# SWOT ANALYSIS AND RECOMMENDED POLICIES AND STRATEGIES OF ERITREAN FISHERIES

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## ABSTRACT

Eritrea is resource rich but low capitalized country. The Red Sea of Eritrea is one of the most underexploited fisheries sectors in the world. This present study attempts to capture the strengths, weaknesses, opportunities and threats of the Eritrean fisheries sector. Strengths, weaknesses, opportunities and threats analysis has been used for deriving the reasons for the poor exploitation of the fisheries resources of Eritrea. The strengths, weaknesses, opportunities and threats analysis is important because it delivers the information of a given sector in all its ramifications which enables a policy maker to make a quick, yet studied judgment of the sector within a limited time frame. The factors identified are used to formulate and recommend suitable policies and strategies for development and proper exploitation of the Eritrean fisheries sector. The study also used the compound growth rate and performance analysis of the fish production as pre-investigative tools to develop the strengths, weaknesses, opportunities and threats analysis. Eritrean marine fisheries were found to be performing below the optimum registering an overall negative growth rate of 1.92 per cent and high instability of 99. Looking at the overall performance for the period 1950-2009 the situation was found to be 'less desirable'. Therefore, there is an urgent need to improve all parameters that enable efficient and higher levels of fish production in a sustainable manner.

**Keywords:** SWOT analysis, fisheries policies, development strategies, performance, instability, marine fish production,

## INTRODUCTION

Eritrea is a small country which is found in the horn Africa with a total land area of 124,750 sq. Km, mainland coastline of 3300 km, islands coastline of 1950 km, 354 islands and islets, territorial waters area of 55000 sq. km, Exclusive Economic Zone (EEZ) 120, 000 sq. km, continental shelf of 56000 sq. km and maximum sustainable yield of 86,000 tons [1,2]. The Red Sea extends from North up to south east of the country. Eritrea occupies around 50 percent of the Red Sea coast and has an important strategic location on the Red Sea, as the Red Sea links the country with Europe, Middle East and the Far East with a direct sea route [3]. This gives the country a strong backbone for economic development due to the fisheries resources found in the

territorial waters. The Red Sea fisheries if properly utilized can be a source of income, livelihood opportunities, foreign exchange earnings and food security to the country. The sustainable management for growth and development of the fisheries resources will then be the basis for the economic development of the whole country. Therefore, the fisheries sector required a huge amount of capital investment as the country was to be reconstructed from the scratch [4]. Therefore, SWOT analysis is very important to figure the multiple factors required for a sustainable exploitation and development of the fisheries sector of the country. Without which the resource will remain to be underexploited or poorly managed and may lead to mismanagement of the precious marine resources. The study, based on a SWOT analysis, thus, identified the various factors that resulted in the growth and instability in fish production of these two countries. The SWOT analysis is important because it delivers the information of a given sector in all its ramifications which enables a policy maker to make a quick, yet studied judgment of the sector within a limited time frame.

The SWOT analysis gives a descriptive judgment of the strength, weakness, opportunities and threats of any given sector. The SWOT analysis is directed to give a comprehensive yet concise picture of a sector in the framework of a table. The advantage of SWOT enables the reader to grasp the essence of the issues involved in any given sector. Therefore, SWOT analysis approach delivers the information of a given sector in all its ramifications which enables a policy maker to make a quick yet studied judgment of the sector in minimum possible time.

## MATERIALS AND METHODS

Sixty years data (1950-2009) on marine fish production was collected from Sea Around Us Project website [6]. In this study, the compound growth rate and Coppock instability index (CII) were computed based on the data collected and the study also used the compound growth rate and performance analysis of the fish production as pre-investigative tools to develop the SWOT. Thus, using the statistical measures of CGR and CII the growth and performance are examined. Performance refers to the tradeoff of growth and instability of fish production. Where high growth-low instability refers to high performance (desirable) of the fisheries sector, and low growth-high instability indicates low performance (undesirable).

