

Article

The Social Context of the Chinese Food System: An Ethnographic Study of the Beijing Seafood Market

Michael Fabinyi ^{1,2,*} and Neng Liu ³

¹ Australian Research Council Centre of Excellence for Coral Reef Studies, James Cook University, Townsville City QLD 4811, Australia

² WorldFish, Jalan Batu Maung, Batu Maung, 11960 Bayan Lepas, Malaysia

³ Department of Sociology, Peking University, 5 Yiheyuan Road, 100871 Beijing, China; liun@pku.edu.cn

* Correspondence: fabinyi@gmail.com; Tel.: +60-4620-2151

Academic Editors: Iain Gordon and Marc A. Rosen

Received: 12 January 2016; Accepted: 1 March 2016; Published: 5 March 2016

Abstract: China's role in the global food system has expanded immensely in recent years. In the seafood sector, it is now the largest consumer of seafood products in the world, making the Chinese market highly significant for global fisheries. Drawing on ethnographic- and interview-based research in the largest seafood market in Beijing, this paper analyzes the social context of Chinese consumption and trade. We broadly conceive of this social context as encompassing a range of social norms and practices that include culturally and historically generated consumer preferences, and distinctive forms of governance and business practice. We find that the social context of China is a key driver of patterns of consumption and trade, and provides challenges and opportunities to improve governance for environmental sustainability. We highlight the need for greater policy and academic attention to these characteristics of seafood consumption and trade within China.

Keywords: Asia; China; seafood; consumption; food system; ethnography

1. Introduction

Since the economic reforms launched by Deng Xiaoping in 1978, China's role in the global food system has expanded immensely. Driven by urbanization and income increases, food consumption is increasing and the composition of this consumption is shifting towards greater consumption of animal products [1–3]. In large part because of the sheer scale of China, these developments are generating global challenges for agriculture, environmental management and food security [4,5]. In the seafood sector, by 2030 China is expected to account for 38% of global consumption of food fish [6]. China's role as the largest consumer of food is associated with increasingly important challenges for the global environment, including the overexploitation of particular types of seafood destined for the Chinese consumer market [7,8], and the rapid development of aquaculture production in China [9].

While these developments are beginning to attract more academic and policy attention, detailed understandings of forms of food consumption and trade within China—the Chinese food system—remain limited. In particular, there is limited understanding of how the social context of China affects the domestic food system. This social context encompasses a range of social norms and practices that include culturally and historically generated consumer preferences, and distinctive forms of governance and business practice. Drawing on ethnographic and interview-based research in the largest seafood market in Beijing, this paper analyzes the distinctive social context of China that influences patterns of Chinese consumption and trade. We discuss the historical development of the Beijing seafood market, highlighting the expanding scale of the market and the particular trajectories this market is taking. We focus on the geographic expansion of sourcing locations, new product forms, changes in business structures and market demand. Our examination of governance of the seafood

market analyzes both formal government regulations and informal social institutions, including the general relationship between government and private seafood firms; regulations on and attitudes towards food safety, environmental sustainability, corruption and the “grey trade” between China, Hong Kong and Vietnam; and the importance of social trust in trading relationships. We highlight how such components of the Chinese social context influence both patterns of consumption and trade, and their governance.

Building on insights from economic anthropology, commodity studies and food systems, this paper contributes to an emerging literature in inter-disciplinary environmental scholarship that seeks to understand how the trade of natural resources interacts with specific local cultural contexts [10,11]. This emphasis on the micro-scale complements the macro-scale studies of Chinese consumption and trade. While such macro-scale studies are important in generating understandings of the extent of changes in Chinese consumption and trade, they are limited in their ability to provide insights into how and why such changes are taking place, or the local factors that influence these changes. Furthermore, we argue that a better understanding of the Chinese context that influences the Chinese food system can inform policy that seeks to improve environmental outcomes.

After this introduction, we introduce the field site of Jingshen Seafood Market and discuss the methods. We then outline our conceptual framework and how it builds on related literature in economic anthropology, commodity studies and food systems. Section 4 presents the results, divided into two subsections that discuss: (1) changing forms of consumption and trade in the Beijing seafood market; and (2) the regulatory and governance environment. We then discuss the implications of these findings for understandings of Chinese seafood consumption and trade, and for environmental sustainability.

2. Background of the Field Site and Methods

The data for this paper draws on interviews and observation spanning 2011–2014 in the largest seafood market in Beijing and the North of China, Jingshen Seafood Market. The Market covers about 85% of the Beijing market, and covers eight hectares in the south of the city. It was established in 2006 by two state-owned companies. In 2013, the annual trading volume of Jingshen Seafood Market was CNY 11 billion (approx. US \$1.8 billion). There are approximately 1200 stalls in the market, and 56 companies.

In 2012, we conducted 7 semi-structured interviews with luxury seafood traders. In 2014, we conducted a further twenty-one semi-structured interviews with owners or managers of seafood businesses in Jingshen market. Interviews lasted between one to three hours. In order to gain a representative sample of traders at the market, we interviewed traders that dealt in different seafood products (e.g., dried seafood, frozen seafood, freshwater fish, crustaceans, and marine fish), and at different scales of operation (e.g., from smaller family firms to large companies with offices in the market). We also conducted in-depth interviews with two senior managers of the market, with a government representative also involved in market management, and with the head of the peak body seafood trading association, the Chinese Aquatic Products and Processing Marketing Alliance (CAPPMA). Interviews varied in their content depending on the role of the interviewee, but topics focused on: the history and background to the firm; experiences with and attitudes towards government regulations; business practices and relationships with suppliers and customers; market trends; and consumer attitudes towards sustainability and food safety.

In addition to these formal interviews, from 2011–2014 we also used ethnographic methods at the market. These involved numerous opportunistic, informal interviews with traders, observation, and socializing over meals. These informal interviews included wide-ranging discussions about consumer and market trends, the family backgrounds and social networks of traders, and the histories of business development. Using these ethnographic methods in addition to the formal interviews generated responses that we did not anticipate in the formal interviews, and enabled a more fine-grained perspective on seafood trading patterns in Beijing. All interviews were conducted in Mandarin and

subsequently transcribed into both Chinese and English. These transcriptions were then analyzed and coded for important themes that emerged [12].

3. Conceptual Framework: Food Systems, Social Context and Chinese Consumption

Our analysis is focused on the food system activities that take place within China, specifically on patterns of consumption and distribution of food that are directed towards domestic consumption (hereafter referred to together as “consumption”). Such patterns of consumption have undergone significant changes in recent years. Many scholars seeking to understand such changes have used large-scale datasets and linked these to broader changes in global food consumption. For example, Popkin and others have discussed the consequences of the “nutrition transition”, involving the transition from predominantly vegetarian-based diets to greater consumption of meat and dairy products [2,3,13], while Reardon and colleagues [14,15] discuss the rise of supermarkets in China as part of a global trend of modernizing food supply systems. In the Chinese seafood sector, Villasante *et al.* [16] link patterns of Chinese fish consumption to GDP growth, highlighting the exceptionally rapid growth of fish consumption compared to other developing countries.

