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The new institutional arrangements for fisheries management in Beibu Gulf☆

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Abstract

China and Vietnam have recently signed two bilateral agreements to deal with maritime issues in Beibu Gulf. One is the maritime boundary delimitation agreement, and the other the fisheries agreement. The two parties have also formulated a supplementary protocol to the latter agreement. All of them have entered into force on 30 June 2004. This article introduces the new arrangements for fisheries management initiated by the two countries, focusing especially on the Joint Fishery Committee established by the two parties, the contracting waters covered by the fisheries agreement, and the conservation and management measures for the Gulf's fisheries. The challenges likely confronted by China after this institutional change takes place are analyzed. A brief comparison is drawn among the three effectual fisheries agreements signed by China, respectively, with Japan, South Korea and Vietnam. Finally, as for the future of fisheries management in the Gulf some recommendations are made.

Keywords: Fisheries management; Institutional arrangements; Beibu Gulf (Tonkin Gulf)

1. Introduction

In response to many a claim of ownership for the seabed and overlying waters of their continental shelves from coastal states worldwide, the United Nations convened a meeting to address international aspects of the "Law of the Sea" in Geneva in 1958. The Geneva conference led to the ultimate formation of the United Nations Convention on the Law of the Sea (UNCLOS) in 1982. Many nations have acknowledged and accepted its 300 plus Articles which define and describe legal maritime activities and jurisdictional issues for maritime claims [1]. It was on 16 November 1994 that UNCLOS began to enter into force. One hundred forty-five coastal states,[1] including China and Vietnam, have ratified UNCLOS and declared their territorial seas, economic exclusive zones (EEZs), and continental shelves.

Fishery resources, as a kind of common-pool resources (CPRs), have their own law of ecological distribution depending on their biological nature and environmental conditions. Thus, fish care nothing about the political boundaries demarked by human beings. The boundaries of the EEZs, however, are politically rather than ecologically determined, which often fail to encompass the entire ecosystem where the living resources in question distribute [2]. Munro [3] provides a definition of transboundary stocks, which, through slightly modifying the definition presented by Caddy [4], can extend to cover straddling stocks. Munro's definition is as follows:

> A group of commercially exploitable organisms, distributed over, or migrating across, the maritime

☆This article is not intended to reflect Chinese government official views. The citations to the Sino-Vietnamese fisheries agreement and UNCLOS are not listed in the References because the cited articles have been shown in the text.

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[1]Interested readers may refer to the website http://www.un.org for detailed information.

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boundary of a national jurisdiction and the adjacent high seas, whose exploitation can only be managed effectively by cooperation between the States concerned.

According to the estimation of Caddy, there are 1000–1500 transboundary fish stocks in the oceans worldwide [3]. How should these fish be conserved, managed, and exploited in a sustainable and responsible manner? What are the rights or duties to them?

To address these concerns, inter alia, on 4 August 1995, the UN Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks adopted the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (hereinafter referred to as the UN Fish Stocks Agreement). Notwithstanding having expressed its position by an official declaration, China has not ratified this agreement while Vietnam has no response to the agreement.[2] Under the auspices of FAO, the following two important instruments were adopted in 1993 and 1995, respectively. One is the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Compliance Agreement)[3] which entered into force on 24 April 2003, and the other the Code of Conduct for Responsible Fisheries (Code of Conduct) which is voluntary in nature. States and all those involved in fisheries are encouraged to apply the Code and give effect to it. The Compliance Agreement is an integral component of the Code.

UNCLOS, UN Fish Stocks Agreement, and other international legal instruments set up a fundamental framework for fishery cooperation among countries. However, the cooperative arrangements and regional fisheries management regimes or organizations are very diverse in practice. Based on whether decision-making is bilateral or multilateral, Stokke [5] identified two categories of regional fisheries management regimes, i.e. bilateralist or regionalist regimes. Sydnes [6] argued that there are currently three main categories of regional fishery organizations in existence, that is, (1) scientific research organizations, (2) regional coordination and development organizations, and (3) regional fisheries management organizations. Houtte [7] divided the pattern of fisheries cooperation into four main categories from the view point of form and institutions (More about this typology, see [7]). These arrangements exist to facilitate cooperation related to a variety of issues related to shared stocks, such as information gathering and exchange, scientific research, maritime boundaries, mutual access, resource management and conservation and control and surveillance [7].

China and Vietnam have jointly established a new regime to conserve, manage, and exploit the fishery resources in Beibu Gulf (also known as the Gulf of Tonkin worldwide, and as *Bac Bo Gulf* in Vietnam) via negotiations based on the fundamental principles and regimes of relevant international law, especially UNCLOS. They signed two agreements in 2000 and one supplementary protocol in 2004, namely (1) the Agreement Between the People's Republic of China and the Socialist Republic of Vietnam on the Delimitation of Territorial Sea, the Exclusive Economic Zone and Continental Shelf in Beibu Gulf (hereinafter referred to as the maritime boundary delimitation agreement); (2) the Agreement between the Government of the People's Republic of China and the Government of the Socialist Republic of Vietnam on Fishery Cooperation in Beibu Gulf (hereinafter referred to as the fisheries agreement); and (3) Protocol on China–Vietnam agreement on fishery cooperation in Beibu Gulf (hereinafter referred to as the protocol).

In the following sections, we will elaborate on the new institutional arrangements for fisheries management in Beibu Gulf. Firstly, the fundamental information on the Gulf is presented, including the basic natural conditions and fisheries basis. This is followed in short order by an introduction to the background of fisheries cooperation between the two countries. Secondly, the new institutional arrangements are anatomized mainly in the light of the matters of the fisheries agreement and its supplementary protocol. In what follows, a comparison is drawn among the effectual three fisheries agreements signed by China, respectively, with Japan, South Korea and Vietnam. Finally, the article concludes with some recommendations as for the future fisheries cooperation in the Gulf.

