A Preliminary Study on Fisheries Economy of Pakistan: Plan of Actions for Fisheries Management in Pakistan

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Abstract

Fishery management represents an organization consist of resources, industry market which are the basic pillars of fishery sector maintenance and these factors are interconnected with each other. If there is any irregularity to manage fish resources and their management, Government has been enforced to mediate, rightly or wrongly, to fill this space. Economically, balanced fishery management requires the revolution of common property through a restricted entry system intended to raise net benefits from the fishery. Management planning holds goals and policy objectives and the expansion of strategies to attain policy targets. If we study current condition of Pakistan’s fishing industry it determines the ecological environment of Pakistan's fisheries and explain current developments in technology and their effect on the fish catch. The factors contributing to growth involve government efforts, fleet expansion and development of export markets. Development strategies look for balanced, efficient utilization of marine resources for the extensive objectives of national development. Therefore, policy makers’ fisheries management perceptions and techniques are usually less effective in forwarding the need of the coastal communities. In order to develop fisheries Pakistan should require balanced resource management. This study also focuses on difficulties to maintain satisfactory management policy for the regulation of the Pakistan’s fish industry.

1. Introduction

Fishes are one of the important species and they had been serving human being since prehistoric time because fishes are most resourceful creatures which could be utilized to develop nation economy [1]. At the time of independence in 1947 the marine fisheries industry of Pakistan was based on a small scale fishery with no harbor or fish processing plants. A single dilapidated fish trawler was handed down by Pakistan which had provided fishery resources at the time of partition. [2].

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In 1982 Marine fish production reached at 2, 78149 metric tons. There was record of 760 species of fishes from coast of Pakistan out of 760 species 114 fish species are of economical importance which can be a good source of national earning [3, 4].

Pakistan’s fishing waters are described as extremely prosperous in marine life with a vast variety of species having grand marketable value. Fish consumption in Pakistan is near to ground and out of total fish catches 71% exports annually [5].

A glance over world exports Pakistan contributed at about 0.25% which is the minimum in the world export market. Pakistan can take advantage of fish resources and improve fishery sector by adopting modern techniques because nature has provided enough fishery resources that could be utilized to promote Pakistan’s fish exports [6].

1.2. Infrastructure of Fishery Management

Fishery management reveals to the total system, consisting of the resource foundation, processing industry and trade of the nation. Natural resources are fully consumed in terms of Seafood exports. The fundamental objective of management is expansion of the social and economical benefit derived from fisheries resources. The natural-resource base consists of the resource endearment, i.e. stocks of fish species. The first step to maintain fish management is to give protection and conservation of fish species. Fishery resources are definite, stocks are inadequate and interconnections among them are highly complicated. For proper fishery management Knowledge of fish stock size, performance and response to fishing pressure is very important [7].

Fishing industry is a main source of export income in Pakistan. Out of total fish catch 10% is exported annually. In 2002-03 Pakistan had exported fish and fishery products (valued US $117 millions[8]. During past years there was slightly increase in fish consumption from 1.0 kg in 1961 to 2.3 kg in 2001 but it is still very low as compared to average world fish consumption for the same time scale i.e. 9.0-16.3 kg [9].

Fishing in Pakistan is a main source of export earning and plays an essential role to develop national economy. Pakistan with a coast line of 814 km still has many fish species which are not used to promote fish industry at national and international market [10].
Table 1. The following table showed various varieties of fish available during the various seasons of the year in Pakistan

<table>
<thead>
<tr>
<th>Months</th>
<th>Type of Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>January-May</td>
<td>Mackerel, Tuna, Jew Fish</td>
</tr>
<tr>
<td>July-December</td>
<td>Black Pomfret</td>
</tr>
<tr>
<td>August-May</td>
<td>Shrimp</td>
</tr>
<tr>
<td>September/October-February</td>
<td>Indian Salmon, Beckti, Sole, Butter Fish</td>
</tr>
<tr>
<td>October-December</td>
<td>Sea Bream</td>
</tr>
<tr>
<td>December-June/July</td>
<td>White Pomfret, Shark, Eel</td>
</tr>
<tr>
<td>Throughout the Year</td>
<td>Cat Fish</td>
</tr>
</tbody>
</table>

Source: SMEDA (Small and Medium Enterprise Development Authority Government of Pakistan 2005)

1.3. Marine Laws and EEZ Zones of Pakistan

Federal Government formulated the Exclusive Fishing Zone Act, 1975 in order to regulate fishing. This Act has been enforced to develop and managed sustainable fisheries resources in EEZ. Pakistan also obeys to the terms and conditions and Code of policy for responsible Fisheries along Pakistan coast as formulated by the FAO of the United Nations [11, 12]. Fisheries industry accounted for the economic growth of many countries mainly due to proper surroundings, optimized cost of effective and efficiently utilization of resources [13].

