

Evaluating the Needs of the Fishing and Associated Livelihoods in the Coastal Fishing Sector of Trinidad and Tobago

ARTHUR POTTS^{1*}, JUDY ROCKE¹, BEN MAHARAJ², SHANTA RAMNATH², and LESTER DOODNATH²
¹*University of Trinidad and Tobago, Chaguaramas, Trinidad, *author.potts@gmail.com.* ²*Institute of Marine Affairs, Hilltop Lane, Chaguaramas, Trinidad.*

ABSTRACT

This paper presents the results of a project undertaken to increase the understanding of the importance of the coastal and marine fisheries in Trinidad and Tobago. The authors administered 519 questionnaires to respondents and conducted thirteen focus group meetings in both islands. Among other things, stakeholders articulated their needs at each of the landing sites around the islands. Many different stakeholders with varying needs were encountered. The authors evaluated these needs by considering the government's priorities for the sector including profitability, governance and empowerment. Evaluation criteria were also applied namely: sustainability, representativeness, compliance and feasibility. Arising out of the study high impact recommendations were proposed for growth and development of the fishing sector of Trinidad and Tobago.

KEY WORDS: Fisheries, stakeholder, evaluation criteria, UTT, IMA, Trinidad and Tobago

Evaluación de las Necesidades de los Medios de Subsistencia de la Pesca y Actividades Similares en el Sector de la Pesca Costera de Trinidad y Tobago

Este ensayo presenta los resultados de un proyecto llevado a cabo para entender mejor la importancia de la pesca marina y costera en Trinidad y Tobago. Los autores distribuyeron 519 cuestionarios y se realizaron trece reuniones de grupo de enfoque en ambas islas. Entre otras cosas, las partes interesadas expresaron sus necesidades en cada área de desembarque de la isla. Se encontraron muchas partes interesadas diferentes con necesidades variadas. Los autores evaluaron estas necesidades al considerar las prioridades gubernamentales para el sector, incluyendo la rentabilidad, la gobernabilidad y el empoderamiento. También se aplicaron los criterios de evaluación, a saber: la sostenibilidad, la representatividad, el cumplimiento y la factibilidad. Del estudio surgieron recomendaciones de alto impacto que fueron propuestas para el crecimiento y desarrollo del sector pesquero de Trinidad y Tobago.

PALABRAS CLAVE: Pesca, partes interesadas, criterios de evaluación, UTT, IMA, Trinidad y Tobago

Evaluer les besoins de la Pêche et Gagne-pain Associés dans le Secteur de Pêche Côtier de Trinité et Tobago

Ce papier présente les résultats d'un projet qui est entrepris augmenter la compréhension de l'importance des pêches côtières et marines à Trinité et Tobago. Les auteurs ont administré 519 questionnaires aux répondants et ont dirigé treize réunions de groupe de foyer dans les deux îles. Entre autres choses, les parieurs ont articulé leurs besoins à chacun des sites d'atterrissage autour des îles. Beaucoup de parieurs différents avec les besoins variables ont été rencontrés. Les auteurs ont évalué ceux-ci à besoin d'en considérant les priorités du gouvernement pour le secteur y compris la rentabilité, la gouvernance et l'autonomisation. Les critères d'évaluation ont été aussi appliqués à savoir : la durabilité, représentativeness, la conformité et la possibilité. Résulter de l'étude les haut recommandations d'impact ont été proposées pour la croissance et le développement du secteur de pêche de Trinité et Tobago.

MOTS CLÉS: Les pêches, le parieur, les critères d'évaluation, UTT, IMA, Trinité et Tobago

INTRODUCTION

This study to determine the needs of the stakeholders in the fisheries sector has achieved many objectives. The first objective was to produce a report on the needs of the sector as represented by the stakeholders at the landing sites. A second objective was achieved by making the Seafood Industry Development Company (SIDC) known to stakeholders at the level of the boat crew and landing site. The third objective was to produce a database which has enormous potential for the tracking of changes taking place within the industry.

The methodology used for this study allowed for maximum participation of the stakeholders. There were a total of 13 focus group meetings held in both islands,

Trinidad and Tobago; and 519 questionnaires were accepted for analysis. The study captured the views of fishers and the associated livelihoods, as well as, of the associations that are active within the fisheries sector. The database of fishers, associated livelihood and fishers organizations will serve as a baseline against which the effects of future programmes implemented in the sector can be monitored. The socio-economic background, the activities and attitudes of the individuals in the database should change as the sector changes. Improvements or declines will be registered in changes in the average income, activities and attitudes and whether the individuals in the database remain in the industry. Maintaining communication and regular update of the baseline is

critical. The database can be expanded as more of the stakeholders are interviewed during the coming years.