These assessments capture the large scale trends taking place in China. However, the particular configurations of transitions in food consumption vary greatly among different countries and in different sectors [17,18], and academic research on the particular characteristics of Chinese consumption patterns remains limited. Because of the sheer scale and global significance of food consumption in China, empirical analysis of Chinese food consumption is an important academic and policy task. The first goal of this paper is therefore to describe the dynamics of changing patterns of consumption in the seafood (referring to both marine and freshwater) sector, and the implications for the food system in terms of environmental sustainability. The second goal of the paper is more analytical: to demonstrate how these distinctive characteristics of the food system within China are not simply variants on the same theme reported globally, but are crucial to understand the nature of the food system itself. We draw on insights from economic anthropology, commodity studies and recent studies in food systems to highlight the particular elements of the Chinese social context that shape patterns and governance of food consumption and trade. Providing a grounded understanding of Chinese consumption and trade, this approach complements the more prominent large-scale datasets and studies.

Economic anthropology highlights how economic practices such as consumption and exchange are always culturally and socially embedded. From this perspective, consumption is usually viewed as less about the act of consumption itself, and more about the expression of social identities and worldviews [19,20]. For example, a range of studies of food consumption in contemporary China emphasize how food consumption serves to promote class identity and social distinction (e.g., [21]). Studies in economic anthropology also frequently examine how marketplaces work, not just abstract markets [22,23]. Bestor, for example, in his influential anthropological study of the *Tsukiji* fish market in Tokyo, highlights the importance of a range of processes that influence the economic market, including culturally-generated forms of Japanese taste and cuisine, and the particular forms of relationships among traders.

This focus on the intertwining of economic and social phenomena corresponds with a broad division in the commodity studies literature between global value chains and global production networks. While global value chain studies tend to focus primarily on inter-firm relations, in contrast, one of the contributions of the literature on global production networks has been to highlight how elements of social context such as culture, the state, and social relationships are of key importance when trying to understand distributional and governance outcomes [24,25]. As Coe [26] notes, the global production network approach attempts to move beyond the more linear forms of global value chain analysis, and to understand the role of relational, contextual factors in how production-consumption systems operate. To modify Beetham’s metaphor, “institutions such as these are not to be viewed as merely the icing on the cake (of the food system), which is applied after baking is complete, leaving

the cake itself essentially unchanged. Instead it is more like the yeast that permeates the dough, and makes the bread what it is" ([27] (p. 39), cited in [28] (p. 143)). Our use of the term social context in this article is deliberately broad, and encompasses culturally and historically-conditioned consumer preferences, distinctive forms of interaction among traders, and the role of the state and government policies in China.

This focus on social context also resonates with a third body of literature, which aims to move beyond narrow interpretations of food systems as simply composed of the activities from production to consumption [29–31]. In addition to these activities, a food system also involves multiple drivers that operate at multiple scales (e.g., changes in the global environment; culture, economics and demographics). Food systems are complex, with a wide range of variables and environmental and social drivers that affect food system activities and outcomes. Much of this research is consequently necessarily multi-disciplinary in nature. In this paper we do not look in detail at large-scale household surveys of consumption in China, but focus on one market in detail to examine what lessons can be learned about how trade is changing, why it is changing, and the processes that shape this change at a micro-level. We aim to understand how the specific Chinese context affects patterns of consumption and trade. We focus on how this context affects both the nature of demand for particular species and products, and the nature of governance of this trade.

4. Results

4.1. Changing Forms of Consumption and Trade in the Beijing Seafood Market

This section discusses the key changes that have taken place in the Beijing seafood market over the past several decades. We highlight changing consumer preferences for new species and product forms, and changing business structures.

4.1.1. General Patterns of Seafood Consumption and Consumer Preferences

Figure 1 indicates levels of apparent seafood consumption in China from 1985–2015, indicating a steady increase. In line with this increase in consumption, the nature of the products sold in the Beijing seafood market has changed over recent years. The key drivers of these changing forms of seafood consumption are the high levels of urbanization and increased incomes that have taken place across China [1]. As one trader noted when describing the influence of the broader economy on his business, using a Chinese idiom: "when the water rises, the boats float high" (*"shuizhang, chuangao"*).

Traders suggested that progressively since the early 1990s when some of them first began trading seafood in Beijing, the types of seafood sold had changed dramatically. A much greater variety of species are now consumed. Supply chains have expanded significantly, as traders now source products from all over the world. Table 1 gives an indication of the variety of products currently sold in the market, and the origin of these products. The table is not a comprehensive list of all of the products sold, but an indication of some of the major types.

The nature of these products can be roughly divided into four groups: live freshwater, live marine, dried, and frozen. Freshwater products are mostly produced domestically, and, with some exceptions, are generally sold relatively cheaply. They are often consumed at home, or in lower-end restaurants. Many of the restaurants with these freshwater fish are associated with regional cuisines of inland provinces such as Hunan and Sichuan, which often involves stronger flavors, and cooking methods such as roasting, boiling and frying. Freshwater seafood has a long history of popularity in China, and overall still dominates domestic production. Traders explained how during the 1990s their product sales were dominated by freshwater fish that had been sourced locally or in nearby provinces. Carps remain the most commonly consumed type of fish in China [32].

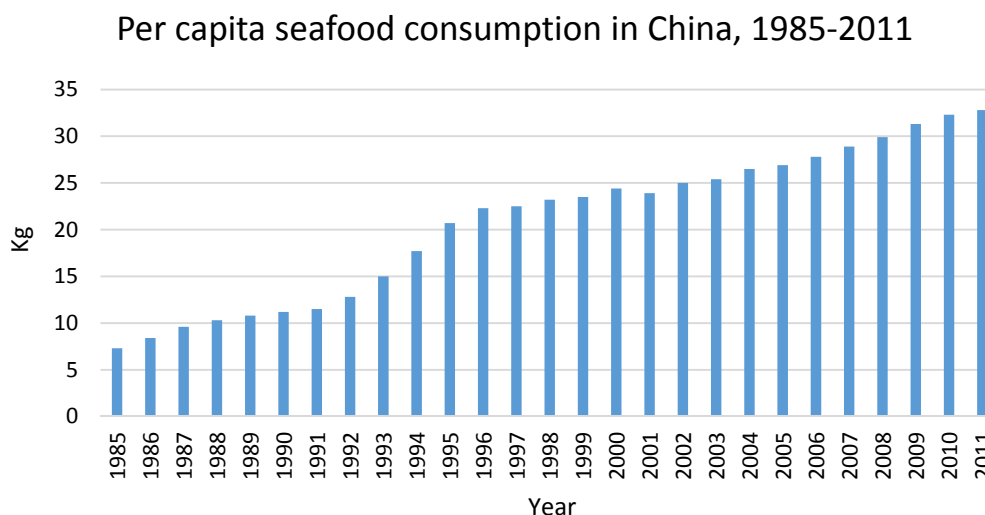


Figure 1. Apparent per capita seafood consumption in China, 1985–2011. Food balance sheets of the Food and Agriculture Organization do not measure actual consumption, but the supply of food in the country that is potentially available for human consumption (which does not always correspond to actual consumption, due to a range of factors such as household wastage and in the seafood sector, discrepancies between measurements of live weight and edible weight [32]). They are often used as proxies for consumption. Government data on actual aquatic product consumption in China is much lower, and does not take account out of home consumption [32]. Seafood is defined here and in this paper as all “fish and fishery” products (including freshwater fish, and invertebrates) available for consumption. (Source: [33]).

