Linking global certification schemes and local practices in fisheries and aquaculture

Simon R. Bush[1] and Peter Oosterveer[1]*

Abstract

Global environmental certification systems base their legitimacy on consumer concerns, which are facilitated by non-governmental organisations and retailers, and which steer fishers and fish farmers to comply with pre-determined production standards. But while such information flows are clearly demonstrated in complying exporters, it is often less clear how the information is transferred from them to producers. Evidence suggests that in the absence of strong vertical integration, the link between exporters and producers remains a "black box", confounding assumptions that producers have transparent access to global markets. In order for certification schemes to foster environmental and social sustainability in fisheries and aquaculture, new arrangements for engaging local practices and relations of production and trade are needed.

Introduction

There has been a push to link trade and the environment through new governance mechanisms such as certification schemes. Seafood has been one of the main frontiers of this new wave of environmental certification, with more than 50 schemes currently on the market for capture fisheries and aquaculture combined (Jacquet et al. 2009; Parkes et al. 2010). The Marine Stewardship Council is currently the most well known scheme for capture fisheries, with 139 fisheries or 6% of the total wild capture harvest certified.[2] There are a number of competing schemes for aquaculture, including the Global Aquaculture Alliance, GlobalGAP and the nascent Aquaculture Stewardship Council (ASC). As major retailers in the USA and Europe continue to make claims of only selling sustainable seafood by some time up to 2020, the role that these certification standards will play is set to increase in importance.

From the perspective of food retailers and processors, environmental certification is a means of ensuring that the conditions of production meet generally agreed upon standards in the sites of consumption (Oosterveer 2005). For them certification is a means of setting auditable standards against which they can claim responsible provisioning of seafood. For their customers, sustainability certification is supposed to also be a means of enacting what has been labelled political or ethical consumerism (Barnett et al 2011; Micheletti 2003) — a process by which consumer knowledge and concerns guide production often in distant locations through their purchasing power (Whatmore and Thorne 1997). However, this transfer between retailers and/or consumers and producers is complicated by a myriad of other actors that facilitate and influence this transfer of information and market supply and demand through the global value chain — including actors both directly involved, such as traders, exporters, importers and processing companies, and indirectly, such as non-governmental organisations (NGOs), producer associations and governments. Whether and how producers can respond to market demand, and consumers to the complexities of global trade remains an ongoing area of inquiry.

Increasingly evident in global seafood certification is a divide between "developed" and "developing" world fisheries and aquaculture. Of the 139 fisheries that the MSC has certified to date, only 7% are from developing countries (Cambridge et al. 2011). Aquaculture certification schemes have been more successful, given the vast majority of production that comes from tropical countries, especially Asia, but the extent of certification remains patchy at best. Despite the promise of certification as a truly global environmental governance tool, there has been continued failure to effectively target and improve production processes in information-poor developing countries where rules, norms, values and control over production are neither clear nor easily amenable to modern auditing and traceability practices.

In this article we summarise the findings of an earlier study (Bush and Oosterveer 2007) and address some of the challenges related to the successful

1 Environmental Policy Group, Department of Social Sciences, Wageningen University, PO Box 8130, 6700 EW Wageningen, the Netherlands.
2 See http://www.msc.org/business-support/key-facts-about-msc, visited 24 February 2012.
* Email: simon.bush@wur.nl

implementation of certification in developing countries. More specifically, we focus on the practices that exist within the value chain that influence the transfer of market information and pressure between consumers and retailers in Europe and producers in developing countries, using examples from coastal aquaculture in Southeast Asia. First we present the "nitrofuran case" from Thailand, which illustrates how consumer food safety concerns are translated down the supply chain. The second the case involves a coastal village in Vietnam where small-scale farmers and fishers have developed new combinations of existing and novel arrangements to sell their produce up the commodity chain. In presenting these cases, we explore how these dynamics both directly and indirectly influence the livelihood decisions of producers and the requirements for more effective governance arrangements that cover not only the quality and safety of food, but also the social and environmental sustainability of the production systems involved.

