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246

**China's Evolving Fishing Industry:
Implications for Regional and Global Maritime Security**

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Abstract

Having the world's largest fishing fleet while facing depleting fishery resources in its inshore waters, China's marine catch sector has been experiencing two major structural adjustments: a shift from inshore to offshore fishing and expanding Distant Water Fishing (DWF). The shift from inshore to offshore fishing is leading to growing illegal fishing operations by Chinese fishermen in neighboring countries' EEZs and disputed waters, particularly in the East China Sea and South China Sea. These operations become triggers for maritime tensions and clashes in the region. Meanwhile, the rapid expansion of China's distant water fishing fleet also has notable implications for global maritime security. China's growing distant water fishing fleet is also one of the factors leading to China's efforts to build a blue water navy to safeguard China's maritime interests. However, it might also contribute to overfishing and illegal fishing which threatens the sustainability of the global fishing sector.

The root causes of fishing disputes between China and other countries are China's worsening supply and demand imbalances for aquatic products, and overcapacity of its marine catch sector. Thus, in order to manage fisheries disputes and prevent fishing disputes from escalating into regional and global diplomatic and security conflicts, efforts at national, regional and global levels are needed. At the national level, China needs to step up efforts to address the demand and supply imbalances and at the regional and global level, cooperation and coordination among countries are essential to prevent fishing disputes from escalating. If the structural shifts of China's fishing industry could be well managed, the fishing sector could be an ideal field for cooperation to achieve maritime safety and security at both regional and global levels.

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China's Evolving Fishing Industry: Implications for Regional and Global Maritime Security¹

Introduction

July 2012: 36 Chinese fishermen were detained and two ships were seized after being fired upon by the Russian coastguard for entering an exclusive economic zone in its far eastern Primorsky region.

April 2012: A fishing dispute involving Chinese fishermen who were accused of illegally fishing in the disputed area led to a serious maritime standoff between Chinese and Philippine vessels.

March 2012: One Chinese fisherman, believed to be fishing illegally off the Pacific island nation, was killed by Republic of Palau police officers and another 25 Chinese fishermen were detained.

December 2011: A Chinese fishing boat captain stabbed two South Korean coastguards, killing one, which triggered intense tension between China and South Korea.

September 2010: The arrest of the captain of a Chinese trawler by Japan after a collision dramatically increased tensions between China and Japan over Diaoyu Island.

November 2008: A Chinese fishing vessel was hijacked by pirates armed with grenade launchers and automatic weapons off the coast of Kenya, which aroused strong indignation in China.

These are headlines of maritime incidents involving Chinese fishermen in recent years. The list is far from complete. For instance, according to China's official statistics, from 1989 to 2010, in the South China Sea waters alone, there were 380 cases of Chinese fishermen being attacked, robbed, detailed or killed by neighboring countries with over 750 fishing vessels and 11,300 fishermen involved.² Maritime incidents involving Chinese fishermen seem to have become a major trigger for maritime tensions and clashes in the region. Meanwhile, while overfishing and illegal fishing are increasingly threatening the sustainability of the global fishing industry, as well as turning many poor fishermen in

¹This working paper was made possible by contributions and supports from my colleagues and friends, in particular, I wish to thank Dr. Li Mingjiang, Associate Professor at S. Rajaratnam School of International Studies (RSIS) for his support and invaluable comments, and Ms. Yang Fang, Research Associate at the Centre on Asia and Globalisation (CAG) at the Lee Kuan Yew School of Public Policy, for her encouragement and feedbacks.

² Refer to Beijing News at: <http://www.bjnews.com.cn/news/2012/07/09/209203.html> 18 July 2012.

Africa into pirates,³ China's expanding Distant Water Fishing (DWF) operations pose further challenges to global maritime security. As maritime conflicts have already emerged as one of the top threats to economic prosperity, peace and stability in the region and the world, it is of critical importance to reduce and manage these potential flashpoints. Towards this end, fishing disputes as well as maritime security incidents involving China fishermen deserve serious attention. While much of the research has been focused on China's confrontational actions, attitudes and internal politics, little attention has been given to the impact of China's evolving fishing industry on regional and global maritime security.⁴

This paper examines the evolution of China's fishing industry, and its implications for maritime security at both regional and global levels. The paper begins with a brief overview of China's fishing industry and then discusses China's supply and demand imbalances for aquatic products. Following that, it touches on the government's attempts to address the imbalances. Next, after outlining the structural shifts of China's fishing industry, it analyzes the impact and implications of the structural shifts of China's fishing sector on regional and global maritime security. The last section of the paper summarizes the main points.

Overview China's Fishing Industry

China has by far the largest fishing industry in the world. As Table 1 shows, China's fishery production in 2009 accounted for over 34% of global production: catch production made up 16.78% of the global total, while aquaculture production represented over 60% of world production. As shown in Table 2 China not only has the biggest fishing industry in the world, it is also the top exporter, as well as an important importer for aquatic products in the world. In the past 32 years since the *Reform and Opening-up* in 1978, China's fishing industry has experienced phenomenal growth (Figure 1). China's

³ Hughes, Jasmine. *The Piracy-Illegal Fishing Nexus in the Western Indian Ocean*. Strategic Analysis Paper, West Perth: Future Directions International, 2011; refer to *Time* at <http://www.time.com/time/world/article/0,8599,1892376,00.html> accessed on 24 April 2012; refer to *Guardian* at <http://www.guardian.co.uk/global-development/poverty-matters/2012/apr/03/overfishing-foreigners-senegal-fishermen-piracy> accessed on 25 May 2012.

⁴An exception is a recent paper by Zhang Junjie, entitled: "Averting China's fishing Wars", Zhang, Junjie. *Averting China's Fishing Wars*. Policy Paper, San Diego: Asia Society, 2012.

annual fishery production has increased by more than 11 times during the period of 1978 to 2010- from 4.7 million tons in 1978 to 53.7 million tons in 2010, with a growth rate close to 8% per annum. The sector has over 1 million ships and total tonnage of 9.4 million, which includes over 1990 DWF vessels.

Table 1 World and China Fishery Production in 2009, tons

Area	Fish, crustaceans, molluscs, etc.			Aquatic plants		
	Catch	Aquaculture	Total	Catch	Aquaculture	Total
World	88,918,040	55,680,738	144,598,778	905,055	17,342,745	18,247,800
China	14,919,596	34,779,870	49,699,466	276,170	10,495,905	10,772,075
China's Share	16.78%	62.46%	34.37%	30.51%	60.52%	59.03%

Source: FAO 2012

Table 2 International Fishery Trade, USD 1000

Country	Top 10 Importers		Country	Top 10 Exporters	
	2008	2009		2008	2009
USA	14952379	13858165	China	10114324	10245527
Japan	14947418	13258134	Norway	6936644	7072742
Spain	7101147	5907780	Thailand	6532404	6235867
France	5835957	5579174	Vietnam	4550333	4300877
Italy	5453104	5060193	USA	4463052	4144623
China	5143432	4976220	Denmark	4601250	3980695
Germany	4501743	4570607	Chile	3930969	3606328
UK	4220392	3593968	Canada	3706192	3239530
Netherlands	2919792	2774296	Spain	3465473	3142891
Denmark	3110650	2734798	Netherlands	3394073	3137993