Data were subjected to statistical analysis using SAS version 9.3 and SPSS version 17.0 statistical software [7,8].

Then SWOT analysis has been used for deriving the reasons for the poor exploitation of the fisheries resources of Eritrea. The factors identified are used to formulate and recommend suitable policies and strategies for development and proper exploitation of the Eritrean fisheries sector.

## RESULTS AND DISCUSSION

### Growth and performance analysis

An examination of the performance of marine fish production in the selected countries reveals that, during the first three decades (1950-1979) Eritrean marine fish production showed less desirable performance with CII of 339 and negative growth rate of 50.40 per cent. And in the next three decades (1980-2009) the situation improved to most desirable performance with CII of 99 and positive growth rate of 11.30 per cent. However, the overall performance of Eritrean marine fish production for the six decades (1950-2009) was less desirable. Therefore, the performance summary indicates that there is an urgent need to improve all parameters that enable efficient and higher levels of fish production with sustainable manner in all the four countries.

**Table I: Decadal and overall growth rate, CII and performance of Eritrean marine fish production (per cent)**

| Year | CGR | CII | Performance |
|---|---|---|---|
| 1950-1959 | 12.69 | 103 | most desirable |
| 1960-1969 | 8.17 | 72 | most desirable |
| 1970-1979 | -50.40 | 339 | least desirable |
| 1950-1979 | -6.86 | 98 | less desirable |
| 1980-1989 | 14.06 | 180 | most desirable |
| 1990-1999 | 27.58 | 142 | most desirable |
| 2000-2009 | -17.46 | 95 | less desirable |
| 1980-2009 | 11.30 | 99 | most desirable |
| 1950-2009 | -1.92 | 3 | less desirable |

### Strengths, Weaknesses, Opportunities and Threats Analysis

Table 2. SWOT analysis of Eritrean fisheries indicates that despite the institutionalization of marine fisheries resources in the form of a Ministry of Marine Resources (MMR), the full potential of the sector has not been tapped to enable high performance, growth and income from fisheries sector. The table also indicates that the lacuna in Eritrean fisheries is more of a governance issue. Therefore, the opportunities which have been listed in the SWOT analysis for Eritrean fisheries can be realized only if proper governance is enabled in the country.

High resource potential, regional and international collaborations and strategic access to important regional and international markets emerged as the strength of the Eritrean fisheries sector. The listed weaknesses also indicate that despite some measure of official governance in place, the realization of the opportunities and elimination of the threats across the country have not really happened.

Therefore, the SWOT analysis largely captured the fact that innovative, committed and focused governance and institutionalized networking of fisheries would lead to proper,

sustained and higher levels of fish production from the fisheries sector of the country in the years to come.

**Table II: SWOT analysis of Eritrean fisheries**

| **Strengths** | **Opportunities** |
|---|---|
| 1. High resource potential<br>2. Healthy and unpolluted sea<br>3. Management plans cover for most of the fisheries<br>4. Untapped inland fisheries resources<br>5. Separate Ministry of Marine Resources (MMR)<br>6. Untapped offshore and deep sea resources<br>7. International collaborations | 1. Strategic location and access to important regional and international markets<br>2. Rising demand for fish consumption and exports<br>3. Expanding global fisheries market<br>4. Potential for food security and reducing poverty<br>5. Source of foreign exchange and investment<br>6. Source of income and employment<br>7. Tourism |
| **Weaknesses** | **Threats** |
| 1. Poor institutional capacity<br>2. Shortage of technical manpower and expertise<br>3. Inadequate infrastructure<br>4. Monopsonic fish marketing<br>5. Physical and financial inefficiencies and understaffed cooperative societies<br>6. Limited financial and technical investment capital<br>7. High level of illiteracy in the fishing community<br>8. Use of Outdated and dilapidated traditional fishing craft and gear<br>9. Low priorities to inland fisheries and aquaculture<br>10. Low participation of NGOs<br>11. Isolated fish markets, inefficient marketing<br>12. Illegal cross border trade<br>13. Fuel shortages and exorbitant fuel prices<br>14. Shortage of fishing inputs<br>15. Insufficient management system<br>16. Lack of value addition<br>17. Lack of sufficient management research<br>18. Low level business equilibrium trap<br>19. Inefficient and irregular data collection and management | 1. Drought prone Sub-Saharan region<br>2. border conflicts<br>3. Political instability<br>4. Climate changes impacts<br>5. IUU Fishing by foreign vessels |

