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Challenges and Opportunities of Traditional Stilt Fishing Industry in Southern Sri Lanka

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Abstract
The study was designed focusing on stilt fishing industry, a small-scale and traditional fishery method practicing in Sri Lanka, to examine the Socio, Economic and Environment aspects in Traditional Fishing and Modern Fishing and to identify the challenges and threats particularly in Traditional Stilt Fishing (TSF) at community level. Further study indented to examine the available opportunities for the people who are engaging in Traditional Fishing industry, particularly in Traditional Stilt Fishing (TSF), and to identify already applied survival strategies of same fishing community. Special reference was given to examine the contextual preparations of TSF for the tourism intervention as a supplementary income generator and to identify the mediating effect on TSF by the Southern coast tourism industry. Finally to develop strategies to overcome challenges faced by TSF through harnessing the potentials and manipulating opportunities at community level.
The data in the study were collected from six sites of stilt fishing in southern Sri Lanka, using three sophisticated questionnaire from stilt fishermen (sample size 100) and those who are interested in promoting it (tour guides/ operators/ hoteliers) (sample size 25) and those who are visiting it (tourists) (sample size 50). Both qualitative and quantitative techniques were used to analyze collected data. It was observed that tourism development gives more opportunities and living standards to the stilt fishing community. It was concluded that certain sites (within the six mentioned sites) possess higher comparable advantage in promoting stilt fishing than others. More than 70% of stilt fishers were satisfied with their jobs while most of them are earning satisfactory level of income through tourism. Around 50% of the interviewed tourists claimed that they were satisfied by visiting stilt fishing and government should consider ensuring sustainability of the stilt fishing industry. It was recommended to establish thorough system to promote tourism in terms of pricing of stilt fishing, value addition to stilt fishing, women empowerment, tourists' safety assurance. The study was limited to present data, since there were no recorded statistics in the past regarding stilt fishing industry, thus the nature of the study requires a time series analysis. Therefore future research implications are available varying from job satisfactory with time series analysis in stilt fishing to in-depth analysis of socio economic aspects of stilt fishing community in Sri Lanka.
Keywords: Challenges, Opportunities, Traditional Stilt Fishing Industry.

1.1 Introduction

Sri Lanka is an island with a coastline of 1585 kilometers and a land of 65610 square kilometers, situated between the latitude of 50 55' and 90 51' North and the longitude of 790 41'and 810 54' East within the tropic of Cancer (Map 1.1).The coastal areas are generally low lying, and landscapes exhibit considerable variety characterized by bays, lagoons, headlands, coastal marshes and dunes. (Chandana Senevirathna, 2005)

Traditional stilt fishing industry is mainly based in Galle and Matara districts in southern Sri Lanka. Ahangama, Delwelangala, Hatapalana, Maradawala, Midigama and Weligama are traditional fishing villages situated at about 130 kilometers down south from the capital Colombo, Sri Lanka. The people of the area are Sinhalese and their religion is Buddhism. Culture and lifestyle are altogether different from other people engaged in fishing industry living in coastal areas of the country. At the time of regaining independence, activities were concentrated on the coastline, using Non Mechanized Traditional Crafts (NMTC) such as canoes (Oru) and wooden crafts. In the past sixty years, the fleet has been modernized and fishing activities expanded to cover deep sea fishing. The fishing fleet in 1997 has been estimated at 27000 crafts including multi day boats; Fibre Reinforced Plastic Boats (FRPB) and Traditional Crafts fitted with outboard engines. (Economic Progress of Independent Sri Lanka, 1998).

This study was mainly focused on the changes of the Traditional Fisheries Sector and the social economical and environmentally induced issues in the area. To identify Traditional fisher's income distribution and labour market, social problems were the major part of the study. Therefore it is important to identify these effects and conditions of the social sector of the area. Development projects were introduced by the government agencies in Koggala area and indirectly affected the ecological changes and the eco system. As a result of Tsunami rehabilitation projects, government agencies have provided modern mechanized boats in an attempt to restore the economy and the livelihood of fishing communities. However no agency has shown any interest in restoring the traditional fishing sector by preserving traditional knowledge, folk wisdom and culture. New mechanized boats, nylon nets and modern fishing gadgetry were destroying the traditional fishing culture, techniques and methods.Traditional fishing is environment friendly and based on micro level with simple technologies. It has a culture and technology. The Indigenous Knowledge (IK) of their forefathers is interwoven

with community practices and rituals. This study tries to consider the challenges and opportunities of Traditional Stilt fishing industry in Southern province Sri Lanka.