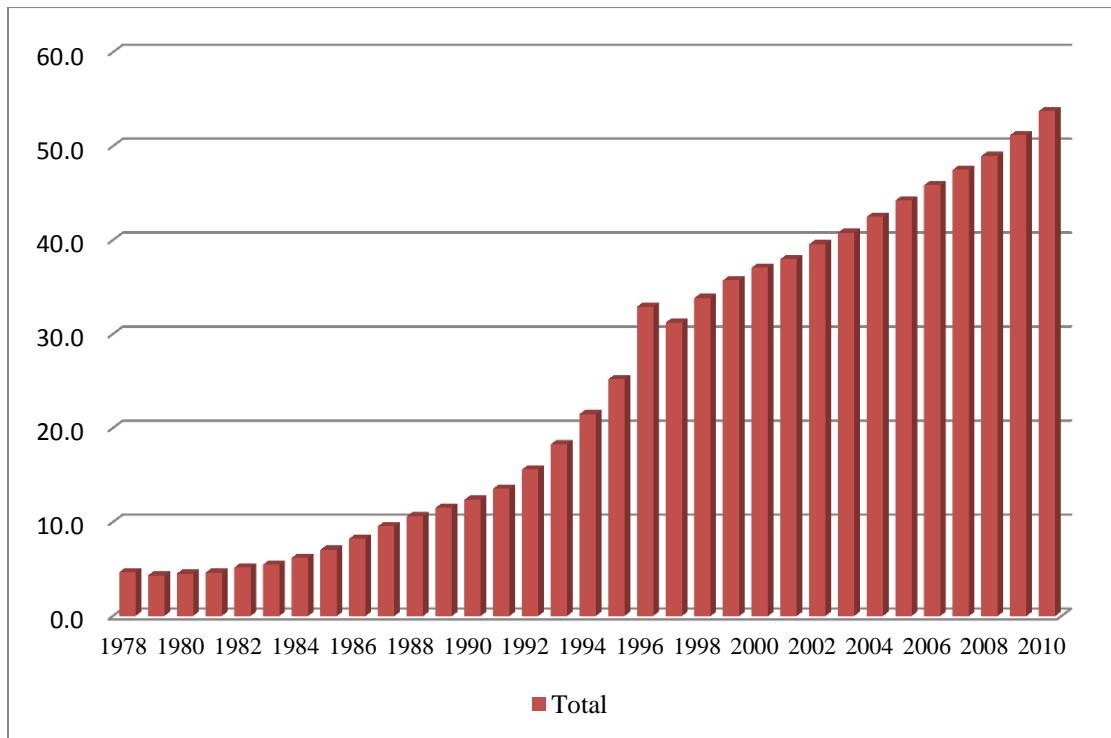
Source: FAO 2012

The fishing industry is a very important contributor to the national economy. In 2010, the contribution of the fishing industry to China's GDP reached RMB 675 billion and the annual value added of the sector totaled RMB 379 billion. The share of the fishing sector in China's agricultural GDP increased from 1.6% in 1978 to more than 9.3% in 2010.⁵ The fishing industry plays an important role in China's international trade as well. China is the biggest exporter of aquatic products in the world. In 2010, China exported over 3.3

⁵Ministry of Agriculture Bureau of Fisheries. *China Fishery Statistics Yearbook 2011*. Beijing: China Agriculture Press, 2011.

million tons of aquatic products, with total export valued at over USD 13.8 billion, which makes aquatic products China's top agricultural export. Over the past three decades, the number of people who work in China's fishing sector has increased by more than 10 million. In 2010, over 13 million people worked in the fishing sector. Among them, close to 7.5 million were traditional fishermen. The rapid development of China's fishing sector has greatly enriched the fishermen. Based on official statistics, the per capita net annual income of fishermen increased from RMB 93 in 1978 to more than RMB 10,000 in 2011,⁶ which is significantly higher than the annual income of farmers in 2011 (around RMB 6900).⁷ Therefore, China's fishing sector is of critical importance to national food security, local economic development and fishermen's income growth.

Figure 1-China's Annual Fishery Production, million tons



Source: China Fishery Statistics Yearbook 2011

⁶ Refer to People's Daily at <http://english.people.com.cn/90778/7691714.html>, accessed 23 April 2012

⁷ China's Finance and Economic News, 2011, available at http://www.cfen.com.cn/web/cjb/2011-12/29/content_828558.htm, accessed 25 April 2012

China's Fishery Demand and Supply

Rising Demand

The phenomenal growth of China's fishing industry over the past thirty years has been driven by both push and pull factors. The push factors, such as institutional reform, technological advancement, and supportive government policies, were the key factors contributing to rapid growth of China's fishing industry in the early years after China's opening and reform in 1978, whereas the pull factors, including rising domestic demand and exports, have become the main engines for China's fishing industry in recent years.⁸

Aquatic products, which are the main source of protein in human food consumption, are very important items in Chinese food diets. Aquatic products contribute to one third of the Chinese intake of animal protein,⁹ and this share is even higher in the coastal regions. China's rapid economic development in the past 30 years has contributed to substantial increase in the real incomes of its people, and higher income has spurred greater demand for aquatic products. Per capita consumption of aquatic products of the Chinese has increased from 5 kg in 1970 to 25 kg annually in 2010.¹⁰ The dramatic increase in the size of the population, along with the significant rise in per capita consumption of aquatic products means that an even greater quantity of aquatic products is demanded. However, in spite of the fivefold increase in per capita consumption in the past four decades, the consumption level of aquatic products is still quite low compared with other East Asian countries, particularly Japan, whose current per capita consumption is as high as 65 kg per annum. That means as the Chinese become increasingly wealthier, their demand for aquatic products will continue to rise.

Furthermore, as shown in Table 2, China is also a major player in the international fishery trade. It is the leading exporter of aquatic products in the world and its exporting volume

⁸Meador, Melinda, Xinping Wu, and Angie Han. *Fishery Products Annual*. Fishery Products Report, Washington DC: USDA, 2010; Lindkvist, Knut Bjørn, Zhikai Wang, Gard Hopsdal Hansen, and Håvard Haarstad. *The Chinese seafood industry: structural changes and opportunities for Norwegians*. Industry Report, Bergen: Institute for Research in Economics and Business Administration, 2009.

⁹Sun Haiwen. "Strategic Choice for the development of China's Fishing industry", *China's Fishery Economy*, 2009, 05

¹⁰Refer to China's Economic Herald at <http://www.ceh.com.cn/ceh/shpd/2010/12/16/72873.shtml> accessed on 23 April 2012; the data on China's per capita aquatic products consumption varies depending on sources. Yet, based on China's total annual fishery production, fishery trade and population size, the author believes that 25 kg per capita consumption of aquatic products in 2010 is much more accurate.

has increased steadily over the years.¹¹ Although, measured by quantity, China imported more aquatic products than it exported, China has been enjoying a surplus from the trade in aquatic products for years. For instance in 2010, China registered an over USD 7.2 billion surplus through its aquatic products trade, since Chinese fishery exports are mainly highly valued and processed aquatic products. Since global consumption of aquatic products continues to surge, external demand for Chinese aquatic products will remain high in the future. Furthermore, considering that China's aquatic exports are highly concentrated in China's coastal provinces such as Shandong, Guangdong and Fujian, the fishing sector is a very important pillar for the local economy. This provides strong incentives for local governments to promote exports of aquatic products to meet this strong external demand.

Troubling Supply

Despite the fact that China has largely been self-sufficient in the supply of aquatic products with China's net imports of aquatic products being quite small over the years - less than 1 million tons in terms of quantity (in terms of value, China has been a net exporter for aquatic products) - the structure of China's fishing production has changed dramatically in the past three decades. As shown in Table 3, before 1985 marine catch sector had been the major contributor to China's total fishery production, yet aquaculture has been the main driver of total production increase since 1978. In 1978, China production marine catch was 3.1 million tons, which increased to 12 million tons in 2010 (Figure 2), while the production of aquaculture jumped from 1.2 million tons in 1978 to over 38 million tons in 2010, accounting for 71.3% of total fishery production.

