



ANNUAL REPORT 2015



Department of Fisheries, Bangladesh
Ministry of Fisheries and Livestock

Annual Report 2015

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Printed by

Hasan Color Printing & Packaging
217 Fakirerpool, Mothijeel, Dhaka-1000

Date of Publication

May 2016

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Department of Fisheries, Bangladesh
Ministry of Fisheries & Livestock



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Director General
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Bangladesh

May 2016

Preface

Fisheries sector represents one of the most productive and dynamic sectors in Bangladesh. This sector has been playing an increasingly important role in our economy for the last few decades. Fisheries in Bangladesh have both prospects and challenges. The Department of Fisheries (DoF) has assumed responsibility for providing animal protein to the huge population of Bangladesh through aquaculture, fisheries conservation, proper management and planned development of fisheries resources, to uplift the socio-economic conditions of fishers and other stakeholders. Another important agenda for the department is to facilitate and maintain the quality and safety of fish and fisheries products to enhance our maritime exports. The Department of Fisheries also assists government in formulating policies and acts of parliament required for sustainable development, integrated natural resource management, and fisheries conservation.

Bangladesh ranked 4th in terms of inland capture fisheries in the world. Fish provides about 60% of animal protein for the people of Bangladesh. To ensure overall development of the sector, DoF is implementing several projects and programs under both development and revenue budget. The Annual Report 2015 presented a comprehensive brief of the activities performed by the DoF and a vision of the fisheries sector exploring the considerable potential for significant achievements in the future.

I do believe that this report will be one of the most important reference document and helpful for the field officers of DoF, planners, researchers, development partners, extension workers, NGOs and other stakeholders in the fisheries sector. I appreciate the advice and support of my colleagues who provided their valuable time, effort and endeavor in preparing this report.



Syed Arif Azad

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1. Introduction

Bangladesh, a riverine country blessed with many rivers-canal, depressions and ox-bow lakes, ponds and floodplains, covering a huge area of water resources of 4.70 million hectares. Besides, there is a huge marine fisheries resources expanding over an Exclusive Economic Zone (EEZ) of 1,66,000 sq. km. Since time immemorial, these inland, coastal and marine waters are the main sources of fish. As an agro-based country, the contribution of fisheries sector to national economy has always been considered important and main source of animal protein, employment opportunities, food and nutritional security, foreign earnings, aquatic biodiversity conservation and socio-economic development. Fisheries sector contributes 3.69% to GDP and 22.60% to agricultural GDP. Fish supplements to about 60% of our daily animal protein intake. About 11% of the population dependents directly and indirectly on the fisheries for their livelihood.

Extension programs towards sustainable aquaculture technologies for fish and shrimp, conservation and management of the fresh and marine water capture fisheries, optimization and fine-tuning of fish inspection and quality control programs and use of information and communication technologies in fisheries sector has been taken to achieve the much desired targets. As a part of the 'Digital Bangladesh' program, the Government initiated e-Extension services for fish/shrimp culture and extension programs to provide appropriate services at the doorsteps of the farmers. In addition to these, existing laws and acts related to fisheries have been amended and updated to ensure food security by maintaining quality fish/shrimp production and availability of quality inputs.

In conformity with the targets of 'Vision-2021' of the present Govt., the Department of Fisheries (DoF) has also envisioned some important programs and targets to achieve the goal. Effective Initiation of good practices in environment friendly fish/shrimp farming towards promotion of export, biological management of jalmohals, establishing of easy access of real fishers to the open water capture fisheries, creation of employment opportunities and other various pragmatic programs have been taken by the DoF to facilitate achievement of 'Vision-2021'. It is expected that all these programs will contribute to reduce present poverty level from 6.5 crores to 2.2 crores by the year 2021.

