

## SUSTAINABILITY IN GLOBAL CANNED TUNA COMMODITY CHAINS<sup>1</sup>

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### ABSTRACT

Commodity chains for canned tuna are global, with fishing grounds in all the oceans, processing centers on every continent and end markets equally widespread. A tuna caught by a Taiwanese vessel in the exclusive economic zone of Kiribati in the Pacific may be transported to a cannery in Thailand by a carrier registered in Panama, the logistics of supply from the cannery to buyers in the European Union may be managed by a company based in Singapore, and then the tuna may finally end up in a sandwich in the UK. How does this globalization in canned tuna commodity chains affect the sustainability of tuna fisheries? Clearly the traversing of multiple jurisdictions creates difficulties for national governments in implementing sustainability measures. This paper outlines the various organizations involved in governance along canned tuna supply chains and considers their effectiveness in changing practices around sustainability. Trade and market related measures by governments, industry bodies and environmental organizations seem to offer a useful addition to conventional measures targeting the harvesting node of supply chains, but the effective implementation of measures near the retail end of supply chains requires accurate traceability back to the fishing vessel. This paper is a work-in-progress based on a preliminary study of canned tuna commodity chains, and outlines directions to pursue in future research.

**Keywords: canned tuna, global commodity chains, sustainability measures, governance**

### SUSTAINABILITY IN CANNED TUNA FISHERIES

Vital questions about sustainable levels and patterns of fishing for tuna are debated by biologists, policy-makers and economists – especially in and around the Regional Fisheries Management Authorities (RFMOs) responsible for tuna fisheries.<sup>2</sup> Of the main species targeted for canning – skipjack, yellowfin and albacore – skipjack appears resilient to fishing thus far, while yellowfin is suffering overfishing in some areas and there are also questions about current levels of fishing on some albacore stocks. But purse seining for skipjack also takes significant quantities of juvenile bigeye tuna, and bigeye stocks are dwindling. In addition, RFMOs and other organizations have been working with fishing companies to minimize their impacts on other species, such as sharks, sea birds, turtles, and marine mammals.<sup>3</sup> My skills are in International Political Economy and ethnographic research methods, so my research is not about biological sustainability *per se* but what happens after the scientific evidence about sustainability has been considered and rules about fishing formulated. That is, the paper considers compliance with fishing regulations – specifically how those regulations may be effectively enforced in global supply chains.