This study was commissioned by the Seafood Industry Development Company (SIDC), a new, special purpose, state company formed with the mandate to improve the seafood sector of Trinidad and Tobago. The IMA undertook this study to assess the needs of stakeholders of the fishing sector of Trinidad and Tobago in accordance with the detailed and specific Terms of Reference (TOR) provided by the SIDC. The description of the Scope of Works that follows provides a summary of these terms.

Scope of Works

Project activities that were agreed upon at the beginning of the study are itemized as follows:

- i) Reviewing available literature on the: involvement of stakeholders in the fishing industry in terms of their socio-economic and cultural profile; worldwide examples of strategic development plans for fishing communities; Socio-economic survey methods and methods of analysis that were developed by the FAO and other organizations which prepare assessments to international standards.
- ii) Developing a survey instrument to capture pertinent socio-economic and cultural indicators for the stakeholders and which includes coverage for Trinidad and Tobago. The survey instrument must capture the level of awareness of developmental programmes available and reasons why these may or may not be used. The survey design involved tasks such as: Designing a survey instrument with assistance from the SIDC; developing a sample design to capture information in Trinidad and Tobago with assistance from the SIDC; Training technicians to administer the questionnaire; Pre-testing of the survey instrument and making necessary adjustments.
- iii) Engaging stakeholders in the data collection exercise: A stratified sample of the coastal communities with the boat crew as the unit of assessment based on data collected in the literature review; a survey of other stakeholders through knowledgeable informant interviews and completion of questionnaires.
- iv) Producing a final report that includes, inter alia: Description and analysis of fisheries development issues in each community; Identification of the needs for training, employment, infrastructure, etc., of stakeholder groups; Recommendations for programmes to be developed to address the needs of stakeholders.
- v) Reporting to the internal and external stakeholders.

After failing to obtain the complete list of fishermen/fishers and associated livelihood workers engaged in the fisheries for framing a random sample of stakeholders, the IMA and the SIDC agreed upon the application of stratified sampling of the stakeholder groups with geographic coverage to include strategic landing sites. Three questionnaires were developed and administered to 541 respondents from three main groups identified in the sector. These included the fishers, the associated livelihoods and the organizations. There were 13 focus group meetings held across Trinidad and Tobago with a recorded attendance of 414 industry stakeholders.

RESULTS AND DISCUSSION OF ISSUES RAISED

Literature Review

There are four agencies responsible for the development of fisheries data in Trinidad and Tobago. These are the Fisheries Division of the Ministry of Agriculture, Lands and Marine Resources, the Department of Marine Resources and Fisheries, Tobago House of Assembly (THA), the Institute of Marine Affairs (IMA) and the University of the West Indies (UWI). A fifth source of information on the coastal environment is the Environmental Management Authority (EMA) which has required that significant energy sector projects, inter alia, produce a detailed assessment of impacts on the environment prior to the commencement of projects. These assessments have included references to the fisheries sector but are mainly introductory studies which are largely based on the 2000 Census data at the Central Statistical Office (CSO) and supplemented by limited social surveys, focus group meetings and public consultations held during the period 2000 to 2008.

The few local articles that include a discussion of the needs of the sector were prepared by Fisheries Officers. Official policy documents were prepared by the Fisheries Division: 1990, 2007; UWI, 2004 and 2007. Sporadic articles by Soma (2003) at the FAO and Kuruvilla (2000, 2004) at the Fisheries Division present discussions on particular aspects of the fisheries. The Consultants also consulted with institutions that have traditionally collected data or which have prepared reports on the fisheries sector, namely: the Fisheries Division, the THA, the Central Statistical Office (CSO), the Institute of Business (IOB) of the UWI, and the WECAFC of the FAO. There are currently eight recognized databases that are available for use by students and researchers. These are housed at the Fisheries Division's library and at the CFTDI in Chaguaramas.