Source: [3,5,9,10,11]

## SOME LEADS FOR ERITREAN FISHERIES

According to the CGR-II tradeoff the performance of the Eritrean marine fish production was observed to be in a least desirable situation where there is low growth-high II (table 1). Thus, there is a need for developing the Eritrean marine fisheries sector in a sustainable manner. The performance has to come to a most desirable situation with high growth-low II being the target while not losing the sustainability and conservation aspects at the same time.

The average level of exploitation of the Eritrean marine fisheries in the past two decades was about 5.3 percent of the maximum sustainable yield. This indicates that the marine fisheries resources are yet under-exploited and untapped. But, with such a low level of exploitation still the country could not make use of the available resources. In the past two decades of independence, the rehabilitation process done so far did not show a significant increase in fish production.

Thus, though the government has formed a separate ministry and so many policies, strategies and international funding to develop the marine resources and increase the production level, no evident progress is visible so far. This indicates that there is an intrinsic problem in the implementation and execution of the agenda. Unless the drafted agenda are translated and applied in the sector they will not be of any use for development. Despite all these scenarios, still the prospect of Eritrean fisheries development is very high due to the availability of untapped potential of natural resources.

SWOT analysis was done on the Eritrean fisheries sector revealed some of the strengths and opportunities that could be used for developing the sector (table 2). The country's rich natural resources and diverse biodiversity coupled with a strategic position for accessing the expanding international fish markets could be used for generating employment, income, foreign exchanges and achieving the food security of the nation. Hence, the fisheries sector could significantly boost the national economic growth if utilized in a proper manner.

The same table also shows the weaknesses and threats that are encountered by the fisheries sector of Eritrea. Correcting the weakness and avoiding or minimizing the threats would also lead to the development of the fisheries sector. Therefore, with the help of the SWOT and performance analysis it will be possible to suggest some policies and strategies that could be pursued to bring the appropriate sustainable development of the Eritrean marine fisheries.

## RECOMMENDED POLICIES AND STRATEGIES

The following are recommendations of appropriate policy strategies for improving the performance and development of the fisheries sector in Eritrea.

**1. Ecosystem based fisheries management (EBFM) and adaptation to climate change:** The first and foremost issue that should be carried by the MMR is to keep the current state of the Red Sea as it is still healthy and unpolluted. The MMR should learn from the past experiences of the other coastal countries. Thus, the environmental and ecological conservation should take

precedence over all other activities. Towards achieving this end a balanced approach consisting of the various types of fishing craft and gear may be promoted based on fishing quotas and strict enforcement measures. The global climate change is also a threat to the Eritrean marine resources. Therefore, an appropriate precautionary approach to climate mitigation and adaptation should be developed.