¹¹Ministry of Agriculture Bureau of Fisheries. *China Fishery Statistics Yearbook 2011*. Beijing: China Agriculture Press, 2011.

Table 3: Production structure of China's Fishing Industry, million tons

	Total	Aquaculture	% of total	Marine Catch ¹²	% of Total
1978	4.7	1.2	26.11%	3.1	67.53%
1980	4.5	1.3	29.95%	2.8	62.53%
1985	7.1	3.1	44.23%	3.5	49.04%
1990	14.3	7.3	51.13%	5.9	41.64%
1995	29.5	16.6	56.21%	10.6	35.79%
2000	37.1	22.4	60.33%	11.9	32.09%
2005	51.0	29.4	57.63%	11.1	21.78%
2010	53.7	38.3	71.26%	12.0	22.40%

Source: China Fishery Statistics Yearbook 2011

This dramatic change in the production structure of China's fishing industry is a result of the restricted and shrinking production capacity of China's inshore fishing. Traditionally, inshore fishing has been the major marine fishing operation in China. The production accounted for 70%-80% of the total marine fishing production in the early 2000s. Inshore fishing covers the Bohai Sea, Yellow Sea, the area within N33, E125; N29, E125; N28, E124.5; N27, E123 in the East China Sea, and the area east to E112 within 80 meter isobath and west to E120 within 100 meter isobath in the South China Sea.¹³

Since the *Reform and Opening-up* in 1978, China has introduced a series of policies to promote its fishing industry. The abolition of people's communes, elimination of the State monopoly and marketing of aquatic products, relaxation of price control, as well as the introduction of China's Fishery Act of 1986, has had a strong impact on China's inshore fishing. The production of inshore fishing began to pick up, and growth accelerated with rising demand in the 1990s. Unfortunately, China's fishing sector has become a victim of its own success. The dramatic growth of China's fishing sector in and after the mid-1980s until the late 1990s spurred the income growth of the fishermen and made a great contribution to local economic development. The huge success of the fishing sector attracted more people and investment. With more people joining the fishing

¹² The production of distant water fishing is not included.

¹³Xubing, Fan and Rui, Yu. "The Fishery Industry in China", *GLOBEFISH*, Vol.76. Rome, FAO. 2004. p.75; in this paper inshore fishing also includes coastal water fishing which is carried out in waters inside the demarcation line forbidding access by motorized fishing boats.

sector and more ships being built, overfishing soon emerged as a top threat to China's fishing industry. This situation was exacerbated by the lack of clear ownership, and ineffective control and management. Although the Chinese government realized the seriousness of overfishing as early as the late 1980s and took efforts to control inshore fishing, overfishing has quickly resulted in depletion of fishery resources in China's inshore waters. Based on expert estimates, China's current fishing capacity exceeds the fishery resource sustainability level by as much as 30%.¹⁴ This means overfishing is a still the predominant threat to China's fishing industry.

Overfishing is not the only worrying factor for China's fishing industry, which is also facing growing threats from rapid urbanization and industrialization in China's coastal regions. With rapid expansion of the cities in China's coastal regions, excessive land reclamation from the sea becomes a growing risk to oceanic ecology. From 2002 to 2009, 74,100 hectares of land were reclaimed from the sea in China which has adverse effects such as environment degradation and seafood pollution.¹⁵ According to the *2011 China's Ocean Development Report* issued by the State Oceanic Administration of China, over 460 Chinese islands along the mainland coast have disappeared and half of China's coastline has been developed in the past decade.¹⁶ Furthermore, for a variety of reasons, rapid industrialization in China's coastal regions has led to the establishment of a majority of heavily-polluting chemical, energy and transportation industries along China's coastline. As a result, a wide range of pollutants, including heavy metals and organic toxins, are discharged into the sea. According to an official inspection in 2009, about 74 percent of 457 discharge outlets released excessive pollutants, with 14 million tons of heavy metals discharged into the ocean.¹⁷ This has led to degradation of the marine ecosystem in China's inshore waters, which further compromised the sustainability of China's inshore fishing.

¹⁴Chen Yide, Ma Weijun and Yang Changjian, "Thoughts and suggestions on how to safeguard fishing rights and ensure stability in the new situation", *China Aquatic*, 2012,3

¹⁵Refer to China Daily, available at http://www.chinadaily.com.cn/china/2010-03/26/content_9644201.htm accessed on 24 April 2012

¹⁶ China Daily, http://www.chinadaily.com.cn/china/2011-05/05/content_12447511.htm

¹⁷Refer to China Daily at http://www.chinadaily.com.cn/china/2010-03/26/content_9644201.htm accessed on 25 April 2012

In addition, maritime territorial and fishery agreements with neighboring countries have further reduced the marine fishery resources available for Chinese fishermen. After the Sino-South Korea and Sino-Japan fishery agreements came into force, around 25,000 fishing boats from China's eastern provinces such as Shandong, Liaoning and Zhejiang, were forced to pull out of fishing. This led to a 1.2 million ton reduction in China's marine catch, causing an economic loss exceeding RMB 6 billion. According to the statistics of Zhejiang province, affected by China-South Korea fishery agreement, around 10,000 fishing boats had to pull out and over 30, 000 fishing workers lost their jobs. Similarly in Southern China after the China-Vietnam Beibu Gulf fishery agreement came into force, the marine catch of Guangdong, Hainan and Guangxi have suffered huge losses. For Guangdong alone, around 6,000 fishing boats had to cease fishing operations in their traditional fishing grounds in the western part of Beibu Gulf.¹⁸

The combined impact of the above factors on China's fishing industry is that it becomes increasingly difficult for China's fishing industry, especially the marine catch sector, to meet the country's rising demand and millions of Chinese fishermen began to experience economic difficulties. This undermines the country's food security and hinders the economic development of the coastal regions.¹⁹

Government Efforts to address the imbalances

Facing growing demand for aquatic products as incomes of Chinese continue to rise and with depleting fishing stocks in its inshore waters, the Chinese government has made serious efforts to reform the production structure of its fishing industry. Top priority has been given to promoting inland and marine fish farming. This strategy has been quite successful in the sense that production of aquaculture currently accounts for over 70% of total production of aquatic products in China. With regards to the production of marine catch, China introduced the "Zero Growth Policy" for setting marine catch targets in 1998. Since then, China has taken a lot of effort to curb marine fishing. In order to cap

¹⁸ Yang Jian, Li Yanliang, Chen Jiayong and Yang Zijiang, "Policy suggestions on transferring of fishermen in the coastal regions", *China Fishery Economy*, 2002,1