Shrimps form the backbone of the fish industry. They raise economy of the country by monitoring catch and effort data. In 1971, Marine Fisheries Department of Pakistan had conducted a study on estimation sustainable yield (MSY) in collaboration of FAO to analyze catch and effort data. In that study, data of total shrimp landings for the period 1959-1970 were evaluated by Zupanovic (1971). Whereas van Zalinge et al. (1986, 1987) calculated the data of most important species for the period 1970-1982.

Tuna fishery in Pakistan is a professional activity with insignificant inputs from industrial sector. As a part of national policy, for the judicious operation of fishery resources in Exclusive Economic Zone (EEZ) of Pakistan, further highlighting is being given for development of tuna fisheries both in coastal waters as well as on the high seas. These fishes are accidentally caught by pelagic gillnetters, targeting on a number of mixed species, especially the more profitable ones such as mackerels and sharks, which obtain better prices in local market. Therefore the fishery is generally restrained to the areas where most of these fishes occur and not specifically in areas where only tunas are in large quantity.

In 1990 Government of Pakistan had allowed foreign flag tuna long liners of 500-750 GRT for the purpose of resource survey and stock assessment as well as commercial utilization. These tuna long liners were permitted to operate in EEZ of Pakistan beyond 35 nautical miles from the
coastline by paying license fee and 3 per cent payment on the subsidiary catch. Stock assessment program by foreign flag tuna long liners was stopped in 1995, since then only Pak-flag tuna long liners are acceptable to operate in EEZ of the country for tuna and other large pelagic fish resources by paying fixed amount and annual license fee [14].

1.4. Consequences of Fisheries Management

In Pakistan there are three levels, which have special consequence for fisheries management.

- Federal government has authority over fisheries management in the zone between the territorial waters base line and the outermost limits of the exclusive economic zone (EEZ).

- Provincial governments; the two provinces (Sindh and Baluchistan) have authority over fisheries management in the waters in their respective territorial waters (12 mile zone). Each province has its own administrative set-up. Some agencies involved to maintain and monitor fisheries for development and management.

The marine fisheries policies of developing countries such as Pakistan are directed to achieve following objectives, namely: fill the protein gaps as to improve the supplies of marine fish for domestic utilization, to motivate employment, to develop the economic interests of the fishermen and to get more foreign exchange through the export of fish and shellfish. In Pakistan maximum consideration is being paid to attain the last objective, that is, the earning of foreign exchange, which has developed the Pakistan’s marine fisheries industry as an export supplier. The need for fishery-resource conservation originates from the industrial, as renowned from natural, predation of fish stocks. Since predation is evolved by a demand for fishery products and growth which involved fisheries management that will lead fisheries sector development [15].

1.5. Supply Chain Management of Fishery Trading

Export trading for fisheries mainly depends on Supply Chain management which opens opportunities such as catching quotas in different countries and complementary usage for aquaculture production. This policy was aimed to cater marine resources. The government had issued several policies in this regard however the same had not been implemented at federal or at provincial levels.

The objectives of the marine fisheries policy at federal Government level are: Training of fishermen, upgrading fishing boats, transformation of infrastructure services, conservation of shrimps and other fish resources, expansion of fishing operations to the whole EEZ, beginning of
fish and shrimp culture and inspection of marine pollution. The common objectives at provincial
government level emerge to be prevention of disparaging fishing, discouraging overfishing and
protection of endangered species. The objectives of management at the local government level
principally revolve around satisfying the sustainability of local marine foods.

Fisheries Development Commissioner (FDC) is functioning under Ministry of Food,
Agriculture and Livestock (MINFAL). FDC is responsible for policy design, planning and
coordination with provincial fisheries departments, national and international agencies. The Marine
Fisheries Department (MDF), Karachi is working closely with MINFAL for the implementation of
these policies and regulation [16]. In Pakistan there is a biggest research organization unit at
National Agricultural Research Center (NARC) recognized under the MINFAL [17].

Fisheries management dealings are not openly acknowledged and show to be limited to a few
technical management events such as closed area/seasons. There is no published official stock
assessment or examination of CPUE in Pakistani fisheries [18-20].

Pakistan has relished strong export achievement in fish products over the past years. This
improvement has been assisted by fish production and exports of natural resources of Arabian Sea.
Private investment sector, government provision and technical support of international agencies
have also some active role to introduce Pakistan’s fishery products in the international market. But,
further organizational modifications can help to maintain export growth.