2. The characteristics of the Gulf and its fishery resources

Capture fisheries are based on natural resources, the production of which is not under the control of human beings. Total production in the sea depends on natural conditions with given limits [8]. The natural resource endowment in the Gulf is briefly presented below because of its importance to capture fisheries as a resource-based industry.

2.1. The characteristics of the Gulf

The Beibu Gulf is a semi-enclosed sea surrounded by land territories of China and Vietnam and China's Hainan Island (see Fig. 1). Its total area is more than 128, 000 km^2. The width of the Gulf is relatively narrow with the widest part of 180 nm (nautical mile). The Gulf

[2] Ibid.

[3] It has not been accepted by both China and Vietnam for the moment.

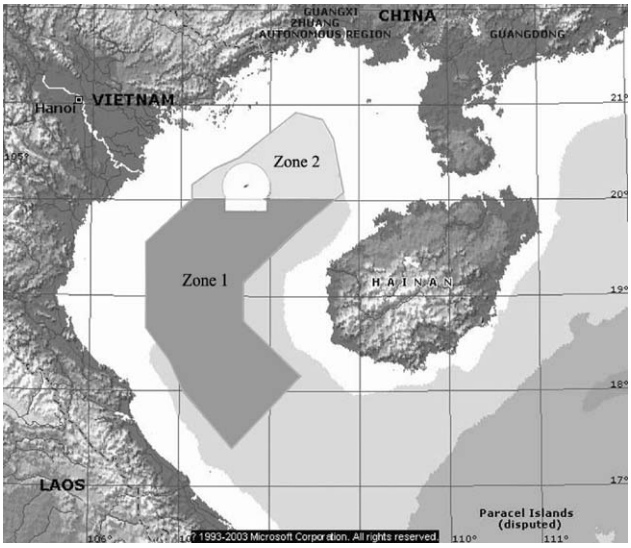

Fig. 1. The sketch map of Beibu Gulf (the Gulf of Tonkin). *Source*: [12]. *Notes*: The *Zone 1* stands for *the Common Fishery Zone* while the *Zone 2* stands for *the Waters in Transitional Arrangements* in the map.

has a maximum depth of 60 m and an average depth of 38 m, except at the mouth where depths reach about 100 m [9]. Its bottom is flat while sloping from the northwest to the southeast. Several rivers flow into the Gulf, including the Red River, Fangcheng River, Nanliujiang River, Qinjiang River, Dafengjiang River, Beilunhe River and Changhuajiang River, thus having an extensive estuarine ecosystem [10]. It is interesting that the rivers take many kinds of nutrient salts from the land to the Gulf. Abundant nutrient salts, especially nitrates and phosphates, are necessary for the growth of phytoplankton, which is the primary productivity of the marine ecosystem. In addition, the climate of this Gulf is favorable to species' growth and reproduction. Its climate is subtropical and monsoonal: the average temperature of every year is about 24 °C with the top of 37.1 °C and the down of 2 °C; the annual average rainfall is about 1670 mm [11]. No wonder the basic conditions are very advantageous to fish growth and fishing operation.

2.2. Fishery resources in the Gulf

The biodiversity in this Gulf is considerably abundant. Most of Chinese mangrove resources, more than 50%, are concentrated around the Gulf [13]. Coral reefs there are also very beautiful and famous in China even around the world. The species composition in the Gulf is similar to the northern part of the South China Sea, with 30 species of large kelps, more than 200 shellfishes, over 20 cephalopods, over 100 crustaceans and 238 fishes. However, the number of fish species has decreased from 487 recorded during the Sino-Vietnam Joint Survey carried out at the beginning of 1960s. At present, the major exploited species include 2 large kelps, 10 shellfishes, 7 cephalopods, 9 crustaceans and 37 fishes [9]. Most major economic species spawn, breed, and nurse their young in the North and South in winter and spring, then in autumn migrate to the mid-western part of the Gulf in order to fatten up. It is there that the center fishing ground comes to shape. That is to say, the fisheries are migratory species and shared by both countries (i.e. transboundary species), but the distribution of the mature fisheries is located in the waters adjacent to the Vietnamese side [14]. Historically, the fishing grounds in the Gulf are traditional fishing areas for both the Chinese and the Vietnamese. Indeed, the Beibu Fishing Ground is one of the four largest fishing grounds in China.

2.3. Overexploitation and issues related to the maritime boundaries delimitation

Recently, however, scientific data has shown that the fishery resources in the Gulf have been overfished. Sun et al. [15] have ever analyzed variations of major commercial fish stocks based on the data of trawl surveys conducted in the Gulf in 1961–1962, 1992–1993, 1998–1999, 2000–2001, and 2001–2002. The results show that the stocks of *Lutjanus sanguineus, Therapon theraps*, *Gerres filamentosus*, *Carcharhinus menisorrah* and *Gymnocranius griseus*, which were once the dominant species in the bottom trawl fishery in 1960s, have been depleted; and stocks of *Parargyrops edita*, *Priacanthus tayenus*, *Priacanthus macracanthus*, *Argyrosomus argentatus*, *Decapterus maruadsi* and *Trachurus japonicus* were quite unstable; stocks of *Trichiurus haumela*, *Saurida undosquamis* and *Psenopsis anomala* were relatively stable despite showing a declining trend. On the other hand, the total stock density obtained from trawl surveys has also changed greatly (shown in Fig. 2). The stock density in 1992–1993 was 43.4% of that in 1962. The stock density in 1998 was the lowest in history and was just 16.7% of that in 1962. After adopting closed season in South China Sea in 1999, the stock density in 2000–2001 was 46.6% of that in 1962 (for more details see [15]). The maximum sustainable yield (MSY) of the Gulf is estimated to be 600, 000 t per year, rather recently the

