

A Comparative Study on Fisheries Policy Issues and Rice-Shrimp Farming System between Bangladesh and Vietnam

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Abstract: Fisheries policy is new idea if it compares with agricultural policy in developing world. Bangladesh and Vietnam are developing countries. The export oriented production of frozen seafood fisheries sector plays a significant role in the national economy of Bangladesh and Vietnam. Both countries fisheries sector are concentrated on coastal belt and emphasized on shrimp farming. This paper was reviewed and analyzed changes in policy towards Bangladesh and Vietnam and then tried to make a comparison between two countries fisheries policy and rice-shrimp farming system. For this study, data and information were collected from both primary and secondary sources. A total of 170 primary data were collected for rice shrimp farming farmers during July 2010 from Bangladesh (169) and December 2010 from Vietnam (1) and data were analyzed by Microsoft excel for comparison of rice shrimp farming in Bangladesh and Vietnam. Semi-structured interviews were also conducted for policy issues, with personal of other stakeholder organizations for information on policy issues. Both countries have problem in fisheries sector and this sector is one of the main sources for foreign currency.

Keywords: Fisheries policy, rice-shrimp farming, Bangladesh, Vietnam

1. Introduction:

Fisheries policy is new idea, if it compares with the agricultural policy. Even in the developed world formal

fisheries policies and comprehensive management systems, as distinct from piecemeal regulation, are little more than 30 or 40 years old. They were born of a growing concern

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for the depletion of commercially valuable fish stocks through overfishing [1]. In developing countries where fisheries policy had less attention, but last two decades are the revolution for fisheries policy issues (such as food security, supply of cheap protein intake, employment opportunity, source of foreign currency, the protection of individual and community fishing rights, livelihood development, poverty reduction and sustainable development through fisheries sector) in developing countries. National fisheries regimes are the product of a complex matrix of macro- economic and sectoral policy initiatives, stakeholder responses and the institutional capacity to accommodate the two. In the case of developing world, programs instituted or supported by multilateral, bilateral and other donor organizations also impact upon national fishing strategies and management structure. This process of policy formulation, dissemination and implementation – and its local/sectoral consequences – has been subjected to examination by a growing number of articles in recent years. Developing countries are among the most important fish producers in the world; they make up 14 to 20 countries that produce more than 1,000,000 metric tons annually [2] contributing more than two-thirds of the global fish production over the last decade [3]. However, in contrast to the consolidated fishery systems of developed countries [4, 5], some of which have had intensive fishing for centuries such as England Norway, Russia [6, 7, 8] massive fisheries are relatively recent additions to developing nations (beginning in the 1970s) [9]. This is the case of multi-species fisheries regime in developing countries [10]. However, as noted by Barnes and McFadden [11], policy adoption is not the same as policy implementation. Therefore, it is really difficult and tough task for developing countries like Bangladesh and Vietnam to adapt proper fisheries policy with in their numerous problems. Bangladesh is a country, itself a delta and Vietnam has also delta. Both countries have contribution of global fish market and they have their own fisheries policy and law. In both countries, government policies towards fisheries sector have changed significantly. A few study has been done aspect of fisheries policy issued in developing

countries and comparative study on fisheries policy issued have been barely done. Therefore, the main objective of the study was to compare the fisheries policy issues and rice shrimp farming system between Bangladesh and Vietnam. To fulfill the objective the following sections were considered:

Methodology,

Review of global aquaculture and contribution of Bangladesh and Vietnam,

History of shrimp and rice shrimp farming in Bangladesh and Vietnam,

Results and discussion including (To make the comparison for Bangladesh and Vietnam, profitability of rice shrimp farming system was considered and to review of overall fisheries policy issues for Bangladesh and Vietnam) and

Conclusion.

2. Methodology:

For this study, data and information were collected from both primary and secondary sources. A total of 170 primary data were collected for rice shrimp farming farmers during July 2010 from Bangladesh (169) and December 2010 from Vietnam (1). Primary data were collected from Khulna, Bagherhat and Satkira district under Khulna division for Bangladesh and from My-Xugen district under Soc Thrang providence in Mekong delta region in Vietnam for analyzing the profitability. In both countries those districts were famous for rice shrimp farming. Semi-structured interviews were also conducted for policy issues, with personal of other stakeholder organizations such as Bangladesh Frozen Foods Exporters Association, Department of Fisheries Offices, Export Promotion Bureau and World Fish Centre Office in Khulna district, Dhaka and different fisheries related researcher in Bangladesh. For Vietnam, My-Xugen district agricultural office and Can Tho University were visited for information on policy issues. Besides, secondary data and information were collected from various organizations as well as from published and unpublished sources of government agencies and trade organizations in Bangladesh and Vietnam in the type of documents, reports, handouts, notifications, etc. having

relevance with this study. The data and information from all these field surveys, were summarized which were used to write this paper. Data were analyzed by micro excel and simple tabular technique were used for comparison of rice shrimp farming in Bangladesh and Vietnam. Bangladeshi and Vietnamese currencies were converted to US Dollar (USD) for cost and return analysis.

