

Analysis of the application of MSC ecolabelling in tuna product processing industry in Sibolga City

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Abstract. The need for fishery products that are healthy, safe, legal, and sustainable to increase. This makes the export destination country require a certificate issued by an institution. One of the standards used by such countries is the MSC ecolabel. MSC ecolabel is an endorsement of a product that meets the criteria of environmental sustainability procedures. Therefore, it is necessary to conduct an assessment related to the application of MSC ecolabels in the Sibolga tuna processing industry. The purpose of this study is to analyze the level of gap analysis and the suitability of the application of the MSC ecolabel and examine various inhibiting factors. This research was conducted using survey methods and FGD with industry and the government. The analysis used was qualitative descriptive analysis, gap analysis, and conformity level analysis. The research results show that the level of conformity in MSC CoC (*Chain of Custody*) for its principles is highly non-compliant with the standard (0%), while for its criteria, it is almost compliant with the standard (71.32%). Meanwhile, the conformity level in MSC fisheries indicates a very low level of compliance with the standard (39%). Policy recommendations provided include the formulation of a harvest strategy for tuna in WPP 572, strengthening and implementing measurable fisheries, and formulating a *Fisheries Improvement Project* (FIP) policy.

1 Introduction

The need for fishery products that are healthy, safe, legal, sustainable, and preferred by the community continues to increase over time [1]. Consumers are increasingly aware and

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concerned about the clarity of their fishery products [2]. This makes export destination countries require certificates issued by certain institutions [3]. Increasing consumer awareness of the clarity of fishery products is reflected in several countries that have implemented the principle of traceability for every fish caught and cultivated product [4]. Importing countries' demand for information regarding the origins of fish from pre-production, processing, and distribution to consumers is something that cannot be avoided. Therefore, implementing traceability is an obligation for a country or exporter.

Applying traceability to fishery products, especially tuna, positively impacts Indonesia because it will strengthen the bargaining power and competitiveness of Indonesia's export fishery products on the world market. Trust in importing countries can increase demand, positively impacting fishermen's and tuna businesses' welfare [5]. Apart from that, the fisheries sector's Gross Domestic Product (GDP) will also increase. Another advantage obtained by implementing traceability is preventing and eradicating illegal, unreported, and unregulated (IUU) fishing as well as ship cargo changing activities at sea (transshipment) [6]. Traceability is the central part of the product supply chain and functions as a system for tracking product history through documentation [7]. Traceability is the power to access information throughout the product cycle by identifying what is recorded [8]. Implementing traceability is about obtaining the necessary information and additional product quality information to increase consumer and market loyalty [9].

The United States (US) and the European Union (EU) have established a traceability system for products entering their territories. The European Union has established provisions for the implementation of catch certificates based on Council Regulation (EC) 1005/2008 regarding the prevention of IUU fishing as well as the general food law (regulation 178/2002) regarding supplier identification records [10]. Meanwhile, the US enacted the FDA Food Safety Modernization Act of 2011 regarding food safety guarantees and, through NOAA, required the SIMP (*Seafood Import Monitoring Program*) program to eradicate IUU fishing [11]. The objectives of the European Union and the US in requiring traceability are: 1) maintaining the safety of food or products entering their territory, 2) regulation is based on the principle of knowing each stage in the supply chain, and 3) the need for data/information from each producer.

Apart from the regulations set by the US and the European Union, other regulations, namely the *Marine Stewardship Council* (MSC), can also be used as standards in determining quality. The MSC ecolabel is a recognition of products that meet the criteria for environmental sustainability procedures and are well-managed [11]. The MSC identifies good fisheries governance based on predetermined criteria related to the use of fisheries resources and marine ecosystems [12]. The MSC fisheries ecolabel is essential for all parties involved in fisheries activities worldwide, including the industrial sector, which is vital in repairing environmental damage and controlling the sustainability of natural resources [13]. Labeling is an effort by the world community to prepare natural resources to function optimally without reducing the meaning of sustainability [14, 15]. PPN Sibolga in Central Tapanuli is one of the critical points in the WPP 572 area and one of the ports that plays a vital role in loading and unloading fish, especially tuna, and there are many tuna processing industries located around it, so export activities through this port can be carried out. Therefore, it is necessary to conduct a study regarding the level of implementation of the MSC ecolabel in the processing industry around PPN Sibolga and whether it is running well according to MSC standards. This research aims to analyze the level of implementation of the MSC ecolabel by the tuna processing industry in Sibolga and formulate recommendations for formulating management policies.

