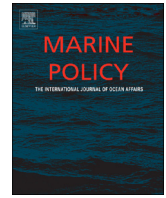




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Small in scale but big in potential: Opportunities and challenges for fisheries certification of Indonesian small-scale tuna fisheries



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ABSTRACT

Achieving sustainable fisheries and certifications can be challenging for developing countries, affecting the achievement of global seafood sustainability and food security. Indonesia is one of the world's leading producers of tuna products but struggles to achieve certification. Small-scale tuna fisheries are an important component of the Indonesian fisheries sector, especially with regard to employment and income. The Marine Stewardship Council is the most recognised fisheries certification scheme worldwide but is criticised for being inaccessible to small-scale fisheries. Fair Trade has traditionally focussed on land-based products, but recently developed a standard for capture fisheries. Traceability systems are important components of many fisheries certifications and are essential in ensuring product quality and food provenance. This paper discusses the challenges and opportunities facing Indonesian small-scale tuna fisheries achieving certification and implementing traceability. The outlook for certification of such fisheries is promising, given recent global and national developments but requires increasing commitment to communicate the importance and value of such schemes in developing countries.

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1. Introduction

The global demand for sustainably-sourced seafood is increasing. Certification schemes and initiatives, such as consumer recommendation lists, are influencing consumers' preferences [1]. The prominence of eco-labelling and certification schemes has grown in recent years, with various schemes applied to Pacific tuna fisheries [2] and similar efforts in the Indian Ocean [3]. Eco-labelling and certification schemes are market-based approaches to support sustainability, providing product attribute information to consumers related to environmentally friendly or sustainable production methods [4]. These schemes usually arise from the 'Global North'; as net importers of seafood, they have an increasing influence on sustainability, using market forces to require seafood products with specific attributes, socially or environmentally motivated. Many large retailers with seafood counters from the 'Global North' have made commitments based on their seafood sourcing policies, aiming to source 'certain percentage of certified fish', or 'only fish coming from a credible Fishery Improvement Project', within specified timelines [5]. These commitments also cover ensuring full chain traceability and

assurance to the consumer that products are not associated with Illegal, Unreported and Unregulated fisheries. It is estimated that ~60% of all fish and fish related products are sourced from the Global South [6], from areas frequently characterised by 'weak governance': limited fisheries management or awareness of sustainability issues and environmental stewardship. Consequently, an apparent demand for certified and traceable seafood exists, but the Global South, where the majority of the fish indicated in these commitments will come from, is not yet in a position to supply it [7]. In response, many Global South producers are enrolling in certification schemes to maintain, or in some cases gain, market access.

Indonesia is a large seafood producer, with tuna species being an economically valuable resource, especially for the export market. The priority species are skipjack (*Katsuwonus pelamis*) and yellowfin tuna (*Thunnus albacares*), with bigeye (*Thunnus obesus*) and albacore (*Thunnus alalunga*) also important. In 2013, the total export value of tuna products was ~760 million USD [8] (~18% of Indonesian fishery product exports, by value). Given the large volume of production from developing countries, implementing certification schemes in such countries, like Indonesia, can help towards maintaining global food security and meeting the market demand for increased sustainable production for future fish consumption [9].

This article focuses on the challenges and opportunities facing Indonesian small-scale tuna industry in achieving one of two

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certification schemes, (Fair Trade and Marine Stewardship Council) and in establishing traceability systems to meet the chain-of-custody requirements of both, in the face of increasing market demand. In the Western and Central Pacific Ocean, it is estimated that up to 90% of vessels targeting tuna species are small-scale, < 5 gross tonnage (GT) [10]. Approximately 60% of the catch volume is caught by purse seiners and ~20% of the catch volume caught by longline fishing, the remainder caught with a mixture of small-scale gears [11]. Although small-scale Indonesian tuna fisheries catch a small proportion of the total catch, they make an important contribution to communities throughout Indonesia in providing a livelihood solution in remote areas. These fisheries are important sources of nutrition and food security in rural communities [12], both within Indonesia and the Coral Triangle Region, emphasised by the establishment of the 'Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security' [13].

There is mounting concern for the status of some stocks: bigeye is classified as over-exploited, yellowfin as fully exploited and skipjack classified as exploited at a moderate level [10]. The situation in the Coral Triangle Region is exacerbated by sparse data collection, an open access system and poor management [14]. Despite referencing a 'sustainable approach' to resource management and development in its National Development Plan [15], Indonesia generally has a poor record of implementation and enforcement, supporting expansion rather than following the precautionary approach to fisheries or the ecosystem approach to fisheries management [16]. Recent changes in the Indonesian Ministry for Maritime Affairs and Fisheries, (MMAF), are attempting to redress previous fisheries management actions and the new fisheries minister aims to stimulate prosperity for Indonesian fishermen by focusing on sustainable practices. Building on a basis of strong, yet minimally enforced existing fisheries regulations, additional regulations were introduced recently (Table 1). To reinforce the commitment to these regulations, MMAF applied a 'shock therapy' approach: three Vietnamese-flagged vessels in Raja Ampat and two Papua New Guinea-flagged vessels in the Arafura Sea were destroyed in December 2014, with more destroyed since then.