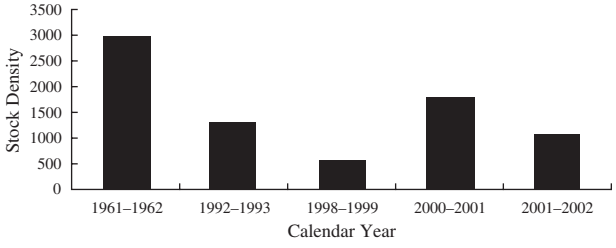

Fig. 2. Interannual variations of total stock density (kg/km^2) derived from trawl surveys in the Gulf. *Source*: [15].

actual catches of the two parties from the Gulf have been over 1, 000, 000 t per year [14].

The issues of conserving, managing, exploiting transboundary stocks in the Gulf will be presented and confronted by the two parties once the maritime boundary is delimited. How should various kinds of rights and duties be shared and undertaken by them? What kinds of measures should be taken to conserve, manage, and exploited the fishery resources in a sustainable and responsible manner? On what grounds should these measures be developed in order to achieve optimum utilization of fisheries? These issues, amongst others, should be taken into account.

3. Background on the Sino-Vietnamese fishery cooperation

Before the 1960s, the two countries governed the Gulf according to their own claimed width of territorial seas. Other part of the Gulf was considered as the high sea. According to the principle of "freedom in the high sea", at that time, resources in the Gulf, especially fishery resources, were shared with each other. Fishermen from both China and Vietnam carried out fishing activities in the waters beyond their territorial seas. However, there were three fisheries agreements between them signed in 1957, 1961 and 1968, respectively. In fact, the 1961 agreement was the supplementary protocol to the 1957 one. Fisheries management was very limited with measures taken just offshore (3–6–12 nm). According to these agreements, fishing boats of neither country was permitted to enter the waters, the outer-limits of which were 3 nm (the 1957 Agreement on Sailboat Fishing), 6 nm (the 1961 Protocol to the 1957 Agreement on Sailboat Fishing) and 12 nm (the 1963 Agreement on Fishing Cooperation in Beibu Gulf) off the coastline and islands of each country. That means the two sides were free to carry out fishing activities beyond these limits. Back then, these were also the provisions of international law of the sea. In the 1970s, these agreements expired as the United Nations initiated discussions on the development of a new Convention on the Law of the Sea, with the formation of the EEZ concept. In international practice, many countries have also signed agreements on fishing cooperation in the waters between them (see [14,16–18]).

Then lots of new issues between the two littoral countries began to emerge, i.e. how to delimit this Gulf between them, that is to say, how to demarcate the territorial sea, the EEZ and the Continental Shelf. According to UNCLOS, the width of the Territorial Sea, Exclusive Economic Zone and Continental Shelf is 12, 200 nm and no more than 350 nm to every coastal state. China and Vietnam are both member countries of UN and their legislatures ratified UNCLOS in 1996 and 1994, respectively. Moreover, they have both enacted related maritime legislation and established pertinent regimes (see Table 1).

In accordance with Article 56 of UNCLOS, a coastal state is entitled to the sovereign rights for exploring, exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil within their 200-nautical-mile EEZs. In terms of fisheries, fishing fleets of coastal states can undoubtedly enter into their own territorial seas, EEZs, and continental shelves. They, however, have no right to enter into the other country's corresponding parts to fish unless the approval is granted by the country.

Table 1
The status of acceptance of ocean-related international law

	China	Vietnam
UNCLOS	Ratification: Jun. 1996 (Signature: Dec. 1982)	Ratification: Jul. 1994 (Signature: Dec. 1982)
Territorial Sea	12 nautical miles (Feb. 1992)	12 nautical miles (May 1977)
Contiguous Zone	24 nautical miles (Feb. 1992)	24 nautical miles (May 1977)
EEZ	Established: Jun. 1998	Established: May 1977
Establishment of straight Baseline	May 1996	Nov. 1982
Seabed Agreement[a]	Ratification: Jun. 1996 (Signature: Jul. 1994)	Signature: not yet
Compliance Agreement[b]	Ratification: not yet	Ratification: not yet
UNIA[c]	Signature: Nov. 1996	Signature: not yet

Notes:

[a]Seabed Agreement is Agreement relating to the Implementation of Part XI of the Convention which entered into force from 28 July 1996.

[b]Compliance Agreement is Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas which entered into force from 24 April 2003.

[c]UNIA is Agreement for the Implementation of the Provision of the Convention relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, which is abbreviated as the UN Fish Stocks Agreements and entered into force from 11 December 2001.