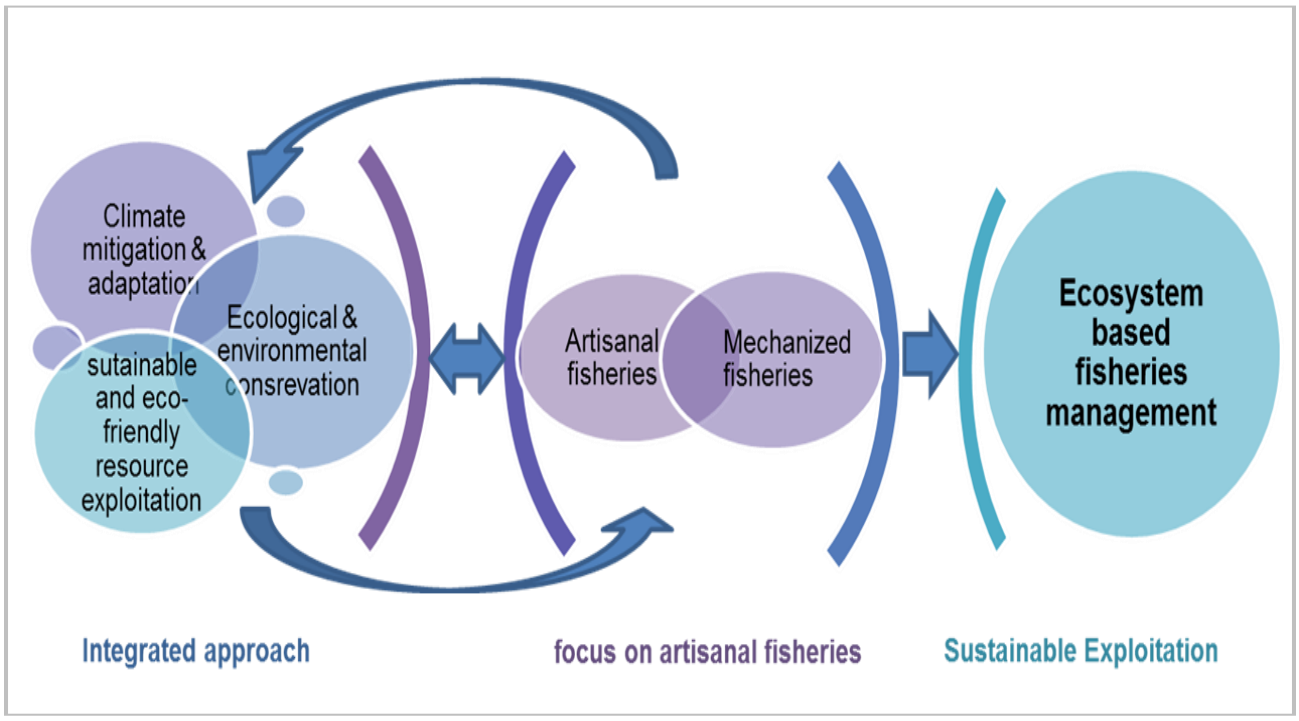


**Fig. 1: Integrated approach model for sustainable fisheries development**

**2. Fisheries cooperative societies and Self Help Groups (SHGs):** the cooperative societies are not considered as legal entities [11]. Thus, they are not performing effectively as such. As the cooperative societies can be used to mobilize the fisher communities and bring them into close contact with other departments in the MMR, it would be of great help for the MMR in pursuing and implementing the fisheries policies and strategies. They can also serve as the appropriate institution to enable proper fish marketing. This institution is also viable to act as a conduit for financing fisheries in terms of credit as well as subsidies. It will also help to serve as an institution for distribution of fishing inputs. This would give the fishermen a competitive edge vis-à-vis the traders and middlemen in the market. But, there should be a strong motivation and incentives for the fishers to willingly join the cooperative societies. This can play a great role to uplift the economic status of the fishers and agricultural farmers and reduce the manipulation of the fishers by middlemen. Thus, the fishers could develop themselves through mutual help and voluntary association. In addition to this, the introduction of self-help groups (SHGs) especially among women will also help increase the livelihood and social status of the women coastal communities. It will help them get and improve their managerial skills in fisheries related

activities like marketing of fish and management of their own SHGs. Thus, empowering women for generating their livelihood, through formation of Self Help Groups (SHGs) and micro-finance which can be help them to run their own small businesses and make it self-sustaining. This coupled with educating the SHGs will improve the gender equality among the coastal fishing communities.