1.2 Literature Review

1.2.1 Sri Lankan fishing Industry

The sea area of Sri Lanka is approximately more than twenty times of its land area. According to the law of sea Exclusive Economic Zone (EEZ) for Sri Lanka is 200 nautical miles from the coast (Map 3). The area is about 230,000sq km. with ocean resources and coast line is about 1760 km in Sri Lanka (Chandana Senevirathna, 2005). Within this area only Sri Lankan can do fishing according to the international fisheries and aquatic resources Act. The fishing resources of Sri Lanka can be divided in to three categories such as, Marine resources, Inland resources and Brackish water resources

Marine resources; marine resources can be divided in to two sectors.

a. Coastal fisheries; fishing activities concentrated with in the area of sea extending up to 40 km from the coast.
b. Off shore and deep sea fisheries; the off shore fishery consisting of fishing activities concentrated between 40 km 96 km from the coast while deep sea fishery is in the area beyond 96 km from the coast.

Inland resources; Sri Lanka has about 28 000 hectares of water from lakes and ponds and the rest is from lagoons and marshy lands.

Brackish water resources; This resource spreads up to about 12000 hectares. 80 000 ha of this consist of deep lagoons and marshy lands. The rest consist of shallow lagoons, tidal flats, mangroves swamps, and saline marshes.

1.2.2 History of fishing Industry in Sri Lanka

The history of Sri Lanka fisheries and aquaculture is quite old. According to Mahawansa, fresh water fish has been cultured in Sri Lanka since 161-137 B.C., during the Anuradhapura era, fresh water fisheries in Sri Lanka in one of his books. Recently many countries of the world have developed a keen interest in fisheries and aquaculture. (Fisheries, OUSL 2007)

Environmental concern is not a new concept to Sri Lanka. It has a long history. Because, of that, since the entire lifestyle of ancient Sri Lankan depended on the environment, they made several measures to protect natural resources and the physical environment even at the village level.(Bandara Rajapakse 2005) In the ancient periods meat and honey were collected from the forest, fish from tanks and rivers as well as from the sea. The fish they contained was considered to be the property of that individual, and any other person appropriating such fish by whatever means was liable to be held as having committed theft. The King received some income from a tax on fish caught in tanks and rivers. Fish and meat entered the diet from time to time, but they were not consumed on a regular basis, at least by the masses. (Rev. Wimalaratana W., Senanayake S.M.P., A. de Silva 2008)

An examination of accounts of nineteenth century fishing indicates that the technology used in the Southern Province immediately before the introduction of nylon nets and mechanized crafts in the 1960s, was unchanged from a century earlier. In 1970, the 'traditional' methods were still being used alongside modern gear. (Alexander Paul 1995). There is 1337 fishing village in the marine sector, while the corresponding figure for the inland sector is 1289 villages. This adds up to a total of more than 2600 fishing villages. About 146,940 households live in the marine fishing villages are occupied by 11,920 households with a total of 158, 860 fishing households for the country as a whole. (Amarasinghe O. 2001)

1.2.3 Small-Scale Fishery

The role of small-scale fisheries in rural development in terms of food supply/security, income and employment has been widely recognized. Within arena of fisheries management literature and development policy, the significance of sustaining small-scale fisheries is being increasingly recognized (Pauly, 1997, Allison, 2001).

According to Allison & Ellis (2001) in 1990, an estimated 28.5 million people made all or part of their living from fish production and capture; the vast majority (around 24 million) were small-scale or artisanal fisher folk in Asia.