3. Global aquaculture and contribution of Bangladesh and Vietnam:

The aquaculture sector is being fostered all around the globe because it is assumed to contribute substantially to food security, nutritional supply, poverty reduction and economic development [12]. Between 1999 and 2008, annual global production of aquaculture increased from 31 to 53 million tones and earned 45 to 98 billion US dollars [2]. In the developing countries contribute about 90% of global production in weight and 80% in value [13, 14]. Recent Statistics for global aquaculture shows that eleven of the top fifteen producer countries are in Asia, accounting for 86.9% of the total global production (Fig.1) [2]. China is the leading producer in the world, accounting for almost 62.3% of the total production. The position of Vietnam and Bangladesh are third and sixth, contributing approximately 4.7% and 1.9% respectively to the total aquaculture production (Fig.1). Globally the annual capture fishery production decreased from 93 to 89 million tones between 2000 and 2008 [2]. Table 1 shown that total fishery production, aquaculture production and share of aquaculture production in 1999 and 2008 for fifteen countries. These countries contribute almost 92% to the world aquaculture production, but there are significant differences in their aquaculture shares. The table also shows that Vietnam and Bangladesh aquaculture production have increased at an annual average rate 0.398 and 0.593 million tons to 2.461 and 1.005 million tons in 1999 and 2000, respectively. The total share of aquaculture for Vietnam has increased from 22.3% in 1999 to 54.1% in 2008 which was more than double (31.9%). But, the total share of aquaculture for Bangladesh has increased from 38.2 in 1999 to 39.2% in

2008 which was 1%. And it is attributed to a commensurate increase in overfishing as well as disease outbreaks, inadequate management practices and fisheries policy and law.

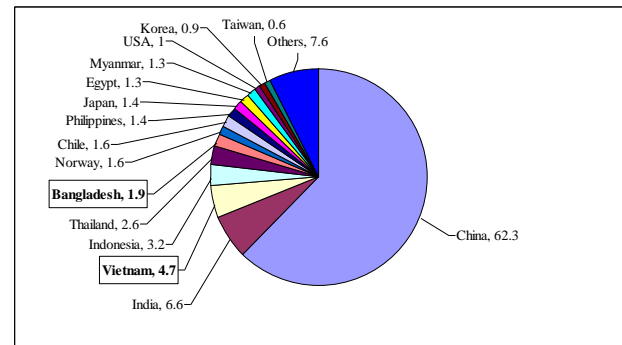


Fig 1. Aquaculture production by top fifteen countries in the world [2]

4. History of shrimp and rice shrimp farming in Bangladesh and Vietnam:

The export oriented production of frozen seafood plays a significant role in the national economy of Bangladesh and Vietnam. Shrimp aquaculture has expanded from the south eastern to the south western parts of the coastal areas of Bangladesh. In the 1970s, shrimp aquaculture in Bangladesh was started in *ghers*, which are traditional earthen ponds or fields situated by riversides and impounded by dykes [15, 16]. Generally, a *gher* is used to grow rice between the months of August and December/January, and shrimp culture is practiced during the month of February to July/August [16, 17,]. Initially the pond area under culture comprised 20,000 ha in 1980, growing rapidly to approximately 217,877 ha in 2007/08 [18, 19]. Therefore, rice shrimp farming is common

Table 1: Total fishery production, aquaculture production and share of aquaculture production in 1999 and 2008

