteracy of the traditional fishermen mainly account for the absence of such vertical mobility.

While the owners of mechanised fishing crafts are permanent residents of Orissa, the operators of the various types of crafts engaged in fishing at Paradeep coast have migrated from different villages of Andhra Pradesh, Kerala and Bangladesh. Because of the migratory characteristic of the fishermen, their family structure is mostly nuclear in character. This is more prominent in case of fishermen of Telugu origin than those of Bengali origin.

The study of the size of households of fishing groups reveals that owners have large sized families in comparison to the operators. Study of the demographic characteristics of fishing groups, shows that the percentage of children is invariably more in the household of operators than that of the owners. The bulk of the total workforce, belong to the age group of 15-59. Among the owners and the operators, the former exhibits higher dependency ratios than the latter. The percentage of literacy is extremely low among the operators of fishing crafts. It varies between 8.2 and 4.5 per cent. Poverty and ignorance are the main reasons for children's non-attendance of school.

A remarkable difference is observed in the living patterns of the different fishing groups. While the owners of mechanised crafts enjoy a modern living, others are deprived of the bare necessities of existence.

The occupational characteristics reveal that female workers do not
participate in fishing operations and male workers in the age group of 15-59 prefer fishing to any other economic activity. The children and women in the category of operators supplement the income of their families by engaging themselves in other non-fishing activities, which are usually manual in nature.

Except the owners of mechanised crafts, no other fishing households has any landed property. They do not pool their resources to buy such properties. Rather they channelise their savings into boat building activities. The analysis of asset structure of the owners shows that the quality and value of assets held by the owners of mechanised crafts are much higher than those held by their counterparts in the motorised and traditional sectors. However, the operators of three types of crafts enjoy equal status with respect to their asset position.

The ratio of liabilities to assets reflects an asset liability pattern which is more favourable to the operators than the owners.

Although there is not much of difference among the six fishing groups in respect of the proportion of expenditure made on food items, significant differences in the consumption of individual food items are observed between the owners of mechanised crafts and the rest of the fishing groups. This variation is the result of the difference in the social and economic status between the two groups. Among the operators, the operators of mechanised crafts enjoy better living standards than others.

In spite of the phenomenal rise in the marine fish production, the share of Orissa in the total marine fish production in the country was less than
4% till 1994-95 The state is lagging behind the country in the average fish production per kilometer of coast line. The average production per kilometer of coast line in Orissa is much less than the same for Goa, Karnataka, Kerala, West Bengal and Maharashtra.

13 The performance of West Bengal in mechanised fishing proves that it is not the total number of crafts but the number of mechanised crafts that counts towards achieving higher productivity in the fishing sector. The number of mechanised crafts per kilometer of coast line is the lowest in Orissa.

14 The degree of fluctuation in fish production is observed to be much more in the brackish water sector than in marine and inland sectors.

15 The erratic behaviour of marine fish production in the state is attributable to the migratory character of fish, inadequate knowledge of fishermen about the location of fishing ground, non-availability of high-tech trawlers, absence of remote sensing facilities etc.

16 The fishing activity in the state is influenced by the North-east monsoon from October to November which is manifest in the form of cyclonic spells.

17 The percentage share of mechanised boats in the total marine fish production in Orissa has been continuously rising since 1989-90.

18 Mechanised fishing has helped establishment of a number of fishery based industries in the state. Apart from public sector investment, mechanised fishing has attracted huge private capital for investment in boat building yards, net making units, fish processing plants, cold storage, ice-plants, fish meal plants etc.
19 The fishery based industries are found to be economically viable and are capable of providing employment to a good number of people.

20 The pattern of employment and the system of remuneration vary between the mechanised and non-mechanised sectors.

21 In fishery sector the owner of the craft bears all operational costs as well as the maintenance cost of the craft and the net. Therefore the sharing of the catch between the owners and operators is quite different from the share-cropping arrangement in agriculture wherein the owner is entitled to a share in the produce of the land without incurring any investment expenditure.

22 The operators always try to minimise operational costs and to increase the surplus. They are not subject to the type of exploitation which their counterparts face in agriculture. The cordial relationship between the owners and operators is a unique feature of mechanised fishing.

23 Although the traditional boats provide more days of employment per unit of investment, it cannot be inferred that as the unit of investment on new fishing technology increases, the number of workers employed decreases.

24 The capital labour ratio is found to be much higher in mechanised boats than in case of other two types of boats. But it will be much lower if the employment opportunities created by mechanised boats outside the sphere of fishing is taken into account.

25 Mechanised fishing has proved to be an important source of foreign exchange. Although export of marine products from Orissa to other states...
and abroad has registered a spectacular growth over the last two decades, the most concern causing feature is that there is a gradual declining trend in the share of Orissa in the total marine exports of India as a whole. It implies that the rate of growth of export in Orissa is lower than that in the country. Moreover, export of marine products from Orissa is still confined to prawn. Diversification of exports is essential for accelerating the rate of growth of export of marine products.