As mentioned above, the widest waters of the Gulf is no more than 180 nm. So the ranges of EEZ belonged to the two parties according to UNCLOS are overlapped. An inevitable challenge confronting the two parties is that how the maritime boundary should be delimited with the fisheries protected, the normal fishing production continued in a sustainable and responsible manner while ensuring their sovereignties, jurisdictions and fisherman's interests guaranteed. The negotiations on maritime boundary delimitation were tabled by the bilateral in 1974 when Vietnam desired to cooperate with an Italian petroleum company in terms of the oil exploitation in the Gulf. The negotiations had ever been compelled to interrupt because of the deteriorated relations of the two nations [14]. After 1991 when their relations accomplished normalization, a new round of negotiation was held accordingly, considering the complexity of surrounding situations, too high frequency of fisheries disputes in the Gulf and the necessity of demarcation on their territories. It was not easy but friendly. At the beginning, China required that the maritime boundary and the fisheries in the Gulf should be addressed at the same time. Despite bilateral great efforts, concessions from each other to some degree, and understanding of each other, the two parties did not get in accord until two agreements was signed on 25 December 2000, one of which is about the demarcation, and the other about fishery cooperation. Zou [17] wrote an article to introduce the fisheries agreement. After the principal issues about fisheries and delimitation were solved, they held negotiations about the concrete implementation of the fisheries agreement at once. Good news came from the negotiating table one after another. Three years later, on 29 April 2004 they signed the protocol to the fisheries agreement in the Gulf. Both Chinese and Vietnamese legislatures ratified the three instruments. They came into effect on 30 June 2004.

Containing 22 Articles and one Annex, the fisheries agreement between the two countries put forward the fundamental framework for fishery cooperation in the Gulf. Zou has translated it into English and placed it at the end of his article (see [17]). The agreement applies to the contracting waters which are parts of the EEZs and parts of the adjacent territorial seas of the contracting parties in the Gulf. It presents the concepts of the Common Fishery Zone, the Waters in the Transitional Arrangement, and the Buffer Zone for small-sized fishing vessels while describing the extent of the Common Fishery Zone and buffer zone (Article 3, 11, 12). Namely, the contracting waters fall into three different categories. The Sino-Vietnamese Joint Committee for Fishery in Beibu Gulf (hereinafter referred to as the Joint Fishery Committee) was established according to Article 13 of the agreement. The functions of the Joint Fishery Committee were expounded in the agreement. As far as the protocol is concerned, it is an integral component of the agreement and came into effect at the same time together with the agreement according to relevant provisions of the protocol. The protocol only applies to the Waters in Transitional Arrangements (Article 1 of the protocol). It details the range and management of these waters. Significantly, it paves the way to activate the already signed agreements that both delineate and provide for fishing cooperation in the Gulf. In the next section, we will introduce and examine the institutional arrangements by describing and discussing the concrete contents of the agreement, its supplementary protocol, as well as other relevant instruments.

4. The new institutional arrangements for fisheries management in the Gulf

Institution is a concept with many definitions and interpretations. Yet it is a key concept in the fisheries management discourse, as it is through institutions that management systems work. Hence, the efficacy of fisheries management is largely a question of institutional design and dynamics [19]. A coastal state has the powers to decide on all aspects of management in its own waters. But where resources cross boundaries, a need to cooperate with other states arises [19,20].

When the maritime boundary has been set between two opposite or adjacent coastal states, how to exploit and utilize the transboundary resources should been provided for in relevant agreements or treaties. The institutional arrangements for managing these resources thus change with those agreements taking effect. In terms of fisheries the arrangements should be transitional and stable due to its traditional exploitation, or social stability will confront some severe challenges.

4.1. The Joint Fishery Committee

According to Article 13 of the fisheries agreement, the contracting parties establish the Joint Fishery Committee in order to implement this agreement effectively. The Joint Fishery Committee consists of two representatives one from each party appointed by the governments of the two contracting countries, and several commissioners. It has rights to make detailed regulations on its operational mechanism. The agreement assigned its primary functions and responsibilities on the Common Fishery Zone and Buffer Zone for small-sized fishing vessels. In addition, the protocol supplemented its functions on the Waters in Transitional Arrangements. The committee shall hold one or two meetings annually, and the venue is made by turns between the two countries. If necessary, ad hoc meeting may be held with

the agreement of both parties. Any recommendation and decision of the Joint Fishery Committee shall get consensus between the representatives from both parties. The functions of the committee focus on making decisions and recommendations on management and exploitation of the contracting waters. However, the committee can also consult and/or decide matters about the Common Fishery Zone and other issues concerned by both parties. Its primary functions and responsibilities can be outlined as follows:

- to make recommendations towards the two governments on relevant matters relating to the conservation and sustainable utilization of fishery resources in the contracting waters through consultation,
- to offer proposals to the two governments on fishery cooperation in the contracting waters through consultation,
- to put forward recommendations on supplement and amendment to the agreement and its annex, as well as the protocol,
- to make reports to the two governments on the implementations of the agreement and protocol after certain pertinent assessment is made,
- to develop regulations and implementation measures on conservation and management of fishery resources in the Common Fishery Zone pursuant to Article 5 of the agreement,
- to determine the quantity of fishing vessels of the two parties having access to the Common Fishery Zone annually pursuant to Article 6 of the agreement,
- to resolve some disputes relating to fishing activities which take place in the Buffer Zone for small-sized fishing vessels and Waters in Transitional Arrangement,
- to direct the settlement of fishery disputes and maritime accidents within the range of its authorities.

4.2. *Three different categories of fishing areas and relevant provisions*

Three different fishing areas have been established after the two parties negotiated and relevant provisions for production and management have also been made based on their different natures. These areas are the Common Fishery Zone, the Waters in Transitional Arrangements, and the Buffer Zone for small-sized fishing boats-mentioned above.