Efforts were also made to include information from institutions that produce pertinent 'non traditional' sources of data. These included the Ministry of Social Development, the Agricultural Development Bank, the Ministry of Community Development, Culture and Gender Affairs, the Trinidad and Tobago Coast Guard, the Environmental

Management Authority, the Energy Sector Entities and the CFTDI.

The literature review focused on these major areas: Stakeholder identification, Profile of Trinidad and Tobago Fisheries, Regional concerns in coastal fisheries, International concerns in coastal fisheries and Network analysis. The definition of the term "stakeholders" was taken from articles written by Caribbean Natural Resources Institute (CANARI 2002) and by Mikalsen and Jentoft (2001). CANARI (2002) identified stakeholders as local and non-local persons, formal and non-formal organizations and groups, as well as, users and non-users of the environmental resources who will be affected by the changing use of the resource over time. Both Mikalsen and Jentoft (2001) and CANARI (2002) developed guidelines for identifying the dynamics that exist among stakeholders and have developed a mapping of the power relations of the groups.

Sources for a description of the fisheries in Trinidad and Tobago include Lalla (2002) and Mohammed and Chan a Shing (2002). Kuruvilla (2004) of the Fisheries Division prepared the latest and most comprehensive of the descriptions. Commercial harvesting of fish in Trinidad and Tobago is largely artisanal, typified by manual operations and daily fishing trips. In 1999 - 2000, employment in the fisheries sector was estimated at 3,908 fishermen (Kuruvilla et al. 2002). Of the 1,570 fishing vessels in the national fleet (1999 - 2000), about 1,500 were artisanal, operating in inshore coastal waters. The artisanal fleet fish daily in coastal areas and are equipped with artisanal trawl gear, gillnets, lines or fish pots. Artisanal fishing vessels land at about 65 sites around Trinidad and 32 sites in Tobago.

The associated livelihoods in this study were characterized as the service industries workers and the distribution workers that support the fishing effort. The suppliers and service industries that support the fisheries sector include boat-builders, net makers and repairers, suppliers of fishing gear and suppliers of engines and parts. The relative importance of the fisheries sector to these industries is often difficult to quantify and financial information on specific sales to the sector is not readily available.

There were nine boat-building firms, of which four depend mainly on the fishing industry for business. These firms supplied 46 artisanal vessels to the fishing industry in 1999 - 2000 valued at TT\$1.8 million. Another 40 companies supply inputs to the fishing fleet of which ten companies accounted for significant sales, consisting mainly of fishing gear, boat engines and parts. Three companies sell outboard engines to the industry. Total sales of boat engines during the period 1999 - 2000 were estimated at TT\$3.1 million. Engine parts, fishing gear, engine oil, and other equipment were supplied by 10 major companies. Total sales in 1999 - 2000 amounted to TT\$6.8 million.

Of the 17 processing plants operating in Trinidad and Tobago, seven were classified as medium-sized plants and

ten as small plants. There are some temporary/seasonal operations. The plants are mainly primary processors and fish is sold on the local market or exported chilled or frozen. Total sales volume for all processing operations was estimated at about 7,000 metric tonnes with a value of TT\$105 million. Total value-added for this sub-sector was estimated at about TT\$48.1M. Employment generated by processing operations is estimated at 1,225 persons. Since 2004, many of the plants have had to limit their operations or have gone out of business due to the unavailability and unreliable supply from the local market and the limitation of exports to the European Countries (EU) because of stringent standards for harvesting and processing of the fish. There are three wholesale fish markets in Trinidad managed by the National Agricultural Marketing Development Company (NAMDEVCO). In Tobago, the major markets are in Scarborough, Buccoo, Plymouth and Charlotteville. Fish are sold to the market directly from fishing vessels that land their catch at the market or from wholesale buyers who may have purchased fish from several landing sites.

At the local level there were 34 fishing organizations (9 co-operatives and 25 Associations) in Trinidad and Tobago. Of these, 24 are in Trinidad and 10 in Tobago. The cooperatives are formally registered with the Ministry of Labour, and are each governed by a Board of Directors. In Tobago there was greater success in forming local level management teams. This is evidenced in the formation of the All Tobago Fisherfolk Association (ATFA) in 1999. Based on the success of ATFA, an umbrella organization called the Trinidad and Tobago Union of Fisherfolk (TTUF) was registered in 2005.