### GLOBAL CANNED TUNA COMMODITY CHAINS

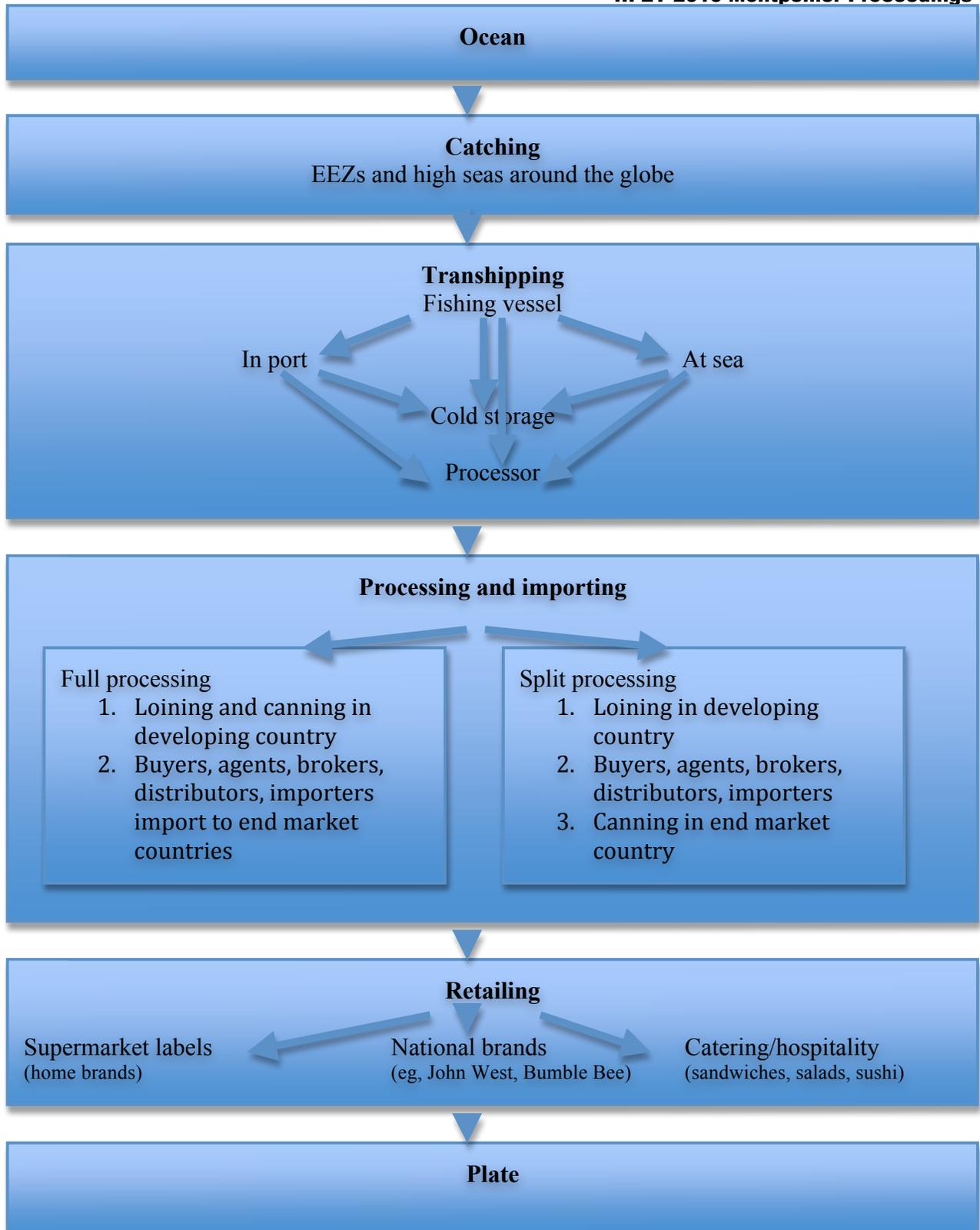
‘Globalization’ is one of those umbrella terms used to signify disparate phenomena including flows of people, flows of information and communication, flows of finance, flows of ideas and cultural formations, and flows of material goods. The kind of globalization discussed in this paper is the phenomenon that has characterized much industrial production since the 1980s, whereby manufacturing occurs across two or more national economies. Certainly commodities have been traded globally for centuries, but much of the processing or manufacturing was often conducted in one country, usually in so-called developed or industrialized countries, and the supply chains were generally vertically integrated.

As labor conditions and environmental standards improved in wealthy societies during the 20<sup>th</sup> century, however, production costs rose. Bulk shipping options became cheaper and more reliable, international exchange of information and international financial arrangements became easier. From the 1980s many corporations responded to this new environment by moving their production away from high cost countries to countries where standards for labor and environmental performance were lower, and thus cheaper. This is often called the ‘off shoring’ of production. Raw materials are shipped to the place they are manufactured, manufactured parts may then be shipped to somewhere else for assembly, and then possibly be shipped somewhere else for retail. At the same time as spreading production globally, corporations ceased vertically integrated ownership of each node of production. The Nike model became fashionable – the company that owns the brand essentially just does marketing, and out sources all of the other nodes in the production chain, such as producing the raw materials, manufacturing, and logistics. Canned tuna is one of the many products that were globalized in this way. Not all canned tuna is produced in exactly the same way – different companies have different ways of doing things – but most of the prominent brands have spread their production globally and contract other companies to do some or all of the production and supply of their product.

Social scientists from various disciplines have studied this type of globalization and there are several approaches for studying global supply chains: global commodity chains, global commodity systems, global commodity circuits, global commodity networks, global value chains, global production networks, and *filières* (see Bair 2009). Social theorist and anthropologist Anna Tsing has labelled it ‘supply chain capitalism’ (Tsing 2009). The global commodity chain approach has been applied to a study of post-Fordist industrialization in canned tuna, focussing on the controversy over dolphin mortality in purse seine tuna fisheries (Bonnano and Constance 1996). The approach may also be used to consider wider issues of sustainability in tuna fisheries.