Live marine products include some domestic maricultured types such as turbot and other flatfish, abalone and grouper. Marine seafood tends to be more highly-priced and include some products for the very highly-priced luxury market, such as lobsters and reef fish (mostly groupers). Much marine seafood is often cooked lightly—steaming is a common method—so as to preserve the flavors, and delicately-flavored fish are preferred [7]. These preferred characteristics are linked to the regional cuisines of provinces of the coast, such as Guangdong, Fujian and Shandong. Southern Chinese cuisine (Guangdong and Fujian) is considered to be high-status and appeals to the new middle classes, and its rising popularity throughout Mainland China is one factor behind the increase in demand for marine fish [7]. Other types of marine fish not traditionally consumed in large quantities in China are also growing in popularity. The Chinese market for salmon, for example, is expanding rapidly [34]. Tuna, however, remains relatively unpopular [35].

Of key importance in China for these two segments of the market is freshness. Fresh, live seafood is seen as tasting better by many Chinese consumers and traders. As one trader put it simply, “Live fish taste better than frozen fish”. As anthropologist Eugene Anderson notes, from a comprehensive and influential study of Chinese food: “Fresh seafood should be *fresh* . . . Food is part of a system of belief in which quality, freshness, purity and high standards are matters of necessity, if one is to remain in any way truly human” ([36] (p. 174 emphasis in original; p. 139)). The emphasis on fresh, live seafood can be seen in the recent boom of live lobsters from North America to China, and can be considered as a cultural institution that heavily influences the ways in which seafood is produced in China [37].

Table 1. Major types of aquatic products sold in Jingshen Seafood Market, origin and price. (Source: Authors' fieldwork data, 2014).

Common Name	Scientific Name	Origin	Price in CNY per <i>jin</i> (1 <i>jin</i> Equals 500 g, and Is the Standard Measure for Food in China)
<i>Live freshwater</i>	<i>Live freshwater</i>		
Mandarin fish	<i>Siniperca chuatsi</i>	Guangdong	38/ <i>jin</i>
Perch	<i>Perca</i>	Guangdong	26/ <i>jin</i>
Catfish	Siluriformes	Henan	11/ <i>jin</i>
Carp	Cyprinidae	China	6–11/ <i>jin</i>
Snakeheads	Channidae	Guangdong	13/ <i>jin</i>
Bullfrogs	<i>Lithobates catesbeianus</i>	Guangdong, Fujian	17.5/ <i>jin</i>
Soft-shelled turtles	Trionychidae	Zhejiang	17/ <i>jin</i>
<i>Live marine</i>	<i>Live marine</i>		
Turbot	Scophthalmidae	Shandong	20/ <i>jin</i>
Lobster	Nephropidae	Australia, NZ, South Africa, USA, Canada	Australian lobster 280–320/ <i>jin</i> , Boston lobster 68/ <i>jin</i>
Groupers	Serranidae	Indonesia, Philippines, Malaysia, Australia, Hainan, Guangdong, Taiwan	40–50/ <i>jin</i> (cultured from Hainan); leopard coral grouper (imported) 3–400/ <i>jin</i>
Crabs	Brachyura	Zhejiang, Australia	30–70/ <i>jin</i>
Scallops	Pectinidae	Liaoning	20/ <i>jin</i>
Clams (e.g., Venus, Razor)	Bivalvia	Liaoning	4–10/ <i>jin</i>
Ribbonfish	Trichiuridae	Zhejiang, Fujian	60–70/ <i>jin</i> (live),
Yellow Croakers	Larimichthys	Zhejiang, Fujian	3–50/ <i>jin</i> (farmed), 8–900 (wild-caught)
<i>Frozen</i>	<i>Frozen</i>		
Salmon	Salmonidae	Norway, Scotland	56/ <i>jin</i>
Clams	Bivalvia	Canada	20/ <i>jin</i>
Ribbonfish	Trichiuridae	Zhejiang, Fujian	20/ <i>jin</i>
<i>Dried</i>	<i>Dried</i>		
Abalone	Haliotidae	Dalian, Japan, South Africa, Australia	1000/ <i>jin</i>
Shark fin	Elasmobranchii	Hong Kong	Most common types at 400/ <i>jin</i>
Sea cucumber	Holothuridae	Liaoning, Shandong	200–3000/ <i>jin</i>

While wet markets and fresh, live seafood have long been a distinctive characteristic of Chinese seafood consumption, this is changing. Frozen products are now becoming more and more accepted in the Chinese market. A May 2014 report noted that for the Frozen Seafood Processing Industry, “revenue has been increasing at an annualized rate of 12.1% in the five years through 2014, in line with steadily growing domestic demand” [38]. Frozen products have a high level of diversity in origin, species and price. They are often consumed at home, or in lower-end restaurants. Many frozen products are sold in packages, and these sorts of products are not as visible or common in the wholesale Jingshen market. Instead they tend to have different channels of distribution—supermarkets—which

have spread rapidly in recent years in China [13–15]. From 1994 to 2002, for example, the numbers of supermarkets rose from 2500 to 53,100 [14] (p. 561). From 2001–2009, the annual compound sales growth rate of the “modern retail sector” in China was 27.5%, indicating that this “supermarket revolution” is continuing [15]. Major players in the Chinese supermarket sector include international chains Wal-Mart and Carrefour, as well as domestic chains.

While many supermarkets continue to offer fresh live seafood, they also offer a far wider variety of frozen, chilled and canned products. In supermarkets in Beijing, a wide variety of domestic and imported seafood can now be found in a range of forms. Sea cucumbers, for example, used to be sold almost exclusively as dried *bêche-de-mer*. However, in recent years, stimulated by the rise of supermarkets and consumer demand, they can now be found in supermarkets in a range of frozen, perishable forms [39]. The convenience of frozen seafood is the major selling point, as one trader pointed out: “Who would want to gut and clean a fish once they get home after work?” As another trader explained simply, “people who want to cook at home usually buy frozen seafood”. Marine, not freshwater products dominate the frozen seafood sector.

Jingshen Market itself is also encouraging the frozen seafood segment, as a segment with high growth rates. As one of the managers of the market described, higher-end products in Beijing have faced a recent downturn because of government policies designed to limit spending on banquets (see Section 4.2.5 Anti-Corruption Campaign below), and one way Jingshen Market has responded is to increase support for frozen products through electricity subsidies: “In this way, the sales of the stalls can be expanded, the ratio of high-end consumption will be lowered, and the gradual transformation to ordinary popular seafood can be guided by us”.

Dried seafood products tend to be smaller in scale but more expensive. Major products in this sector include sea cucumbers (produced domestically and imported), shark fin, abalone and fish maw. Many of these products are key components of the luxury seafood market and are consumed in banquets. Although the luxury seafood market has witnessed a downturn because of government policies designed to limit spending on banquets (see Section 4.2.5 Anti-Corruption Campaign below), such banquets remain extremely important in social and professional settings in China [40], and are a key driver of demand for these particular types of products [7]. Since the rapid expansion of the economy during the 1980s, banqueting has become more important and more common, with consequential increased demand for luxury seafood. The banquet culture is therefore a key Chinese social institution that influences how particular types of seafood is eaten, and stimulates the demand for certain types of seafood.

Dried seafood sellers will also often sell other dried goods such as bird’s nest, and dried pork and beef. Some of these products (such as shark fin) are almost exclusively served in restaurants, but others (such as sea cucumbers) are also sometimes bought by consumers for cooking at home. There is wide price variability among different grades of these dried seafood products. Indeed for all types of seafood, there are many factors that influence prices. In addition to supply and demand trends, factors that affect the price of individual types of seafood includes the source location, the quality of the product, the size of the specimen, and whether it was farmed or wild-caught.