Summary on Findings of Questionnaire Survey

The sample proved representative of the fisheries population. This was illustrated in that the age, family size, educational attainment and income of the stakeholders corresponded with that of the Census information of 2000. Crew members were likely to be the youngest, living in single person households and receiving the lowest income. They had the same type of training as the other groups. Family support was available but was greatest at 30% of the owners of the boats. The stakeholders earned incomes that varied from less than \$3,000 to above \$15,000. The majority received \$2,500 - \$5,000 per month. Apart from the owners of the boats and captains, the remainder of the stakeholders (80%) did not have much relation with the state agencies. This lack of communication within the industry is further reflected in that there was only 24% awareness of the presence of the SIDC. Still fewer stakeholders were aware of the function of the SIDC. Training requests were mainly for the repair of gear and improvements of operations at sea.

Summary on Findings/issues Discussed at Focus Group Meetings

The matrix below (Figure 1) illustrates the locations where all of the general issues were discussed during the cycle of Focus Group meetings. It is noted that all of the 13 Focus Group meetings held across Trinidad and Tobago discussed issues pertaining to infrastructure, as well as, representation, advocacy and agency.

Discussion of Issues Affecting the National Fisheries

The information retrieved from the Focus Groups and the questionnaires is discussed from the point of view of the four development goals highlighted in the SIDC’s Strategic plan for the fishing industry. These goals were advanced for the development of the sector in the following areas: Profitability and competitiveness of the sector, Sustainable utilization of resources, Governance framework to aid in the modernization of the sector, and Empowerment of coastal fishing communities (SIDC 2007). Recommendations that follow the discussion on each of the goals were also retrieved from the focus groups and questionnaires. Those recommendations that advanced the SIDC’s goals were selected and then evaluated according to four criteria:

- i) Compliance with the Trinidad and Tobago laws, especially those related to the fishing industry,
- ii) Positive impact on the environment or promoting sustainability,
- iii) Representative of the opinion of the majority of the sample population as seen by the proposing of this solution in at least three of the focus group meetings, and
- iv) Practical feasibility in terms of the cost that can

be paid from the current budget of the fisheries administrators, local availability of technical expertise and a time frame of less than three years to enacting this recommendation.

Profitability and Competitiveness of the Sector

The views of fishers, semi-industrial and industrial, as well as, the associated livelihoods were considered in this discussion of the profitability and competitiveness of the sector. All of these stakeholders identified inadequate infrastructure and security as the issues that affect their capacity to earn an income (Figure 1 and Appendix 1). These are therefore the critical issues affecting the profitability in the fishing industry. Security at the landing sites has declined both for the storage of the equipment and gear and for the person who must work there. The lack of security is important for a number of reasons; for instance, with the increased cost of equipment and gear and the lack of adequate storage facilities, theft becomes a serious issue for the stakeholders. There has been an increasing incidence of theft of boats and engines at some of the sites. This has a debilitating effect on the fishery as the supply of fish is reduced during the time taken for a replacement and there is loss of income for the fishers. Fishers also have to raise more funds to replace this equipment and gear which could lead to indebtedness. The time delay for replacing gear can affect the fishers’ ability to guarantee supplies to the seafood market.

The lack of adequate infrastructure clearly hinders the fishers from fulfilling the HACCP guidelines. A seafood industry that intends to sell fish as food to the European Union is compelled to demand improved facilities. Additionally, the risk to personnel at the site and the

Categories	Chaguaramas NW	Industrial Sea Lots	Orange Valley W	San Fernando W	San Fernando I W	Fullerton SW	Moruga S	Mayaro SE	Balandra NE	Toca NE	Maracas N	Tobago I	Tobago II
Basic needs at fishing sites	●	●	●	●	●	●	●	●	●	●	●	●	●
Physical Infrastructure	●	●	●	●	●	●	●	●	●	●	●	●	●
Economic Concerns	●	●	●	●	●	●	●	●	●	●	●	●	●
Safety at Sea	●	●	●	●	●	●	●	●	●	●	●	●	●
Security of Property and Persons	●	●	●	●	●	●	●	●	●	●	●	●	●
Conflicts – Intra-Sectoral	●	●	●	●	●	●	●	●	●	●	●	●	●
Conflicts – Inter-Sectoral	●	●	●	●	●	●	●	●	●	●	●	●	●
Fisheries Resource Management	●	●	●	●	●	●	●	●	●	●	●	●	●
Representation Advocacy Agency	●	●	●	●	●	●	●	●	●	●	●	●	●
Training Needs	●	●	●	●	●	●	●	●	●	●	●	●	●