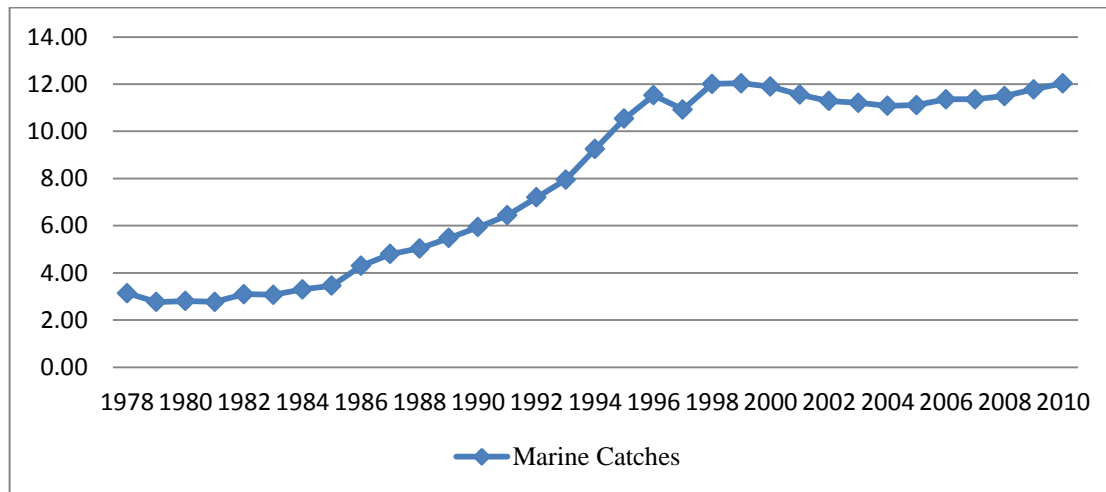
¹⁹ Yu Xishang. "Zhoushan Fishermen's income situation in the past 10 years and discussion about its future outlook". *Zhoushan Fishery*. 2004.3; refer to CCTV available at <http://jingji.cntv.cn/2012/05/14/VIDE1337003761170843.shtml> accessed 24 May 2012; and GDCCT at: http://price.gdcct.gov.cn/micronews/201204/t20120412_679386.html accessed on 24 May 2012.

overfishing and preserve fishery resources, serious attempts have been made at both central and local levels to downsize China's fishing fleet and transfer fishermen to other occupations, in addition to imposing fishing bans and other measures. In the last decade, the central and local governments have earmarked billions of Yuan to downsize the fishing fleet through capping the building of new vessels, scrapping unseaworthy ships and implementing fishing permit systems,²⁰ and reducing the fishing workforce through transferring affected fishermen to new jobs.

The figures relating to production of marine catch tend to suggest that the "Zero Growth Policy" has been quite effective (Figure 2). The dramatic expansion of the production of marine catches has been well controlled, although in recent years it has been slowly picking up again. However, the government's efforts in downsizing the fishing fleet and fishing workforce have not been very successful. As shown in Table 4. In terms of marine fishing fleet, although the number of ships has decreased since the early 2000s before increasing again in recent years, total tonnage and horsepower of China's fishing fleet has been increasing continuously. From 2000 to 2010, the total number of fishing vessels only increased by 2.8%, but total tonnage and horsepower increased by 21.5% and 22.8%, respectively. This indicates that China's fishing vessels are becoming bigger and stronger, which are capable of going further out to sea. With regards to China's fishing workforce, both the number of fishing households and workforce have increased steadily from the late 1990s. The number of fishing households and size of fishing workforce have increased by 15% and 8%, respectively, from 2000 to 2010.

²⁰Refer to China Daily, available at <http://www.china.org.cn/english/government/116452.htm> accessed 24 April 2012.

Figure 2 Marine Catches (Million tons)



Source: China Fishery Statistics Yearbook 2011

Table 4 Marine Fishing fleet and Fishing Workforce

Year	Marine Fishing Fleet			Fishing workforce	
	Number	Tonnages	Horsepower	Household	Workforce
1995	273978	4657597	9800739	3834729	11428655
1996	280352	4998771	10755063	4002518	12076192
1997	282504	5257964	11218769	4188127	12216876
1998	283218	5446956	11801492	4300342	12374815
1999	279994	5600419	12180709	4372380	12569925
2000	289682	5820106	12727083	4550563	12935689
2001	282824	5972413	12976508	4732546	12327490
2002	279003	6072797	13401529	4907519	13128693
2003	281367	6254487	13716056	4999087	13162812
2004	279937	6229814	13742425	4954358	13018332
2005	277907	6220771	13847138	4980679	12902777
2006	283607	6205163	14203414	4957103	12594654
2007	288740	6469511	14705955	5223895	13168614
2008	286983	6733939	15253862	5317450	13994223
2009	295847	6843549	15493687	5202229	13847300
2010	297734	7071197	15622494	5237296	13992142

Source: China Fishery Statistics Yearbook, Multiple years

There are several reasons why China's attempts to downsize fishing fleet and fishing workforce have achieved only limited success. First, the fiscal budget allocated to the fishing sector has been too small and poorly targeted, particularly given the size of

China's fishing sector.²¹ After the fishery agreements between China and neighboring countries including South Korea, Japan and Vietnam entered into force in the early 2000s, the central government set up an annual RMB 270 million fund to compensate those fishermen who scrap their ships in order to reduce the number of fishing boats.²² However, given the huge number of fishing boats affected, RMB 270 million is simply too little to motivate the fishermen to scrap their ships. What is worse, this fund, which is also supplemented by local governments, primarily targets compensating ship-owners instead of fishing workers. The poor fishing workers, who represent 50-60% of China's total fishing workforce and are the most severely affected group, are not entitled to the subsidies.

Second, conflicts of interest between central and local governments undermine the effectiveness of the downsizing efforts. While the central government is determined to control overfishing and conserve marine ecology, the local governments are more interested in further promoting the local marine catch sector as fishing plays an important role in local economic development and food security.²³

Third, it is very difficult for the fishermen to work in other sectors. The reasons are very simple. To begin with, most fishermen are very poorly educated and trained. For instance, close to 90% of the fishermen in Guangdong province received only primary or secondary education,²⁴ and in Zhoushan city, close to half of the fishermen received only primary or no education.²⁵ Next, traditional fishermen are accustomed to fishing life, and it is quite difficult for them to work in factories on land. Also, in spite of the

²¹Yi, Jinhui. "Policy Thoughts on China's Fiscal Supports to Fishing Industry". *Problems of Agricultural Economy*, 2007: 91-95.

²²Refer to Chinese Academy of Fishery Sciences at http://www.cafs.ac.cn/show.asp?ResName=newsb*order=299 accessed on 29 May 2012

²³Zha Daojiong, Localizing the South China Sea Problem: the case of China's Hainan, *The Pacific Review*, 2001, Vol.14 No.4, 575-598; and New Beijing Daily, Captain says going to Nansha will get government subsidy, 35,000 Yuan per trip, 05 May 2012

²⁴Ju Zhanjie and Zheng Fangbing. "On the Fishermen's Transfer to Civilian Jobs in Guangdong Province". *Reformation & Strategy* 2010.1, 97-99

²⁵ Yu Xishang. "Zhoushan Fishermen's income situation in the past 10 years and discussion about its future outlook". *Zhoushan Fishery*, 2004 issue 3

compensation they can receive from the governments, fishing boat owners are reluctant to scrap their ships and work onshore as the sunk cost is too high for them.²⁶

Fourth, although Chinese fishermen have experienced some economic difficulties in recent years, fishing is still a very attractive sector. For the poor farmers and peasant workers from China's inland provinces, the fishing sector offers them better lives. In 2010, per capita net income of the fishermen exceeded RMB 8,962, whereas per capita net income of farmers was less than 7,000. The difference is even bigger when comparison is made at the regional level. In 2010, per capita net incomes of six main marine fishing provinces, including Zhejiang, Fujian, Shandong, Hainan, Guangxi and Liaoning exceeded RMB 10,000, whereas per capita net income of the farmers in Gansu, Yunnan, Guizhou, Shaanxi and Qinghai was less than RMB 4,000.²⁷ Naturally, the fishing sector is still very attractive to peasant workers from inland China. It has been reported that in coastal cities such as Zhou Shan and Qingdao,²⁸ the majority of the fishing workforce are peasant workers from inland provinces. Moreover, in view of the increasing demand and economic incentives, China's fisheries industry still attracts a large amount of investment regardless of the fact that the catch of fish stocks has far exceeded their biological reproduction limits.²⁹

²⁶JuZhanjie and Zheng Fangbing. "On the Fishermen's Transfer to Civilian Jobs in Guangdong Province" *Reformation & Strategy* 2010.1, 97-99

²⁷China's Statistical Yearbook 2011

²⁸ Zhou Deyun, Zhu Qingyong and Shui Bainian. "The impact of outside fishing workers on Zhoushan's inshore fishing sector". *Nong Jia Zhi You*. No 8, 2010, pp75-78.