Value chains and certification

Fish products are now a widely commercialised food commodity in the world, with 50% being traded from developing to developed economies (OECD 2010). The value chains that these products are traded through are, therefore, global in reach and remain one of the most challenging to understand because of the complex interrelations between inputs, outputs and the diversity of actors involved (Thorpe et al. 2005). This is not to say that other value chains are not complex, but only to stress that much of the current literature has focused on industrial or agroindustrial sectors that have a more predictable structure and set of functions than what is found in fisheries. What makes fisheries and aquaculture, especially those in developing countries, more complex is not so much the global commodity flows, but the local relations of production and trade.

To unpack these local relations, and put them into the wider global context, the "new" value chain literature is enlightening. By not only taking vertical relations, which are conceptually emphasised in the "chain" metaphor, but also horizontal relations of production, a more substantive sociological understanding of the influences over transactions and commodity and/or information flows is made possible (Coe et al. 2008; Gereffi et al. 2005; Gibbon and Ponte 2005;). Such analysis also emphasises the specific relations of production and trade at the local level. As fish are caught, processed and transferred to local, national and international markets they pass through a series of scaled networks along the chain, each with their own formal and informal norms, rules and regulations that control and manage activities and social relations. As Goodman and Dupuis (2002) argue, the extent to which producers can respond to signals in the value chain, such as certification, requires understanding how they respond to institutions that emerge from horizontal networks, such as customary access arrangements, trade cooperative rules, state legislation and global food safety standards.

The linkages between global and local dynamics in global value chains do not consist of a simple process of translation (Oosterveer and Sonnenfeld 2012). Different kinds of dynamics take place at different locations along the global value chain, so it requires an active process of intervention to accommodate them all. In this process not only chain actors are involved, but also non-chain actors such as scientists, politicians and NGOs.

Certification is a governance tool that implies that normatively "good" production practices can be objectively verified, and that in the process, producers are made accountable for their practices. When production is seen as a vertical process of supply and demand, devoid of external social, cultural or political influences, such a cause and effect relation may be possible. But when production is seen in the wider context of horizontal networks the certification process is made considerably more difficult. In addition, the lack of capacity for accreditation, the lack of quantitative scientific data on production practices and high cost of entering certification programs has been a major stumbling block for increasing the participation of small-fishers and fish farmers. In information-rich countries, where there is a relatively clear understanding of the commodity flows certification has proved effective. In information-poor developing countries, where globally networked flows are first and foremost grounded in complex informal sociocultural institutions, relatively free of outside intervention, control may be minimal or considerably distorted.

The effectiveness of certification is, therefore, not measured in terms of consumer steering and producer compliance. Adopting a value chain approach opens up a wider set of questions about the connectivity of vertically related actors who influence the flow of information, finances and materials, as well as the influence that horizontal relations and institutions have on the other hand. But while a considerable amount is known about the flows of goods and information from consumer to exporter in global chains, much less is known about the flows between those exporters and local networks of traders and producers operating in information-poor environments. As illustrated in Figure 1, this missing link between local producers and global networks constitutes a black box that obscures our understanding of both the vertical flow of commodities and the horizontal dynamics between formal and informal actors