2 Materials and Methods

This research was conducted in 3 (three) different places, namely Sibolga Archipelago Fisheries Harbor (PPN), PT. Agung Sumatra Samudera Abadi (ASSA) Sibolga, and CV. Horizon Group Sibolga, North Sumatra, Indonesia. The research implementation period starts from December 2021 to May 2022. The research methods used are survey and *Focus Group Discussion* (FGD) methods. Data collection uses purposive sampling method, which is data collection on respondents by looking at the consideration of the researcher, in this case adjusted to the needs of the specified criteria. According to [16], research methods are carried out using questionnaires as a research tool for large and small populations.

The types of data collected are primary data and secondary data. Organizations or individuals collect and process primary data directly from objects [17]. The primary data collected are data on the amount of fish production, fishing data, fish landing data, ship data, and export data. While the secondary data collected are data on the number of processing industries in Sibolga and data on the potential of fish resources issued by the Sibolga Archipelago Fishing Port. Types of data related to the level of gaps (gap analysis) and the suitability of implementing traceability are carried out through interviews and direct observation in the field. Interviews and observations concerning MSC regulations were carried out with PPN Sibolga and Industry.

The data analysis used in this research is adjusted to the objectives achieved, namely the first objective, using gap analysis and suitability analysis. Meanwhile, the second objective uses qualitative descriptive analysis. According to [18], descriptive analysis is a form of research describing actual or occurring events. The gap analysis aims to assess how big the gap is between the current level of traceability implementation in the processing industry and the MSC standards. This assessment uses an assessment sheet based on a Likert scale with the following criteria:

Table 1. Likert scale for data collection.

Scale	Description
0	Not significantly up to standard
1	Does not comply with standards
2	Not by standards
3	Nearly in line with standards
4	Conforms to standards

After each element is assessed, the value obtained is calculated cumulatively to obtain the value of the results of handling each element. Next, a gap analysis is carried out. The greater the gap value of an attribute, the lower the level of suitability and deficiencies that need to be considered. According to [19], the gap value is calculated based on the following formula:

$$Gap\ level = Y - X$$

(1)

$$Conformity\ Level = (\bar{x}X)/(\bar{x}Y) \times 100\%$$

(2)

Information: **Y**: Implementation according to MSC standards, **X**: Application in the field

After obtaining the suitability level value, a decision is made to determine the level of the gap. Decision-making is carried out by comparing the standards that have been set with field conditions based on the following criteria:

Table 2. Likert scale for data collection.

Scale	Description
0 – 34%	Not significantly up to standard
35 – 50%	Does not comply with standards
51 – 65%	Not by standards
66 – 80%	Nearly in line with standards
81 – 100%	Conforms to standards

3 Result and Discussion

3.1 Level of Gaps and Suitability of Tuna Traceability Implementation Based on MSC Ecolabel

The MSC ecolabel recognizes products that meet environmental sustainability criteria and have been managed well. It also identifies good fisheries governance based on predetermined criteria for using fisheries resources and marine ecosystems [13], such as the industrial sector, which is essential in repairing environmental damage and maintaining the continuity of natural resources. Eco-labeling is an effort by the world community to utilize resources optimally without reducing the meaning of sustainability.

This research shows how the readiness and implementation of VAT in Sibolga and the fisheries processing industry in the Sibolga area implement and adopt the MSC ecolabel on their products. Two types of MSC are used, namely fishery MSC and COC MSC. The following are the results obtained during research on tracking yellowfin tuna fisheries by observing and paying attention to MSC standards. Several principles must be fulfilled in each MSC, including the MSC CoC, which consists of five principles and five criteria, while the MSC fishery has three principles.

3.1.1 MSC CoC (Chain of Custody)

MSC CoC certification is one of the certifications currently widely used by various countries worldwide to ensure future product tracking and sustainability of resource stocks. CoC certification guarantees that products sold under the MSC trademark originate from certified fisheries and can be traced through their supply chain to the certified source. A recognized third-party certification body must audit companies that obtain an MSC CoC Standard certificate and are subject to periodic surveillance audits during the three years of CoC certificate holding.

Table 3. Results of gap calculations and conformity to the MSC CoC principles.