Figure 1. Matrix showing categories of issues discussed at Focus Group Meetings

potential loss of catch, boat gear and equipment affects the supply of the seafood for processing. According to the questionnaire survey, the most common concerns, for the associated livelihoods personnel, were the economic survival of their industry and the lack of infrastructure and basic needs of the site. There are limited facilities for the providers of services such as net mending and boat repairs. The distribution workers, such as those buying and selling fish, were also concerned about the lack of storage, and the general sanitation of the site where the fish food is being handled. The lack of security at the sites directly affects the distribution workers. The increase in the price of the commodity has resulted in the need to make direct transfers of funds at the landing sites. These sites have no security presence, and there are illicit activities and nefarious characters involved in the drug trade who frequent certain of the sites with the intention to use the sites as places of operations. Associated livelihood workers are also concerned for the safety of the fishers at sea because if they are affected by piracy, then there would be fewer boats to service and less fish to distribute. The associated livelihoods link their fortunes with the fortunes of the fishers. They understood the integrated nature of their business with the fisheries.

To address these concerns, the stakeholders gave the following recommendations:

- i) Take measures to address the reduction in fishing effort which can occur because of a number of reasons; encourage the development of HACCP guidelines throughout the industry; encourage the training of fishers and associated livelihoods at landings on the HACCP guidelines;
- ii) Provide micro-finance to reduce the time lost for replacing gear as this can affect the fishers' ability to guarantee supplies to the seafood market; guard against piracy by increasing the patrols by the Trinidad and Tobago Coast Guard or the Marine Branch of the Police Service;
- iii) Include search technology for the missing boats and engines, as well as, insurance to replace the equipment in the shortest possible time;
- iv) Improve the sanitation at the sites; provide facilities for the associated livelihoods including net mending and boat repairs;
- v) Improve refrigeration facilities at the sites;
- vi) Increase formal security at the landing sites;
- vii) Provide adequate storage at the landing sites;
- viii) Collect the waste from fish cleaning to start a possible fertilizer or fish meal enterprise;
- ix) The waste water after fish cleaning should be piped away from the landing site, and
- x) Improve infrastructure to improve the quality of the fish being landed so a higher price is fetched and there are more markets.

Sustainable Utilization of Resources

The views of fishers, semi-industrial and industrial, as well as the associated livelihoods, were considered in this discussion of the sustainable utilization of the fisheries resources. The fishers were concerned about the pollution arising from the activities of other sectors which are operating in the marine environment and in the nearshore. They were also concerned about the lack of management of the waste streams at the landing sites. Another of their concerns was the lack of adequate fisheries data upon which fisheries management decisions are based. The semi-industrial and industrial fishers were concerned with the lack of tenure which affects the sustainability of the industry stakeholders. Associated livelihoods were concerned that there was insufficient enforcement of the fisheries laws such that unsustainable practices were occurring which could lead to a collapse of the fishery resources. The increased exploration and exploitation of the energy resources has increased the potential for pollution of the fishing grounds due to oil leaks. The increased activity could also disrupt the movement of the fish through the fishing grounds. The current global crisis in food availability makes local agriculture, including fishing, strategically important.

The associated livelihood personnel realize that sustainable harvesting of the resources would ensure a higher price for the commodity at the market, as well as, ensure the supply. Many are convinced that the deep-sea trawlers are destroying the seabed. It is thought that the activities of the trawlers would eventually lead to a collapse of the industry. They cite the lack of adequate legislation and enforcement of the laws as the main cause of the problem.

The following recommendations were advanced by stakeholders to address the issues raised:

- i) Address the claims for compensation because of deleterious effects of activities in other sectors;
- ii) Encourage cooperation between the fisheries and the tourism sectors;
- iii) Disseminate information to encourage best practices within the industry;
- iv) Licensing of fishermen and boats to reduce the open nature of the fishery;
- v) Strengthening the legislation to control the number of vessels allowed to fish in the fishing grounds;
- vi) Strengthening the legislation to control the presence of fishing vessels in spawning and nursery grounds;
- vii) Enforce legislation relating to the control of the net sizes to allow gillnet fisheries to increase the landings, and
- viii) Eliminate the use of 3 ½ mesh sizes.