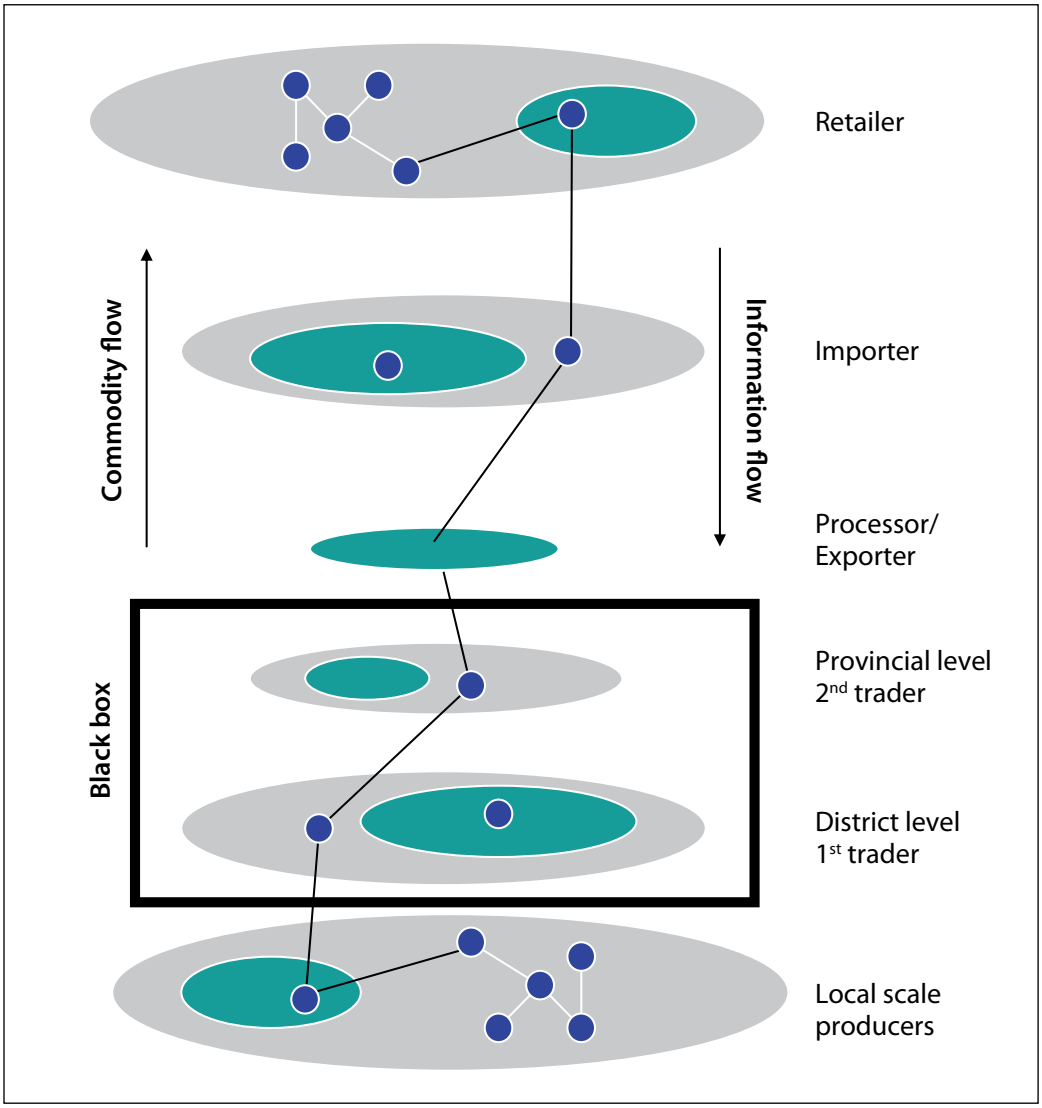

Figure 1. Intersection of global and local commodity chains and networks.

The diagram indicates the flow of information and commodities between nested hierarchical scaled networks. Individuals (dark blue circles) exist either independently or as part of collectives or firms (dark green ellipses). The "black box" bounds the link between producer and consumer, indicating the break in transparent, information flows.

Source: Bush and Oosterveer 2007.

existing within any number of familial, communal, state and non-state based networks.

In practice, this black box means that for certification-led environmental change to be effective, both standard-setting bodies and auditors will have to go beyond the information-rich and transparent segments of the fisher chain, from consumers to exporters, to engage with those actors in horizontal networks that influence capital and information flows through informal, diffuse trade networks. As such, opening up the black box of global value chains remains a key challenge for the inclusion of social and environmental sustainability within certification-led governance. We now turn to two case studies that illustrate diverging examples of how vertical and horizontal dimensions of value chains influence the capacity of global market actors to influence production practices in Southeast Asia.