²⁹Xue, Guifang. "China's Distant Water Fisheries and its response to flag state responsibilities." *Marine Policy*, 2006: 651-658.

Table 5 China's Marine Catch Structure³⁰

Year	Inshore	Offshore	Total
1985	89.85%	10.15%	100%
1986	89.39%	10.61%	100%
1987	89.37%	10.63%	100%
1988	88.45%	11.55%	100%
1989	80.67%	19.33%	100%
1990	80.38%	19.62%	100%
1991	72.53%	27.47%	100%
1992	69.72%	30.28%	100%
1993	68.51%	31.49%	100%
1994	67.09%	32.91%	100%
1995	62.90%	37.10%	100%
1996	67.10%	32.90%	100%
1997	65.64%	34.36%	100%
1998	69.07%	30.93%	100%
1999	65.12%	34.88%	100%
2000	65.62%	34.38%	100%
2001	65.12%	34.88%	100%
2002	64.49%	35.51%	100%

Source: China Fishery Statistics Yearbook Multiple Years

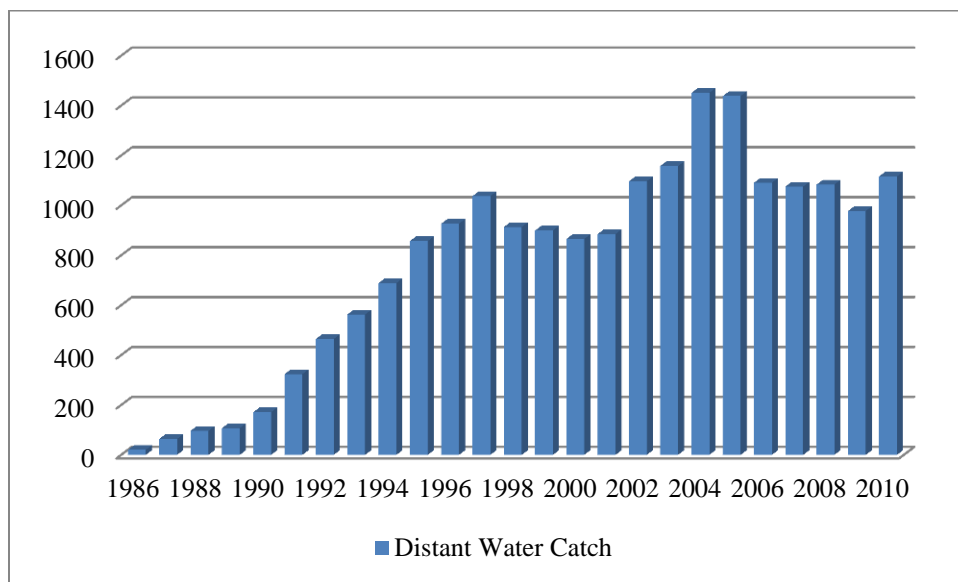
Overcapacity of China's fishing fleet and depleting fishery resources in China's inshore water (the government also imposed tighter fishing control in its inshore water) has resulted in a dramatic shift of China's marine catch structure—from inshore to offshore fishing. Offshore fishing in China, which excludes distant water fishing, is mostly taking place in the waters east to 127E longitude along East China Sea and around the Xisha (Paracel), Zhongsha, Dongsha and Nansha (Spratly) islands.³¹ In order to pursue sustainable fishery development, China introduced the Zero Growth Policy to cap overfishing. Although the total marine catch stabilized, the production cost of marine catch has increased significantly and the catch of high-valued species has decreased due to rapid depletion of fishery resources in China's inshore waters. As a result, more and more fishermen looked towards offshore waters, where fishery resources are relatively abundant and government regulations are comparatively lax. This has resulted in a

³⁰ Distant water fishing production is not included

³¹ Xubing, Fan and Rui, Yu. "The Fishery Industry in China", *GLOBEFISH*, Vol.76. Rome, FAO. 2004

significant shift of China's marine fishing from inshore to offshore. As Table 5 shows, inshore fishing comprised nearly 90% of China's total marine catch in 1985, but in 2002 this figure dropped to 64.5%. Unfortunately, the statistics for inshore and offshore fishing at the national level have become unavailable after 2002. Data at the local level suggests that the shift from inshore to offshore fishing continues. The inshore fishing production in Fujian province dropped to 50.5% in 2007;³² and offshore marine catch made up close to 60% of Guangzhou's total marine catch in 2006.³³

Figure 3 Production of China's Distant Water Catch (1000 tons)



Source: China Fishery Statistics Yearbook 2011

Promoting DWF has been another approach emphasized by the Chinese government to address the domestic demand and supply imbalance of aquatic products, and provide economic benefits for fishermen. China defines DWF - Distant Water Fishing - as citizens, legal entities, and other organizations of China engaging in marine fishing and its processing, supply and product transportation activities on the high seas and in the sea areas under the jurisdiction of other countries, but does not include fishing activities in the Yellow Sea, East China Sea, or South China Sea. The Ministry of Agriculture is responsible for the planning, organization, and administration of the DWF industry,

³² Refer to *Fujian Daily* at http://www.66163.com/Fujian_w/news/fjrb/gb/site1/rbdzb/2008-12/24/content_1509369.htm accessed on 23 April 2012.

³³ Guangzhou Bureau of Statistics. *Guangzhou Statistical Yearbook 2007*. Guangzhou: China Statistics Press, 2007.

though the ministry also works with the State Council and other related departments over policy and supervision of the industry. The Ministry of Agriculture's Bureau of Fisheries has a DWF Subdivision. China maintains that DWF is an important part of its official-going out strategy, which was elaborated in China's tenth five-year plan (2001-2005) and encourages Chinese companies to search for new markets and invest abroad.³⁴

Since China sent its first DWF fleet to West Africa in 1985, China's distant water fishing has made remarkable achievements in the past 25 years. As shown in Figure 3, China's annual production of distant water catch reached 1.1 million tons in 2010 and the total number of DWF vessels topped 1991 - the largest in the world.³⁵ Distant water fishing has a very important role in local economic development as it has strong multiplier effect on other sectors of the economy. It has been estimated that China's distant water fishing sector provides employment for over 50,000 people and generates annual revenue reaching RMB 10 billion.³⁶ Rapid development of DWF has helped to contribute to China's food security, relieve pressures on China's inshore and offshore marine environment, and create additional economic benefits to the fishermen and local economy. China now has its distant water fishing fleets operating in the North Pacific Ocean targeting cod and pollock; in the Atlantic, Argentina for example, targeting squid; in the South Pacific Ocean for tuna; and off West Africa, for ground fish and shrimp.