26 Mechanised marine fishing is highly capital intensive and therefore investment on it is much beyond the capacity of the traditional fishermen. The entry of persons from outside the fishing community into mechanised fishing has not been resisted by the traditional fishermen.

27 The operational costs play a crucial role in determining the net economic return of the fishing boats. In terms of the indicators such as annual catch, distance covered and net return, bigger sized boats showed better performance than smaller ones. However, the small sized boats are found to have operated for more number of days than the large boats.

28 In terms of the proportion of different varieties of fish catches and their value, the bigger boats show better performance. Substantial portions of income come from pomfret and quality fish catches.

29 The analysis of cost-benefit ratio reveals that an increase in the size of boats and/or increase in fishing effort can raise profit per unit.

30 The profit per 1 kilogram of fish is quite high for both big and small boats.

31 Among the various determinants of the operational efficiency of fishing
boats the contribution of horse power of trawler engine is found to be the highest.

32 Sixty four percent of the total variation in gross return is explained by the factors such as horse power of engine, age of crafts, number of fishing days, distance covered, number of crew employed and fishing experience. The rest thirty six percent of variation is attributed to natural factors.

33 Analysis of sources of finance for investment in the fishery sector clearly brings out the fact that except in case of motorised boats, all other types of fishing boats are largely financed by external sources. Among the external sources, non-institutional sources account for a greater proportion of the investment. The relative contribution of institutional credit to the financing of fishing crafts has no tendency to increase rather the contribution of non-institutional sources is on the rise. But institutional finance has played a pioneering role in initiating investment in mechanised fishing. The programme of mechanised fishing could not have been initiated without the financial help of the Onssa State Financial Corporation.

34 A positive correlation exists between the percentage of loan utilised for productive purposes and the level of technology.

35 The mechanised fishermen lag behind the traditional fishermen in their performance in respect to debt repayment.

36 The high percentage of unproductive loan is a compelling necessity for the traditional fishermen.
37 The average size of loan is much larger for the owners of mechanised crafts. Access to credit is directly linked to the ownership position of the borrowers.

38 The loanable funds supplied by the fish processing industries and export houses are mostly interest-free.

39 The factors which ordinarily determine the price of credit in unorganised credit market do not appear to have influenced the interest rate charged on loans advanced to the boat owners. Among the factors relevant for determination of interest, the purpose of credit and the actual or potential income of the borrowers appeared to be very much significant.

40 The market-tied-credit is common among the owners of mechanised crafts. The owners of motorised and traditional boats do not avail market-tied-loans.

41 The boat owners are obliged to provide interest free lump-sum loans to the crew members. The interlocking of credit and labour relations takes the form of financial ties between crew labourers and boat owners.

42 The incidence of indebtedness is considerable in all the fishing groups, but the problem is not the same for all, the groups. The problem of indebtedness among the operators manifests itself in form of interlocking of credit and labour, but it never leads to deprivation of the loanees of their assets as is found in case of agriculture. The indebtedness of the owners is a direct function of their ownership position. Most of them are wilful defaulters of institutional loans.
43 The institutional support which was extended to entrepreneurs at the initial stage of mechanisation has been withdrawn and the funding agencies have turned apathetic to the needs of mechanised fishing.

44 Lack of berthing centres has inhibited the growth of mechanised fishing in the state.

45 No effective steps have been taken to co-ordinate the activities of the plants rendering various services for sea food processing.

46 The fishermen depend on private traders for disposing off the non-exportable varieties of catches. In the absence of an organised market for these, the boat-owners are obliged to sell their catches to the middlemen. No in depth study has been made to give a cross-sectional view of the structure and pattern of distribution of marine fish in Orissa.

47 The mechanised sector has been monopolised by non-fishermen. But the entry of neo-fishermen cannot be prevented because of the capital intensive nature of mechanisation. The programme of mechanisation has helped the upper income strata and the fruits have not percolated down to the lower strata of the fishing community.

48 Mechanised fishing is gradually becoming more and more capital intensive. It can be made economically viable by integrating fishing with other allied activities. This necessitates entry of corporate sector into the arena of mechanised fishing. The other activities which can be undertaken along with fishing are brackish water shrimp and fish culture, marine bio-technology, exploration and extraction of marine mineral resources, culture of ornamental fish etc.
7.2 Policy implications:

In the context of the acute problem of unemployment and underemployment, agriculture and allied activities, fishery development etc occupies a place of pride in employment planning. The present study apparently brings forth the fact that mechanised fishing is highly capital intensive and it is not within the reach of an average fisherman. Moreover, the development achieved so far in case of mechanised fishing cannot be sustained if its scope is not enlarged to encompass allied activities into its fold.