Nitrofurans in Thai shrimp aquaculture

The "nitrofuran" incident can be singled out as an example of how global market relations impact local production practices. Thai shrimp production from aquaculture is part of a transnational flow of food, linking producers and consumers at very large distances and bringing together impacts at different scales. Thailand is a leading exporter of farmed shrimp with a global market share of about 25%, representing a value of USD 2 billion (Manarungsan et al. 2005). Local practices of shrimp farmers are closely linked to the transnational commodity flow of shrimp, including related capital

and information. For example, food safety requirements are translated from consumer concerns in the European Union (EU) into production guidelines for shrimp farmers in Thailand. This information dynamic explains why and how pressures to reduce the environmental impact of shrimp production in Thailand have not only been domestic but also foreign in origin, as shown in the case of the use of nitrofuran.

Nitrofuran, a group of antibiotics used in shrimp farming to inhibit bacterial growth, is recognised as a cancer-causing chemical and has been banned by most countries, including the EU, which since 1994 completely forbids its presence in shrimp and other food products. In practice, however, the restricted sensitivity of the techniques used by the EU could only detect the presence of antibiotics above 5 ppb (parts per billion), thereby setting a "de facto" limit in the view of exporting countries. However, the subsequent introduction of new testing techniques lowered the detection threshold to 0.05 ppb, resulting in February 2002 in the discovery by EU customs officials of the presence of nitrofuran in shrimp imported from Thailand.

In response, the EU decided to test all shrimp imports from Thailand and other Asian countries instead of the usual random sampling procedure. As a direct consequence, shipments of frozen shrimp from Thailand to the EU fell from 7,000 tonnes (t) in 2001 to 1,850 t in 2002, and less than 700 t in 2003 (TFFA 2005). Initially, the Thai shrimp industry reacted furiously, claiming that this measure constituted imposing unjustified trade barriers and demanded retaliation by the Thai government. The exporters' spokesperson complained this was a one-sided measure, misusing the Sanitary and Phytosanitary agreement within the WTO (Manarungsan et al. 2005). However, rather swiftly the shrimp buyers' association accepted the new requirements and introduced new testing measures to prevent the export of shrimp with unacceptably high levels of prohibited antibiotics.

The European shrimp market is challenging because of a growing range of environmental and food safety concerns among consumers (Knowles et al. 2007). These consumer concerns include sustainable and controlled farming, antibiotic regulation, ethical employment standards, traceability, absence of genetically modified feed ingredients, fishmeal sustainability, animal welfare, no application of genetics in shrimp breeding, and no presence of dioxins, PCBs, heavy metals, agrochemicals or irradiation in the final product (FAO 2004). At the same time, the EU imports about 50% of all shrimp traded internationally and, thereby, constitutes the largest market for shrimp in the world. Therefore, although Thailand at the time only supplied a small part (3.5%) for this market, the international publicity on the EU ban prompted an overwhelming response from both private and government sectors in other importing countries (Manarungsan et al. 2005).

Under pressure from European consumers, the Thai government enforced a national Code of Conduct for Sustainable Shrimp Farming. This code was developed already in the 1990s to obtain a framework to meet the expressed shrimp farming industry's goal to take responsibility for its environmental, social and economic impact (Nissapa 2002). The guidelines in this code were, however, never implemented nor effectively enforced because previous to the detected of nitrofuran by the EU, they were not taken seriously. Key elements of the code were the ban on the use of forbidden antibiotics, including nitrofuran, intensified and improved testing, and the introduction of contracts with trusted suppliers and improved traceability and transparency throughout the shrimp supply chain. If all actors involved in a shrimp production chain would abide by this code, the final product could be labelled as "Thai Quality" shrimp. After several years of active promotion of the scheme, it has become an accepted standard for international trade in Thai shrimp.

The national Code of Conduct forced shrimp farmers to abandon the use of banned substances and become much more tightly controlled on their adherence to this regulation than in the past. In reaction, a proportion of farmers left shrimp farming altogether; a choice facilitated by the drop in their income resulting from the decreased demand for Thai shrimp on the global market. However, it was the processing factories, notably those owned by CP (Charoen Popkhand) the largest food processing firm in the country, that were required to submit the necessary information to the EU to avoid substantially larger economic losses. This led to their own process of imposing direct control over farmers with the assistance of state extension services. The shrimp farmers themselves were not actively involved and were simply confronted with strict quality requirements and informational demands from the processing firms. In this role CP, and other processing firms in Thailand, became key players in translating global market requirements into local production practices in coastal Thailand.