Empowerment of Coastal Fishing Communities

The associated livelihoods expressed a sense of powerlessness as other sectors are making more use of the resources that have been traditionally under the control of the fishing sector. The fishers' organizations had concerns that the basic needs of the members continue to go unfulfilled. They were concerned about raising funds through encouraging the development of value added fish products and promoting business ventures that would earn an income to offset operating expenses and bring a return to shareholders. They too are concerned about the activities of the other sector but the leaders have tried to get involved in any talks that have a bearing on the future of the industry. The associated livelihoods identified competing interests and their investments on the coast and within the fishing grounds, such as the energy industry, the then proposed Essar Iron and Steel Mill and the Aluminium smelters with their ports, as unfair competition. These sectors seemed to have the full support of the political directorate, unlike the fishing industry. There was also the introduction of a water taxi service within the Gulf of Paria. The fishers believed that existing industrial plants on the coast were allowing polluting chemicals into the Gulf of Paria. The stakeholders believe that measures must be taken to address the concerns and issues re the empowerment of the coastal communities, such as a drive to increase the membership of cooperatives and landing site fisher organizations and to train members in managing their finances.

CLUSTERS AND NETWORKS IN THE FISHERIES SECTOR

The researchers further analysed the information gathered for this study by examining for the presence of effective networks within the industry. Effective networks within the fisheries sector can accelerate the development of the sector. The UNIDO (SIDC 2007b) has been instrumental in transforming small and medium sized enterprises into viable business enterprises in several developing countries. They transformed the stakeholder groups through the development of clusters and networks. The clusters were defined as regional or specialty groupings of business organizations among which the networks or business relationships were developed. The IMA developed indicators to be used in profiles that describe the functional level of stakeholders in the fisheries sector of Trinidad and Tobago based on the UNIDO definition of networks. Included here are the results for the first stage in the analysis of the existence of networks within the fisheries sector using the Index developed by the researchers.

Governance Network within the Fisheries Sector

This section examines the governance network present within the fisheries sector. Network 1 (Figure 2) was developed based on professional knowledge of the organizational structure in the Fisheries Division and of its interaction with the several governance stakeholders operating within the fisheries sector. Network 2 (Figure 3) presents the perception of the fishers as they work within

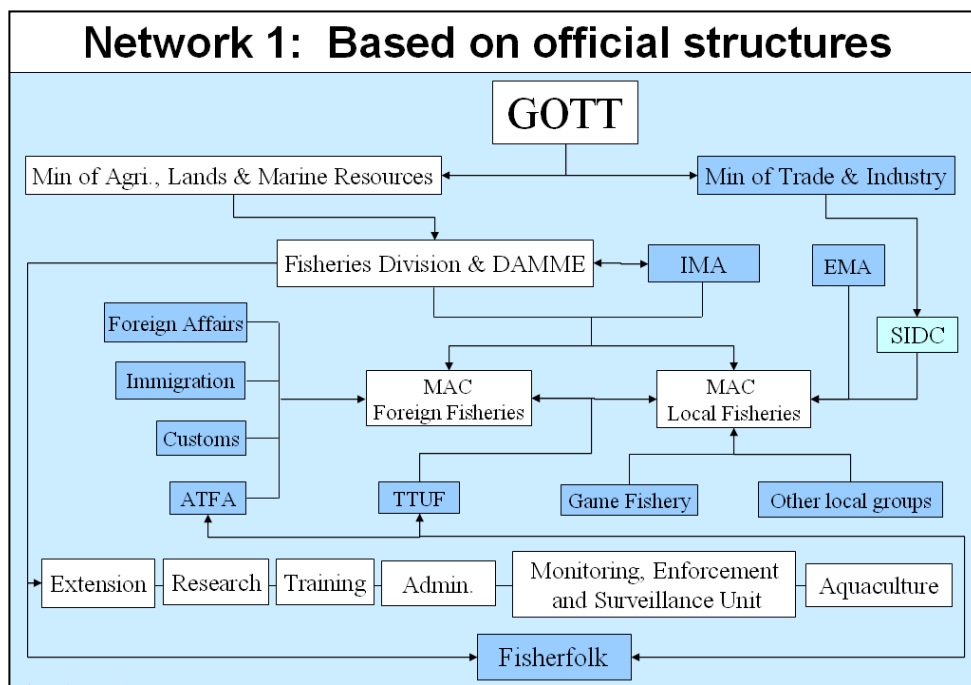


Figure 2. Network 1, Official Structure for Fisheries Sector Governance

this governance framework and was developed based on professional knowledge and interaction with the fishers. Note that Network 1 (Figure 2) presents a governance network which has a ‘top-down’ orientation. The fishers make very little effective contribution to the development of the sector in this scenario. Network 2 (Figure 3) shows that the fishers consider themselves separate from the official fisheries managers. They interact with the managers for some training, but mainly for registration and other administrative functions. Outside of these operations they communicate with few other local and national level groups and agencies.