1.2.3.1 Characteristics of small-scale fisheries

There have been a variety of attempts to define Small Scale Fisheries (e.g., Panayotou, 1982; Russel and Poopetech, 1990; Castilla and Defeo, 2001; Staples et al., 2004; Chuenpagdee et al., 2006). These efforts have generally taken into account several characteristics of small-scale fisheries, such as size of the boats, mobility of the fleet, method of production, levels of organizations, and distribution of the products. While differences in Small Scale Fisheries around the globe are acknowledged, some common characteristics can be summarized as follows (Panayotou, 1982; Charles, 1991, 2001;).

a. Targeting of a mix of species using multiple types of boats and fishing gears, making it difficult to evaluate the state of the resources and the fishing intensity exerted;
b. Low levels of capital investment by fishers, and the use of labour-intensive harvesting,

processing and distribution methods to exploit the fishery resources;

c. A wide range of landing sites used by fishers along the coast (often in small communities), making it difficult to effectively record catches and fishing effort;
d. Seasonal use of fishing resources, and fishing income that is often complemented by other economic activities (with the frequent presence of part-time fishers in the fishery);
e. Significant provision through fishing as protein and jobs for people in coastal areas;
f. Attraction of migrant people to the coast in the search for income, with typically less investment needed to enter the fishery, in terms of capital and skills, or the option of becoming "workers" in private companies;
g. Limited power of fishers to influence the fish market, given their small-scale capital commitment; and consequently a greater dependence on middlemen for marketing and loans;
h. Lack of social mechanisms for health and employment provision to the fishers.

While the majority of small-scale fisheries are found in developing nations, a considerable number exist in developed nations as well (Chuenpagdee et al., 2006). Although the latter may employ more sophisticated fishing gears, they still qualify as small-scale fisheries if relatively limited capital commitment and labour intensive participation exist (Charles, 1991, 2001). Most studies of small-scale fisheries in developing countries in the last 25 years have tended to emphasize small-scale fisher folks' resource dependence and the open-access nature of fisheries that together lead to resource degradation, poverty and marginalization. As highlighted in Pollnac in 1991 and Pauly in 1997, ''the occupation of last resort'' and fisher folk as ''the poorest of the poor'' were frequently dedicated terms to characterize Small-scale fisheries.

Salas and his team in 2007 has mentioned that the solutions advocated to the problems of poverty and resource degradation have centered on the necessity to make small-scale fisheries more economically efficient, while finding means to conserve fish stocks through a combination of management to limit access and incentives for current participants to leave the fishery. These policy prescriptions have typically been based on fisheries-sector analyses that have not addressed the role of fisheries in the wider coastal economy. They are also based on an 'equilibrium' view of fisheries resources, where fishing capacity is matched to the productive capacity of the resource, with the objective of achieving a maximum sustainable yield (or related targets that include economic and social objectives).

The prevalent sectoral and equilibrium views are challenged by empirical observation. The limitations of equilibrium models in fisheries management have been repeatedly pointed out (Larkin, 1977, Caddy and Gulland, 1983, Wilson et al, 1994) but the assumption of an underlying static bio-economic equilibrium, where catching capacity can be matched to resource productivity, continues to be the dominant 'world view' in fisheries (Kesteven, 1997) . It has also often been observed that small-scale fishers respond dynamically to resource fluctuations (Pollnac, 1991, Ruddle et al, 1992, Bailey, 1994) but there has been no systematic attempts to build approaches to fisheries management that take these adaptations into account. It is the aim of this paper to bring to the fore the adaptive responses of small-scale fishers to resource fluctuations and other shocks and uncertainties, so that the search for creative solutions to current fisheries management problems can draw on an understanding of the adaptive strategies of fisher folk themselves.

1.2.3.2 Evaluation of the Role and Importance of Small-Scale Fisheries

The issue of how to undertake an evaluation of the role and importance of small-scale fisheries is quoted as it was discussed in this second section of this paper. Although small-scale fisheries are recognized as having a very important role as a source of employment, nutrition, food security and income, there is a serious lack of information regarding this subsector (Staples, 2003). Further Staples mentioned that beneficiaries of small-scale fisheries are not just the fishers themselves but the contribution needs to be considered in the broader context of:

- Employment and associated financial and food security benefits for participants;
- Financial and food security for the dependents of participants;
- Food and nutritional benefits for end consumers
- Employment and associated benefit for those involved in related services, and
- National taxation and export revenues.

In this context, the contribution of small-scale fisheries needs to be examined at both a macroeconomic level and at a community level. In the past, as identified by Staples in 2003, attempts have been made to estimate the importance of small-scale fisheries using measures and methods developed for large commercial fish stocks that are landed in a small number of landing sites by a relatively small number of people who often have to provide the information as part of some sort of management system. Based on this conventional approach, the role and importance of the subsector has been examined by trying to estimate:

a) Total catch;
b) Number, age and gender of people employed in harvesting and processing;
c) Income of the harvesting and processing sectors;
d) Amount of fish supplied for direct consumption (i.e. not sold);

e) Amount and value of fish sold locally;
f) Amount and value of fish exported/imported;
g) Total amount of fish consumed;
h) Nutritional value of fisheries products in diet;
i) Social and cultural importance of fisheries (e.g. life style, religious linkages, etc).