The introduction of this Code of Conduct makes clear that contemporary governance cannot be organised by conventional nation-states alone. Production areas, structures of trade and places of consumption may move swiftly without national governments being able to control them. Effective governance of global shrimp trade has to combine various governmental structures and non-governmental actors at different levels and establish

connections between the local dynamics in the production and consumption ends of the global value chain. This case also shows how consumer concerns are often translated by governments and traders or processing firms into standards and guidelines for producers without their active participation. Shrimp farmers seem to be passive recipients of such guidelines although in practice they have to apply them in practice and in doing so they necessarily interpret them in a specific manner.

Artisanal trade networks in the Mekong Delta

The majority of shrimp farmers in Southeast Asia still operate outside the direct intervention of the kind of standards and certification outlined in Thailand. However, these producers remain influenced by a combination of global and local value chain arrangements. Leaving the "consumer-down" chain illustrated by the nitrofuran case we now turn to the case of Ab Cho in the Mekong Delta of Vietnam to illustrate the dynamics of value chain access and governance from the perspective of producers.

Ap Cho is a coastal hamlet in TraVinh Province that exemplifies the complexity of customary production and trade arrangements faced by small-scale fishers and fish farmers in marginal coastal areas (Bush 2006). The village was historically dependent on coastal fisheries. But by the mid-2000s, approximately 90% of households in the hamlet had developed shrimp aquaculture farms in mangrove-forested areas with the support of the government. Like many extensive shrimp production systems in Southeast Asia, the farmers have been exposed to a range of production and economic vulnerabilities (Bush et al. 2010). Continual outbreak of diseases such as white spot syndrome has meant that only a third of ponds are successfully harvested, leaving farmers with considerable debt.

When successful, farmers sell their shrimp through a convoluted network of collectors and traders to processors that export to international markets. Unlike the relatively "information-rich" farmers in the Thai case, the farmers of Ab Cho only have a vague idea of where and how the shrimp they produce is finally retailed and consumed. The information they do receive is communicated by local government officials, media sources and local traders, and focuses on farming techniques, such as stocking, feeding and disease management, and market prices. Technical information from traders and local elites is often more trusted by farmers given their closer association with the community. Market information is also channelled through these local traders who pass by the farmers sometimes several times a day on their motorbikes.

The farmers are connected to global commodity flows, but their access is mediated by the complex trade networks that are in turn directly open to a range of social, cultural and political influences. Meeting either national or international production standards or planning production based on market information is not simply process of compliance, education, and technical capacity. Rather improved production and trade is based on their capacity for negotiating complex local relations in what can be labelled "artisanal trade networks" — often patriarchal and debt-tied. Those farmers that are able to successfully negotiate access are often those with pre-existing social connections to traders, or those with formal ties with local elites (a point supported by Belton et al. 2011; Ruddle 2011). As the head of the women's union of the commune stated, surviving as a shrimp farmer requires being introduced to reliable and fair traders rather than having information or capital alone. Typically, farmers will establish and maintain patron-client relationships with traders who give lower farm gate prices in return for ongoing access to credit, cash flows, information and market.

For processing companies, these artisanal trade networks provide a means of collecting low volumes of shrimp across a wide area at low cost. But the convoluted nature of collection and trade means that any attempt to provide current information to producers on safety requirements, let alone emerging environmental standards, is severely limited. The companies, therefore, have a choice. They can either draw these traders into their own trade system, or alternatively bypass them by trying to connect to farmers directly. The processing company most directly involved in Ab Cho chose the latter option, and established a series of collection points or trade-posts for farmers. These decentralised branches of the company also provided technical and market information to the farmers, as well as feed on credit. Based on the model presented, it appeared rational for the farmers to engage with the company directly. However, in practice, the approach taken by the company did not appear to be succeeding. Despite overcoming many of the constraints that farmers themselves identified, they were reluctant to break their relationship with local traders.