4.2.1. *The Common Fishery Zone*

The Common Fishery Zone was established according to Article 3(1) that "both contracting parties have agreed to establish the Common Fishery Zone in the respective area of 30.5 nm of the EEZs of them from the demarcation line determined in the maritime boundary delimitation agreement, north to the closing line of the Gulf, and south of 20°N″ The *Zone 1* in Fig. 1 stands for this common fishery zone (see Fig. 1). The actual extent of the Common Fishery Zone is the enclosed waters encircled by straight lines connecting in order the following 15 geographic coordinate points:

1. 17°23′38″N. , 107°34′43″E. 2. 18°09′20″N. , 108°20′18″E.
3. 18°44′25″N. , 107°41′51″E. 4. 19°08′09″N. , 107°41′51″E.
5. 19°43′00″N. , 108°20′30″E. 6. 20°00′00″N. , 108°42′32″E.
7. 20°00′00″N. , 107°57′42″E. 8. 19°52′34″N. , 107°57′42″E.
9. 19°52′34″N. , 107°29′00″E. 10. 20°00′00″N. , 107°29′00″E.
11. 20°00′00″N. , 107°07′41″E. 12. 19°33′07″N. , 106°37′17″E.
13. 18°40′00″N. , 106°37′17″E. 14. 18°18′58″N. , 106°53′08″E.
15. 18°00′00″N. , 107°01′55″E.

The Common Fishery Zone covers an area of 33,500 km^2, accounting for 27.9% of the Gulf's total area.[4] The contracting parties will undertake long-term fishery cooperation in this zone with the spirit of mutual benefit (Article 4 of the agreement). However, the term of validity of the agreement shall last 12 years and extend to another 3 years automatically afterwards in accordance with Article 22. It appears the fisheries arrangement might be changed in the future when the term is over. So the term of this zone shall be 15 years for the time being. Both parties shall jointly develop the measures that conserve, manage, and sustainably exploit the living resources in this zone in accordance with the natural conditions, characteristics of the living resources, the requirements of sustainable development and environmental protection, as well as the effects on their fishing activities (Article 5 of the agreement). It seems that they have enabled the Joint Fishery Committee to exercise this article. The Article 6 of this agreement says that the quantity of operating fishing vessels for each party in the Common Fishery Zone shall be determined annually by the Joint Fishery Committee in the light of the allowable catches determined on the basis of the results from joint regular surveys on fishery resources, the impact on respective fishing activities of both parties, and the need of sustainable development while respecting the principle of equality and mutual benefit. According to Article 10 of the fisheries agreement, each contracting party may adopt any form of international cooperation or form of joint venture within the framework of operational scale in its own waters in the Common Fishery Zone, but the fishing vessels must comply with certain regulations and accord with particular conditions. They have agreed that in the Common Fishery Zone the number of fishing vessels which have access to the waters of the other party

[4]Interested readers may refer to this website http://www.vov.org.vn/2004_08_01/English/xahoil.htm.

should not exceed 1543, including no more than 617 trawlers, i.e. no more than 40% of the total number, in the first year when the agreement takes effect. The capacity of per vessel should be under 60–400 HP and the total capacity under 211391 HP.

4.2.2. The Waters in Transitional Arrangements

The Waters in Transitional Arrangements is mentioned in the fisheries agreement (Article 11) but stipulated in detail in the protocol. The *Zone 2* in Fig. 1 stands for the waters (see Fig. 1). In fact after the signature of the agreements in 2000 the focus of negotiation between China and Vietnam turned to the transitional arrangements. The area is parts of the their EEZs on the north of the Common Fishery Zone, north of 20°N, and south of 20°54′N. The actual extent of this area is the enclosed waters encircled by straight lines connecting in order the following 12 geographic coordinate points:

(A) 20°00′00″N. , 108°42′32″E.(B) 20°04′25″N. , 108°48′15″E.
(C) 20°37′30″N. , 108°41′30″E.(D) 20°49′40″N. , 108°34′10″E.
(E) 20°54′00″N. , 108°16′25″E.(F) 20°43′20″N. , 108°01′40″E.
(G) 20°25′35″N. , 107°37′40″E.(H) 20°19′25″N. , 107°23′00″E.
(I) 20°09′30″N. , 107°07′41″E. (J) 20°00′00″N. , 107°07′41″E.
(K) 20°00′00″N. , 107°30′00″E.(L) 20°00′00″N. , 107°57′00″E.

But the area between the points K and L is connected by a circular arc with radius up to 15 nm, and the light house (20°08′00″N. 107°43′40″E.) on Bailongwei Island (also known as Bach Long Vi Island in Vietnam) as the centre. That is to say the two parties have agreed that Vietnam has sovereign right and jurisdiction over Bailongwei Island which has 12-nautical-mile wide territorial water and 3-nautical-mile EEZ and continental shelf (25% effect in delimitation). Chinese fishing vessels shall have no access to the waters around Bailongwei Island with radius up to 15 nm. The total area of this zone is about 9000 km^2. The transitional arrangements shall be expired in four years since the agreement enters into force (Article 11(1) of the agreement) i.e. the term of validity of the protocol and the waters shall last only four years (Article 8(2)). Either party has the priority rights to fish in the other party's EEZ mentioned in the first paragraph of this section under the same conditions when the period of the time is over. The contracting parties have agreed that in the Waters in Transitional Arrangements the number of fishing vessels which have access to the waters of the other party remains no more than 920, including no more than 322 trawlers, i.e. no more than 35% of the total number, in the first year when the fisheries agreement enters into effect. The capacity of per vessel should be within 20–200 HP, the average capacity of per vessel should be 85 HP, and the total capacity should not exceed 78,200 HP. The number and capacity of fishing vessels shall decrease at the rate of 25% every year.