Country	Total fishery production (tones)		Total aquaculture production (tones)		Share of aquaculture total fish production (tones)	
	1999	2008	1999	2008	1999	2008
	China	35,162,719	47,527,107	20,141,602	32,735,944	57.3
India	5,606,963	7,583,567	2,134,814	3,478,690	38.1	45.9
Vietnam	1,784,768	4,549,200	398,468	2,461,700	22.3	54.1
Indonesia	4,736,188	6,647,219	749,269	1,690,121	15.8	25.4
Thailand	3,646,070	3,831,208	693,762	1,374,024	19.0	35.9
Bangladesh	1,552,417	2,563,296	593,202	1,005,542	38.2	39.2
Norway	3,103,466	3,274,572	475,932	843,730	15.3	25.8
Chile	5,325,835	4,397,956	274,216	843,142	5.1	19.2
Philippines	2,223,364	3,302,334	352,567	741,142	15.9	22.4
Japan	5,944,302	4,981,071	759,262	732,374	12.8	14.7
Egypt	648,941	1,067,630	226,276	693,815	34.9	65.0
Myanmar	1,011,124	3,168,526	91,114	674,776	9.0	21.3
USA	5,228,325	4,849,967	478,679	500,114	9.2	10.3
Korea Republic	2,422,561	2,417,664	304,036	473,794	12.6	19.6
Taiwan	1,347,447	1,340,372	247,732	323,982	18.4	24.2
Total (15)	79,744,490	101,501,689	27,920,931	48,572,890	21.6	32.8

Source: [2]

shrimp aquaculture in Bangladesh.

On the other hand, most of the shrimp culture area in Vietnam is concentrated in Mekong delta, along estuaries and canal, in the central coastal regions, and in the Red river and the Thai Binh river delta in the North. Together with expanding the culture area, shrimp production increased dramatically from 1990s. The southern provinces (provinces in Mekong river delta) are the main contributor of shrimp products in Vietnam, responsible for 82%, while the Red river delta is responsible for 3% and the remaining area is responsible for 15% [20]. Under the impacts of the resolution 09/ NQ-CP in year 2000, the land conversion for the shrimp farming has been conducted all over the country, but most concentrated and expanded in the Mekong river delta, producing the largest shrimp volume in Vietnam. According to the MOFI's

statistics, the area for shrimp culture increased from 250,000 ha in 2000 to 478,000 ha in 2001 by the end of 2005, there had been 604,480 ha of land used for shrimp culture [21]. This are included shrimp and rice farming in rotation in Vietnam and about 26,000 ha out of 136,000 ha of mangrove forest which were used for shrimp culture as a combination of shrimp production and forestry. This has made Vietnam one of the countries with the largest area for shrimp culture in the world. According to the field survey, in Vietnam shrimp is grown from January to June (Dry season) and rice is grown during July to December.

5. Results and discussion

5.1 Comparison between profitability for rice shrimp farming in Bangladesh and Vietnam:

Table 2 shows cost and return for shrimp of rice shrimp

Table 2: Cost and Return for shrimp for rice shrimp farming in Vietnam and Bangladesh (USD/ha)

Items	Bangladesh (Mean)	Vietnam (Mean)
Return for shrimp		
<i>Bagda</i>	2,635	6,250
<i>Golda</i>	2,761	
Others	503	
Total A	5,899	6,250
Cost items		
Fingerling		
<i>Bagda</i>	90	104
<i>Golda</i>	36	
Others	72	
Human labor	2,249	
Formulated feed	74	2,625
Fish meal	126	0
Snail	7	-0
Rice bran	26	0
Lime	10	0
Urea	1	0
TSP	2	0
Cow dung	2	0
Total cost(B)	2,695	2,729
Net return= (A-B)	3,204	3,521

Source: Field Survey, 2010

farming in Vietnam and Bangladesh. Total return for shrimp farming for Vietnam (USD 6,250) was higher than Bangladesh (USD 5,899). In Vietnam, only *Bagda* (black tiger) shrimp was cultured with rice shrimp farming, but in Bangladesh *Bagda*, *Golda* (fresh water) shrimp and other species especially carp were also cultured. Total cost and net return for shrimp farming was USD 2,695 and 3,204 and USD 2,729 and 3,531 for Bangladesh and Vietnam, respectively. Total cost and net return for shrimp farming were higher for Vietnam than Bangladesh.

Table 3 shows cost and return for rice of rice shrimp farming in Bangladesh and Vietnam. Total return for rice farming in Vietnam (USD 1,697) was higher than Bangladesh (USD 330). Total cost and net return for rice farming was USD 109 and 221 and USD 260 and 1,437 for Bangladesh and Vietnam respectively. Total return, total cost and net return for rice farming were more than 5 times, 2 times and more than 6 times higher for Vietnam than Bangladesh.