However, the complexity in terms of the multiple uses and users of the resources, as well as the geographical spread of the subsector makes this traditional sector approach very difficult logistically and statistically to implement without an enormous budget and personnel. It is no wonder, that there is a general lack of information. What is available at a national level is also difficult to access, even from national government offices and is often unreliable. Some data sets collected at community level are available, but these are often associated with short-term aid projects and are not very useful at broader spatial or temporal scales.

The approach to evaluate this subsector needs to be broadened out to a more integrated assessment approach in which the contributions of different sectors need to be considered together. As pointed out in Béné's(2002) background paper, several complementary approaches are available (e.g. economic efficiency analysis, economic impact analysis and socio-economic surveys and sustainable livelihoods). What seems to be required is better coordination and closer working relations with the different Departments and agencies that collect data as well as new innovative data collection techniques.

1.2.3.3 The Concept of Small-Scale Fisheries Management

The impact of intense fishing pressure on marine resources (apparently magnified by climate change and other human activities) has shown that those resources are not inexhaustible. This is a reality well illustrated by the prominent fishery resources targeted by several industrial fisheries worldwide that ended up with an overwhelming phenomenon of overcapitalization (Hutchings and Reynolds, 2004; Pauly et al., 1998). Problems of Small-Scale Fisheries, by contrast, range from the high levels of labour involved, to the lack of policy support for such fisheries and other marginalization due to physical remoteness and economic disempowerment (Salas et al, 2007). The open access conditions in many Small-Scale Fisheries have contributed to the overexploitation of fishery resources. In the 1980s, most countries encouraged increases in fleets as a way of generating jobs and food for coastal communities (Thorpe et al., 2000). At times, governments have also supported the migration of people to coastal areas, to participate in fisheries as a 'last resort' source of employment. These programs may have assumed that it was unnecessary to control fishing intensity, as coastal populations grew, on the basis that this was not seen as threatening the resources—yet the increased targeting of such resources has at times created severe problems with fish stock declines (Salas and Torres, 1996; Pauly, 1997).

Economic theory may predict that the long-term decline of economically important species in fisheries would lead to an exiting of fishers from the fisheries, and thus a decline in fishing effort, but in fact resource declines have been accompanied by a long-term trend of increasing fishing effort. This has occurred either by fishers spending more time and money to catch the same or a reduced amount of fish, or by the fishing activity going farther afield (in search of more fish). Either of these makes the fishery less efficient in economic and social terms, with a consequent impact on biological systems. In addition, the lack of improvement in livelihoods has increased the marginalization of fishers (Pauly, 1997), even though some are seeking to diversify their activities and generate further income by becoming involved in non-fishery coastal activities (Allison and Ellis, 2001).

1.2.4 Traditional Fishery

Traditional fishing also known as Artisan fishing is any kind of small-scale, low-technology, commercial or subsistence fishing practices, particularly those of coastal or island ethnic groups using traditional techniques such as rod and tackle, arrows and harpoons, throw nets and drag nets, and traditional fishing boats. Artisan fishing contrasts with large-scale modern commercial fishing practices in that it is often, but not always, less intensive and less stressful on fish populations than modern industrial fishing. Most of the species taken are associated with coral reefs, although oceanic and pelagic species are important and the coastal zone is far more important in artisanal fishing than the exclusive economic zone

1.2.5 Challenges for Small-Scale and traditional Fisheries Management

Problems with fisheries are recognized worldwide. Many coastal fishers are facing the dilemma of fisheries collapse, the search for income, and the difficulty in sustaining fishing livelihoods. There is also a challenge in defining management schemes that fit the various contexts of small scale fisheries (Berkes et al., 2001; Ehrhardt, 2005; Castilla and Defeo, 2005; Chuenpagdee et al., 2005).