4.2.3. The buffer zone for small-sized fishing boats

The buffer zone for small-sized fishing boats is set up pursuant to Article 12 of the agreement on fishery cooperation. There are many small-sized fishing boats in the nearshore of China and Vietnam, and their equipment is very laggard. Some of them are even not motorized, let alone GPS. So the illegal entry by mistake is inevitable and understandable. Keeping this situation in mind, the contracting parties decided to establish this buffer zone in order to avoid unnecessary disputes by illegal entry by mistake of small-sized fishing boats of one party to the territorial sea of the other. In accordance with the fisheries agreement, both parties agreed to establish the buffer zone that would extend 10 nm toward the south from the first boundary point and 3 nm from the demarcation line. To be accurate, the actual extent of the buffer zone is the waters circled by the straight lines connecting the following 6 geographic coordinate points:

1. 21°28′12.5″N. , 108°06′04.3″E. 2. 21°25′40.7″N. , 108°02′46.1″E.
3. 21°17′52.1″N. , 108°04′30.3″E. 4. 21°18′29.0″N. , 108°07′39.0″E.
5. 21°19′05.7″N. , 108°10′47.8″E. 6. 21°25′41.7″N. , 108°09′20.0″E.

Technologically speaking, the capacity of small-sized fishing boats should be no more than 60 HP or the length of it no more than 15 m. The access of other boats beyond this standard to the buffer zone is prohibited. According to the agreement, either contracting party, finding that small-sized fishing boats of the other party fish in its waters in the buffer zone, may send a warning, or take necessary measures to drive them away from that area. But by doing so the contracting parties shall restrain its action from detaining or arresting the vessels in question, and resorting to force instead of going to extremes. If any dispute related to fishing activities arises, it shall be reported to the Joint Fishery Committee for settlement; if any dispute beyond fishing activities arises, it shall be settled by relevant and respective competent authorities of the two countries in accordance with their domestic laws.

4.3. Conservation and management measures

In order to sustainably and responsibly conserve, manage, and exploit the fishery resources, and maintain the normal fishing order and safety in the Common Fishery Zone, the Joint Fishery Committee has developed the Regulations on Conservation and Management of Fishery Resources in the Common Fishery Zone in Beibu Gulf (hereinafter referred to as the Regulations). It entered into force automatically when the fisheries agreement entered into force. The Regulations stipulates that the competent authority in China is the Ministry of Agriculture of China and the Ministry of Fisheries of Vietnam in Vietnam; the executive authority in China is the Bureau of South China Sea Fisheries

Management & Fishing Port Superintendence and the Fisheries Resource Exploitation and Protection Department under the Ministry of Fisheries in Vietnam; the surveillant authorities in China are the authority of fisheries management and fishing port superintendence, the boundary police, and the navy, which in Vietnam are the authority of fishery inspection and protection, the navy, the sea police, and the bound army; the corresponding authority in China is the fisheries management and fishing port superintendence, and in Vietnam is the sea police.

The contracting parties implement fishing license systems to their own fishing vessels in the Common Fishery Zone. The fishing permits must be granted by the executive authorities in accordance with the agreed number of fishing vessels and their terms shall be no more than 1 year. No access without permit. The contents in the permit should include the name of granted fishing vessel, port of registry or hailing port, nationality, registration number, operational type, gross tonnage (including deadweight and load), capacity of the engine, name of captain, owner of the fishing vessel and his address. The approved fishing vessel should be labeled pursuant to the requirement of the Joint Fishery Committee. The contracting parties exchange the information about the granted fishing vessels every year. Permit is also needed for fishing in the Waters in Transitional Arrangements. But the licence systems are different to some extent from those in the Common Fishery Zone. According to the protocol, the authorized agency in one contracting party shall make it easy to grant fishing permits to nationals or fishing vessels from the other party which desire to fish in his part of the waters in light of their agreements and vessel information on application from this party.

The crew fishing in the two categories of waters should carry some certifications and fishing vessels should fly the national flag. The fishing logbook should also be required for the fishing vessels conducting there and must be submitted to the executive authority in their own country.

The contracting parties have agreed that they will implement closed season systems in the Common Fishery Zone. But the measures and matters on closed season will be stipulated by the Joint Fishery Committee. The Joint Fishery Committee can list some kinds of fishing gears and methods as forbidden. More importantly, destructive fishing such as using explosives, electricity, and poison are also prohibited in the Gulf. The great importance is also attached to the biodiversity in the Gulf. Fishing endangered aquatic species, especially whales, dolphins, dugongs, turtles, corals, are prohibited. When harvested unintentionally, these species should be released immediately.

Any rule in paper will be of no use unless it is in practice enforced. How to ensure compliance is thus a key but very difficult factor facing by policymakers. Designing a rule, even a good one, is just the first step to a long march. In order to ensure compliance, generally speaking, policymakers may add some incentives to their composition. The arrangements for fisheries management in the Gulf are no exception. For the sake of ensuring these conservation and management measures as well as other provisions to be enforced effectively and efficiently as well as to be in good compliance, the contracting parties have formulated high penalties for illegal activities.

According to the fisheries agreement, the competent authorities of the contracting parties shall monitor, control and conduct surveillance of the nationals and fishing vessels of both parties in their own waters of the Common Fishery Zone in accordance with the Regulations-mentioned above. If any violation found, the competent authorities shall have the right to address such breach pursuant to the Regulations, and shall inform the other party promptly of the relevant circumstances and the settlement of the problem through the consultation mechanism established by the Joint Fishery Committee. The seized or detained crew or fishing vessels should be released rapidly after an appropriate security or guarantee is paid. If necessary, the joint monitor, control and surveillance should be coordinated or conducted to deal with violation. Each contracting party shall have the right to impose punishment on fishing vessels which enter its own waters in the Common Fishery Zone and Waters in Transitional Arrangements. Besides, in the Article 20 of the Regulations there is a detailed list of illegal activities for fishing vessels and nationals with a permit. Furthermore, the penalties for corresponding illegal activities are provided in the same article.