No	MSC CoC Principle	Handling Value	Standard Value	Gap Value	Conformity Value (%)
1.	Certified products are purchased from certified suppliers	0	4	4	0%
2.	Certified products can be identified	0	4	4	0%
3.	Segregated certified products	0	4	4	0%
4.	Certified products can be tracked, and their volume can be recorded	0	4	4	0%
5.	Organizations have management systems	0	4	4	0%
Average		0	4	4	0%

Table 4. Results of gap calculations and suitability of MSC CoC criteria.

No	MSC CoC Principle	Handling Value	Standard Value	Gap Value	Conformity Value (%)
a. Ship name					
1.	Ship name	4	4	0	63,75%
2.	Ship's nationality certificate	4	4	0	
3.	Ship unit identity	4	4	0	
4.	Registered ship's website address	4	4	0	
5.	Ship flag	4	4	0	
6.	Capture coordinate point	4	4	0	
7.	Vessel Monitoring System	4	4	0	
8.	Name of transshipment vessel	0	4	4	
9.	Unique transshipment vessel code transshipment	0	4	4	
10.	STK of transshipment vessels	0	4	4	
11.	Transshipment ship flag	0	4	4	
Average		2,55	4	1,45	
b. Catch Data					
1.	Location of arrest	4	4	0	82,25%
2.	Name registered with FIP (<i>Fisheries Improvement Project</i>)	0	4	4	
3.	Date and time of ship trip	4	4	0	
4.	Date and time of fishing	4	4	0	
5.	Type of fishing gear	4	4	0	
6.	Production method	4	4	0	
Average		3,33	4	0,67	
c. Transshipment, Landing, and Data Processing Data					
1.	Transshipment location	0	4	4	66,75%
2.	Transshipment date	0	4	4	
3.	Landing location	4	4	0	
4.	Landing date	4	4	0	
5.	Product expiration date	4	4	0	
6.	<i>Sertificate of Origin</i>	4	4	0	
Average		2,67	4	1,33	
d. Certification and Licensing					
1.	Fishing license	4	4	0	42,86%
2.	Fish catch certificate	4	4	0	
3.	Capture the CoC certificate	0	4	4	
4.	Transshipment permit	0	4	4	
5.	Landing Permit	4	4	0	
6.	Free of underage workers	0	4	4	
7	Workers meet Human Welfare and Safety Standards	0	4	4	
Average		1,71	4	2,29	
e. Product Information					
1.	Code species	4	4	0	100%
2.	Product type	4	4	0	
3.	Unique product code	4	4	0	
4.	Product serial number	4	4	0	
5.	Weight (weight)	4	4	0	
6.	Unit of weight	4	4	0	
Average		4	4	0	

Based on Table 3 above, all the standard principles that the processing industry must meet to obtain MSC CoC eco-labeling can be concluded to be not by the applicable standards; this is because the standard value of the five standard principles of the MSC CoC, whose level of application in the processing industry and Sibolga VAT is 0 %.

Meanwhile, in calculating the MSC CoC criteria, of the five criteria, there were very varied results, where there was one criterion whose level of implementation needed to be by the applicable standards. Then, in the other two criteria, the level of implementation is almost by the standard, and the other two levels of implementation are by the standard. However, on average or overall, the value of applying the MSC CoC criteria in the Sibolga processing and VAT industry is almost by the standard, where the value is 71.32%.

Based on research conducted by [20], it is said that the implementation of eco-labeling in developing countries faces several obstacles, namely:

- 1. The credibility of ecological institutions.
- 2. Too much accessibility (especially for traditional processors).
- 3. High certification costs.
- 4. Lack of incentives for fishermen.
- 5. Different fishery structures.
- 6. Support from stakeholders in each country.

3.1.2 MSC Fisheries

In obtaining MSC fisheries certification, three principles must be met: 1) Stock sustainability, 2) Impact on the ecosystem, and 3) Effective Management. In research conducted at PPN Sibolga and the processing industry, the results obtained by referring to existing standards include the following:

Table 5. Results of gap calculations and suitability of MSC fisheries principles.