This part seeks to gather different issues related to small scale fishing and traditional fishing of the world. Most of these issues differ from place to place and some issues might be unique. However following issues are mainly extracted and compiled from the different studies done on the areas like South East Asia, South Asia, Western Africa Latin America and Carribian. Proper understanding on these might help to understand and narrow down the issues which are related to the traditional fishing in Sri Lanka.

1.3 Statement of the Problem

Fishery is a resource extracted from commonly owned property, the ocean/ water body. Therefore any person, who accesses in to it with the intention of making profits, naturally uses it towards maximum utilization. In such a situation, unrestricted accessibility of a large number of people trying to maximize self-profit, leads to maximum resource exploitation which in turn will lead to the ultimate extinction of the resource.

It requires special attention and proper management techniques for the sustainable use of these resources. Therefore the significance of studies, evaluating the status of this imperative natural resource, is on the hike, because such studies will reveal the necessary implications towards conserving this resource.

The government, in order to prevent destruction of fishery resource and to protect them, has enforced laws, rules and regulations, but people do not abide by the laws.

1.4 Research Objectives

The general objective of this study is to review the threats and opportunities for the stilt fishing industry and community of the area. The main objectives are,

a. To examine the Socio, Economic and Environment aspects in Traditional Fishing and Modern Fishing and to identify the challenges and threats particularly in Traditional Stilt Fishing (TSF) at community level.
b. To examine the available opportunities for the people who are engaging in Traditional Fishing industry, particularly in Traditional Stilt Fishing (TSF), and to identify already applied survival strategies of same fishing community.
    - To examine the contextual preparations of TSF for the tourism intervention as a supplementary income generator and to identify the mediating effect on TSF by the Southern coast tourism industry.
c. To develop strategies to overcome challenges faced by TSF through harnessing the potentials and manipulating opportunities at community level.

1.5 Research Methodology

1.5.1 Research Design

The main objective of this study is to investigate the socio economic responses of the stilt fishing community in southern Sri Lanka in the face of challenges and opportunities, posed on the stilt fishing industry in the process of sustainable development, covering the objectives mentioned in chapter one. The study also investigates the demographic factors that may contribute towards labor turnover of the stilt fisheries in Sri Lanka. Even though the Stilt Fishing industry in Southern Sri Lanka is a method of traditional small-scale fishery, it was recognized by the tourism industry in the coastal belt based on the indigenous characteristics. On the other hand the selected study area is both famous for fishing industry and tourism industry. This is a great opportunity to analyze the current situation of the stilt fishing industry and the local demand and the supply for such fishery and the beach tourism industry.

This study will be benefited by the others those who are especially interested in these two industrial sectors in terms of investing and market analysis. This study is primarily a survey research, relying mainly on the collection and analysis of primary data collected through a questionnaire. Both qualitative and quantitative methods have been used to provide answers to the research questions. The questionnaire was designed for self-administration and involves a large number of subjects. It guarantees confidentiality to elicit more truthful responses. It is also less expensive and time consuming than interviews.

More to reinforce the confidence of the research result, qualitative methods such as observations, in-depth interviews and informal interviews were also used. Secondary sources were used to provide documentary evidence, which provided a comprehensive overview of the stilt fishing industry and assisted in developing the theoretical framework. The sources included government documents and research literature regarding small-scale and traditional fisheries in particular.

1.5.2 Description of the sample

1.5.2.1 Sampling frame, Target population and unit of analysis

The main population of this study is stilt fishing communities who are currently occupied in the southern coast of Sri Lanka. Additionally two major stakeholder categories were identified in relation to existing tourism orientation of stilt fishery, namely Domestic and foreign tourists and tour operates including accommodation providers to tourists.

According to the field survey there are nearly 540 stilt fishermen in the southern coast. Therefore the sample, which has been taken from the fishing community, represents a large portion of the total population within the stilt fishing community. The unit of the analysis is the individuals working in Stilt Fisheries in Galle and Matara districts.

1.5.2.1 Sampling Design

To determine an appropriate and representative sample, a random sampling method has been used to select the Stilt Fishermen, Tourists. In order to conduct in-depth interviews, informal interviews and participants observations, apurposive sampling method has been selected. Even though this method has a risk because conditions can be changed during the sampling, it was selected because it is highly representative of the population. (Guildford & Fruchter, 1970: 121). To interview tour guides/ operators, ground level and customer handling levels of the organizations were considered. Similarly, hoteliers of the area were targeted. For participant observations, 3 sites were selected.