The Map of Global Canned Tuna Supply Chains (Fig. 1) covers the routes of most canned tuna. Small amounts (by value) are sold in the developing country in which it is processed, and small amounts are wholly processed in end market countries, but the majority is fully or partly processed in developing countries and then retailed in wealthy countries. As the map shows, retail is through supermarkets or related kinds of stores and also when canned tuna is used as an ingredient in food sold through catering or other hospitality businesses. Thailand is the world centre for canning tuna, but there are also many other plants around the world, in island countries in the Pacific and Indian Oceans, in Latin America and in Africa. The most lucrative end market countries are the USA, EU and Japan, although there are also significant markets in Canada, the Middle East and Australia (Ababouch and Catarci 2008).

**Figure 1. Map of Canned Tuna Global Supply Chains**



The labour intensive part of processing is the loining of the fish – taking off the skin, bones and blood-filled parts of meat to leave clean loins. Loining is generally done in countries with low wages, but the choice of country for processing is influenced by trade rules affecting imports to the end market countries. The EU, Japan, and the USA have all had domestic canning industries, which are no longer competitive due to labor costs, but which have been protected by tariffs on processed fish imports. Split processing is an artifact of this situation. The labor intensive part of canning is conducted in developing countries then the final putting of the meat into the can and sealing the can is done in highly mechanized factories in end market countries. Some developing countries have been wholly or partly exempt from tariffs. The relationship between the EU and former European colonies in Africa, the Caribbean and Pacific Islands under the Lomé Convention (later the Cotonou Agreement) has been particularly influential, contributing to the viability of processing facilities in these areas that would otherwise not have been competitive against product from Thailand. There have also been tariff exemptions under the Generalized System of Preferences, and special benefits for Least Developing Countries. Pressure from the World Trade Organization to reduce tariffs and make preferential trade agreements WTO-compliant is causing changes, possibly undermining the long-term viability of processing in some locations that have relied on tariff advantages.<sup>4</sup> It will also likely cause the demise of tuna canning in wealthy countries, and the split processing option (Fig. 1), leaving the whole canning process in countries with low labor costs.

## **GOVERNANCE IN CANNED TUNA SUPPLY CHAINS**

What contribution does a commodity chain analysis, including the map (Fig. 1), make to knowledge about factors affecting the implementation of sustainability measures in fisheries? First, it gives a shorthand visual representation of the various jurisdictions and organizations canned tuna travels through on its journey from ocean to plate. Second, it helps illuminate which players are most likely to be able to influence fishing practices. This is important for gaining understanding of governance in tuna fisheries. Compliance with sustainability measures is clearly a governance issue. In fisheries management we tend to think of governance as something governments do, particularly Departments of Fisheries, but the broader scholarship on governance looks not only governments but also corporations and civil society groups. In commodity chain analysis governance is understood as being the circumstances affecting commercial decision-making. That is, the power relations and norms affecting practices in fishing and the trade in fisheries products. It is therefore instructive to consider the actors with influence over practices in the canned tuna supply chain and their relative power.

### **Who does governance along canned tuna commodity chains?**

Several kinds of state actors attempt to exert control over canned tuna supply chains. This includes national governments of fishing states, coastal states, port states, countries in which processing occurs and countries that import tuna products. It also includes international organizations such as the RFMOs and other bodies such as the United Nations Food and Agriculture Organization (FAO), which has a Code of Conduct for Responsible Fisheries and has worked towards a code of conduct for responsible trade in fish and fishery products. There are also other groupings of states such as the Parties to the Nauru Agreement (PNA), a group of coastal states with the richest purse seine tuna fisheries in the Western and Central Pacific Ocean (WCPO), who have worked collaboratively to further their mutual interests since 1982. Since 2008 the PNA has made fishing access to their combined Exclusive Economic Zones (EEZs) conditional on a high level of observer coverage, limits on use of Fish Aggregation Devices (FADs), and non-use of high seas areas between EEZs in the WCPO (PINA 2010).