Table 3: Cost and Return for rice for rice shrimp farming in Vietnam and Bangladesh (USD/ha)

Items	Bangladesh (Mean)	Vietnam
Return from rice	330	1,697
Cost items:		
Seedling	15	50
Human labor	78	0
Power tiller	5	0
Irrigation	11	0
Insecticide	7	0
MP	2	0
Urea	5	50
NPK	0	160
TSP	6	0
Cow dung	1	0
Total cost(B)	129	260
Net return= (A-B)	201	1,437

Source: Field Survey, 2010

Table 4 shows the profitability for rice shrimp farming in Bangladesh and Vietnam. Total return for rice shrimp farming in Vietnam (USD 7,947) was higher than Bangladesh (USD 6,229). Total cost and net profit for rice shrimp farming was USD 2,824 and 3,405 and USD 2,989 and 4,958 for Bangladesh and Vietnam, respectively. Total return, total cost and net profit for rice shrimp farming were higher in Vietnam than Bangladesh. In both countries, Farmers were produced fruits and vegetables, but those were used for house consumption.

5.2 Overall fisheries policy issues for Bangladesh and Vietnam:

In 1990s, Shrimp farming has expanded faster and farm had been converted in semi intensive and intensive in Bangladesh and Vietnam due to higher market price, high demand for shrimp on the international market and high profit. However, In the Mekong Delta, for the period of

Table 4: Profitability for rice shrimp farming in Vietnam

and Bangladesh (USD/ha)

Source: Field Survey, 2010

Items	Bangladesh (Mean)	Vietnam
Return for shrimp		
<i>Bagda</i>	2,635	6,250
<i>Golda</i>	2,761	
Others	503	
Total Return A	5,899	6,250
Return from rice (B)	330	1,697
Total return for rice shrimp C= (A+B)	6,229	7,947
Total cost for shrimp farming (D)	2,695	2,729
Total cost for rice farming (E)	129	260
Total cost for rice shrimp farming F=(D+E)	2,824	2,989
Net profit for rice shrimp farming G= C-F	3,405	4,958

1994-1999, only 20-30% of the farms were successful in shrimp farming [22]. The 1994/95 culture season, a disease outbreak in the southern province affected 85,000 ha of shrimp, equivalent to a loss of 294 billion Vietnamese Dong (VND) [23]. On the other hand, in 1996, shrimp virus affected 90% of the shrimp farms in the south-western coastal area of Bangladesh, reducing national shrimp production by 20% [24]. In 1997/98 culture season, the total amount of shrimp exported dropped from 25,742 tons to 18,630 tones after a disease outbreak. Then, in 1999-2000, shrimp exportation increased to 28,514 tones after a year without severe disease outbreak [25]. In 2001, shrimp production fell by 25% compared to the previous years because of white spot disease associated with other viral and bacterial pathogens [26]. Shrimp industry has also serious negative environmental impacts (e.g., soil and water pollution, increasing salinity, degradation of natural resource in both countries). To overcome the problem in shrimp industry in both countries (Bangladesh and Vietnam) need better fisheries policy implementation and

adaptation. Semi intensive and intensive farming systems are cost intensive. Therefore in Vietnam, government try to apply different strategies to reduce the cost and the economic risk of virus outbreak and environmental problems and they convert their farming improved extensive and extensive with alternate rice shrimp farming (My-Xugen, district's agricultural office, 2010). For the virus outbreak and environmental problem, the same situation has been crated in Bangladesh. In Bangladesh, 70% of the shrimp farms use traditional and/or extensive, 25% semi intensive and 5% intensive culture techniques [27]. Both countries have problems in fisheries sector and this sector is one of the main sources for foreign currency. Therefore, fisheries management policy was reviewed and analyzed for Bangladesh and Vietnam.

5.3 Overall fisheries policy issues in Bangladesh:

First fisheries act was made in 1950. But most of policy was adapted within last two decades. Fisheries policy was adapted in 1998. The shrimp of Bangladesh is characterized by a multitude of institutions, including 17 ministries and divisions and 28 departments and agencies [28]. In addition, there are different institutions and organizations that play a role in the shrimp sector, such as NGOs, donor agencies, cooperatives of shrimp farming groups and the local union *parishad* (council) [29]. A total of nineteen fisheries related policies, laws, acts, rules and ordinances have been found (Table 5). Among them seventeen have been enacted in Bangladesh to develop the shrimp sector [30, 31] (Table 5). The department of fisheries is the main implementing agency in the fisheries and aquaculture sector under the administrative control of the ministry of Fisheries and Livestock. The other policies are relevant to the shrimp sector including the FAO Code of Conduct for Responsible Fisheries, National Agricultural Policy, National rural development Policy, National Environmental Policy and Coastal Zone Policy [30]. Bangladesh government has amended several acts such as