1.5.3 Data Collection Methods

1.5.3.1 Questionnaire

Under primary data collection, a worker questionnaire, which appears in appendix A, was used to obtain data leading to the research questions. In addition, another two questionnaires were developed to gather information from tourists and tour guides/ tour operators/ hoteliers who were visited SF. Namely, they are: Questionnaire for those who were involved with Traditional Stilt Fishing activities and living in selected fishing sites of the study areas. Questionnaire for tourists (both foreign and local) who visit the selected stilt fishing areas. Questionnaire for tour organizers (foreigners and local) and tour guides who were related to this industry and area.

1.5.3.2 Informal Interviews

Informal interviews focused on stilt fishermen, family members of stilt fishermen, fish buyers and field officers and those who are directly involved in stilt fishing industry and working closely with the fisheries industry and tourism industry to evaluate the actual effects of the Stilt Fishing industry. Especially the, nature of the fishing catch, their requirements, how they practice their industry with the newer challenges, were topics covered in the interviews.

In addition to the above, interviews were held with the leading hoteliers in the area and officers who are involved in the export and import trade in fish products. Further, personal visits were undertaken to meet those who are involved in stilt fishing industry and tourist industry in southern Sri Lanka and owners of those who were doing other kinds of fishing using boats and other machinery for fishing.

1.5.4 Documentary Data

Secondary data, which are relevant to the study, included published materials gathered by way of reference and used for the study.

The Secondary data were collected from relevant government agencies and non government organizations. Data was secured through industry publications, journals, local and foreign, which were obtained from the libraries of government institutions such as Ministry of Fisheries and Aquaculture, Tourists Board, Sri Lanka Export Development Board (EDB), Department of Fisheries and Aquaculture, NARA, NAQDA, Environment Authority, Marine pollution prevention authority. In addition to that, statistics were obtained from BOI, Sri Lanka Customs and other institutions with related for this study.

1.5.5 Non-Participant Observation

Another methodology employed was non-participant observation to cross-check the data that were gathered from the questionnaire. The behavior of stilt fishermen, visited fish consumers, and tourists were closely observed. Also, the researcher closely observed employees' living conditions and working conditions.

1.6 Data Analysis

The data which was collected through the questionnaires was used to contrast and compare using charts, tables, graphs sketches and percentage based tables. Individually calculated all the items and analyzing the data was obtained from the questionnaires. Conclusions were drawn in term of percentages obtained for each choices of item. The SPSS was used to analyze the data.

The statistics collected from the questionnaire which was given to the selected sample and also information gathered through interviews is studied comparatively. Efforts were made to organize analysis and interpretation statistics collected by the field and also from study area. For the convenience of analyzing, percentages, diagrams and tables were used in order to bind the statistics on specific aims. Efforts have been made to form a picture while conducting the analyzing, study area has been considered as sample representing the whole stilt fishing in Southern area.

1.7 Conclusion

Data Analysis was done separately for the identified stakeholders such as fishermen, tourists and tour guide/ operator/ hotelier. Data were collected through questionnaire survey and interviews targeting main stilt fishing sites in southern coast; namely Ahangama, Delwelangala, Hatapalana, Maradawala, Midigama and Weligama. The analysis focused on attributes of Stilt Fishermen such as; education level, income from stilt fishing, income from other sources (ex- Tourism, etc...), job satisfaction, on the job experience, working hours, any key challenges to stilt fishing industry and any suggestions for further development of the industry.

Tourists who visited stilt fisheries were analyzed on their satisfaction levels by watching/ photographing/ experiencing stilt fishing, the reasons to choose it as an attraction, any relevance/ advantage to tourism, their perception on stilt fishing industry, key challenges and suggestions to develop Stilt Fishing Industry as a tourism destination. Ancillary and supportive groups of stilt fishing industry, such as; tour guides/ tour operators/ hoteliers, were analyzed under following attributes. Namely, opportunities for tourism in stilt fishing and tourism demand, their perception on stilt fishing industry, key challenges as middle operators in stilt fishing tourism and suggestions to develop stilt fishing industry were recognized.