The broad objectives of fishery development in our country have been improving the levels and living conditions of fishermen community, increasing fish production and increasing foreign exchange earnings. In spite of the enormous increase in output of marine fish, the levels of living and incomes of the traditional fishermen have not shown any significant improvement. In order to solve this problem efforts were made to introduce a more capital saving and labour intensive intermediate technology which could be within the reach of the fishermen. But these efforts have also failed as a great majority of the fishermen are extremely poor and were incapable of moving to the rank of owners. Moreover, income from marine fishing is largely dependent upon export of fish to foreign countries. Adoption of intermediate technology will in no way be helpful in changing the capture of exportable varieties of fish. Therefore, the future prospects of mechanised fishing depends largely on the availability of shrimp and other exportable varieties which requires a viable technology for commercial production of high value items for exports. In view of such problems, policy means should be so designed to bring the traditional fishermen within the purview of mechanised fishing not as owners of crafts but as operators with higher productivity and bargaining power. The social purpose of
mechanisation cannot be achieved as long as these people are not made active agents of the transformation of fishery economy. There is no dispute that mechanization of fishing craft cannot alone fill up the gap between demand and supply of fish. Therefore efforts should be made to develop coastal aquaculture. However, along with industrial aquaculture the programme of mechanization must continue. The present study reveals that there is neither intensive nor extensive fishing in Orissa coast. The findings of the study indicate the need for rapid and accelerated mechanization of fishing crafts in the state. The decline in the share of Orissa in total export of marine products from India calls for augmentation of production of export variety of fish through brackish water prawn culture and farming of other marine fish.

Lack of institutional support has been a major factor inhibiting the progress of mechanization in the state. Without institutional support, mechanised fishing cannot be undertaken on a large scale. Moreover, in the context of the present globalisation, there is an imperative need for scientific and commercial fishing which can only be undertaken by the corporate sector. The capital requirements of large scale fishing call for the entry of corporate sector into the arena of marine fishing. Big corporations have already entered into the arena of brackish-water prawn culture. Their entry has not been resisted by the small fishermen who have been gainfully employed by these corporations. In a similar manner the operators of the small mechanised crafts can be absorbed in the deep sea and off-shore fishing by the fishing companies. Adoption of modern technology and the consequent increase in fish production will pave the way for large-scale employment in fishery based activities. It may so happen that the fishing companies will require the services of the existing small trawlers for transporting fish from the area of fishing to the landing centres. In the absence
of such engagements, the owners of small mechanised crafts may shift their area of operation to comparatively less developed harbours where facilities are not available for operation of big and sophisticated fishing vessels. As a policy measure, some landing centres can be reserved for the operation of small crafts. But in the long-run they have to switch over to other fishery based avocations, where their past experiences can be gainfully utilised. Because, under the influence of growing global competition for market and the fast changing fishing technology scope for small scale mechanised marine fishing is rather limited.

Fishing and allied activities need to be developed in an integrated manner. Except brackish water shrimp culture in some coastal areas, no effort has been made to develop industrial aqua-culture in the state. Augmentation of marine fish production calls for utilization of under exploited or unexploited conventional and non-conventional resources. Employment opportunities for the traditional fishermen can be created through culture of fish and other marine organisms, exploration of marine resources, export of ornamental fish, etc.

There is no denying the fact that the programme of mechanization was initiated by the Government. But with the institutional help extended by "Indo-Norwegian Project" State Financial Corporations, Central Marine Fisheries Research Institute (CMFRI) etc, mechanised fishing has attracted private investment and the credit for the development achieved so far can be attributed to the private sector. The future development of marine fishery also depends on the initiative of corporate sector. In the context of the changed economic scenario in India, public sector cannot assume a leading role in reorganizing mechanised fishing along lines which will prepare the sector to face the
challenges from the international markets. Nevertheless, the role of the state in revamping the sector cannot be undermined. The state has to play a positive and significant role in transforming small-scale marine fishery into a gigantic sector encompassing all fishery-related activities. The state has not only to provide infrastructure and other facilities for the aforesaid transformation, but also has to take care of the frictional unemployment which may arise in the process. Besides, the state has to take certain measures to improve the living and working conditions of fishermen so as to make them eligible to participate in the process of development. A detailed welfare programme arriving at alleviation of poverty can be chalked out for socio-economic development of the fishing community. Under the said programme apart from providing fishing equipments, certain other basic facilities like provision of drinking water, education, health, sanitary facilities, transport and communication facilities can be provided. Credit facilities at concessional rates of interest should be made available to the fishermen through various financial institutions. Steps should also be taken for marketing of their catches through cooperatives. The fishermen should also be encouraged to take up coastal aquaculture and other non-traditional trades like diary and poultry farming etc.

In the entire process of development of marine fishery, the role of the Government should be confined to that of internalizing the negative externalities that may arise therein.

*****