In sum, the Beijing seafood market has seen a shift from mostly freshwater, locally sourced products that are kept fresh and live, to a diversified market containing a wider variety of products. Sourcing locations have expanded to encompass countries from across the globe, and greater numbers of comparatively more expensive marine products are being consumed. Although the luxury seafood sector has witnessed a decline in the last three years, overall this sector has expanded significantly since the 1980s. Freshness remains very important for some species, but the shift to greater numbers of marine products and the expansion of supermarkets has also facilitated the growth of diverse frozen seafood products.

4.1.2. Logistics and Business Structures

Traders based at Jingshen Market operate at a range of scales: at the lower level are simple stalls who buy off larger traders and sell at a retail level, while at the larger scale are companies that import directly from foreign suppliers, and large companies with branches across China that may have offices in Jingshen Market. According to traders, a strong shift has taken place since the early 1990s from smaller family-run firms to larger companies. The market administration is explicitly encouraging the establishment of these larger companies to enter the market. The shift from smaller to larger companies has occurred together with other aspects of globalization, including the development of new technologies and infrastructure.

Logistics for the seafood industry have been transformed over the past two decades. Improved transport networks mean seafood traders can more easily sell to places further away from Beijing. The market in Beijing serves as a supply hub for locations throughout China, not just in Beijing. Traders reported selling their seafood as far west as Xinjiang province. More often, they will supply seafood for provinces in neighboring regions, including Hebei, Shanxi, Shaanxi, Inner Mongolia, Heilongjiang, Liaoning and Jilin. Traders from these provinces regularly visit Jingshen Market for purchasing. While the so-called “cold chain” of transport remains far below the standards of many Western countries, it has improved significantly, and major companies are now investing in cold chain transport networks [41,42]. The use of computers allows better accounting, while smartphone technology has also facilitated the growth of seafood trade. Several traders for example, described how they used *WeChat*, a popular messaging service in China, to share photos to check the quality of the goods from suppliers and negotiate over price. Another recent trend is that of e-commerce, which is growing explosively in China [43]. As one trader of sea cucumber pointed out, “ordinary people are more and more into online shopping, especially the young generation. They prefer to use *Shunfeng Express* [a popular courier service] delivery. It is very convenient. You don’t have to drive all the way to the market, where maybe you can’t find a parking lot”. Investments by the government in roads and other physical infrastructure also contribute to the ease of transporting seafood.

However, the expansion of logistical facilities around China has also resulted in increased competition, as several traders pointed out: Beijing used to be the hub market for all of northern China, but suppliers from the south of China are now increasingly finding more direct routes to other provinces. As one trader explained, “in the beginning Shenyang (a major city in Liaoning Province, North-eastern China) got fish from our market. Now we have convenient transportation, and so many suppliers can go directly to Shenyang”.

New communications technologies and infrastructure exemplify a common characterization of the process of globalization as “time-space compression” [44]. While this process of globalization is certainly not unique to China, the speed, scale and global significance of what has taken place since 1978 in China is exceptional. It has had the effect of enabling greater levels of trade of more types of seafood products at a faster speed.

4.2. Regulatory and Governance Environment

This section examines the role of governance institutions in regulating the Beijing seafood market. We use a broad view of governance to encompass both top-down formal government regulation, and the actions taken by market and other societal actors to informally govern seafood trade. We discuss five sectors where the role of formal government plays a significant role: the relationship between government and business, food safety, grey trade and customs, protected species and sustainability, and a recent anti-corruption campaign. The final sub-section analyzes the role of social norms in the seafood industry as a form of governance.

4.2.1. Government–Trader Relationship

While the relationship between government and private business has changed rapidly since the economic reforms that were launched in 1978, the Chinese state has played a limited role in facilitating the development of private trading in China [45]. It was not until 1988 that private firms were actually granted formal legal status [45] (p. 6), and in the annual Ease of Doing Business ranking, in 2014 China still ranked 90th out of 189 countries [46]. Instead, the government-business relationship is characterized by many traders as one of regulation and supervision.

Very few traders discussed receiving any assistance from the government. When discussing business loans, for example, the “big four” state-owned banks (Bank of China, Industrial and Commercial Bank of China, China Construction Bank and Agricultural Bank of China) were seen as unhelpful, with rigid conditions and high interest rates. As one trader noted, “Our profit is lower than the interest from these banks”. Or as another trader of dried seafood stated, “Their approval process is too slow, and they set many restrictions”. Only larger-scale traders with long records of business tended to get approved for loans from these big banks. Instead, when traders did need loans from a bank, they would usually go to smaller, private banks, often from their local province. More commonly, traders would save funds themselves or borrow from friends and relatives. For example, one trader of live fish began as a family operation of dried seafood in the early 1990s. Combining savings from their existing business, their friends and relatives, they invested in live seafood operations. As this live seafood business developed, they were able to expand and eventually opened branches in Shanghai, Shenyang, Changsha and Zhejiang. Only during these later phases of business expansion were they able to conveniently access loans from banks.

In Jingshen Market, relationships with the government are managed through the market organization itself. As one trader characterized the relationship, using a Chinese idiom: “There is shade under a large tree” (“*Dashu Dixia Hao Chengliang*”), meaning that the market represents or protects them to some extent when dealing with the government. The market has a Chinese Communist Party organization, and it is a member of the peak body seafood trading organization, CAPPMA. It has an internal quarantine and inspection office, and is also responsible for the dissemination of government laws and regulations. There are a range of government departments that inspect traders. These are primarily focused on checking financial and tax compliance, and issues to do with food safety and quarantine.

4.2.2. Food Safety

China’s troubled record with food safety and food crimes in recent years has meant that food safety is high on the public and government agendas [47]. Quarantine certificates and certificates of origin are necessary, and are inspected regularly. As one trader pointed out, having a certificate of origin provides protection for the trader: if there is a problem with the product, they can then trace the responsibility. Without a certificate of origin, the trader is then forced to take responsibility.

One trader of frozen seafood highlighted how food safety issues are an important issue for the government now, and closely watched in the seafood industry: “If you haven’t collected all the certificates required, then it gets complicated to sell them, doesn’t it? Now the supervision on food safety is very strict, so we should always try to obey the law. We don’t earn much, we would go out of business if something bad happens”. For larger traders, food safety is of particular importance: “Poisoning is a big issue, and the sellers are liable for the payment of the compensation. If the seller is a street vendor, he may get away with it because you cannot find him if he doesn’t show up in the same place. However, it is a different matter for sellers in the market. We have the responsibility to assure the safety of the food.” However, there are different standards for domestic and international products in China (see also [48]). While imported products need to have a range of documentation from the source country and customs, problems with the quality and safety of domestic food remains a significant issue. Despite the emphasis on having certificates of origin, traceability remains limited, and more broadly there remain many challenges for the governance of food safety in China [47].

Consumer and buyer concern is similarly focused on food safety issues and certificates of origin. As one trader noted: “They do not care about sustainability. They only care whether there is pesticide residue in farmed fish.” This concern for food safety presents opportunities for some traders. One trader pointed out that he was marketing his products as “green”, because “consumers want everything sold in the market to be green, ecological and safe. So long as it is green, it sells well. The green products are natural and don’t have pollutants”. Supermarkets in Beijing often market their seafood as “natural”, “safe” and “chemical-free”. Traders of Australian and New Zealand seafood in China attempt to capitalize on their countries’ reputations for “clean and green” products (see e.g., [49]).