Implications for Regional and Global Maritime Security

As discussed in previous sections, with rising demand for aquatic production and depleting fishery resources, China's fishing industry has been undergoing dramatic adjustments. On the one hand, fish farming is playing an ever more dominant role in the production of aquatic products. On the other hand, China's marine catch sector has experienced a dramatic shift from inshore to offshore fishing, and distant water fishing has become increasingly important to China's fishing industry. Given maritime boundary disputes in the region and increasing competition for marine resources worldwide,

³⁴Mallory, Tabitha Grace. *China as a Distant Water Fishing Nation*. Testimony, Washington, DC: U.S.-China Economic and Security Review Commission, 2012.

³⁵ Refer to China's 12th Five Year Plan on Fishery Development, available at http://www.moa.gov.cn/zwl/m/gjh/201110/t20111017_2357716.htm accessed on 23 April 2012.

³⁶Ji, Xiaonan, Shenli Liu, and Task Force. "To Support Distant Water Fishing as a Strategic Industry". *China National Conditions and Strength*, no. 9 (2010).

dramatic adjustment of China's marine catch sector has serious implications for regional and global maritime security.

From inshore to offshore Fishing

When fishery resources in China's inshore waters were quickly depleted, Chinese fishermen naturally looked towards their offshore traditional fishing grounds such as in Yellow Sea, East Sea and South China Sea, where they have been fishing for generations. However, with the 1982 UN Convention on the Law of the Sea (UNCLOS) entering into force globally in the mid-1990s and regional competition for marine resources intensifying, large areas of offshore waters, which had been Chinese fishermen's traditional fishing grounds, became either Exclusive Economic Zones (EEZs) of neighboring countries or disputed water areas between China and regional countries. Furthermore, China's bilateral fisheries agreements with South Korea, Japan, and Vietnam that came into effect in early 2000s further reduced traditional fishing grounds for Chinese fishermen. The combining effects of the above factors is that more and more Chinese fishermen are fishing illegally in waters which now belong to neighboring countries' EEZs and disputed areas. This causes fishing disputes between China and regional countries, which sometimes evolve into serious diplomatic and security tensions between China and regional countries.

There are several reasons why Chinese fishermen are willing to take risks in neighboring countries EEZs and disputed waters. Firstly, Chinese fishermen are driven by economic incentives. Chinese fishermen like to go fishing in neighboring countries' EEZ and the disputed areas in spite of the high risk of being fined, detained or even fired upon by foreign coast guards or navies for the simple reason that fishery resources are abundant in those waters, due to natural reasons and effective management of marine sources by neighboring countries especially South Korea and Japan. For instance, in the Yellow Sea, off South Korea's west coast the waters are the rich in marine resources, and have been traditional fishing grounds for fishermen from Shandong province. Previously, they used to coexist peaceful with South Korea fishermen, but after the China-South Korea fishery agreement came into force in 2001, these waters belong to South Korea. However, with fishery resources quickly depleting on the Chinese side and the government's strong

efforts in implementing fishing bans in China's inshore waters, fishermen from Shandong and Liaoning have been tempted to go across the boundary to fish illegally in the South Korean waters. The same thing happens in the East China Sea and South China Sea. As China has territorial disputes with Japan over Diaoyu Island and with some ASEAN countries over the Spratly islands, Chinese fishermen's growing fishing operations in those disputed waters are often a trigger for regional maritime conflicts.

Secondly, as most of the Chinese fishermen are poorly educated,³⁷ many cannot understand (some do not even know) UNCLOS or the bilateral fishery agreements between China and neighboring countries. As a result, these fishermen may enter neighboring countries EEZ or disputed waters unknowingly. Thirdly, the lack of effective control and management by Chinese authorities is another factor contributing to growing fishing disputes.³⁸ Although China has made serious attempts to prevent Chinese fishermen entering neighboring countries' EEZs or disputed areas as part of its good neighbor policy, actual implementation of the policies has been weak due to poor management structures as well as the inadequacy of law enforcement forces. The complicated bureaucratic structure behind China's fishery management has been often described as 'nine dragons stirring up the sea'.³⁹ The lack of cooperation and coordination severely undermines the effectiveness of China's fishery management efforts.⁴⁰ Also, conflicts of interest between central and local government are, to a certain extent, accountable for Chinese fishermen's growing fishing activities in disputed areas and neighboring countries' EEZs. Unlike the central government which is committed to avoid diplomatic and security conflicts with neighboring countries, local governments are motivated mainly by economic interests. For instance, Hainan fishermen's growing fishing activities in the waters near disputed Spratly islands have been, in part, attributed

³⁷ For instance, close to 90% of the fishermen in Guangdong province received only primary or secondary education.³⁷ Ju Zhanjie and Zheng Fangbing. "On the Fishermen's Transfer to Civilian Jobs in Guangdong Province". *Reformation & Strategy*. 2010.1, 97-99

³⁸ Chen Yide, Ma Weijun and Yang Changjian. "Thoughts and suggestions on how to safeguard fishing rights and ensure stability in the new situation". *China Aquatic*, 2012. 3

³⁹ The 'nine dragons' include Customs Law Enforcement, China Fisheries Law Enforcement Command, the Maritime Safety Administration, China Marine Surveillance and other bodies.

⁴⁰ ICG. *Stirring Up the South China Sea*. Asia Report, Brussels: ICG, 2012; and China Economic News, available at http://www.gdcct.gov.cn/politics/headline/201203/t20120316_670528.html#text accessed on 25 April 2012

to the support from local governments of Hainan Province, which heavily relies on marine fishing for economic growth.⁴¹

However, what should not be overlooked is that neighboring countries' law enforcement activities against Chinese fishermen as well as the handling of fishing disputes are at least partially responsible for the escalation of fishing disputes. Taking fishing dispute between South Korea and China in the Yellow Sea as an example, under the China-South Korea Fishery Agreement, Chinese fishermen could operate in South Korean waters provided they got a certificate from South Korea. However, the problem is that it is very difficult and costly for Chinese fishermen to apply for such a certificate. And sometimes, Chinese fishing boats which have the certificate are also disrupted and fined by the South Korean Coast Guard. This unreasonable harassment caused dissatisfaction among Chinese fishermen towards the South Korean Coast Guard. Dissatisfaction leads to conflicts and growing conflicts result in South Korea Coast Guard's tougher law enforcement against Chinese fishermen. This is fiercely resisted by the fishermen, and eventually, violence erupts and injury and casualties result.⁴² In addition, politicizing of fishing disputes by some countries also tends to stir up the waters. For example, when Chinese fishermen were caught by the Philippines for fishing in disputed waters, they would receive fines, lose their fishing boats, or be sentenced to prison in the Philippines. Sometimes, they would be made to sign a paper in a foreign language admitting the disputed areas belong to the Philippines.⁴³

Furthermore, as fishery resources in offshore waters become increasingly important for the country's fishing industry, China has stepped up efforts to reinforce its claims over disputed areas, and devoted more effort to preserving the marine environment. To protect fishery resources in its offshore waters, China, like other countries in the region, has taken a tougher stand against illegal fishing of foreign fishing boats in its EEZs and disputed waters. For example, Vietnamese fishermen have been frequently chased and

⁴¹Zha Daojiong, "Localizing the South China Sea Problem: the case of China's Hainan" *The Pacific Review*, 2001.4, 575-598; and *New Beijing Daily*. Captain says going to Spratly will get government subsidy, 35,000 Yuan per trip, 05 May 2012

⁴²Xue Guifang, "Coast Guard Incident, whose fault?". *World Vision*, 2012 1; and refer to China Radio International at http://gb.cri.cn/27824/2011/12/12/5187s3473661_3.htm, accessed 12 April 2012

⁴³Refer to *Nanfan Daily* at http://int.nfdaily.cn/content/2012-04/18/content_43463621.htm

detained by China for illegal fishing in China's waters. According to a Vietnamese newspaper, from 2005 to October 2010, 33 Vietnamese fishing boats were seized and 433 fishermen detained by China.⁴⁴ Lately, in March 2012, China detained 21 Vietnamese fishermen and accused them of fishing illegally in waters around the Parcel Islands.⁴⁵ China's seizing and detaining of Vietnamese fishing boats and fishermen have led to diplomatic tensions, sometimes even security tensions, between China and Vietnam. The other important policy introduced by the Chinese government is fishing bans, not only in Chinese inshore waters but also in offshore waters, where maritime disputes exist between China and regional countries. China's fishing bans are applicable to both domestic and foreign ships, and China considers fishing activity of foreign ships in the banned areas as a 'blatant encroachment on China's fishery resources.'⁴⁶ For example, to curb overfishing and conserve marine ecology, in 1999 China started imposing fishing bans in the South China Sea. However, part of the areas covered by China's South China Sea fishing bans is being claimed by some ASEAN countries such as Vietnam and Philippines. Vietnam, in particular, is very unhappy with China's unilateral fishing bans.