Masyarakat Dan Perikanan Indonesia (MDPI, www.mdpi.or.id), is a non-governmental organisation working with small-scale fishermen in Indonesia to support the achievement of responsible and sustainable fisheries. The work of MDPI covers three main

topics (Table 2). These topics are important for national and international food security, ensuring sustainable ecosystems and fish stocks, assuring food safety and quality and contribute to community development in isolated regions. This paper draws on MDPI's experience in the field with small-scale tuna fisheries of Indonesia, as well as published literature, to discuss the challenges and opportunities facing small-scale tuna fisheries in terms of fisheries certification and traceability implementation.

2. Fair Trade, Marine Stewardship Council and Traceability

2.1. Background to the Indonesian context

Indonesian small-scale fisheries face a number of challenges for achieving sustainable tuna fisheries. Fisheries certifications can help address these challenges, and help Indonesia meet increasing market demand from consumers of the 'Global North'. Attaining certification comes with a number of general challenges arising from Indonesia's status as a developing country. Small-scale tuna fishery operations often occur in remote, small communities of Indonesia, meaning accessibility, education, socioeconomic conditions, etc., are variable at best, and poor at worst. Investment in public infrastructure in Indonesia remains low [22,23], creating problems for rural communities, especially in eastern Indonesia [10]. Poor road conditions and in some areas, lack of developed transport links, can create difficulties in reaching fishing communities and vice versa in transporting product to market. Many communities do not have continuous electrical supply, with a generator often the only electrical supply option available at night, which increases cost in maintaining product quality within the cold chain. There may be limited access to ice and fuel. Due to the remote location of some fishing communities, telephone signal and internet connection are not always readily available. Many landing facilities are minimal, often only a simple beach landing with no dedicated facilities for maintaining quality. Education levels are low, especially in eastern Indonesia [24], making the guidelines and need for fisheries certification schemes difficult for small-scale fishermen to grasp and they often do not see any immediate benefits of participation. Socioeconomic conditions mean that individuals usually focus on short-term subsistence and financial income, with limited importance placed on long-term

Table 1

Recent regulations of relevance to small-scale operations, with potential positive and potential negative consequences briefly outlined.

Regulation number	Scope	Potential positive	Potential negative
Ministerial regulation 56 of 2014 [17,18]	Pause the licensing of Indonesian vessels and temporary suspension of fishing licences to vessels constructed abroad	<ul style="list-style-type: none"> – Increased surveillance, combating number of illegal and foreign vessels – Reducing international competition for Indonesian fishers, i.e. in areas such as North Sulawesi and North Maluku with a large presence of Filipino vessels 	<ul style="list-style-type: none"> – Reduced investment from international companies – Financial losses and employment losses for national fleets
Ministerial regulation 57 of 2014 [19]	Transshipment ban unless offloading to designated Indonesian port	<ul style="list-style-type: none"> – Increased processing of Indonesian resources in Indonesian facilities could increase the value of the Indonesian processing sector 	<ul style="list-style-type: none"> – Closure of small-scale operations as the transshipment ban may increase fuel costs to unviable levels
Ministerial regulation 2 of 2015 [20]	Prohibition of trawls in all of Indonesia's fishery management areas	<ul style="list-style-type: none"> – Potential benefits for stocks and the ecosystem – Increased demand for fish caught by non-trawl methods (i.e. handline and pole and line) 	<ul style="list-style-type: none"> – Increased unemployment, on fishing vessels and in processing facilities who are already having difficulties sourcing fish due to moratoriums – Pressure to find alternative food sources for artisanal and 'fishing for food' fishers affected by the ban on artisanal hand trawls
Ministerial regulation 4 of 2015 [21]	Fishing banned in breeding and spawning ground of the Banda Sea	<ul style="list-style-type: none"> – Reduced fishing pressure in this area potentially allowing growth in populations 	<ul style="list-style-type: none"> – Transfer of fishing pressure to other locations, generating increased pressure on and competition for other stocks
Proposed	Closing four nautical mile (nm) zone to commercial fishing, only small-scale fishers may fish here	<ul style="list-style-type: none"> – Increase the rights and ownership of small-scale fishermen on the resource 	

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