ACKNOWLEDGEMENTS

The authors would like to thank the Institute of Marine Affairs (IMA) and its researchers who worked on this project; the Seafood Industry Development Company (SIDC) for funding the research; the University of Trinidad and Tobago (UTT) for financial and staff support; the Tobago House of Assembly (THA) for its cooperation and collaboration; the many public and private sector agencies that cooperated on the project; the Cipriani College of Labour and Cooperate Studies for supplying research assistants and most importantly the many fishermen/fishers, associated livelihood stakeholders and fishermen/fishers associations and others too many to mention, who in some way assisted in the conduct and success of this research project.

LITERATURE CITED

Caribbean Natural Resources Institute (CANARI). 2004. Guidelines for Stakeholder Identification and Analysis: A Manual for Caribbean Natural Resource Managers and Planners, CANARI Guidelines Series 5.

Ceglie, G. and M. Dini, 1999. SME Cluster and Network Development in Developing Countries: The Experience of UNIDO. United Nations Industrial Development Organization (UNIDO): Investment Promotion and Institutional Capacity Building Division, Vienna. <http://www.unido.org/fileadmin/import/userfiles/russof/ giopaper.pdf>. Accessed May 2009.

Fisheries Division. 2006. Fishing Policy. Ministry of Agriculture Land and Marine Resources.

Fisheries Division. 2002. Atlas Marine Fisheries Atlas of Trinidad and Tobago Part 1, Fisheries and Information series 10. Ministry of Agriculture Land and Marine Resources.

Fisheries Division. 1999. Report on 1998 Census of Fishing Vessels Trinidad Fisheries Internal Report Number 3 Ministry of Agriculture Land and Marine Resources.

Fisheries Division. 1996. Draft Policy Directions for Marine Fisheries of Trinidad and the 1990s.

Food and Agriculture Organization of the United Nations (FAO). 2005. Fishery and Aquaculture Profiles: Belize, Guyana, Jamaica. <http://www.fao.org/fishery/countrysector/FI-CP>. Accessed May 2009.

Institute of Marine Affairs. 1997. Draft report. Environmental data and information project. Marine and coastal areas. Physical oceanography, water and sediment chemistry, fisheries and coastal dynamics. Document prepared for Environmental Management Authority. Chaguaramas: IMA 125 pp. Technical Advisory Services.

Institute of Marine Affairs. 2005. Final report. Fishing activity study, north coast marine area, Trinidad. Submitted to British Gas Trinidad and Tobago Limited. Chaguaramas: IMA, ii, [75 pp.]: maps, tables Technical Advisory Services.

Kuruvilla, S.C. Chan A Shing, L. Ferreira, L. Martin, S. Soomai, H. Lalla, and A. Jacque. 2002. Study on subsidies in the fisheries sector of Trinidad & Tobago. Fisheries Division, Ministry of Agriculture, Land and Marine Resources; Port of Spain (Trinidad and Tobago).

Kuruvilla, S. 2004. Review of Studies on the Marine Fisheries of Trinidad and Tobago and Status of the Fisheries Resources.

Lalla, H. 2002. National Report of Trinidad and Tobago, Fisheries Division, Ministry of Food Production and Marine Resources, St. Clair Circle St Clair, Port of Spain, Trinidad, W. I. <http://www.fao.org/DOCREP/005/Y4260E/y4260e0f.htm#TopOfPage>. Accessed December 2008.

Mikalsen, K.H. and S. Jentoft. 2001. From user-groups to stakeholders? The public interest in fisheries management. *Marine Policy* 25:281 – 292.

Mohammed E. and C. Chan A Shing. 2003. Trinidad and Tobago: Preliminary Reconstruction of Fisheries Catches and Fishing Effort, 1908 – 2002. Trinidad Fisheries Division, Ministry of Agriculture, Land and Marine Resources.