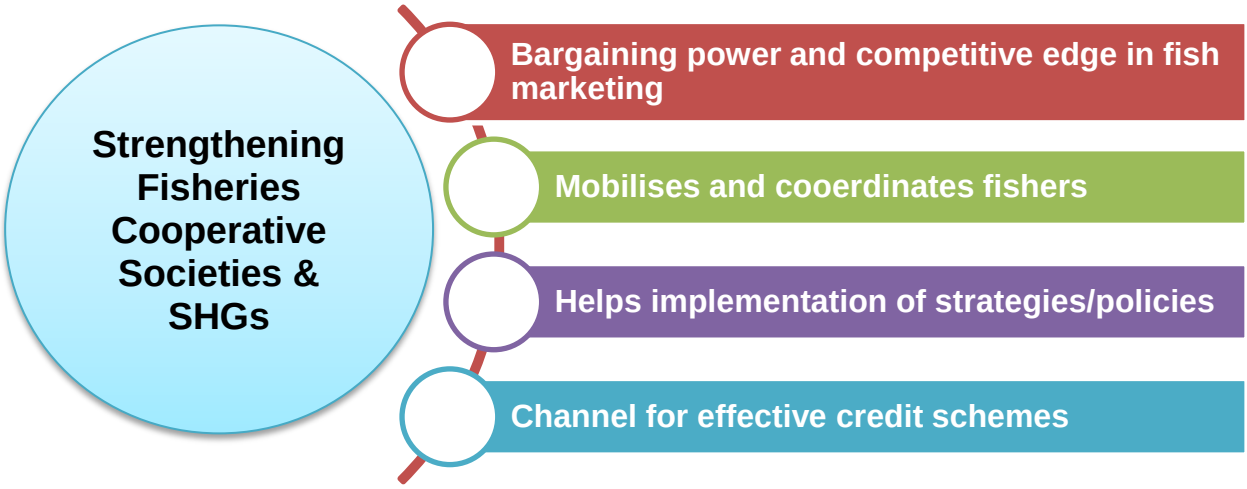


**Fig. 2: Fisheries cooperative societies' development model**

**3. Training and extension services:** There should be adequate training and extension services for the fishermen. This could be done through strengthening the Hirgigo training center and also through using the College of Marine Science and Technology (COMSAT) to produce trained professional for the sector. But, it should be mentioned that the traditional knowledge of fishing practices of the fishers should not be ignored in the training process. It should be done in such a way that, while the good traditional knowledge should be encouraged and fishers should be trained to adopt new techniques as well, it requires strong extension experts for diffusing any new and modern fishing practices deemed important for enhancing fishing production.

**4. Scientific research and education:** So far there is a shortage of research activities in the sector. Without adequate scientific research it is impossible to attain any development in the sector. Therefore, it is recommended that, the MMR in collaboration with COMSAT and other national and international stakeholders should pursue research in the biological and economic aspects of the sector. There is an urgent need to strengthen the staff of the MMR and train professionals in the sector, who can be employed for controlling, developing, monitoring the sectors' activities, without which, it would not be possible to economically and ecologically sustain the fisheries resources. In addition educating the fishing community is also very important in developing the fisheries sector and in making the fishermen aware of the Code of Conduct for Responsible Fisheries (CCRF) which is the main concept behind sustainability.

**5. Enhancement of capital investment in the sector:** Upgrading the fishing vessels is a necessary step for improving the fish production by introducing efficient modern crafts and gears. Increased capital investment in the fisheries sector in terms of credit schemes to the fishers continue to enhance infrastructural construction like ice plants, landing centers, transportation systems, roads and fishing inputs at lower affordable cost. Enabling organized marketing channels and structure to ensure fair prices to artisanal fishers and decrease the domination of government enterprises in the trade would make the market more competitive. All these will help to reduce the illegal fish trading to Yemen and other neighboring countries. Thus, provision of marketing and technical support for enhancing production and sales is required.

**6. Strengthen the market integration:** There is also a need to ensure the forward and backward linkages in the fisheries sector. The fishers and the buyers need to be integrated in the market place.

**7. Information technology systems:** Introduction of electronic fish finders/ GPS equipment and satellite information technology would also help in reducing cost of fishing effort per trip and will lead to higher fish production at a lower cost. This will lead to higher income for fishers and ultimately improved livelihoods. Thus, there is a need of investment in this area as well.