In Baluchistan during analysis of fish growth it was found that there has been increase impulse
of fish, shrimp, lobster and cuttle fish processing plants. In just three years number of processing
plants increased 10-39. The global requirement of fishery products are increasing and new markets
are rising; a number of new fishery products from Pakistan are getting good response.

This research study has been conducted as a support in fishery management and development.
The purpose of this paper is to explain economic segment of fishery management correlate with
seafood market economics which directly highlights fishing efforts linked with economic efficiency
and national income.

2. Materials and Methods

A broad literature review related to export of Fish products was used to achieve the objective of
this paper. Pakistani fisheries sector have inadequate record on fish stocks. In 1990 the important
resource survey was conducted to monitor regulation of landings specifically for two important
species i.e, shrimp and tuna. During this survey there was information about overfished of lobster and shrimp but evidence is not mentioned. Several stakeholders with assorted interest and least amount incorporation produced an environment among institutions responsible for research, management, policy inventing to strengthen organization. Sometimes private sector stakeholders have been created an informative way of exchange to build industry but it might be show the way to doubt and non beneficial conditions which in return destroy industrial growth and establishment.

The information needed for this study was collected from the concerned institution and some various related publications. Most of the data on export of Fish products of Pakistan was derived from secondary sources such as FAO Fishery and Aquaculture statistics. Marine Fisheries Department (MFD) Government of Pakistan. Fisheries Reports and publications or journals related to Fishery export in Pakistan.

3. Results

3.1. Raising in Seafood Exports of Pakistan

According to latest data of Pakistan Bureau of Statistics (PBS) Pakistan has exported worth of $367.472 million of Seafood products in June- July (2013-2014) which was showing increase in value compared to Sea food exports of $317.652 million in June-July (2012-2013). During past two years (2013-2014) Pakistan’s Seafood exports increased 12.25% in term of quantity i.e 138,680 metric tons to 155,671 metric tons. On yearly basis, the exports of fish and fish processing increased by 20-40 % in June 2014 than June 2013. The country exported seafood products of $31.726 million in June 2014 but this rate was 26.351 million in June 2013. In May 2014 Pakistan has exported $42.000 million of seafood products which is reduced by 24.46 % in June 2014. The overall food exports from the country decreased by 2.90 % during the economic year 2013-14 compared to previous year [21].

3.2. Fish Production and Processing

During a survey of Seafood market in Karachi Harbour, exports of salted and smoked fish are increasing day by day and there were demand for fresh, frozen or chilled fish. In the year 2013. Pakistan exported $ 60 million of seafood products to China, Vietnam. Other markets for Pakistani seafood are Thailand, South Korea, Saudi Arabia, Indonesia, Malaysia, Bangladesh, Egypt, Hong Kong, Japan, Kuwait and the UAE, etc.
Table 2. Fish export earnings from Pakistan

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<tbody>
<tr>
<td>Export Earning (Quantity Million in Tons)</td>
<td>0.105</td>
<td>0.124</td>
<td>0.135</td>
<td>0.138</td>
<td>0.21</td>
</tr>
<tr>
<td>Export Earning (Value) in Million (US $)</td>
<td>198</td>
<td>188</td>
<td>213</td>
<td>240</td>
<td>260</td>
</tr>
</tbody>
</table>

Source: UNIDO (United Nation Industrial Development Organisation 2010)

Demand for fish exports increasing drastically and Trade Development Authority of Pakistan (TDAP) should manage committed harbor for shrimp, grant loans to import fishing nets and renovation of fishing boats. TDAP have to overcome electricity supply interruption to boost seafood exports at Karachi fish harbour.

The average annual catch is almost 600,000 metric tons of more than 200 commercially important fish and shellfish species, found in Karachi Harbour. One way to raise the role of fisheries in national GDP is stop to over-exploitation of fish stocks [22].

3.3. Economic Survey of Pakistan

According Economic Survey of Pakistan total fish catch during 2013-2014 increased slightly i.e 725,000 tonnes-730,000 tonnes. More than 100,400 tonnes fish were exported in the same period. The volume of fish exports during 2013-2014 was 140,000-150,000 tonnes this was mainly due to reopening of EU market and high demand of Pakistani fish mainly in China and Vietnam. This need for Pakistani fish has boosted fishing industry [23].

![Figure 1. Most common Fish catches in Pakistan Percentage of Fish Catch in Pakistan: Source FAO](image-url)
4. Discussion mismanagement of fishery sector

During past years fisheries sector are not efficient to rule and regulate proper economical management which in turn affects fishing capacity and efforts. Another main problem is that most of fishing activity is outlay from observation of regulators and consumers.

