



# Market assessment on the incentives and disincentives for the adoption of sustainable practices along the tuna value chain in Region 12, Philippines



Larry N. Digal, Shemaiah Gail P. Placencia\*, Carol Q. Balgos

School of Management, University of the Philippines Mindanao, Philippines

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## ABSTRACT

With the world's increasing demand for tuna and the subsequent exhaustion of tuna stocks, this paper tries to assess the different attempts and/or practices that lead towards sustainability along the tuna value chain in the Philippines. In terms of economic gains, the net margins analysis, was used to measure the level of income of the actors which was considered as a factor that could possibly incentivize the adoption of sustainable practices, along with other market phenomena which were reviewed in this paper. These significant practices in the market include the provision of price premiums for the capture of mature tuna and the stringency of the market in terms of eco-labelling and certifications in contrast to the indifference of the local Philippine market in terms of preference. Lastly, having purse seine as a less sustainable method of tuna fishing, it was seen that there is a lack of incentive for them to adopt more sustainable practices.

## 1. Introduction

Tuna is one of the most valuable marine caught commodities in the world, highly demanded by countries in the Europe, US, Japan, among others [1]. The most commercially significant species are that of skipjack, yellowfin, and bigeye, which account for 50.7%, 31.7%, and 10.8% of the world's global catch and 71%, 23%, 6% of the total catch in the Western and Central Pacific Ocean, respectively [2,3]. One of the largest tuna producing countries is the Philippines, which holds tuna as its highest exported aquatic commodity. The country's marine fishing industry is an important part of the agricultural sector and an essential source of local and export income [4]. It contributed 1.6% and 1.8% at current and constant 2000 prices, respectively in 2014 and provided employment for 1614,368 people [5]. Region 12, SOCCSKSARGEN, holds the highest production and other activities included in the industry. It houses five of the six canneries in the country and the biggest fish port in the country [6].

In the Philippines two of the most common methods of catching tuna are handlining and purse seining; targeting yellowfin and skipjack tuna respectively. Handlining, also known as hook-and-line or pole-and-line, has been a traditionally employed method by the tuna fishers in the Philippines. This method usually harvests large species of tuna. Class A of which, are usually sent to the export market either fresh or frozen. But classes B and lower are sold locally to Manila or to other provinces in the Philippines. Handlining is considered to be a very sustainable method of tuna fishing due to its selective nature [7]. This

technique is also seen to be advantageous for spawning fish, like tuna, since they normally bite only after being able to spawn. Moreover, lines are usually set for a short time, enough for fishers to be able to return unwanted species to the sea alive [8]. However, the declining fish stocks subsequently effect to the reduction of fish size and the lengthening of fishing trips. Fishing for longer periods then lead to the deterioration of fish quality such that fishing trips that last for more than two weeks lead to the quality being unsuitable for export [9,10]. Purse-seining, on the other hand, is seen to be unsustainable due to the aggregative nature of the gear and the corresponding prevalent usage of Fish Aggregating Devices (FADs) which increase the bycatch of juvenile tuna and other species such as dolphins, sharks, and sea turtles [11]; except for those vessels with very high capacity who target free schools of tuna using advance tracking equipment. The canneries are the major markets of the purse seiners. Since many purse seiners do not qualify for the requirements, the canneries import tuna from vessels fishing in farther seas especially from those fleets fishing in Papua New Guinea who were regarded as part of the PNG fleet. Some others were even reflagged to PNG under certain arrangements. Most of the cannery production is exported to the EU and US market and only 10% is consumed locally. There is continuous high pressure for the domestic fleets to find other fishing grounds due to declining access in other countries [12].

Despite the great economic contribution of the industry to the country, most of the fishers remain poor. The fisheries sector still occupies the poorest spot among the other sectors in the Philippine

\* Correspondence to: Postal address: School of Management, University of the Philippines Mindanao, 8022 Mintal, Tugbok District, Davao City, Philippines.  
E-mail address: [splacencia@up.edu.ph](mailto:splacencia@up.edu.ph) (S.G.P. Placencia).

economy. In addition to this, the increase in fishing pressure due to the heightening demand led to the increase of fishing capacity and efficiency of fishing vessels. Because of this occurrence, tuna species started to become overfished and the tuna stocks began approaching a significant decline. These species fall under a nearly fully exploited or overexploited state [13]. The tuna industry will continue to face decline due to the unceasing overfishing and employment of unsustainable practices [14], which may lead to a greater loss for the tuna fishers and other entrepreneurs reliant to the tuna industry.

Practices towards sustainability were identified as the adoption, implementation, and improvement of management measures and policies especially in the market; creation of monitoring mechanisms, most importantly for illegal, unregulated, unreported fishing (IUU); prohibition of subsidies that encourage overcapacity and overfishing; providing market incentives to change the consumer behavior, leading towards sustainability; establishment of marine protected areas; investing in innovation of sustainable fishing techniques; and increasing efforts in mitigation of bycatch, discards, and post-harvest losses [15].