No	MSC CoC Principle	Handling Value	Standard Value	Gap Value	Conformity Value (%)
a. Stock Sustainability					
1.	Stock Status	4	4	0	54%
2.	Stock reestablishment	2	4	2	
3.	Capture strategy	0	4	4	
4.	Catch control rules and their means	2	4	2	
5.	Information and monitoring	1	4	3	
6.	Stock status estimation	4	4	0	
Average		2,16	4	1,84	
b. Impact on the Ecosystem					
1.	Primary species output	4	4	0	45%
2.	Primary species management strategy	4	4	0	
3.	Primary species information	4	4	0	
4.	Secondary species output	4	4	0	
5.	Secondary species management strategy	4	4	0	
6.	Secondary species information	4	4	0	
7.	ETP species output	0	4	4	
8.	ETP species management strategy	0	4	4	
9.	ETP species information	0	4	4	
10.	Habitat output	0	4	4	
11.	Habitat management strategy	0	4	4	
12.	Habitat information	0	4	4	
13.	Ecosystem output	1	4	3	
14.	Ecosystem management strategy	1	4	3	

15.	Ecosystem information	1	4	3	
Average		1,80	4	2,20	
C. Effective Management					
1.	Legal framework and traditions	0	4	4	18%
2.	Consultation, roles and responsibilities	1	4	3	
3.	Long term goals	0	4	4	
4.	Objectives of fishery specifications	0	4	4	
5.	Decision making processes	1	4	3	
6.	Compliance and law enforcement	1	4	3	
7.	Monitoring and evaluating management performance	1	4	3	
Average		0,72	4	3,28	

The results of the research are shown in Table 5. From the three MSC fisheries principles, varying values were obtained, where the value of the principle of stock sustainability was not by the standard. Regarding the principle of impact on the environment, the application value is inconsistent with the standard. In contrast, for the last principle, namely effective management, the application value is very inconsistent with the standard. However, if you look at the overall value of the level of implementation of the MSC fisheries principles, it is very inconsistent with the standards (39%). This happens because it can indicate full support or attention from the government as a policy or regulation maker.

In contrast to the MSC CoC, MSC fisheries require government involvement as the party fully responsible for the sustainable management of fisheries resources. When this research was conducted in the Sibolga VAT area and processing industry, its implementation still needed improvement due to the lack of full attention from the government as a policymaker and the absence of more comprehensive regulations in WPPNRI 572. The main factor that made the value so low was that there were no policies or rules for implementing harvest strategies for tuna. Based on the interview results, formulating a tuna harvest strategy will only start in 2023 in the Eastern Indonesia region, which is the center for tuna fishing, while in the Western Indonesia region, especially in WPPNRI 572, it has yet to be formulated. Strict government law enforcement is also weak against perpetrators or fishermen who violate applicable regulations.

3.2 Management Policy Recommendations

The readiness of the tuna processing industry in Sibolga to apply for and obtain MSC ecolabeling still needs to meet the indicator standards listed in the MSC ecolabeling, both MSC CoC and MSC fisheries. This can happen because there are still areas for improvement on the part of the industry in following the standard indicators set out in the regulation. Meanwhile, the government itself, as a policy and regulation maker, has yet to implement or carry out a specific policy regarding tuna fish in WPPRI 572 or those landed in the Sibolga-Central Tapanuli area. Data on the management and stock of yellowfin tuna need to be appropriately updated. In a structured manner, management and control of the stock cannot be carried out correctly.

From the formulation and results obtained in the explanation above, the formulation of policies that can be recommended for future improvements related to sustainable tuna fisheries management by MSC standards consists of three, namely:

3.2.1 Acceleration of Tuna Harvest Strategy Implementation Policy at WPPNRI 572

Harvest strategy is a best-practice approach to decision-making in fisheries management. It is proactive and adaptive and provides a framework for obtaining the best information about tuna stocks. It is also proof of the application of a risk-based approach in determining the number of fish that can be caught (harvest level) and is also a standard in MSC.

3.2.2 Strengthening Quota-Based Measurable Tuna Fisheries at WPPNRI 572

Quota-based measurable fishing policy in the context of better governance of capture fisheries by balancing economics and ecology. With a quantifiable fishing policy, SDI management is based on output control by prioritizing SDI sustainability as a basis for management and optimizing economic benefits.

3.2.3 Strengthening FIP (Fisheries Improvement Project)

The policy of strengthening the FIP (Fisheries Improvement Project) is one of the steps that the government can take to discipline companies/industries to continue carrying out responsible fishing activities by prioritizing ethics and complying with rules or regulations that have been established or are in force.

4 Conclusion

The conclusion obtained from this research is that, in general, the level of implementation of the MSC CoC and MSC fisheries ecolabels by the processing industry in Sibolga still needs to meet the applicable standards. Furthermore, recommendations for policy formulation include formulating a tuna harvest strategy, strengthening measurable fisheries policies, and implementing and strengthening the FIP (Fisheries Improvement Project).

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