The growing importance of food safety among consumers and the government has therefore meant that traders now need to comply with more hygiene and traceability-related regulations. However, traders have also engaged with these trends in a positive manner, through generating new business opportunities.

4.2.3. Protected Species and Sustainability

In contrast to the theme of food safety, governance of sustainability issues does not rate highly in the consciousness of traders. Not a single trader we interviewed reported any level of interest among their buyers or consumers regarding the issue of environmental sustainability. This corresponds with earlier research among restaurant operators, where Fabinyi and Liu [7] discussed this lack of interest among seafood consumers and restaurant operators in Beijing.

However, the government has specific regulations on protected animals. Trade in these animals is banned, and appears to be generally well-enforced at the market, notwithstanding national-level challenges relating to enforcement [50]: there are prominent posters displaying protected species at the entrance of the market. Beyond these specific protected animals, there is little awareness or interest in sustainability issues. As one trader asserted: “My products are almost all cultured products. They have no relation with the issue of species protection”. Aquaculture becomes considered to be a “green” choice because of the fact that it is not diminishing an endangered species in the wild. Or, as another trader stated: “We don’t care about it (sustainability) because we don’t sell those illegal things”. This view of effectively equating legality with sustainability elides the host of other more subtle environmental problems that aquaculture and fish trade is closely linked to, including pollution, genetic contamination of cultured stocks, and declining (if not endangered) wild stocks with subsequent effects on ecosystems.

In addition to government regulations, there are a range of non-government organizations (NGOs) that are active in trying to promote sustainability in the Chinese seafood market via consumer awareness campaigns, notably one on shark fin consumption [7,8]. Certification organizations such as the Marine Stewardship Council and Friends of the Sea have become more active in recent years in China, and NGOs have been working with the government to improve traceability in the seafood sector [51]. While the trade of legally identified protected animals is mostly enforced, overall however, the institution of sustainability has had limited impact on the Beijing seafood market so far (as indeed it has in most locations).

4.2.4. Grey Trade

Depending on the country of origin and the particular form of seafood, Hong Kong tariffs are usually far lower than the mainland. Hence, much of the luxury seafood that is imported into China comes via the so-called “grey trade” through Hong Kong. Many live reef fish exporters, for example, send most of their product to Hong Kong, and from Hong Kong they are effectively smuggled over the border into neighboring cities in Guangdong province [52]. From Guangdong, they are transported throughout the mainland. According to traders, Guangxi province and Vietnam have also been operating as another important grey trade conduit into China. The grey trade is an example of the limitations of formal governance, and the importance of local social norms and institutions.

Few traders in the market have direct contact with overseas exporters, and many buy the product from importers based in Shenzhen or Guangzhou. For these Beijing-based traders, denial of responsibility is the common response. As one trader of live fish stated: “We get our goods from the agents. But we don’t know whether they smuggle or evade taxes. That has nothing to do with us.” Or, as another lobster trader stated with reference to the necessity of cheap business, “We don’t buy from importers in Beijing. Beijing tariffs are too high to be competitive. We get our supply from Shenzhen . . . For Australian lobsters coming to Beijing, the tariffs and taxes will be nearly 160 yuan per kg, so one *jin* will be 80 yuan higher, but if we import from Hong Kong or Nanning (capital city of Guangxi, on the border with Vietnam), there will only be 50 yuan of taxes added to the price. That’s a big difference.” There are other traders who deal directly with importers, and arrange customs declarations in Beijing. For many of these traders, they are resentful about the grey trade because it offers their competitors an unfair advantage. As one trader in live fish argued, “We use no other channel but the formal one. The temporary profits are not an incentive for us to take such a high risk”.

Enforcement against the grey trade appears to be cyclical. One trader reasoned that the reason behind low levels of enforcement was simply because the borderlands are far away from the capital, using a Chinese idiom: “The mountains are high and the emperor is far away” (“*Shan Gao, Huangdi Yuan*”). However, in 2014, several high-profile incidents took place in Guangdong, including seizures of tons of Australian lobsters and the jailing of a seafood company CEO for smuggling sea cucumbers and shark fin [53]. In 2014, China’s State Administration of Quality Supervision also issued a new circular aimed at increasing enforcement of imported seafood [53].

The grey trade therefore has important environmental sustainability implications for Chinese consumption and trade—in addition to the tax implications for Mainland China, this legally blurred form of trading significantly hampers traceability and data transparency for many important luxury seafood products, and makes it more difficult for international stakeholders to engage with Chinese stakeholders. How the Chinese government responds to the grey trade in future years will be important to observe.

4.2.5. Anti-Corruption Campaign

Since taking office in late 2012, Xi Jinping has made anti-corruption a priority of his administration. It was also recently enshrined as one his “Four Comprehensives”, Xi’s formal contribution to doctrine (“Comprehensively apply strictness in governing the Party”). A key element of this anti-corruption campaign has been banning the use of public funds for banquets as part of a list of “Eight Regulations”. Specifically, shark fin and bird’s nest are now also banned at government banquets.

This has impacted traders in a range of ways. Many of the traders of luxury products such as lobsters and live reef fish have experienced a significant impact on sales. One lobster trader noted how they had reduced the number of employees from 50 to 30, while another noted that his sales of Australian lobsters had dropped from “4–500 *jin* per day to 20–30 *jin* a day”. Traders also reported far fewer sales of particularly expensive reef fish such as Napoleon Wrasse and humpback grouper (*Cromileptes altiveles*) than in previous years. One trader estimated that his sales of leopard coral grouper (*Plectropomus leopardus*, a highly-priced tropical reef fish) had dropped by around 50%.

Traders of luxury products have aimed to adapt to this new environment by shifting their focus to lower and mid-range products. For example, North American lobsters, which are much cheaper than Australian lobsters, are becoming more popular [37]. Thus, one lobster trader had switched his product range entirely from Australian lobsters to North American lobsters. For traders of tropical live reef fish, lower-level *Epinephelus* species (often farmed in Southern China) were becoming a greater focus than higher-priced *Plectropomus* species and the Napoleon wrasse. For many traders who specialize solely in high-end products, the impact has been very significant. As one trader in shark fin and abalone described:

“If you had come here for an interview in the past, we would have had no time for an interview . . . We used to sell 1000–2000 pieces per month (CNY 700–800,000), now just

1–2 pieces . . . For abalone in a month we could sell 70–80 *jin* a month. Now we cannot sell it at all for 1–2 months. Shark fin cannot sell, it is almost stagnant. The pressure is big. I have loans of approximately CNY5 million, interest of CNY 600,000 yuan a year. Plus CNY 250,000 rent for market, plus 4–5 workers, CNY 100,000 salary, food, housing rent, another 100,000 totaling CNY 1.2 million for a year. Let's not speak of making money now. Isn't the pressure huge?"

This trader was finding it very hard to adapt, and was uncertain of his future business prospects: "Instead of banning shark fin completely, the government decided to ban the use of public funds to eat it. This at least is a more lenient approach, where shark fin traders are not forced out straightaway. If the laws punish those who sell these products, can you imagine how many of them will jump from high buildings? This way just lets you perish by yourself. Few people want my products now, but I have to stay here and dream of a better future. I cannot eat them all and I don't even know how to cook them. I will not dump them either, that would be dumping money. I have no other choice but to wait here, it's like I'm trapped".