Some of the processors such as canneries require certifications in order to access the export markets with stringent requirements on eco-labels and certifications. More so, these canneries utilize sustainably caught tuna in order to pass the requirements and certifications for its targeted export markets. Also, the handline value chain was seen to be environmentally sustainable among the other methods due to the selective nature of the gear used. Thus, this study focuses on the markets for fresh tuna under the purse seine value chain since it is guaranteed that both processors and handliners employ stringent measures for the tuna that they catch and use for value-addition. Specifically, this study aims to:

- 1) Trace and calculate the net margins of the actors in the chain;
- 2) Evaluate the level of profitability for the nodes of the identified value chain; and
- 3) Identify the market incentives and disincentives for adopting more sustainable practices especially in terms of profitability.

## 2. Materials and methods

A Value Chain Analysis (VCA) was conducted in order to examine the practices done by the chain actors. The need for VCA was felt because of the nature of tuna as a commodity. Since there are high potentials for the tuna market both locally and globally generated by the demand, this leads to potential distortions in the chain concerning market power. Moreover, poor equity of benefit distribution along the chain could arise. Among the other elements that the tuna value chain includes, this study focused on the income distribution among the actors in the chain. Therefore, net margins were computed for the identified nodes in the value chain to see the differences in the profitability of the actors performing different functions and activities along the chain.

There have been a lot of studies which used VCA as an approach to study and analyze the issues in the fisheries sector [16–19]. Some studies even focus on the tuna industry specifically [6,20,21]. However, most of these studies focus on the profiling of the industry, including the actors and their activities, the flow of tuna from being caught until it reaches the consumers, and some of the issues encountered along the chain. This study, on the other hand, provides the analysis on the level of profitability of these actors and to some extent, relating it to the sustainability measures that these actors employ.

The study site focused in Region 12, which houses the largest tuna landing site in the Philippines, the General Santos Fish Port Complex [22] as shown in the map. Specifically, GSFP was the focus of the analysis since majority of the actors are present there. However, some of the chain actors within the proximity were also taken into account. In 2014, the tuna landings in GSFP amounted to 20,410.93MT and 139,753.2MT for yellowfin tuna and skipjack respectively [23]. The

number of handline vessels that unload in the GSFP reached 506 boats with capacity of less than 3 gross tonnage (GT), 1488 of GT between 3–5, 558 for vessels between 5 and 15 GT, and 202 boats having capacities greater than 15 GT. Purse seiners, on the other hand, are at about 130 vessels operating from the minimum of 12 GT to around 1600 GT.

The data needed for the analyses in this paper were primarily taken from key informant interviews. These were done in order to gather relevant data on the practices, cost structures, and revenue of the actors in the tuna industry both in peak and non-peak seasons. Key informant interviews with the head of the General Santos Fish Port Complex, representative of an organization of purse seiners, the SOCCSKARGEN Federation of Fishing and Allied Industries Inc., and other government personnel from the Bureau of Fisheries and Aquatic Resource and the Department of Trade and Industry were initially conducted to get an overview of the tuna industry in the region particularly in the GSFP.

Specifically, key informants were selected based on their presence and availability at the General Santos Fish Port Complex during period of data collection. Twenty-six key informant interviews were done in addition to the initial interviews conducted. Two of which involved input suppliers, another five were handliners which covered medium and large scale operations only, three were with purse seiners, another one was an interview with a boat operator, an additional four interviews were done with *jamboleros* which function as collectors and distributors, two for traders, another one with a trucker, two were checkers in the fish port, and the last three were interviews with retailers.

For each actor, different interview instruments were used. But all sets of these instruments have questions on the functions and activities undertaken by each actor; governance mechanisms such as contractual arrangement, payment terms, arrangements on outputs, and standards required by buyers; market structure of each node (where the actor belongs) wherein the exercise of power between actors and the level of competition were determined i.e. the number of actors in the same node, and existence of forward and backward linkages; technology used (whether mechanized, manual, semi-mechanized, and labor intensive or not); and the changes they have observed over time i.e. comparing activities/functions, governance mechanism, structure, and technology from five years ago.

For handliners and purse seiners, data collected mainly included boat capacity, fishing days, berthing days, capitalization, costs incurred, volume harvested, types of fishes caught, sales, labor requirement and wages, price, seasonality, and technology used.

Secondary data were also gathered from the Philippine Fisheries Development Authority for the monthly volume and prices of fish landings in the GSFP (Fig. 1).

## 3. Results and discussion

Two value chains were identified. One was the handline or “yellowfin” tuna value chain and the purse seine or the “skipjack” tuna value chain. For the yellowfin value chain, three marketing lines were identified and for the skipjack value chain, two marketing lines were also observed, as seen in Fig. 2.

### 3.1. Yellowfin tuna value chain line 1 – (inputs suppliers – handline operators – exporters)

Input suppliers are those that provide inputs to the fishing operations which include ice plants and the financiers of the fishing operations. Financiers are very important actors of the chain since most boat operators require large amount of capital in preparation for the fishing trip. Amount of capitalization depends on the length of the fishing expedition and the capacity of the boat. Handline vessels could either be individually or company owned. Fishing companies facilitate the marketing activities for the fishing boats under them. The handline or *pasol*

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