**8. Total quality management systems (TQM):** Introduce efficient total quality management system for sustainable use of resources and quality production, processing and marketing of fish. Habtom has mentioned there is no much value addition and quality of fish was also not up to the standards [11]. In order to ensure good export growth and also to enhance local consumption of fish, it is necessary to ensure the adoption of HACCP norms. This will enhance the earnings of foreign exchange. TQM system will also help attain a continuous and complete improvement in the fisheries sector aiming at fully satisfying its internal and external customers.

**9. Institutional building and strengthening:** It has been reported that there is insufficient management systems in the fisheries sector. This demands a good institutional building for the development of the fisheries sector and coastal communities. MMR has a good institutional set up but the implementation of the technical and practical aspects of the strategies is lacking. Thus, the Ministry needs to focus on institutional set up which encourages and leads to an effective implementation procedures. This could be done by educating youth and delegating power for carrying out their tasks in the Ministry. It also needs to improve the incentives and salaries of the ministry's staff, as Habtom and Ghebrit mentioned, there is a lack of effective management and lack of employee satisfaction in the fishing companies owned by the government [11,12]. Thus, there is a need to look at the institutional set up in all dimensions. Here again come the TQM systems which helps the MMR to build strong and productive institutions which are concerned with satisfying the needs of their both internal and external

customers. Therefore, an institution built on the principles of TQM will always keep moving and developing.

**10. Inland fisheries sector:** Though not a high priority point, the inland fisheries need to get more attention from the MMR. So far, the MMR is not giving much focus on this sector and thus, it is producing only 5 percent of its potential. But, with proper development actions the production of the inland fisheries could increase and be used for generating income and employment of the communities living around the reservoir and help in improving the protein intake of the communities.


**Fig. 3: Fisheries development model**

## FUTURE RESEARCH AREAS

As the Eritrean fisheries sector is operating at less than optimum level, there is the need for strengthening the overall support systems for ensuring sustained development. Some of the prospective research areas that may be pursued are given below.

- Regular stock assessment surveys are necessary for building up a database that would enable proper estimation of stock exploitation, threshold levels and overexploitation. Therefore, there is urgent need to establish periodic fish stock assessment surveys by an institution of competent stock assessment experts.
- The marketing channels in Eritrea are multiple and weak. Further studies investigating existing marketing channels, marketing margins and price spread would help evaluate the losses sustained by the fishers under different marketing circumstances.
- In the process of mechanization it is quite possible that native and traditional knowledge is lost much to the detriment of sustainable Eritrean fisheries. Therefore, studies on integrating native and traditional knowledge with mechanized fisheries would help proper scientific suggestions for establishment of CCRF with local components integrated into it.
- Eritrean fisheries sector is essentially artisanal. Much of the mechanization that is happening in the fishing sector is government controlled. There is enough scope for re-organization of the fishing sector in Eritrea if a top-down approach is followed. Institutional arrangements and organizational structure like SHGs, cooperatives and producer companies need to be looked into by proper research studies.
- Studies on contribution of the fisheries sector to the national GDP would enable a macroeconomic perspective. Such studies need to be done at regular intervals. Such research would enable develop appropriate policy prescriptions for the policy makers to develop new strategies and re-orient existing ones.
- Studies related to inland fisheries are limited in Eritrea. It is important that studies on inland fisheries sector related to production, marketing, financing and development of the sector would help build appropriate policies for proper development of inland fisheries. Therefore, studies related to marine and inland fisheries would yield number of suggestions, strategies and support systems that would enable proper development in a sustainable manner of Eritrean fisheries.

## SUMMARY AND CONCLUSION

According to the CGR-II tradeoff the performance of the Eritrean marine fish production was observed to be in a least desirable situation where there is low growth-high CII (table 1). Thus, there is a need for developing the Eritrean marine fisheries sector in a sustainable manner. The performance has to come to a most desirable situation with high growth-low CII being the target while not losing the sustainability and conservation aspects at the same time.

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