There is also a range of non-state actors with influence over practices in canned tuna supply chains. Several environmental non-government organizations (NGOs) use methods such as lobbying state actors, collaborative dialogue with industry, and media and public awareness campaigns. Influential groups

include WWF, Greenpeace, and the Marine Stewardship Council (MSC). Industry players and groups of companies are also clearly key agents in the governance of their own practices and the practices of companies with which they deal. In recent years Corporate Social Responsibility (CSR) has become increasingly important to major retailers. Some retailers, such as Sainsbury's of the UK, were imposing social responsibility criteria on their suppliers as early as the mid 1990s, possibly due to the ethics of leaders within the company, although it was also justified in commercial terms as building customer loyalty (Barclay 2008). More recently, being seen as socially responsible has become a commercial necessity for retailers in key market countries. Major retailers such as Walmart in the USA, the entire Dutch retail sector, and the Swiss retailer Coop have made public pledges to only sell wild caught seafood certified as being environmentally sound by the MSC within a few years (Campling 2008-2010). CSR is also influential in Japan, with the retail giant Aeon Co. Ltd. (a group of companies owning 1200 stores) stocking over 20 MSC certified fishery products (Stacey 2010).

Thus far the mainstream of the canned tuna industry has resisted seeking MSC certification for their products. However, they recognize the need for action to improve sustainability in tuna fisheries, so some of the largest canned tuna brands have teamed up with fisheries scientists and WWF to form a group called the International Seafood Sustainability Foundation (ISSF 2010). ISSF engages in a range of activities to improve sustainability, such as committing that members will not buy fish caught by vessels that are not listed as compliant in appropriate RFMO vessel registers, and lobbying RFMOs to more strongly pursue the recommendations of their Scientific Committees regarding sustainable fishing.

#### **How influential are these players in decision-making in canned tuna commodity chains?**

State actors in tuna fisheries management have had limited effectiveness in preventing overfishing, or curbing fishing so that overfished stocks can recover. This is in large part due to the nature of the international political sphere and domestic political imperatives. Game theory has been used to show how difficult it is to achieve consensus between numerous parties with disparate and complex interests, in the absence of a world government to enforce rules. This has been done by international relations scholars to with regard to international cooperation generally, as well as by fisheries economists focusing on multilateral fisheries management bodies such as the RFMOs (Bailey et al 2010). Other international relations scholars who take a social constructivist approach are slightly less pessimistic of the possibilities for international cooperation on sustainability, pointing out the role of norms as well as self-interest in state behavior. Nevertheless, thus far there have been few wins for sustainability in tuna fisheries from state actors focusing on conventional fisheries regulation. Recent PNA initiatives have the potential to alter this picture; further research is needed to tell how much impact PNA initiatives have on fishing practices. A 2008 review of RFMOs concluded that the main problem is that member states either refuse to agree on necessary conservation measures, or fail to abide by their agreements (Hurry et al 2008). Some states simply do not have the resources or bureaucratic capacity to manage fisheries in the way it has been agreed at the international level, but also governments may be unwilling to enforce international rules if politically important groups will be adversely affected by that enforcement.

A success story of an RFMO improving compliance with fisheries regulations arose from the International Commission for the Conservation of Atlantic Tunas (ICCAT) in 2005. For several years leading up to 2005 several countries had been calling on Taiwan to extend greater control over its fleet, particularly in use of Flags of Convenience (FOC) and other activities related to Illegal Unreported and Unregulated (IUU) fishing, but not much progress had been made. Taiwan's government did not feel able to take on the fishing industry leaders in the Kaoshiung area of Taiwan. Then in the 2005 ICCAT meeting Japan declared trade sanctions against Taiwanese imports of sashimi tuna. This caused massive economic upheaval in the tuna industries based in Kaoshiung, and industry leaders turned to government to fix the

situation. Fisheries managers were then able to reign in use of FOCs and reduce capacity in the fleet, and with more credible fisheries management in place the trade sanctions were relaxed (Chen 2009).