i) Permitting farmers to take up saline water into	and culture) has increased rapidly over last two decades,
Title of policy/law/rule/act/ordinance	Aspects covered
<p>new farms with the approved of the Bangladesh Water Development Board. But few of them were follow the rule.</p>	<p>and currently ranks as the third-most prominent economic sector in the country, after oil and garment industries [35]. In Vietnam, the development and</p>
<p>ii) Though shrimp fry collection from natural sources has been banned and importing of shrimp seeds have been stopped, but a group of people are still collecting shrimp fry from natural sources.</p>	<p>management policies for marine capture fisheries sector in the last six decades (from 1945-2003) have changed dramatically, shifting the sector from a coastal small scale industry to an export production oriented industry which is a major part of the national economy. Therefore,</p>
<p>iii) The uses of chemicals and drugs have been regulated. And the farmers are encouraged to apply sustainable pond management techniques. Most of the farmers have not maintained sustainable pond management techniques.</p>	<p>the fisheries of Vietnam contributed 4% to GDP in 2006 and generated 9-10% of the Vietnamese export revenues. The total export value from fisheries sector in 2006 was USD 3 billion. During the period, 1945-1954, the policy of government towards the fisheries sector was for a</p>
<p>iv) Though shrimp farm has to register and get a license from the Department of Fisheries, Still a substantial number of farm have not been registered.</p>	<p>small-scale industry to supply local demand for seafood. The period of 1955-1975, while the country divided, saw two different policy directions. In the North, there was collectivization and development of state fishing enterprises. In the South, there was policy for more</p>
<p>v) Pollution abatement from near tidal zones and policy of waste management has been formulated and emphasized. But it is still not be implemented.</p>	<p>market based industry through modernization mechanization of the fleet and development of processing facilities for an export market. From 1975-1985, as the country worked on reunification, there was continued collectivization of the fishing industry and the establishment of fishing cooperatives and fishing companies. The government invested heavily to increase production and to modernize the fishing fleet through the cooperatives and companies but the inefficiency of these enterprises did not allow production to meet planned quotas. With the adaption of the “doi moi” (renewal) policy launched in 1986, aimed at liberalizing trade and transiting towards a market –oriented economy, the sector moved away from collective harvesting, processing and marketing to private fishing operations and a decrease state subsidies. The fish was allowed to be sold in the free market. The fishing vessels and gear owned by the cooperatives and corporations were sold to</p>

Therefore, the implementation of these policies and regulations by the institutions concerned as well as institutional assertiveness is weak, so huge gap exist in law enforcement [32, 33]. Strict enforcement of the FAO code of conduct, and the amendment of rules and regulations, including a multispectral approach, interdepartmental cooperation and resource diversification, is indispensable for sustainable shrimp aquaculture. In Bangladesh, a clear legal and institutional position about land use change by shrimp aquaculture is still missing in national policy. Table 5 shows the overall policy for fisheries sector for Bangladesh.

5.4 Overall fisheries policy issues especially on shrimp related policy issues for Vietnam:

Vietnamese fisheries sector development (both capture

The Protection and Conservation of Fish Act, 1950	Conservation of fisheries resources as a whole. The text of the Act consists of 9 sections: Short title, extent and commencement
Embankment and Drainage Act, 1952	Protecting crops, not allowing cuts in embankments to produce shrimp
Bangladesh Water and Power Development Board Ordinance, 1972	Develop water management infrastructure for shrimp farming
Bangladesh Fisheries Development Corporation Act, 1973.	Bangladesh Fisheries Development Corporation is established for purposes of development of the fishing industry of Bangladesh.
Territorial Water and Maritime Zone Act, 1974	Conservation of marine fisheries
Allocation of functions to the Ministry of Fisheries and Livestock (Schedule 1 of the Rules of Business, 1975).	This Schedule defines the functions of the Ministry of Fisheries and Livestock relative to fisheries.
Protection and Conservation (Amendment) Ordinance 1982	The amendments mainly concern definitions and technical matters.
Marine Fisheries Ordinance, 1983	
Fish and Fish Product (Inspection and quality control) Ordinance, 1983	Quality control fish and shrimp, mainly targeting export
Protection and Conservation Fish Rules, 1985	Regulations on protection and conservation of fish. The text contains 11 sections about various measures of protection and conservation
Manual for Land Management, 1990	Allocate unused state (<i>khas</i>) land to the landless on a permanent or temporary basis
Shrimp Estate (<i>mohal</i>) Management Ordinance, 1992	Allocate suitable state (<i>khas</i>) land for shrimp farming
Shrimp farm taxation Law, 1992	Imposing higher tax on shrimp land to cover cost of polder infrastructure
Bangladesh Environment Conservation Act, 1995	Conservation of natural resources and ensure eco-friendly development
Bangladesh Environment Conservation Rules, 1997	Conservation of natural resources and ensure eco-friendly development
Fish and Fish Product Rules, 1997	Quality control fish and shrimp, mainly targeting export
National Fisheries Policy, 1998	Conservation, management, exploitation, marketing, quality control and institutional development
Fish and Animal Food Act, 2010	Safe fish and animal feed production, processing, quality control, import export, marketing and transportation
Hatchery Act, 2010	Sustainable hatchery development to ensure quality fish and shrimp seed