For many traders, relations with the government were expressed in a kind of fatalistic approach (see Section 4.2.1 Government–Trader Relationship): "There's nothing we can do", or "We can't control this" was a common response when asked about the effect of government regulations on business. As one trader opined, using a Chinese idiom: "Go on tolling the bell as long as one is a monk" ("*zuo yitian he shang zhuang yitian zhong*"), which expresses a passive fatalistic attitude to work and the broader regulatory environment.

While some traders have been able to adapt to these changing conditions by shifting to different products, for many luxury seafood traders the policy has had a significant negative impact. The government policy that has likely done the most to curb the consumption of unsustainably harvested luxury seafood products such as shark fin and live reef fish is therefore one that has had little to do with environmental sustainability.

4.2.6. Social Institutions

As important as many of the government regulations are social norms and institutions that govern trader behavior [45]. Trust is of fundamental importance in this context. Many traders employed family members; as one trader explained: "family members are in charge of core departments. The particular characteristics of the seafood industry, where every individual fish have different sizes and weights with a lack of standardization, means that it is easy to get cheated by your employees. So you need to have people whom you can trust". Or, as another trader pointed out: "seafood shops deal in cash more than in other industries, so you have to use your own people if you want to manage it effectively". Another trader of live marine fish stated that: "In the seafood business, you'd better open your shops with your family. Because however hard your staff work, it's still not the same as working with your family". However, using trusted family members in the business sometimes comes at the cost of efficiency. As one trader complained: "it is hard to punish family members when they steal from you, or mismanage your funds". Another trader advised that because of this, he was in the process of slowly replacing family employees with outsiders. Many of the traders in Beijing come from Guangdong or Fujian, historical centers of seafood trade and production. This means that many seafood traders know each other, as one trader of live marine fish described: "people from Guangdong will introduce us to each other, we share information, and so we have steady relationship . . . we have a social network for information".

Business partnerships need also to have a high degree of trust. This is often generated through *guanxi*, or relationship building. The vast majority of traders have long-term partnerships with particular suppliers and buyers, where sales credit is often granted. One trader of freshwater fish described how "in the very beginning, we came up to (our supplier). Over time as we got to know each other better, we began to build up some trust. After a while, they realized you bought a lot from them and had faith in you. Then it would be fine to owe them money for a few days". The same would

apply to this trader's customers: "Once they came, the same rules apply. After building up a good *guanxi*, we'll start doing some credit sales". Similarly, a trader of frozen products pointed out: "If a new hotel asks to work with us, we can only accept a payment in advance. For the regular clients that we've been working with for years, we both understand each other's difficulties, of course they have good credit." Sometimes these practices resulted in losses, and traders all reported examples of where business relationships had gone sour and losses were sustained. Yet, many traders regarded pursuing such cases through the courts as too difficult.

The importance of social relations in the Chinese seafood industry has meant the dominance of traders of networks of traders from Guangdong and Fujian in the Beijing market. This dominance of particular ethnic and regional groups in Chinese seafood trade has been noted before, for example in the case of shark fin trading in Hong Kong [54]. Traders have social norms and rules that are often as important as formal government laws, and so can be viewed as a type of governance. These social relations will interact with formal governance mechanisms. For example, social networks among traders with Guangdong links appear to be key in facilitating the grey trade.

5. Discussion

Adapting insights from economic anthropology, commodity studies and food systems research, we have argued for greater attention to the specific social and political contexts in which general changes in food systems are taking place. Local institutions structure the nature of demand by influencing consumer preferences, and they structure the processes of distribution by which seafood is traded and transported through local forms of governance and business practice. Understanding the social context of the food system in China can inform better policies to manage it globally for improved environmental sustainability.

Our data on consumption practices are based largely around seafood industry representatives' perceptions of consumer attitudes and behaviors, not from consumers themselves (the subject of a companion paper). However, these seafood industry representatives are not only key informants regarding consumer perspectives, but they are also key decision-makers in their own right in Chinese seafood consumption. There is wide variation in patterns of overall seafood consumption in China, and Beijing consumes less aquatic products per capita than other major urban centers in Mainland China, such as the coastal cities of Shanghai or Guangzhou [55]. However, the prominence of Beijing also means that it is broadly a cultural "trend-setter" in consumption preferences. While Beijing seafood trade is not necessarily representative of trade in China, it is a nationally important site. While we do not attempt to provide a comprehensive picture of the dynamics surrounding Chinese seafood consumption and trade, therefore, we have provided a detailed empirical window into these dynamics from the perspective of a particularly important group of stakeholders.

Forms of Chinese food consumption are marked by the large-scale changes in food consumption and distribution that have been identified across many low and middle income countries across the globe, including a shift to greater consumption of animal products, and the rise of supermarkets and modern retailing systems [3,15,18]. However, Chinese consumption patterns are also marked by distinctive features in consumer preferences and governance that will have specific implications for the global food system. Because of the scale of China, these changes in diet have significant effects on the global food system [4,5]. In this section we focus on how our analysis of the social context of the Beijing seafood market may affect a key food system outcome, environmental security.

As incomes continue to rise, urbanization intensifies and the economic environment for trade improves, this will likely facilitate greater demand for seafood in China. There are distinctive features of Chinese demand that will influence the specific types of seafood that are consumed. In terms of sheer volume, the particular types of seafood that are consumed in China remain dominated by freshwater cultured species such as carp. However, higher trophic level forms of marine seafood appear to be becoming more popular. Higher status than most freshwater seafood, these fish appeal to the emerging middle classes. While the proportion of wild-caught marine product as a total of

consumption in China remains relatively low, in a country the size of China this still exerts a high level of demand. While recent government regulations are rapidly changing the landscape of the luxury seafood market, the Chinese institution of banqueting, and its expansion since the 1980s, has also resulted in an overall increased demand for particular forms of luxury seafood such as shark fin, live reef fish and sea cucumbers. Freshness, a culturally-valued institution, means that live, fresh fish are still very popular among Chinese consumers. However, the convenience of frozen seafood and the rise of supermarkets have also facilitated the growth of the frozen seafood market.

These distinctive features of Chinese consumer preferences have specific implications for environmental sustainability. Chinese consumption of high-trophic level fish such as groupers and wrasses and other luxury seafood such as shark fin and sea cucumbers is a direct driver of stock declines worldwide [7,8]. In addition to the shift towards higher-trophic level species, while freshwater seafood such as carp are mostly lower-trophic level fish and arguably have less impact on environmental security than higher-trophic level species, many environmental concerns remain. Domestic aquaculture in China is already stressed and suffers from problems of pollution and widespread over-use of antibiotics. In particular, aquaculture has a significant impact on wild fish stock via the extensive use of fishmeal [9]. China is the world's largest importer of fishmeal, and unless improved governance mechanisms are implemented, according to a recent study, "China's aquaculture sector is destined to diminish wild fish stocks worldwide" [9]. The challenge is to reconcile improved production without damaging sustainability.

The Chinese context also strongly influences the governance of seafood consumption and trade, and offers a starting point for examining potential challenges and opportunities for improving this governance for environmental sustainability. There are a range of governance initiatives taking place within China to improve environmental sustainability [51], many of which are beyond the scope of this paper. From the perspective of Chinese traders and consumers, however, consumer demand displays little interest in sustainably harvested products.

Instead, the dominant governance issue is of food safety. While food safety is not directly related to the issue of environmental sustainability, there may be opportunities for improved outcomes for environmental sustainability as well. Specifically, improved traceability in seafood trade has long been a goal of environmental policymakers e.g., [50,56,57], and this intersects with the goals of the government in improving traceability for improved food safety outcomes. Greater enforcement of food safety standards was also the cited reason behind the government's recent crackdown on grey trading between Hong Kong and China [53]. The focus on food safety may therefore offer opportunities to more effectively regulate this grey trade, which is a key hub of trade in luxury and endangered seafood products.