4.1. Challenges to sustain Fishery Industry of Pakistan

Present key management problems comprise:

a. Unsatisfactory fishery systems: Current rules and regulations are not powerful to support fishing industry in order to attain sustainable level. This is mainly due to lack of international fishing regulations.

b. Lack of performance/enforcement: UNO has enforced a law as UN Convention and fish stocks Agreement of the Sea which is not followed, implemented and enforced by many countries such as Pakistan due to lack of catch devices.

c. Lack of precision and traceability: There should be a legal way to monitor fish entry within country and fish caught legally. In Pakistan there is absence of such framework as a result consumers are unsuspectingly support mismanagement of fish shops from untenable fisheries. This problem can be solved by adapting legal systems and sustainable practices.

d. Failure to follow scientific advice: Pakistan fisheries management does not seek scientific advice on fish quotas and set catch limits. Failures to enforce such regulations in return demolish fish industry of Pakistan.

4.2. Flag of Convenience vessels (FOC)

Pakistan and some other countries are unable to restrict FoC vessels resulted in illegal, unreported and unregulated (IUU) fishing to continue. These are big fishing Fleets Company owns and operates FoC vessels from countries like EU, Japan, Korea, Taiwan (China) and Pakistan. IUU fishing in Pakistan occurred through deep sea fishing trawlers (DSFTs), local fisherman and fisherman of neighboring countries.

4.3. Prohibited fishing season

1.2% of the world oceans area have been declared as Marine Protected Area (MPA)s out of which 90% are opened for fishing which required utmost attention as these areas are prohibited and
required safety measure where fishes grows freely and reproduce fully which ultimately increases fish production in the sea. June and July are not suitable for fishing because of breeding season. However the fisherman does not stringently follow due to lack of alternate source of income. Adverse weather condition is another drawback of Pakistan fishery industry and seafood exports market.

Other area for improvement in the fish industry is to enhance research in production and preservation of fisheries, involvement of community participation, standardized safety and quality requirement. However, cost incurred for the above implementation is on higher levels [24].

5. Conclusion

The most result oriented things for fishery sector are to give awareness of fish stocks at sea, fisheries production from coastal areas and offshore deep waters and socio economic growth of the nation. Marine Fisheries Department (MFD) has been designed a project called “Stock Assessment Survey Program in EEZ (Exclusive economic zones) of Pakistan, “Assistance in Planning and Implementing a Marine Fisheries Resources Survey” and “Support to the fishery Resources Appraisal in Pakistan”. These three projects are funded by FAO, Norwegian Agency and MFD itself. The main aim of these projects is to support fishery industry of Pakistan and fill information gap.

The decline in the marine fishery is basically due to overfishing and growing human population is the main cause. With the increasing shortage of fish resources, fisheries management becomes more critical. Fish habitats have been badly affected by industrial waste overuse of reef area and sea visitors. Current study focuses on modeling and technical work out of fishery management tools which is supposed to be a legal approach. Good laws build authorized confidence, incorporate higher grade human rights and resource safety requirement, spell out objectives, put out rights and duties of fishers, plan the suitable combination of fishery devices, consent on governmental proficiency, restrict administrative prudence, supply enforcement tools and grant for judicial review of administrative measures. Fishery management laws should be of good policy and result oriented quality. Fishery laws should deal among development of fishing size, quality, banned overfishing and establish more national master management plans for off-shore fisheries and to promote coastal resources [25].

One common drawback of most of stakeholders is that they have in appropriate facility of financial, technical and skilled man possessions which are keys players to avail market
opportunities for export and to increase industry potential. Additionally there is not much discussion between policy makers, law regulators and industry developers and this might be consider one of the main reason of demolishing market performance of fish industry.

In Pakistan many international coastal projects are launching over fisheries management, but to establish fishery economy the main role goes to people who involved themselves fully and honestly. During a seminar organized by FAO in Pakistan on developing NPOA (National Plan of Action for Conservation and Management of Sharks) Hussain Sinan from Maldives said, “NPOA is the first step that leads Pakistan towards sustainable utilization of sharks in the Arabian Sea”.

In this paper our focus is to initiate a step towards social and economic factors that are very important for proper fisheries management. The main themes of this study are as follows:

1) To expand the state and maintenance of the poor and the landless on the fisheries resources.
2) To reduce gothic structures and stop dependence of the people on it.
3) To raise nutrition and earning of the rural poor.
4) To boost output, efficiency, economics and resource conservation and subsidize to the recovery of rural economies after the fishery sector destruction.

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