This then questions the role of so-called middlemen. Should they be seen as rent seekers that limit the income of farmers and drive up the costs of processing companies? Or, should they be seen as essential, socially and culturally embedded actors that enable market access and translate information flows in marginal areas of the global economy? If processing companies do not engage with these actors then the black box of global value chains will likely be maintained. If they do engage traders and collectors more directly, enrolling them into the informational as well as market channels of the global shrimp value chain, then they will harness

the ability of traders to establish and translate both formal (business) and informal (patriarchal) flows of information. This in turn may create more flexible, trusting relationships that allow farmers to gain more predictable market access while at the same time offset the risk and uncertainty associated with production, finance and trade.

Conclusions

Analysing the global dynamics of trade and regulation illustrates how global governance arrangements can influence locally embedded production practices. The combination of vertical and horizontal features in commodity chains is illustrative of these multi-scalar global dynamics, but attention also needs to be given to the specific arrangements under which fishers and farmers operate within their local context, including access to land, technology, market information, finance and trade. As global governance arrangements operating through value chains become increasingly important in the Asia-Pacific region, as illustrated by the growing number of fisheries and aquaculture systems applying for MSC and ASC certification, it is imperative that more attention be given to their influence over local production practices of coastal communities.

As society, and especially consumers, demand greater accountability of how fish are produced, labels are seen as a means of consumer-driven governance. Greater understanding of how interactions between value-chain actors can lead to more meaningful social and environmental outcomes (Bush 2010). Where information and commodity flows are well documented between retailers, wholesalers, importers and exporters, we still know far too little about the interactions between exporters and producers through local trade networks. If small-scale fish producers are to comply with ever-greater production requirements, then certification standards need to better reflect local conditions, including the conditions through which they gain access to markets, finance and information. If they fail to do so, governance tools such as certification will continue to be confronted with limited participation of small-scale "developing world" producers — a problem long identified for MSC (Gulbrandsen 2009) and one which is in risk of being ignored by ASC.

By focusing on capabilities to access artisanal trade networks we can determine how producers, within their local context, can respond to political consumerism aimed at improving social and environmentally sustainability of production practices. Facilitating more socially and environmentally equitable production systems involves engaging with complex, socially embedded networks that control information and capital flows through global value chains, finding novel ways for producers to maintain ownership of successful farming practices, and enabling support from local authorities before establishing global governance mechanisms through local, regional and global markets.

Further research is particularly needed to elaborate how "artisanal" trade networks facilitate global-local connections. In doing so, emphasis should be given to policy interventions that promote a global auditing culture ahead of local knowledge and social contracts. If assumptions continue to be made about the modernising, and therefore vertically integrating global value chains, then the function of trader networks to absorb risk and facilitating long-distance trade from areas that would otherwise not be accessible to global trade will be lost. Describing the complexity of both formal and informal trade networks above producers and below exporters therefore becomes a key challenge to understanding global commodity chains in both their vertical and horizontal entirety and formulating effective governance arrangements that promote both social and environmental sustainability.

References

Barnett C., Cloke P., Clarke N. and Malpass A. 2011. Globalizing responsibility. The political rationalities of ethical consumption. Chichester: Wiley-Blackwell.

Belton B., Little D.C. and Sinh L.X. 2011. The social relations of catfish production in Vietnam. Geoforum 42(5):567–577.

Bush S.R. 2006. Livelihoods, markets and governance: market access and value adding for small-scale fishers in the Lower Mekong Basin. Phnom Penh, Cambodia, Oxfam America.

Bush S.R. 2010. Governing 'spaces of interaction' for sustainable fisheries. Tijdschrift voor Economische en Sociale Geografie 101(3):305–319.

Bush S.R. and Oosterveer P. 2007. The missing link: Intersecting governance and trade in the space of place and the space of flows. Sociologia Ruralis 47(4):384–400.