4.4. Challenges for the Chinese marine fisheries and society

At present, marine capture fisheries in China have reached a critical stage. Most, if not all, fish stocks in China seas are fully exploited or even depleted. Moreover, many coastal and inshore fishing grounds of high productivity have disappeared or moved much farther away from the nation's coastline due to the combined effect of the overexploitation and misuse of marine and coastal resources as well as marine pollution [21]. The implementation of the agreements will pose many huge challenges to Chinese marine fisheries and society.

The Gulf is the traditional fishing ground of the fishermen in China's Guangxi Zhuang Autonomous Region, Guangdong and Hainan Provinces. Its demarcation will have a direct bearing on the fishing resources distribution and the interests of the fishermen of these areas. According to inadequate statistics, Guangxi, Guangdong, and Hainan will, respectively, lose one-

half, one-half, and one-third of their traditional fishing grounds in the Gulf. Chinese fishing vessels withdrawing from the Gulf are estimated to 30,000. Thus, tens of thousands of fishermen will be laid off. The direct economic loss will amount to several billions Yuan (RMB) or even more. As a result, the livelihood of more people will be impacted negatively.

After the agreements were signed, China's governments have adopted many measures in order to solve the emerging issues of marine capture fisheries and keep stable in the fishing communities. Prior to the signature, China had established special funds for fishermen transferring to other industries at the time when it adopted the "zero-growth" policy in marine capture fisheries in 1999. Since 2002, the State Financial Ministry earmarked 0.27 billion Yuan annually as subsidies for fishermen to decrease their vessels and transfer to other industries. In the meantime, 30 million Yuan was added to fisheries management agencies as enforcement cost in the EEZ. The local governments will train some fishermen to adapt to new jobs and industries, such as aquaculture, fishery processing and so on. On the other hand, governments will encourage investments in recreational fisheries, fisheries processing and other sectors. Maritime training courses will instruct fishermen on how to recognize and determine maritime boundaries so that no violation is committed.

5. A comparison among the three effectual different fisheries agreements

Before signing the fisheries agreement between China and Vietnam, China had signed two other fisheries agreements respectively with Japan and South Korea on 11 November 1997 and 3 August 2000, which took effect on 1 June 2000 and 30 June 2001 after undergoing some necessary legal procedures. The three fisheries agreements were all reached in accordance with the 1982 UNCLOS and other international law and practices. Kang [23] and Kim [22] once introduced and discussed the 1997 Sino-Japanese, 2000 Sino-South Korean fisheries agreements, respectively, and Zou [17,24] once, respectively, introduced and discussed the 1997 Sino-Japanese and 2000 Sino-Vietnamese fisheries agreements in his two different articles (for details see [17,22–24]).The terms of validity of the Sino-Japanese, Sino-South Korean agreements are both 5 years, and the Sino-Vietnamese agreement shall be effectual for 15 years. They all analysed these fishery agreements primarily from the legal perspective, especially the international law and practice.

Generally speaking, more similar articles and provisions exist between the Sino-Japanese and Sino-South Korean fisheries agreements. Take Article 3, 4, 5 of these two agreements, for example. Compared with the former two fisheries agreements, the biggest difference is that the Sino-Vietnamese fisheries agreement in Beibu Gulf was reached when the maritime boundary was being delimited while the former agreements are reached when the maritime boundaries had not been set. The former two agreements are the options of provisional fisheries agreements was envisioned in Article 74(3) of UNCLOS which deals with the legal problems pending delimitation of the EEZ. Another important difference between the Sino-Vietnamese and other two agreements is that the contracting waters include parts of EEZs and territorial seas of contracting parties in the former, but only parts of EEZs in the latter two agreements. The main reason is that: (1) China and Vietnam are both adjacent and opposite, however China is only opposite to Japan and South Korea. (2) There are a lot of artisanal fisheries in the coast of Beibu Gulf, and the fishing boats in use are relatively backward. On the other hand, the nomenclature of cooperative waters coined and mentioned clearly in the three agreements is also different. Three categories of waters are designed in the Sino-Vietnam agreement, namely the 15-year Common Fishery Zone, the 4-year Waters in Transitional Arrangements, and the Buffer Zone for Small-sized Fishing Boats. The waters designed and mentioned specially in the Sino-Japanese agreement is the Provisional Waters. Those in the Sino-South Korean agreement are the Provisional Waters and the Waters in Transitional Arrangements. It is noted that there are the 4-year Waters in Transitional Arrangements which were put forward by China during the negotiations both in the Sino-Vietnamese and Sino-South Korean agreements. The EEZ regime will be applied step by step in these waters, and fishing efforts from contracting parties will decrease year by year up to zero within 4 years. This design shows that the contracting parties have adequately taken into account the traditional fishing existence in the contracting waters and the impacts of the new arrangements on the social stability. The 1997 Sino-Japanese agreement was revised based on the 1975 agreement which was reached based on 1955 non-governmental agreements and official negotiations and had been revised in 1979 and 1985 [22–24]. Although the EEZ regime has not been adopted by either China or Japan before 1996, the Waters in Transitional Arrangements should be not needed because the fishery relationship between them is always continuous even if their diplomatic relationship has not been normalized.[5] However, the new agreements adopted by China, Vietnam, and South Korea will greatly diminish the traditional fishing grounds. These changes take place rapidly because its been a so long time since last effectual fisheries agreement was reached between them,

[5]China accomplished diplomatic normalization with Japan on 29 July 1972.

which would have adverse impacts on the social stability and offer a great challenge for the governments.