One indirect form of governance that has an effect on sustainability for some types of seafood is that of the anti-corruption campaign, which appears to have had a significant effect on expensive forms seafood such as shark fin and Napoleon wrasse [7,8]. The emphasis on anti-corruption in the Xi administration may also be having an effect on grey trading practices [58]. While government policies such as these are rarely considered in discussions of food systems or environmental policy, in the Chinese context they have become extremely influential.

More broadly, beyond China there is an ongoing need for the international policy community to engage in more depth with Chinese stakeholders. Recent years have witnessed a range of scientific meetings and symposia exploring many of the issues related to Chinese seafood consumption and trade (e.g., [59]), and a similar growth in reports and studies (e.g., [8,9,52,56]). Given the growth and scale of Chinese consumption, there is a need for significant, further engagement by the international policy, donor and scientific communities.

Acknowledgments: Thank you to Yunzhu Liu, Ruichen Zhang and Yining Zhang for their hard work in assisting with the research. Thank you also to the Chinese Aquatic Products Processing and Marketing Alliance and the Jingshen Seafood Market for helping to facilitate this research. This research was supported by the Australian Council Centre of Excellence for Coral Reef Studies, by a Society in Science—Branco Weiss Fellowship (M. Fabinyi), and by an Australian Research Council Discovery grant (DP140101055).

Author Contributions: Michael Fabinyi and Neng Liu designed the research; Michael Fabinyi and Neng Liu collected the data; Michael Fabinyi analyzed most of the data with some contributions from Neng Liu; and Michael Fabinyi wrote the manuscript.

Conflicts of Interest: The authors declare no conflict of interest. The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results.

References

- Zhou, Z.; Tian, W.; Wang, J.; Liu, H.; Cao, L. Food consumption trends in China. Available online: <http://www.agriculture.gov.au/ag-farm-food/food/publications/food-consumption-trends-in-china> (accessed on 11 January 2016).
- Popkin, B. Synthesis and implications: China's nutrition transition in the context of changes across other low- and middle-income countries. *Obes. Rev.* **2014**, *15*, 60–67. [[CrossRef](#)] [[PubMed](#)]
- Zhai, F.Y.; Du, S.F.; Wang, Z.H.; Zhang, J.G.; Du, W.W.; Popkin, B.M. Dynamics of the Chinese diet and the role of urbanicity, 1991–2011. *Obes. Rev.* **2014**, *15*, 16–26. [[CrossRef](#)] [[PubMed](#)]
- Sternberg, T. Chinese drought, bread and the Arab Spring. *Appl. Geogr.* **2012**, *34*, 519–524. [[CrossRef](#)]
- Economy, E.; Levi, M. *By All Means Necessary: How China's Resource Quest Is Changing the World*; Oxford University Press: New York, NY, USA, 2014.
- World Bank. *Fish to 2030: Prospects for Fisheries and Aquaculture*; Agriculture and Environment Services Discussion Paper 3; World Bank Report number 83177-GLB; The World Bank: Washington, DC, USA, 2014.
- Fabinyi, M.; Liu, N. Seafood consumption in Beijing restaurants: Consumer perspectives and implications for sustainability. *Conserv. Soc.* **2014**, *12*, 218–228. [[CrossRef](#)]
- Eriksson, H.; Clarke, S. Chinese market responses to overexploitation of sharks and sea-cucumbers. *Biol. Conserv.* **2015**, *184*, 163–173. [[CrossRef](#)]
- Cao, L.; Naylor, R.; Henriksson, P.; Leadbitter, D.; Metian, M.; Troell, M.; Zhang, W. China's aquaculture and the world's wild fisheries. *Science* **2015**, *347*, 133–135. [[CrossRef](#)] [[PubMed](#)]
- Crona, B.I.; van Holt, T.; Petersson, M.; Daw, T.M.; Buchary, E. Using social–ecological syndromes to understand impacts of international seafood trade on small-scale fisheries. *Glob. Environ. Chang.* **2015**, *35*, 162–175. [[CrossRef](#)]
- Österblom, H.; Folke, C. Globalization, marine regime shifts and the Soviet Union. *Phil. Trans. R. Soc. B* **2015**, *370*, 20130278. [[CrossRef](#)]
- Bernard, H.R. *Research Methods in Anthropology: Qualitative and Quantitative Approaches*; Altamira Press: Lanham, MD, USA, 2006.
- French, P.; Crabbe, M. *Fat China: How Expanding Waistlines Are Changing a Nation*; Anthem Press: London, UK; New York, NY, USA; Delhi, India, 2010.
- Hu, D.; Reardon, T.; Rozelle, S.; Timmer, P.; Wang, H. The Emergence of Supermarkets with Chinese Characteristics: Challenges and Opportunities for China's Agricultural Development. *Dev. Policy Rev.* **2004**, *22*, 557–586. [[CrossRef](#)]
- Reardon, T.; Timmer, P.C.; Minten, B. Supermarket revolution in Asia and emerging development strategies to include small farmers. *Proc. Natl. Acad. Sci. USA* **2012**, *109*, 12332–12337. [[CrossRef](#)] [[PubMed](#)]
- Villasante, S.; Rodríguez-González, D.; Antelo, M.; Rivero-Rodríguez, S.; de Santiago, J.A.; Macho, G. All fish for China? *Ambio* **2013**, *42*, 923–936. [[CrossRef](#)] [[PubMed](#)]
- Godfray, H.C.; Crute, I.R.; Haddad, L.; Lawrence, D.; Muir, J.F.; Nisbett, N.; Pretty, J.; Robinson, S.; Toulmin, C.; Whiteley, R. The future of the global food system. *Philos. Trans. R. Soc. B* **2010**, *365*, 2769–2777. [[CrossRef](#)] [[PubMed](#)]
- Popkin, B. Nutrition, agriculture and the global food system in low and middle income countries. *Food Policy* **2014**, *47*, 91–96. [[CrossRef](#)] [[PubMed](#)]
- Carrier, J.G. Consumption. In *Encyclopaedia of Social and Cultural Anthropology*; Barnard, A., Spencer, J., Eds.; Routledge: London, UK; New York, NY, USA, 1996; pp. 128–129.
- Croll, E. *China's New Consumers: Social Development and Domestic Demand*; Routledge: London, UK; New York, NY, USA, 2006.
- Wu, D.Y.H.; Cheung, S.C.H. *The Globalization of Chinese Food*; Routledge: London, UK; New York, NY, USA, 2002.