However, while growing fishing disputes have become a catalyst for maritime conflicts in the region, the challenges posed by fishing disputes could be turned into opportunities for regional cooperation. Aquatic products are a very important source of protein for Asian people and the fishing industry plays a key role in national economic development. Although bilateral fishing disputes between regional countries happen frequently, this region's fishing industry faces some common enemies such as illegal fishing, overfishing, maritime piracy, and degradation of marine environment. Considering the nature of these threats, efforts from one single country cannot succeed and bilateral and multilateral cooperation is needed to manage fishing disputes and ensure sustainability of fishing in the region. Fishery cooperation, which is also an obligation for states bordering an enclosed or semi-enclosed sea according to UNCLOS PART IX, Article 123, could be the very instrument needed for regional countries to build mutual trust and understanding.

⁴⁴ M. Taylor Fravel, "Maritime Security in the South China Sea and the Competition over Maritime Rights," in Patrick Cronin and William Rogers, eds., *Cooperation from Strength: The United States, China and the South China Sea* (Center for New American Security: Washington, DC, 2012)

⁴⁵ Refer to BBC at <http://www.bbc.co.uk/news/world-asia-17796451> accessed on 24 April 2012

⁴⁶ Refer to *China Daily* available at http://europe.chinadaily.com.cn/business/2012-05/17/content_15318208.htm accessed 24 May 2012

Fishery cooperation is crucial for safeguarding maritime security in the region, particularly in managing the East China Sea and South China Sea disputes. As argued by many maritime security experts, while territorial disputes have proven to be extremely difficult, if not impossible, to be resolved, joint fishery development has been identified as a viable solution to boundary disputes. The fishing sector can be the starting point for regional maritime cooperation, which could then have a positive “spillover effect” into other areas of cooperation.⁴⁷

Expansion of Distant Water Fishing (DWF)

The rapid expansion of China’s distant water fishing operations certainly has notable implications for global maritime security. According to the United Nations’ Food and Agriculture Organization (FAO)’s estimate, over 70% of the world’s fish species are either fully exploited or depleted and the dramatic increase of destructive fishing techniques worldwide destroys marine mammals and entire ecosystems.⁴⁸ Against this backdrop, rapid expansion of China’s DWF fleet further contributes to the depletion of global fishery resources and illegal fishing. As China has refused to ratify the 1996 UN Fish Stocks Agreement,⁴⁹ the country DWF fleet is poorly regulated and not bound by international agreements.⁵⁰ Although China claims that the development of distant water fishing has been based on cooperation with local governments and enterprises, and China’s DWF contributes positively to local economic development,⁵¹ there have been reports accusing China’s distant water fishing of contributing to overfishing and illegal

⁴⁷Kuan-Hsiung Wang. “Bridge over troubled waters: fisheries cooperation as a resolution to the South China Sea conflicts”. *The Pacific Review*, 2001; Nguyen-Dang, Thang. “Fisheries Cooperation in the South China Sea and the (Ir)Relevance of the Sovereignty Question”. *Asian Journal of International Law*, 2011.1 59-88; and Zou Keyuan, “Sino-Japanese joint fishery management in the East China Sea”. *Marine Policy*.2003.2, 125–142

⁴⁸Refer to United Nations available at <http://www.un.org/events/tenstories/06/story.asp?storyID=800> accessed 24 April 2012.

⁴⁹China signed but did not ratify the UN Fish Stocks Agreement as China is concerned with some provisions of the agreement regarding the enforcement of high seas fishing vessels. Nonetheless, China has adjusted and enacted domestic laws and regulations to comply with international requirements, yet the enforcement of the regulations is still lagging behind.

⁵⁰Cheng, Jiahua, Wengui Cai, William Cheung, Tony J. Pitcher, Yajie Liu, and Ganapthiraju Pramod. *An Estimation of Compliance of Fisheries of China with Article 7 of the UN Code of Conduct for Responsible Fishing*. Vancouver: University of British Columbia, 2007.

⁵¹China claims that in West Africa alone, its DSF operation has contributed tax and fees totaled over RMB 800 million and its DSF enterprises have been actively involved in local disaster relief and other social responsible activities.

fishing in coastal waters of Africa as well as in Northwest Pacific.⁵² However, restricted by inadequate equipment and limited technique, unlike South Korean and Japanese fishing fleets, most of Chinese DWF fleets are only capable of operating in coastal waters.⁵³ The implications are twofold. On the one hand, the rapid expansion of China DWF would exacerbate the gravity of illegal fishing and overfishing, which has already become a major threat to sustainability of the global fishing industry and a trigger for even big maritime conflicts. On the other hand, as Chinese fishing boats are poorly equipped, they become easy targets for pirates to attack and they are more likely to encounter safety problems in the sea. This could become a search and rescue burden for other countries. For instance, in March 2012, the US air force completed the rescue of two injured fishermen, who were badly burned in a diesel fire, from a Chinese fishing vessel 1,100 km off the coast of Acapulco, Mexico.⁵⁴

Next, rapid development of China's DWF is also one of the drivers for the expansion of the PLA navy. With the rapid development of Chinese distant water fishing, a growing number of Chinese fishermen are undertaking fishing operations in distant waters. For instance, the China National Fisheries Corporation alone has over 1000 employees undertaking fishing operations in African waters, and quite a proportion of China's exported labor works in the fishing sector.⁵⁵ This has made the safety of fishermen and their propriety a big concern for the Chinese government. In recent years, there have been several high profile cases where Chinese fishermen were killed or kidnapped by pirates or local security forces. For instance, in 2001, one Chinese fishing boat was attacked in Somalian waters;⁵⁶ in 2003, 15 Chinese fishermen were killed by Sri Lankan pirates; in 2004, a Chinese fishing boat was attacked by 4 pirates and 2 fishermen were killed in

⁵²Mallory, Tabitha Grace. *China as a Distant Water Fishing Nation*. Testimony, Washington, DC : U.S.-China Economic and Security Review Commission, 2012.

⁵³Xue, Guifang. "China's Distant Water Fisheries and its response to flag state responsibilities." *Marine Policy*, 2006: 651-658.

⁵⁴Refer to *Official Website of the U.S. air force* available at: <http://www.af.mil/news/story.asp?id=123293604>; accessed on 18 July 2012.