How powerful are non-state actors in global canned tuna supply chains? In the global value chain approach power relations are often analyzed by looking for 'lead' firms – firms with the (market) power to set prices and quality standards. Some kinds of value chains for complex manufactures such as cars have been characterized as 'producer driven', in that producer companies are lead firms. Other kinds of chains, for instance for agricultural commodities, have been found to be 'buyer driven', with retailers in wealth countries tending to set prices and quality standards for producers, many of whom are in developing countries. On the face of it tuna supply chains fit this pattern, with supermarkets able to specify the kind of products they want and influence prices (Campling et al 2007). Retailers' concerns to have fisheries products ecolabeled or otherwise guaranteed as sustainable seem to be changing the practices of firms along the supply chain.

On the other hand, industry people in the fishing and processing nodes of canned tuna supply chains also talk about the tuna trading companies as being very powerful. For commercial confidentiality reasons industry people tend not to say with whom they trade tuna, but some estimates put the proportion of the global trade in tuna for canning that passes through just three tuna trading companies at around 80 per cent. These three companies are Tri Marine (based in Singapore), FCF Fishery Co. (based in Taiwan) and Itochu (based in Japan). Processors in the world centre of tuna canning, Thailand, are particularly reliant on these companies, because they do not have their own fleets. Tuna traders manage not only the supply of fish from vessels to processors, however, but may be directly involved by ownership or contract from fishing all the way along the chain to the point a retailer takes control of the product at distribution centers. To have supply chains funnel through such a small number of companies indicates these companies may indeed have a great deal of influence over fishing practices, but further research would be needed to ascertain whether this consolidation of the market translates to market power, or whether for some reason the tuna traders are subordinate to supermarkets in these chains. Tri Marine has joined the large North American and European canned tuna brands in ISSF, indicating a commitment to improve sustainability in tuna fisheries.

The other main non-state actors in the governance of tuna supply chains relevant to discussions of sustainability are environmental NGOs. It is difficult to disentangle their power from the power of state actors or industry players, because their impacts are through state and industry activities. They use the moral power of norms and either collaborate to improve rules and practices or use shaming strategies for the same purpose. It seems clear that NGO campaigns have given momentum to CSR initiatives by industry, both on the part of supermarkets and brand owners. WWF, for example, established the MSC ecolabel with Unilever, and is one of the founding members of ISSF. NGO activities based on shaming strategies include protests outside retail outlets, protests at seafood expositions and seafood buying guides that identify some retailers or species of fish as unsustainable. Retailers have cleared their shelves of products suspected to be caught illegally or unsustainably, and changed their buying practices to avoid this kind of attention from NGOs (Campling 2008-2010).<sup>5</sup>

## LESSONS FROM FOOD SAFETY FOR SUSTAINABILITY

Over the last two decades food safety regulations in canned tuna have been increasingly stringent in the main markets. This includes government regulations but also ‘private standards’ required by buyers, such as the Global Food Safety Initiative (GFSI) established in 2000 and coordinated by the International Committee of Food Retail Chains. Governments are concerned about food safety for public health reasons, but there are also strong commercial reasons for retailers and suppliers to want to avoid the damage to reputation that results from food poisoning incidents.

There are some parallels between safety and environmental concerns in canned tuna. Both are aspects of the quality of the product that have over time become more important. Dolphin safe labels, for which NGO the Earth Island Institute (EII) is the key player, demonstrate some of these parallels. Prior to the late 1980s dolphin mortality associated with purse seining for cannery tuna was not commercially important for retailers, but public awareness campaigns and legislation in the USA in the late 1980s led to it becoming so. By the mid 1990s it was not possible to sell tuna in the USA that was not certified as being dolphin safe. The EU has not had the same kinds of legal requirements about certification as dolphin safe, but it has been commercially mandatory to have EII approval for some years. In 2004 a shipment of tuna loins from the Solomon Islands Soltai cannery being supplied by Tri Marine was refused by buyer Bolton Alimentari in Italy because EII would not certify it (dolphins were not being harmed in the tuna fishing, but Soltai is owned by the Solomon Islands government, which was licensing the export of dolphins for marine theme parks and EII objected to this). Certification as dolphin safe, then, has become a quality important enough in major markets to effect practices all the way back up the supply chain. It is possible that sustainability defined as being caught according to relevant fisheries conservation regulations will become a similarly important product quality.