22. Bestor, T.C. *Tsukiji: The Fish Market at the Center of the World*; University of California Press: Berkeley, CA, USA, 2004.
23. Turgo, N. 'Laway lang ang kapital' (Saliva as capital): Social embeddedness of market practices in brokerage houses in the Philippines. *J. Rural Stud.* **2016**, *43*, 83–93. [[CrossRef](#)]
24. Coe, N.; Dicken, P.; Hess, M. Global production networks: Realizing the potential. *J. Econ. Geogr.* **2008**, *8*, 271–295. [[CrossRef](#)]
25. Hamilton-Hart, N.; Stringer, C. Upgrading and exploitation in the fishing industry: Contributions of value chain analysis. *Mar. Policy* **2015**, *63*, 166–171. [[CrossRef](#)]
26. Coe, N. Geographies of production II: A global production network A–Z. *Prog. Hum. Geogr.* **2011**, *36*, 389–402. [[CrossRef](#)]
27. Beetham, D. *The Legitimation of Power*; Humanities Press International: Atlantic Highlands, NJ, USA, 1991.
28. Jentoft, S. Legitimacy and disappointment in fisheries management. *Mar. Policy* **2000**, *24*, 141–148. [[CrossRef](#)]
29. Ericksen, P.E. Conceptualizing food systems for global environmental change research. *Glob. Environ. Chang.* **2008**, *18*, 234–245. [[CrossRef](#)]
30. Ingram, J. A food systems approach to researching interactions between food security and global environmental change. *Food Secur.* **2011**, *3*, 417–431. [[CrossRef](#)]
31. Lang, T.; Ingram, J. Food Security Twists and Turns: Why Food Systems need Complex Governance. In *Addressing Tipping Points for a Precarious Future*; O'Riordan, T., Lenton, T., Eds.; British Academy Scholarship and Oxford University Press: Oxford, UK, 2013; pp. 81–103.
32. Chiu, A.; Li, L.; Guo, S.; Bai, J.; Fedor, C.; Naylor, R.L. Feed and fish meal use in the production of carp and tilapia in China. *Aquaculture* **2013**, *414–415*, 127–134. [[CrossRef](#)]
33. FAOSTAT. Available online: <http://faostat.fao.org/> (accessed on 29 May 2015).
34. Rabobank. The Dragon's Changing Appetite: How China's Evolving Seafood Industry and Consumption Are Impacting Global Seafood Markets. Available online: http://transparentsea.co/images/c/c5/Rabobank_IN341_The_Dragons_Changing_Appetite_Nikolik_Chow_October2012.pdf (accessed on 11 January 2016).
35. Campling, L. *Assessing Alternative Markets: Pacific Islands Canned Tuna & Tuna Loins*; Technical Report; Pacific Islands Forum Fisheries Agency: Honiara, Solomon Islands, 2015.
36. Anderson, E.N. *The Food of China*; Yale University Press: London, UK; New Haven, CT, USA, 1988.
37. Fabinyi, M. Producing for Chinese luxury seafood value chains: Different outcomes for producers in the Philippines and North America. *Mar. Policy* **2015**, *63*, 184–190. [[CrossRef](#)]
38. IbisWorld. Frozen Seafood Processing in China: 23 May 2014. Available online: <http://www.companiesandmarkets.com/Market/Food-and-Drink/Market-Research/Frozen-Seafood-Processing-in-China/RPT944599> (accessed 3 March 2016).
39. Purcell, S.; Choo, P.Z.; Akamine, J.; Fabinyi, M. Consumer packaging and alternative product forms for tropical sea cucumbers. *S. Pac. Commission Beche-de-mer Inf. Bull.* **2014**, *34*, 57–62.
40. Harmon, B. The Crisscrossed Agency of a Toast: Personhood, Individuation and Deindividuation in Luzhou, China. *Aust. J. Anthropol.* **2014**, *25*, 357–372. [[CrossRef](#)]
41. Godfrey, M. Cold chain service to expand across China. Available online: <http://www.seafoodsource.com/news/supply-trade/26949-cold-chain-service-to-expand-across-china> (accessed on 13 May 2015).
42. Godfrey, M. Multinationals Link with Cold-Chain Solution Lanesync. Available online: <http://www.seafoodsource.com/news/supply-trade/27126-multinationals-link-with-cold-chain-solution-lanesync> (accessed on 13 May 2015).
43. KPMG. E-Commerce in China: Driving a New Consumer Culture. Available online: <http://www.kpmg.com/CN/en/IssuesAndInsights/ArticlesPublications/Newsletters/China-360/Documents/China-360-Issue-15-201401-E-commerce-in-China.pdf> (accessed on 15 May 2015).
44. Harvey, D. *The Condition of Post-Modernity: An Enquiry into the Origins of Cultural Change*; Blackwell Publishers: Cambridge, UK; Oxford, UK, 1990.
45. Nee, V.; Opper, S. *Capitalism from Below: Markets and Institutional Change in China*; Harvard University Press: Cambridge, MA, USA, 2012.
46. World Bank. Ease of Doing Business Rankings. Available online: <http://www.doingbusiness.org/rankings> (accessed on 15 May 2015).

47. Forum on Health, Environment and Development (FORHEAD) Working Group on Food Safety. Food Safety in China: A Mapping of Problems, Governance and Research. Available online: <http://www.ssrc.org/publications/view/food-safety-in-china-a-mapping-of-problems-governance-and-research/> (accessed on 3 March 2016).
48. Broughton, E.I.; Walker, D.J. Policies and practices for aquaculture food safety in China. *Food Policy* **2010**, *35*, 471–478. [[CrossRef](#)]
49. Australian Wild Abalone. Available online: www.australianwildabalone.com.au (accessed on 3 March 2016).
50. Sadovy, Y.J. Humphead wrasse and illegal, unreported and unregulated fishing. *SPC Live Reef Fish Inf. Bull.* **2010**, *19*, 19–21.
51. Fabinyi, M.; Liu, N. The Chinese policy and governance context for global fisheries. *Ocean Coast. Manag.* **2014**, *96*, 198–202. [[CrossRef](#)]
52. Hanson, A.; Cui, H.; Zou, L.; Clarke, S.; Muldoon, G.; Potts, J.; Zhang, H. *Greening China's Fish and Fish Products Market Supply Chains*; International Institute for Sustainable Development: Winnipeg, MB, Canada, 2011.
53. Godfrey, M. China Cracks Down on Seafood Smuggling. Available online: <http://www.seafoodsource.com/news/supply-trade/27236-china-cracks-down-on-seafood-smuggling> (accessed on 13 May 2015).
54. Cheung, G.C.K.; Chang, C.Y. Cultural identities of Chinese business: Networks of the shark-fin business in Hong Kong. *Asia Pac. Bus. Rev.* **2011**, *17*, 343–359. [[CrossRef](#)]
55. National Bureau of Statistics. *China Urban Life and Price Yearbook*; China Statistics Press: Beijing, China, 2011.
56. Buluswar, S.; Cook, S.; Stephenson, J.; Au, B.; Mylavarapu, S.; Ahmad, N. *Sustainable Fisheries and Aquaculture in China: Scoping Opportunities for Engagement*; Report prepared for the David and Lucile Packard Foundation by Dalberg Global Development Advisors, Seaweb and Sustainable Fisheries Partnership, in association with M. Siggs of Seaweb, K Short and W. Songlin of WWF and D; Jones of Sustainable Fisheries Partnership; David and Lucile Packard Foundation: Los Altos, CA, USA, 2011.
57. Clarke, S. *Understanding China's Fish Trade and Traceability*; TRAFFIC East Asia: Hong Kong, China, 2009.
58. Godfrey, M. China's 'Grey Trade' Crackdown Could Change the Game for Seafood Industry. Available online: <http://www.seafoodsource.com/seafood-expo-asia-2015/china-s-gray-channel-crackdown-could-change-the-game-for-seafood-industry> (accessed on 2 October 2015).
59. Fisheries and Food Security in China. Available online: http://fse.fsi.stanford.edu/events/fisheries_and_food_security_in_china (accessed on 3 March 2016).



© 2016 by the authors; licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons by Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).