Bush S.R., Van Zwieten P.A.M., Visser L., Van Dijk H., Bosma R., De Boer W.F. and Verdegem M. 2010. Scenarios for resilient shrimp aquaculture in tropical coastal areas. Ecology and Society 15(2):15. [online] URL: http://www.ecologyandsociety.org/vol15/iss2/art15/.

Cambridge T., Martin S., Nimmo F., Grieve C., Walmsley S., Huntington T., Cappell R. and Agnew D. 2011. Researching the environmental impacts of the MSC certification programme. London, Report submitted to the MSC by MRAG, Poseiden, Meridian Prime.

Coe N.M., Dicken P. and Hess M. 2008. Global production networks: realizing the potential. Journal of Economic Geography 8:271–295

FAO (Food and Agriculture Organization of the United Nations). 2004. The state of food and agriculture 2003–2004: Agricultural biotechnology meeting the needs of the poor? Rome, Italy, Food and Agriculture Organisation of the United Nations.

Gereffi G., Humphrey J. and Sturgeon T. 2005. The governance of global value chains. Review of International Political Economy 12:78–104.

Gibbon P. and Ponte S. 2005. Trading down. Africa, value chains, and the global economy. Philadelphia: Temple University Press.

Goodman D. and Dupuis E.M. 2002. Knowing food and growing food: Beyond the production-consumption debate in the sociology of agriculture. Sociologia Ruralis 42(1):5–22.

Gulbrandsen L.H. 2009. The emergence and effectiveness of the Marine Stewardship Council. Marine Policy 33(4):654–660.

Jacquet J.L., Hocevar J., Lai S., Majuf P., Pelletier N., Pitcher T.J., Sala E., Sumaila R. and Pauly D. 2009. Conserving wild fish in a sea of market-based efforts. Oryx 44(1):45–56.

Knowles T., Moody R. and McEachern M.G. 2007. European food scares and their impact on EU food policy. British Food Journal 109(1):43–67.

Manarungsan S., Naewbanij J. and Rerngjakrabhet T. 2005. Shrimp, fresh asparagus, and frozen green soybeans in Thailand. World Bank Agriculture and Rural Development Discussion Paper 16. Washington, The World Bank.

Micheletti M. 2003. Political virtue and shopping. Individuals, consumerism, and collective action. New York: Palgrave MacMillan.

Nissapa A. 2002. Shrimp farming in Thailand: A review of issues. EU INCO-Dev project PORESSFA No. IC4-CT-2001-10042.

OECD (Organisation for Economic Co-operation and Development). 2010. Globalisation in fisheries and aquaculture; opportunities and challenges. Paris: OECD.

Oosterveer P. 2005. Global food governance. Wageningen, The Netherlands, Wageningen University. PhD.

Oosterveer P. and Sonnenfeld D.A. 2012. Food, globalization and sustainability. London and New York: Earthscan.

Parkes G., Young J.A., Walmsley S.F., Abel R., Harman J., Horvat P., Lem A., MacFarlane A., Mens M. and Nolan C. 2010. Behind the signs — A global review of fish sustainability information schemes. Reviews in Fisheries Science 18(4):344–356.

Ruddle K. 2011. "Informal" credit systems in fishing communities: Issues and examples from Vietnam. Human Organization 70(3):224–232.

TFFA (Thailand Frozen Foods Association). 2005. Fresh and frozen shrimp exports 1999–2003. [WWW document]. URL http://www.thaifrozen.or.th/fact/sub2_shrimp_exp.htm (accessed 19 April 2006).

Thorpe A., Williams S. and Zyl J.v. 2005. The post-harvest chain. p. 109–132. In: Kooiman J., Bavinck M., Jentoff S. and Pullin R.S. Fish for life: Interactive governance for fisheries. Amsterdam (eds). Amsterdam University Press.

Whatmore S. and Thorne L. 1997. Nourishing networks. Alternative geographies of food. p. 287–304. In: Goodman D. and Watts M. (ed). Globalizing food. Agrarian questions and global restructuring. London: Routledge.