One important difference between food safety and sustainability as product qualities is that it is possible to test for food safety (microbes, histamine levels) at the point of retail, whereas there is no easy way to tell the difference between a can of tuna that has been caught according to relevant regulations and one that has not. But since trade related measures (implemented at the importation node in supply chains) and market based measures (implemented near the retail node) are increasingly important in sustainability, and these require the capacity to be able to distinguish between canned tuna that has been caught legally or has not. The way to do this is to have ‘traceability’ – to be able to track the contents of a can on a retail shelf back to the vessel that caught it, including every company it passed through on the way to the shelf. ISSF is considering how to track back products for sustainability with its resolution (09-04) on Product Traceability (ISSF 2009). The European Commission has revamped its importation regulations against IUU fishing, which includes a traceability system for responsible fishing practices (Campling 2007-2010).

Here again food safety offers lessons to consider. Food safety traceability is arguably very accurate. Each importing government has different regulations for it, but the basic idea is that for public health reasons it is important to be able to go back and identify where the problem occurred and then identify every single can that might be affected by the problem so as to be able to recall it. EU regulations require each company in the supply chain to have information about companies on either side of it in the chain – a ‘one step up and one step down’ model (as opposed to collecting information about the whole chain). Independent monitors periodically test the capacity of companies to use this information to quickly and effectively identify all possibly affected fish. Companies need to comply with these government rules, then for their own commercial reasons they want to limit any possible recall to only those cans that might be affected. There is thus a strong incentive for companies to have accurate and reliable information about where tuna has been all the way back to the fishing vessel. The product code printed on one of the flat surfaces of tuna cans is the means by which food safety traceability along the supply chain is established.

Because the food safety traceability system has been in place for many years and is very effective, it would be interesting to explore the model for use in sustainability traceability, or even the option of using existing food safety traceability systems for sustainability. If cans can be traced back to the vessel already, perhaps it would be possible to tie this information to information about whether the vessel is in good standing on the relevant RFMO vessel registers, is meeting its Vessel Monitoring System requirements, and so on. Further research might be needed to investigate this potential, or perhaps all that is needed is for industry bodies such as ISSF, retailers, and RFMOs to discuss the possibilities.

## CONCLUSIONS

This paper presents some preliminary thoughts on compliance with sustainability measures in global canned tuna commodity chains. Conventional state based measures targeting the harvesting sector are undeniably still important, but there are also significant initiatives being implemented at the demand end of chains. These include measures by state actors, such as trade sanctions, and measures by industry bodies, such as retailers requiring ecolabeling and the efforts of groups such as ISSF. Environmental NGOs are playing an important role using their moral power to encourage all of these types of measures. There are indications that retailers and possibly tuna trading companies may be the organizations with most power to affect compliance with sustainability measures. In further research I would like to explore in more depth the power relations along tuna supply chains, among firms as well as between various state and no- state actors, and compile evidence about the factors affecting effectiveness of particular measures in terms of compliance with fisheries regulations.