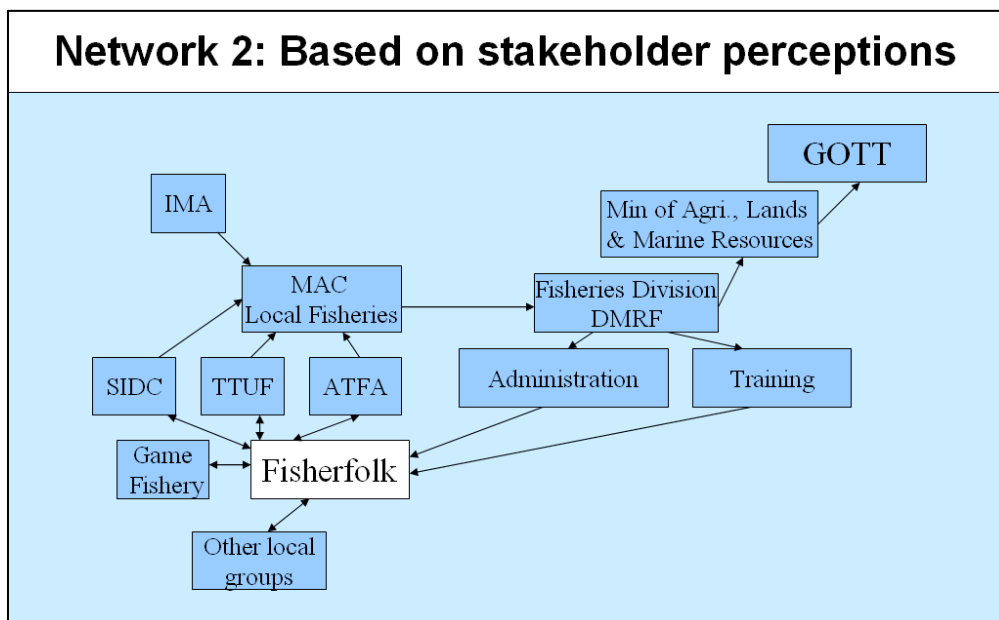


Figure 3. Network 2, Fisherfolk perception of Governance of the Fisheries Sector

Seafood Industry Development Company (SIDC). 2007a. Factors Influencing the increasing prices of fish and fishery products in Trinidad and Tobago, *Green Vine Monthly Bulletin* 3(8):6 – 8.

Seafood Industry Development Company (SIDC). 2007c. Appendix 5, Draft Strategic Plan, Ministry of Trade and Industry, Trinidad and Tobago. 41 pp.

Seafood Industry Development Company (SIDC). 2008. Charting a New Direction: Strategic Plan, 2007 - 2009. Ministry of Trade and Industry, Trinidad and Tobago.

Soma, K. 2003. How to involve Stakeholders in Fisheries Management – a Country Case study in Trinidad and Tobago. *Marine Policy* 27:47 – 58.

UWI and Fisheries Division. 2004. Strategic Intervention for the Ministry of Agriculture, Land and Marine Resources, Ministry of Agriculture website, September, 2008.

UWI. 2007. A Policy for the Marine Fisheries of Trinidad and Tobago.

↓ Issues ↓	IMA Auditorium NW	Industrial Sea Lots	Orange Valley W	San Fernando I W	San Fernando II W	Fullerton SW	Maruga S	Mayaro SE	Balandra NE	Toca NE	Maraca N	Tobago I	Tobago II
Physical Infrastructure at fishing sites	●	●	●	●	●	●	●	●	●	●	●	●	●
Boat Repair Facilities	○			○		○	○	○				○	○
Fish market and Equipment e.g. Scales	○		○					○			○	○	○
Net Mending Sheds					○			○	○				
Dredging Harbour			○	○	○								
Dredging River										○			
Dock, Berthing, Jetty			○	○	○	○		○		○		○	○
Fuel Facilities			○	○			○					○	
Cold Storage/Ice Maker				○					○		○		
Accessibility e.g. Road Slipway					○	○				○			○
Locker Space Storage									○	○			
Lighting of Site (Security, bait attraction, Nav)							○		○	○		○	
Infrastructure/Design or Redesign of Site									○		○	○	○
Fish Attracting Devices													○

Appendix 1. Listing of Issues discussed at Focus Group Meetings - re: INFRASTRUCTURE