When comparing fisherman's income, extra income and fisherman's job experience against fishing spot, the Hatapalana and Maradawala areas has significant advantage to develop stilt fishing as well as tourism promotion areas than others. Therefore there is more vocational advantage when developing strategies to improve stilt fishing, because 37% of fishermen out of total sample are fishing in Hatapalana area, and 71% of the fishermen in Hatapalana are earning more than Rs. 900 per day and extra income also high than other places due to higher tourists' attraction. Maradawala has recorded second best income receipt.

When considering income by fishing, the Ahangama area has lower probability to promote stilt fishing. However stilt fishermen in Ahangama have comparatively high extra income. It suggests this site is crawling with imposters pretending to be as stilt fishermen. In the analysis, it was revealed that Delwelangala area's fishermen were not earning any income from tourism related activities. Further, direct fishing income generated also lower than the other areas, because still it is gradually developing as a newly established stilt fishing area. Therefore Delwelangala is still in the process of growing as a stilt fishing site and if the current context continue to prevail unchanged the tourism character for stilt fishery will be apparent in the future.

When considering job satisfaction of stilt fishermen, 70% of fishermen are satisfied with their livelihood and all of them have good extra income as well, above and beyond fishing income. 20% of stilt fishermen were somewhat satisfied about the job and the rest (10%) were not satisfied because they had no good income from any source. In the questionnaire content a question was raised about job satisfaction, but not a single fishermen in the sample responded as fully dissatisfied due to the fact that they have a certain level of satisfaction regarding stilt fishing. It was interpreted through obvious 16% of the fishermen in the sample, who stated that they were satisfied even though they earned Rs.300- 450 income per day which is not sufficient to upgrade their living standards.

While favorable situations regarding stilt fishing were revealed in the analysis, an unfortunate reality was also surfaced. 16% of fishermen were able to gain extra income from tourists which exceed even their daily income from fishing. It suggests they are imposters who try to act as traditional stilt fishermen in the Southern province. They responded as satisfied with stilt fishing, leading to a conclusion that the income yielded from tourists was far greater than the income generated through the fish harvest. In the onsite observations tourists posed objections to give money to these personal and most of the time they were able to recognize these imposters within a short period of time.

Most of the Fishermen, who are not satisfied with stilt fishing, were engaged in two or three jobs or seasonal employment as laborers, masons, etc... 48% of fishermen were engaged in part time jobs in addition to stilt fishing and most of them are not working in full days. Comparatively they have lower income than the fishermen who are not engaged in part time jobs. The satisfaction has similar correlation with job experience and fisherman age. According to analysis higher the experience in the job leads to higher the job satisfaction levels. In comparison with fishermen's age, it clearly illustrate that young fishermen are not satisfied with stilt fishing than the older fishermen and then they tend not to work as full timers. The situation may lead to cause the vulnerability of the stilt fishing industry is much yawning because people who join in later do not have good satisfaction about the livelihood they are operating. With dissatisfied/ less satisfied employers stilt fishing will lose the traditional and cultural value of the stilt fishing and only emphasis will be the income generating.

When considering tourists' satisfaction the 50% of tourist are fully satisfied by visiting stilt fishing and most of them are visiting as first timers. 62% of tourists would like to visit again and out of that 68% tourist visiting in first time and other 32% tourist have visited more than once. Tourists, who were not satisfied by stilt fishing, are not willing to visit again therefore tourists satisfaction is more important when developing strategy for stilt fishing as tourism destination. Sometimes the fishermen were not satisfied about tour guides' role and the contribution towards sustaining stilt fishing industry, because they say tour guides were not morally supporting to attract more tourists. However according to different analysis it was found, 38% of tourists were informed about stilt fishing from other modes (awareness provide by tour guides/ operators/ hoteliers) rather than conventional modes.

When considering payment/ charges hoarded by fishermen, 50% of tourists are satisfied with stilt fishing and most of them (92% out of that) were suggesting it are essential to pay something to fisherman. This is an additional advantage to fishermen to upgrade their living conditions as well as to develop stilt fishing industry.