## REFERENCES

- Ababouch, L. and Catarci, C. 2008, Global Production and Marketing of Canned Tuna. *Globefish Research Programme 93*. Rome: FAO.
- Bailey, M., Sumaila, R. and Lindroos, M. 2010, Applications of Game Theory to Fisheries Over Three Decades, *Fisheries Research*, 102, pp. 1-8.
- Bair, J. (ed) 2009, *Frontiers of Commodity Chain Research*. Palo Alto CA: Stanford University Press.
- Barclay, K. 2008, *A Japanese Joint Venture in the Pacific: Foreign Bodies in Tinned Tuna*, London: Routledge.
- Barclay, K., Parris, H., Flores, J. and Hanich, Q. 2009, Tuna Trade Flows from the Coral Triangle. Unpublished report for TRAFFIC Oceania.
- Bonanno, A. and Constance, D. 1996, *Caught in the Net: The Global Tuna Industry, Environmentalism, and the State*. Kansas: University of Kansas Press.
- Campling, L., Havice, E., Ram-Bidesi, V. and Grynberg, R., 2007, *Pacific Islands Countries, The Global Tuna Industry and the International Trade Regime – A Guidebook*. DEVFISH Project, Forum Fisheries Agency, Honiara.
- Campling, L. 2007-2010, *Fisheries Trade Briefings* (various). Pacific Islands Forum Fisheries Agency. Available [http://www.ffa.int/trade\\_news](http://www.ffa.int/trade_news). Viewed 5 July 2010.
- Chen, T. 2009, Japan-Taiwan Relations in the 21st Century from the Perspective of Tuna Disputes in the Atlantic Ocean. Unpublished manuscript available from author <[dr.henry.chen@gmail.com](mailto:dr.henry.chen@gmail.com)>.
- Hurry, G., Hayashi, M. and Maguire, J. 2008, Report of the Independent Review: International Commission for the Conservation of Atlantic Tunas (ICCAT). Available [www.iccat.int/Documents/Meetings/Docs/Comm/PLE-106-ENG.pdf](http://www.iccat.int/Documents/Meetings/Docs/Comm/PLE-106-ENG.pdf). Viewed 30 July 2010.
- ISSF, 2010, International Seafood Sustainability Foundation (ISSF). Available <http://www.issf-foundation.org/home>. Viewed 30 July 2010.
- Myers, R. and Worm, B. 2003, Rapid Worldwide Depletion of Predator Fish Communities, *Nature* 423: 280-283.
- Pauly, D., Christensen, V., Dalsgaard, J., Froese, R. and Torres, F. 1998, Fishing Down Marine Food

Webs. *Science* 279: 860-863.

- PINA, 2010, Parties to the Nauru Agreement Seek Certification for Skipjack Tuna, Pacific Islands News Association (PINA), 26 February. Available <http://www.pina.com.fj/?p=pacnews&m=read&o=1853268164b873fba98b6f686e7dda&PHPSESSID=30732f4a6b2f92b272129a2ad25b9d7e>. Viewed 31 July 2010.
- Sibert, J., Hampton, J., Kleiber, P. and Maunder, M. 2006, Biomass, Size, and Trophic Status of Top Predators in the Pacific Ocean, *Science* 314 (15 December): 1773-1776.
- Roheim, C. and Sutinen, J.G. 2006, Trade and Marketplace Measures to Promote Sustainable Fishing Practices. Natural Resources, International Trade and Sustainable Development, Issue Paper No. 3 (May), International Centre for Trade and Sustainable Development (ICTSD) and High Seas Task Force (HSTF). Available <http://ictsd.net/i/environment/11838>. Viewed 5 July 2010.
- Stacey, Margaret E.L. 2010, Aeon Sells MSC Certified Sustainable Bonito, FIS Fish Information and Services, 4 March. Available <http://fis.com/fis/techno/newtechno.asp?l=e&id=35666&ndb=1>. Viewed 30 July 2010.
- Tsing, A.L. 2009, Supply Chains and the Human Condition, *Rethinking Marxism*, 21(2), pp.148-176.

## ENDNOTES

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<sup>1</sup> The thinking behind this paper emerged from contract research on supply chains of canned and smoked tuna from the Coral Triangle area for TRAFFIC Oceania and WWF International (Barclay et al 2009). I am indebted to my co-authors on that report – Hannah Parris, Quentin Hanich and Jimely Flores.

<sup>2</sup> See Myers and Worm (2003), Pauly et al (1998), and Sibert et al (2006). See also the papers from the Scientific Committees of the RFMOs websites: <http://www.iccat.int/en/>; <http://www.ccsbt.org/>; <http://www.iattc.org/>; <http://www.wcpfc.int/>; <http://www.iotc.org/English/index.php>.

<sup>3</sup> Other ‘sustainability’ factors to consider in relation to canned tuna are the amounts of fuel used for fishing and transporting product globally, the packaging used, whether it is a good idea to harvest predator fish such as tuna, and so on. These are outside the scope of this paper.

<sup>4</sup> For further details on the effects of the international trade regime on canned tuna supply chains see Campling et al (2007) and Ababouch and Catarci (2008).

<sup>5</sup> For an overview of CSR in fisheries trade and market related measures see Roheim and Sutinen (2006).