According to the three fisheries agreements, three Joint Fishery Committees were established between China and Japan, China and South Korea, China and Vietnam, respectively. All of these committees are comprised of two representatives one from each party appointed by the two contracting countries' governments, and several commissioners (none of the three fisheries agreements have ever mentioned the exact number). More or less, these committees have some functions in common, such as consultation, recommendation, decision-making to some extent, and dispute-resolving. They must research and report the implementations of the agreements in contracting countries. The recommendations and decisions made by them must reach consensus according to the agreement. They all hold a routine meeting and some ad hoc in contracting parties by turns. It is noted that only the Joint Fishery Committee in Beibu Gulf is entitled to make rules and regulations for the Common Fishery Zone but others not.

Such capacity building in these committees as regional or sub-regional fishery cooperation organizations in the future should be strengthened.

6. Conclusion

No doubt that the location of maritime limits and boundaries will produce a considerable impact on coastal states' maritime activities. Knowing which countries have jurisdiction over particular waters and what type of jurisdiction they have is thus critical to the planning and management of transportation, exploration or exploitation operation. However, the ownership of living and non-living resources is often questioned. A distance of a few hundred meters can have significant economic and political consequences in the case of such resource as minerals, petroleum, and fish is concerned. Due to geographical location, national claims may overlap, thus creating areas of disputed ownership and jurisdiction that can lead to confrontation and conflict. In addition, the sea is often considered an excellent inartificial Great Wall to safeguard a country's security and defense.

From these points of view, the Beibu Gulf has a strategic importance to both China and Vietnam in terms of economy, security and defense. The maritime boundary delimitation agreement will change the countries' strategies of security and defense in the Gulf to some degree. The fisheries agreement will change the distribution of the traditional fishing areas and fishery resources there. The fisheries agreement as well as other two instruments issued after it will change the institutional arrangements for fisheries management in the Gulf. So all instruments discussed in this article will exert titanic influences on China and Vietnam as well as their people, especially the regions surrounding the Gulf and people there.

The maritime boundary delimitation agreement is the first practice for China in maritime demarcation and the second for Vietnam.[6] As far as the implementation of the maritime boundary delimitation agreement is concerned, the fisheries agreement is very important and decisive to some extent. In addition, the signature and implementation of the Sino-Vietnamese fisheries agreement is of great significance although Sino-Japanese and Sino-South Korean fisheries agreements are signed prior to it. There are still eight countries that have maritime boundary disputes with China [14]. These disputes shall be also peacefully and friendly settled through similar mechanism of negotiations and consultations in the future. Based on this consideration, the significance of the Sino-Vietnamese fisheries agreement is far-reaching. Whether the fisheries agreement is implemented effectively and efficiently or not will affect not only the fisheries status and its sustainability but also the implementation of the maritime boundary delimitation agreement and the confidence of people concerned.

The Sino-Vietnamese fisheries agreement mainly focuses on the control of fishing efforts from both parties, without mention of the total allowable catches from the Gulf. This may be considered to be a main shortcoming of the agreement according to Article 61 of UNCLOS. The fundamental problem of fisheries is, in nature, open access, either de jure or de facto [25]. Although management methods and measures such as controlling of fishing efforts and total allowable catches may fail to settle open access in fisheries fundamentally, and there are no sufficient actual evidences showing the former is inferior to the latter, controlling of total allowable catches is more effective and efficient than controlling of fishing efforts with respect to ensuring sustainability of fisheries. Of course, neither China nor Vietnam has implemented the system of total allowable catch. In addition, the gathering and processing of data in TAC system is relatively complex and difficult to do for them. What's more, the enforcement capacities of them are relatively inadequate. It is probably out of these considerations that the Sino-Vietnamese fisheries agreement has not stipulated adopting the TAC systems in the Gulf.

Considering the point above, we recommend that the fishery cooperation between China and Vietnam should be strengthened in the long term in order to conserve, manage, and exploit fishery resources in the Gulf in a sustainable and responsible manner via more effectively

[6]Vietnam has signed maritime boundary delimitation agreements with Thailand in 1997 and Indonesia in 2003.

and efficiently fulfilling bilateral agreements, especially agreement on fishery cooperation, relevant provisions of UNCLOS, and other international law. The functions of the Joint Fishery Committee should be more concrete and powerful. If possible, some sub-committees such as a scientific or legal sub-committee should be established in order to increase scientificity and lower uncertainty in the process of decision-making through more scientifically and regularly conducting surveys on resources in the Gulf. Then measures taken to conserve, manage, and exploit the fisheries will be more elaborate and scientific. Some cooperation mechanisms relating to data gathering, exchanging and sharing, enforcement cooperation, legal compatibility, inter alia, should be further developed.

Another point which deserves to be shown is that the Joint Fishery Committee can be regarded as a kind of subregional organization of fishery cooperation. It is a bilateralist regime in Stokke's typology, and Group B in the typology of Churchill and Lowe as mentioned previously.

In summary, the fisheries agreement is the framework instrument for fisheries cooperation between the contracting parties; the protocol is an integral component of the agreement and the concrete steps and schemes to cooperate in the Waters in Transitional Arrangements. These two treaties were signed in accordance with UNCLOS and based on two main objectives, namely, the peaceful settlement of fishery disputes and the lasting stability of fishing communities around the Gulf. They are both the products of political compromise. There is a long way to go before the objectives are achieved. Economic and managerial factors should be taken into consideration to ensure the sustainability of fisheries and maximum of the economic profitability in the Gulf. More comprehensive stakeholders should be involved in the process of decision-making.

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