Table 5: Relevant fishery policies, laws, rules acts and ordinances in Bangladesh

Source: [30, 31, 34]

private operators. The sector policies were aimed at increasing production, exports and national economic development. The period of 1986 to the early 2000s is characterized by a rapid increase in production and an even larger increase in fishing effort, both inshore and offshore. The development of the sector was brought about with more efficiency in fishing operations and improved business management. However, it was given limited attention in this market-driven environment [36, 37, 38, 39, 30, 41].

The institutional basis for fisheries management in Vietnam resides on a decentralized scheme consisting of two pillars: Ministry of Fisheries (MOFI) which was integrated into the Ministry of Agriculture and Rural development (MARD) in late 2007 and its Directorates in Hanoi on the one side, and the coastal Provincial Governments on the other. A range of decisions between 1997 and 2001 established fisheries department in all coastal province. Provinces have a fisheries department under the direction of the Provincial

People's Committee, responsible for implementing fisheries law, regulations, licensing, and national fisheries policy at the provincial level. Provincial People's Committee can make resolutions, decisions, standards and quotas on fisheries with the province, but not conflict with the regulations of the ministry. The legal frame work for fisheries management is a body of legislative texts that has evolved over the last four decades. The current legal system uses a system of regulations (often at the provincial level) decrees, ordinances, joint circulars, directives and decisions to impart legal instruments [41]. There have been over hundred such legal instruments issued between 1987 and 2003. According to the FAOLEX, 2011[42] in title of Vietnam fishery legislation included 111 instruments since 1964 to 2010. Some of them were shown as follows:

The title "Decision No. 251/1998/QD-TTg on the ratification of the Program for Developing the Export of Aquatic Products up to 2005" described first shrimp related regulation in Vietnam. This Decision of the Prime Minister ratifies a program for the development of the fish industry and exportation of aquatic products valid until the year 2005. It defines also the objectives of the Program and describes various tasks for carrying out the Program and relating to the development of shrimp farming, the exploitation of marine products, the importation of marine raw products destined for re-exportation, etc. Measures of implementation are prescribed in the third part of this decision: these measures aim at reinforcing shrimp culture, fish breeding, the fish feeding supply, and concentrate on science and technology, investments, tax policy, etc.

Circular No. 03/2000/TT-BTS guided the implementation of the Prime Ministers Decision No. 178/1999/QD-TTg issued the Regulation on the labeling of domestically-circulated goods as well as export and import with regard to aquatic goods. This Circular provides further rules relative to the labeling of aquatic goods placed upon the domestic market and those exported Aquatic goods" includes: processed foodstuffs of aquatic animal and plant origin or composed of typical constituents being aquatic animals or plants;

aquatic animal breeds and plant varieties, including parental breeds and varieties; aquatic raw materials for the production of feeds and industrially processed feeds used for aquaculture; drugs and chemical and "biochemical" preparations used for aquatic animals and plants in Vietnam, first Fisheries Law was adapted since 26th December, 2003 and it enters into force on 1 July 2004. The Law includes 10 Chapters: Chapter I, General provisions; Chapter II, Protection and development of fisheries resources; Chapter III, Fishing operations; Chapter IV, Aquaculture; Chapter V, Fishing vessels and service units for fisheries activities; Chapter VI, Processing, sales, import and export of fish and fishery products; Chapter VII, International cooperation on fisheries activities; Chapter VIII, State management of fisheries activities; Chapter IX, Rewards and sanctions; Chapter X, Executive provisions. The present Law deals with all issues related to aquaculture and mariculture, the ecosystem preservation, the protection of fish and of the environment, the regulation for fishing vessel navigation, docking and transportation. Moreover, it disciplines the conduct of fishermen, the fishing gear and methods allowed or prohibited the seasons and size of catch, the functions and responsibilities of the competent Authorities. Overall the law aims to improve the fishing activities while avoiding potential environmental damages and preserving the natural fishing resources.

In 2004, another Decision No. 112/2004/QD-TTG approved the Program on the development of aquatic seeds till 2010. The Decision provides for the approval of a Program destined to the development, improvement and infrastructure planning and building of related facilities in order to increase the breeding of aquaculture species presenting higher productivity, quality and traceability. The involved species shall include prawns, lobsters, freshwater fishes, mollusk's.