⁵⁵ Refer to *International Herald Leader* available at http://news.xinhuanet.com/herald/2010-03/18/content_13192613.htm accessed on 25 May 2012

⁵⁶Refer to *China's Youth Daily* at <http://www.hangzhou.com.cn/20010825/ca11452.htm> accessed on 24 April 2012

West Africa;⁵⁷ in November 2008, a Chinese fishing vessel was hijacked by pirates armed with grenade launchers and automatic weapons off the coast of Kenya⁵⁸ and recently in 2012, one Chinese fishermen was killed and 25 were detained by Republic of Palau police. These incidents have triggered wide domestic calls for a blue navy to offer protection to Chinese fishermen.⁵⁹ In December 2008, as Somalian piracy became a direct threat to China's maritime industry, energy supply as well as distant water fishing, China made the historic decision to send naval ships to the Gulf of Aden.⁶⁰

Furthermore, expansion of China's DWF enhances China's sea power. On the one hand, a strong distant water fishing fleet is considered an important part of China's sea power.⁶¹ A report published by a Task Force, composed of twelve people affiliated with the State Council, Chinese DWF companies, industry associations, and universities, argued that DWF helps to safeguard China's ocean interests and seek international space for development. They believe the DWF fleet can play an important role in evacuating overseas Chinese in times of emergency. Besides, it can also provide crucial assistance to the PLA Navy through developing China's knowledge base with respect to prevailing local conditions, and provide logistics and supply to the navy when operating in the blue water.⁶² It has been reported that Chinese DWF vessels made significant contributions to China's anti-piracy mission in the Gulf of Aden by providing marine geographic information and provisions. In addition, a strong DWF fleet could be incorporated in

⁵⁷ Shi Chunlin, 2010, the safety problem China's fishing boat and fishermen and its solution; and refer to *China News* at <http://www.chinanews.com/hr/hr-hrgs/news/2010/03-18/2177285.shtml> accessed on 28 April 2012

⁵⁸ Refer to *Xinhuanet* available at: http://news.xinhuanet.com/english/2008-11/14/content_10359203.htm

⁵⁹ Gan Junxian. "China should set up marine security force to protect Chinese fishermen". *Global Times* 2012; and refer to *International Herald Leader* available at http://news.xinhuanet.com/herald/2010-03/18/content_13192613.html accessed on 25 May 2012

⁶⁰ Refer to *PLA Daily* at http://military.china.com/zh_cn/news/568/20081226/15254589.html accessed on 24 April 2012; *China Radio International* at <http://gb.cri.cn/27824/2009/09/18/4445s2625904.htm> accessed on 24 April 2012; M. Taylor Fravel, and Alexander Liebman. "Beyond the Moat: The PLAN's Evolving Interests and Potential Influence." In *The Chinese Navy: Expanding Capabilities, Evolving Roles*, by Phillip C. Saunders, Christopher D. Yung, Michael Swaine and Andrew Nien-Dzu Yang, 62. Washington, D.C.: National Defense University Press, 2011.

⁶¹ Phillip C. Saunders, Christopher D. Yung, Michael Swaine, and Andrew Nien-Dzu Yang, 2011, *The Chinese Navy, Expanding Capabilities, Evolving Roles*, NDUP, Washington, D.C. 84

⁶² Ji, Xiaonan, Shenli Liu, and Task Force. "To Support Distant Water Fishing as a Strategic Industry." *China National Conditions and Strength*, no. 9 (2010).

China's maritime militia, which can then provide necessary support for PLA Navy in military campaigns.⁶³

Despite the above concerns, expansion of China's DWF could also have a positive impact on global maritime security. Expansion of China's DWF operation enhances China's maritime awareness, and it provides opportunities for cooperation between China and other countries on fishery and other maritime issues. Although China did not ratify the UN Fish Stocks Agreement, it has taken some concrete steps to regulate its DWF fleet, and is willing to cooperate with other countries to promote sustainability of global fishing. For instance, the China Fisheries Law Enforcement Command has been working with the US Coast Guard for more than a decade in the North Pacific to enforce a UN prohibition on drift net fishing.⁶⁴ China could also work together with the international community to address environmental, weather emergency, rescue, and enforcement aspects of fisheries management. Furthermore, an increase of the PLA navy's presence could also enable China to be an important contributor to global maritime security through fighting maritime piracy, deterring maritime terrorism and protecting marine ecology. The deployment of PLA navy in the Gulf of Aden is a very good example of China being a responsible sea power.

Conclusion

Having the world's largest fishing fleet while facing depleting fishery resources, China's marine catch sector has been experiencing two major structural adjustments: a shift from inshore to offshore fishing and expanding distant water fishing. The shift from inshore to offshore fishing is leading to Chinese fishermen's growing illegal fishing operations in neighboring countries' EEZs and disputed waters, particularly in the East China Sea and South China Sea, which have become triggers for maritime tensions and clashes in the region. Meanwhile, the rapid expansion of China's DWF fleets has notable implications for global maritime security also. China's growing distant water fishing is also one of the

⁶³Xia Zhaoguo, "A few thoughts on strengthening marine defense militia development", *National Defense*, no.9 (2004); and refer to *Xinhua News* at http://news.xinhuanet.com/mil/2007-09/10/content_6696235.htm, accessed on 26 April 2012

⁶⁴Lyle Goldstein, "China's Fishing Fleet Sets Challenge to US", in *Asia Times Online*, 07 August 2009, available at <http://www.atimes.com/atimes/China/KH07Ad01.html> accessed on 24 May 2012.

factors leading to China's efforts to build a blue water navy to contribute to China's rising sea power and safeguard China's maritime interests. The DWF fleet can also provide important support for the PLA Navy. However, it could further contribute to overfishing and illegal fishing that threaten the sustainability of global fishing sector.

With the Chinese becoming more affluent, demand for aquatic products will continue soaring. It is estimated that by 2020, China's total demand will increase by an additional 14 million tons, which is about 30% of current total annual production of China's fishing industry. This growing demand for aquatic products will continue driving China's fishing industry. Although much of the additional supply of aquatic products will come from fish farming production as China has been prioritizing aquaculture as the future direction for its fishing industry, the marine catch sector will still play an important role in supplying highly quality fishery products, as well as promoting the income growth of millions of its fishermen. Facing limited fishery resources in China's inshore water and excess marine catch capacity, the shift from inshore to offshore fishing and expansion of China's deep water fishing will continue in the years to come. These two structural adjustments have been well outlined in the 12th Five Year Plan at both national and local levels. This means that at the regional level, fishing disputes between China and regional countries may intensify, and at the global level China's distant water fishing will further pressure the world's fishery resources.

As Dr. Junjie Zhang at the University of California, San Diego, argued if the root causes of the fishing conflicts between China and other countries are not resolved, tensions between China and its neighbors will heighten and the list of countries engaged in fishing conflicts will inevitably grow.⁶⁵ And this root cause is China's worsening supply and demand imbalances, and overcapacity of the country's marine catch sector. Thus, in order to manage fisheries disputes and prevent fishing disputes from escalating into regional diplomatic and security conflicts, both national and supranational efforts are needed. At the national level, China needs to step up efforts to address the demand and supply imbalances; and at the regional and global levels, cooperation and coordination among countries is essential to prevent fishing disputes from escalating into larger conflicts. If

⁶⁵ Zhang, Junjie. *Averting China's Fishing Wars*. Policy Paper, San Diego: Asia Society, 2012.

the structural shifts of China's fishing industry could be well managed, the fishing sector could become the ideal field for cooperation to achieve maritime safety and security at both regional and global levels. In particular, fishery cooperation in the South China Sea could become the very channel needed to enhance mutual trust and understanding, and with growing sea power, China could effectively act as a maritime security provider for the region and the world.

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