Key Challenges and Threats Identified

Modern fishing technology, Fishing net (1 ¾'), Boating, Diving, Swimming, Lack of fish population, Illegal fishing in shallow waters, Market competition, Manmade barrios such as water bakers, Low access to credit schemes, Lack of awareness of the tourists about stilt fishing, Lack of awareness of the fishermen about tourism potentials in relation to stilt fishing, Importers

Opportunities for Development

As a Tourists' attraction, Cultural and Aesthetic value, Not high expensive method, Area specific fishing system, Extra income from tourists, Traditional fishing methods, Near shore fishing area

Women participation for fish selling on site

1.8 Recommendations

Being an traditional small-scale fishery, Stilt fishing industry, requires certain levels of government intervention to preserve it for future as well as to sustain the stilt fisher community well being. Potentials of stilt fishery, beside fish catch, could be identified in; identity builder for the southern coast in Sri Lanka, Photography (Color and Shady in the warm beach), Related art, Paintings and Craft to SF, tourism promoter, etc...Following measures are inevitable to cope with the existing threats to stilt fisheries in Southern coast.

- Empowering the legal system with special provisions in banning the practices of destructive fishing gear in the near shore specially the use of fishing nets intertwined with eye equal or less than 1.75'. The practice of the mentioned size nets prevent fish coming to shore area where stilt fishing grounds exist.
- Stilt fishers claimed that the sea currents have being disturbed by the near shore man made constructions such as water breakers, sewage channels, etc... Thus these structures built with clear intentions, the disturbance occurred to the nature of near shore fish life cycle was tremendous in which they have lost breading grounds leading less and less fish stocks. Thereto it is highly recommended to assess the environmental impact before planning constructions in resources pools as in near shore of the ocean.
- Establishing breading grounds for specific fish used to catch in stilt fisheries.
- Practicing Fisheries and livelihood diversification strategies: SF can contribute to a households' livelihood diversification through a wide variety of ways. This ranges from the "diversification for survival" strategy adopted ex-post by households in the case of temporary environmental and/or socio-economic crisis, to the "diversification for accumulation" strategy generally developed ex-ante by better-off households. The "diversification for survival" strategy is closely related but different from the "activity of last resort" which is generally assumed to characterize fisheries. However stilt fishers should be encouraged in switching between alternative livelihoods such as; rice-farming, tree-crop farming, laboring, etc... In response to seasonal and inter-annual variations in fish availability. This process requires attempts to attract stilt fishers in to vocational training and human resource advancement.
- Efforts have to be made to preserve the stilt fisheries, since it is on the edge of total extinction with the loss of fishing grounds, by capitalizing land and ocean rights towards effective utilization of possible uses of stilt fishing industry. In other terms efforts should be made to diversify the income through tourism dimension which is poorly managed at present. Further stilt fishers need to be trained to cope with increasing number of tourists avoiding possible stakeholder conflicts (Bene, 2003).

  Government intervention through local government should be guaranteed on;
  - Identification of the contribution made to tourism and establishing separate system to generate income from SF through tourism.
    - Systemizing through land and sea tenure integration conceptually and in practice; issuing tickets to watch SF in controlled sites.
    - Ensuring the safety of the tourists avoiding any harassment from fisher imposters through implementing licensing system in collaboration with local government and fisher associations.
    - Marketing onsite SF related products; BBQ with fresh fish, handicrafts, professional painters, professional photographers.
    - Increasing women participation through possible opportunities such as tour guides on site, marketing locally made products, etc...
    - Event organization related to SF.
    - Allowing tourists to engage and experience SF by themselves.
  - Introducing credit schemes and micro financing schemes to capitalize the SF Industry through community based organizations equipping same methodology adopted in 'Samurdhi' or "Divi Naguma" programmes.
  - As per the findings of the survey, saving and investing habits of stilt fishers are poor. Daily

saving plans with small amounts of money, ensuring shorter and longer benefits should be implemented to favor saving habits of SF community.

Even the total responsibility lies within the power of government, private sector and Non-Government Organizations also could assist this community in certain ways.

- Assisting in establishing active stilt fisher associations to ensure the sustainability of stilt fishing industry via coping with other stakeholders; tourism operators, deep sea fishers, etc...
- Organizing awareness programmes to educate the stilt fishers in linguistics and customer care (to cope with tourists), entrepreneurship and financing to maximize the proper utilization of fishery stocks.
- Organizing events and marketing mechanisms via internet, social media, etc... To attract more tourists, investors. Mentioned marketing mechanisms should be functioned with the capabilities to ensure tourists oriented services. It should include such services to collect information varies from basic tourists preferences to annoyed and stressed criticisms.
- Providing platforms to ensure participation of latent investors; hoteliers, tour operators, etc... To stilt fishing to harness potentials in fishing and tourism.

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