In 2005, Decision No. 07/2005/QD-BTS promulgated the lists of chemicals and antibiotics, which are banned or restricted from use in fisheries production and business. This decision promulgates the list of chemicals and

antibiotics banned or restricted from use in fisheries production and business (Appendix 1 and 2). All products being feed, detergents, germicides veterinary drugs, etc. must be labeled and inscribed specifying that they do not contain substances banned from use.

In 2006, Decision No. 242/2006/QD-TTG approved the program on development of aquatic product export up to 2010 and orientations to 2020. The purpose of this decision is to develop fisheries into a leading industry in the process of agricultural and rural industrialization and modernization by: raising the competitiveness and increasing the export of aquatic products; restructuring export in the direction of increasing commodities with high added value; boosting aquaculture and effectively exploiting aquatic products; etc.

In 2006, Decision No. 15/2006/QD-BTS promulgated the Regulation on management of import and export of fishery goods. The purpose of this Decision is to manage the import and export of fishery goods which shall include: live aquatic products; breeding aquatic species; aquatic animal feed; veterinary drugs; products for treating and improving aquaculture. Fishery goods, when imported or exported, shall be tested for quality and be quarantined according to current regulations. The Decision sets out procedures for the grant of import and export permits. The Decision also defines responsibilities and powers of the Department for Management of Aquatic Product Quality, Safety, Hygiene and Veterinary Medicine, and of regional and provincial authorities.

In 2006, Decision No. 10/2006/QD-TTG approved the master plan on development of the fisheries sector till 2010 and orientations toward 2020. The purpose of this Decision is to develop fisheries into a major commodity industry with high productivity, quality and competitiveness, capable of earning greater export turnover. The orientations for the year 2020 are to form big fishing centers in some coastal areas and the southern delta region, to diversify processed aquatic products, develop offshore fishing, protect aquatic resources and coastal ecological environment, etc.

In 2008, Decision No. 147/2008/QD-TTG approved the National Action Plan on acceleration of the implementation of commitments under the Agreement on the Application of Sanitary and Phytosanitary Measures in performing the WTO member obligations.

In 2010, Circular No. 45/2010/TT-BNNPTNT provided for conditions on food safety and hygiene-guaranteed intensive tiger shrimp- and white-leg shrimp-rearing establishments and zones. This Circular provides for the conditions on food safety and hygiene-guaranteed intensive tiger shrimp- and white-leg shrimp-rearing establishments and zones. Shrimp rearing-establishments and zones must lie within planned regions, comply with local regulations on shrimp farming, be numbered and registered under regulations of the Ministry of Agriculture and Rural Development and satisfy water resource quality requirements set out in Appendix I. Furthermore, rearing establishments and zones must comply with: conditions on infrastructure; conditions on special-use equipment, machinery and instruments; conditions on shrimp rearing technological process which include selection of breeds, feeds and feed supplements, waste water and wastes, disease prevention for shrimps and requirements on product harvesting; and conditions on file management.

In 2010, Circular No. 44/2010/TT-BNNPTNT providing for conditions on food safety and hygiene-guaranteed intensive Asian catfish-rearing establishments and zones. This Circular provides for the management of Asian catfish-rearing establishments and zones.

In 2010, Circular No. 41/2010/TT-BNNPTNT provided for veterinary hygiene inspection and certification for fishery production and trading establishments. This Circular provides for the veterinary hygiene inspection and certification for fishery production and trading establishments and for responsibilities of concerned organizations and of establishment owners.

In 2010, Circular No. 09/2010/TT-BNNPTNT promulgated requirements on assurance of food quality, hygiene and safety in processing “*tra*” and “*basa*” catfish products for export. This Circular provides for food hygiene and safety requirements that processing establishments must meet to be allowed to export “*tra*” and “*basa*” catfish products.

In 2010, Decision No. 1690/QĐ-TTĐ approved Vietnam’s fisheries development strategy through 2020. This Decision approves Viet Nam’s fisheries development strategy. The Decision aims to: develop fisheries into a commodity production industry by promoting the advantages of an industry producing and exploiting renewable resources and advantages of the tropical fishing industry, converting traditional fishing into modern fishing and developing Viet Nam into a strong and rich sea-based country; industrialize and modernize the fisheries sector and reorganize fisheries production in all areas of exploitation, aquaculture as well as processing of aquatic products from raw material production to processing and consumption; improve living standards and conditions of the fishermen community and train human resources for the fishing industry; and develop fisheries toward quality and sustainability, assure food hygiene and safety, environmental protection, protection and development of resources and closely combine fisheries development with the protection of the national sovereignty and marine security. The Decision provides for the strategy targets up to 2020, development orientations, major solutions to reach the targets, major programs, schemes and projects, and for responsibilities of state agencies in organizing the implementation of this Decision.

It is quite clear that though Vietnam adapted fisheries policy since 2003. But, they have made lots of regulations which contributed to sustain their fisheries sector. None of specific policy was emphasized on rice shrimp farming.

6. Conclusion:

Though in Bangladesh, fishery sector provides 63% animal protein and about 1.4 million people are engaged in full time and 11 million people indirectly earn a living through

involvement in fisheries related activities [43]. The fishery sector provides about 40% of the animal protein in the Vietnamese diet. The sector also provides jobs for approximately 4 million people [44].

The study revealed that the fisheries policy in Bangladesh was adapted since 1998 and it has emphasized on conservation, management, exploitation, marketing, quality control and institutional development. The policy was export oriented and it is not decentralized but central based. It had long term policy but implementation was quite difficult. There was no specific policy for rice shrimp farming.

The study revealed that Vietnamese fisheries policy was in detailed and decentralized that have combination of national fisheries policy. It has long term objectives to development of overall fisheries sector as well as aquaculture development through making policy on aquatic living resources. Though the national fisheries policy was adapted since 2003, but they had some clear regulation on fisheries sector since 1945.

The government invested heavily to increase production and to modernize the fishing fleet through the cooperatives and companies but the inefficiency of these enterprises did not allow production to meet planned quotas during 1975-1985 with the adaption of the “*doi moi*” (renewal) policy launched in 1986, was the revolution of fishery sector in Vietnam. Each province (local government) had some regulations which worked as decrees, ordinances, joint circulars, directives and decisions to impart legal instruments. Those regulations are not contradicted with central or national fisheries policy.

In Vietnam, last two decades they made more than 100 regulation to develop fisheries sector as well as food security, increasing production of aquatic product and export, individual product quality control and safety, proper utilization of land and water resources, conservation of aquatic living resources eco-system, poverty reduction by

creating employment opportunity, aquaculture, capture and culture fishery, fishing vessels and crew registration, processing, business and trade, fees and taxes, penalties fishers, incentives for offshore fishing, export program, foreign fishing, conservation, management including increasing production, improving rural income and employment, diversifying farm production, conducting disciplinary and multidisciplinary research of selected aqua farming systems for adaptation or improvement of technologies and for the development of new technologies setting up a regional information system to provide appropriate information for development planning, research and training.

It revealed that Vietnam doesn't have any specific policy on rice shrimp farming except one regulation. All policy and regulation indicated the development of overall aquaculture (capture and culture) and aquatic product development. Vietnam is third contributor for aquaculture production. Therefore, profitability of rice shrimp farming (per ha) for Vietnam was higher as well as separate cost and return for rice and shrimp farming were higher than Bangladesh. In Vietnam for shrimp, farmer cultured only *Bagda* and used the formulated feed. On the other hand for Bangladesh, farmers cultured *Bagda*, *Golda* and other species they used different feed, a few farmers used the formulated feed. Vietnam rice shrimp is improved extensive but in Bangladesh rice shrimp farming still extensive. Most of the farmers were used local variety for rice farming and used the low input. Therefore, output for rice of rice shrimp farming was low. In Vietnam extension service and information system for farmers was better than Bangladesh and fisheries policy was better, efficient and prudent than Bangladesh. Therefore, in Vietnamese fisheries sector was developed rapidly than Bangladesh.

This study could be helpful for policy makers, researcher's to improve and do further research on the fisheries and aquaculture policy in Bangladesh and Vietnam. Both countries are delta. Bangladesh is a small country but it has some good fisheries and aquaculture policy and regulation.

Bangladesh had big problems to implement the policy and regulation which could be said slow implementation. On the other hand, Vietnam is bigger than Bangladesh. It has also some vast fisheries and aquaculture policy and regulation, which they were implemented promptly and successfully. Therefore, their overall fisheries production was bigger than Bangladesh. Vietnam also faced problems on rice shrimp farming. But gradually they improved the production. Hence, this study could be helpful for overcoming the ongoing fisheries and aquaculture policy and regulation in Bangladesh.

Number of rice-shrimp respondent in Vietnam was one which was the limitation of this study. Therefore, this study were emphasized on policy and only rice shrimp farming in Bangladesh and Vietnam.

In near future, different types of shrimp farming systems will be surveyed in Vietnam which authors were already done in Bangladesh.

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