2. Background

Department of Fisheries, Bangladesh was first established in the undivided Bengal of the British India in 1908 and since then it has experienced many changes. In 1910, the DoF merged with the Department of Agriculture, but as per the recommendations of Mr. T. Southwell, the DoF regained its status as an independent organization in 1917. The DoF was abolished again in 1923. However, after a long gap, following the recommendations of Dr. M. Ramswami Naidu, the DoF was revived in May, 1942. Since the inception of the then East Pakistan, the activities of DoF had been continued. After the independence of Bangladesh in 1971, the organization renamed as Department of Fisheries (DoF) instead of the Central Fisheries Department in April 1975, and in 1984, the Central Marine Fisheries Department merged with the DoF as Marine Fisheries wing.

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3. Mission of the Department of Fisheries (DoF)

The mission statement reflects the overall goal for the Department of Fisheries (DoF) and incorporates the objectives for the sector as a whole including all stakeholders.

The Department's mission is to support sustainable growth in fish and shrimp production with other aquatic resources as well, for domestic consumption and exports, and management of open water fisheries resources through community participation leading to equitable distribution of the benefits generated, for optimal economic and social growth in Bangladesh.

4. Mandate of the DoF

- To disseminate improved aquaculture technologies through training and demonstration and to extend advisory services to the farmers.
- To enhance fisheries resources through facilitating conservation and management measures.
- To assist the administrative ministry in formulation of policies, acts etc.
- To enforce quality control measures and issuance of health certificates for exportable fish and fish products.
- To conduct fisheries resources survey and assessment of stock to develop fisheries database for proper planning.
- To facilitate arrangement for institutional credit for fish and shrimp farmers, fishers and fish traders.
- To facilitate alternative income generating activities for rural poor and unemployed people towards poverty alleviation.
- To formulate and implement development projects towards sustainable utilization of fisheries resources to ensure food security.

5. Organizational Setup of the DoF

DoF has following wings to render its services:

- ❖ Inland Fisheries,
- ❖ Marine Fisheries,
- ❖ Fisheries Resource Survey System (FRSS),
- ❖ Fish Inspection and Quality Control (FIQC) and
- ❖ Training.

5.1 Manpower under Revenue

Table 1: Manpower under revenue budget and manpower in position

Heads	Category		Number of Posts	Number of Vacant Posts	In position
Revenue	Class-I	Cadre	1285	631	654
		Non-Cadre	355	153	202
	Class-II		655	271	384
	Class-III		2079	357	1722
	Class-IV		1479	271	1208
	Total		5853	1683	4170

5.2 Manpower under Development Projects

Table 2: Manpower under development project and manpower in position

Heads	Category	Numbers of posts	Numbers of vacant posts	In position
Development Projects (21 Nos)	Class-I	39	8	31
	Class-II	30	12	18
	Class-III	677	64	613
	Class-IV	164	8	156
	Total	910	92	818

6. Budgetary Allocation

The Departmental Budget is a comprehensive blueprint of the annual activities expressed in financial terms. It authorizes the department to make expenditure in order to perform its functions and to implement its policy to achieve desired objectives stated in mission's statement. The budget has two distinct categories: (a) Revenue and (b) Development.

6.1 Revenue Budget

Activities which include expenditures of pay and allowances, supplies and services, repair- maintenance and rehabilitation, miscellaneous, procurement of civil works and projects and program apart from Annual Development Program (ADP) fall under revenue budget. During the last five years, non-development budget of DoF is shown in Table-1.

Table 3: Non-development budget of DoF

(taka in lakh)

Code No.	Description	2010-11	2011-12	2012-13	2013-14	2014-15
4500	Pay of Officer	2477.33	2548.46	2367.58	2463.72	2671.00
4600	Pay of Staff	2700.46	2181.19	2986.11	2597.12	2871.55
4700	Allowances	3799.07	3606.10	3632.19	4823.82	4855.35
4800	Supplies and Services	2102.42	3197.12	4027.43	4952.35	4394.08
4900	Repair-Maintenance	203.85	467.00	604.76	674.01	722.00
7000	Civil Works	0	0	0	383.00	283.25
6800	Assets Procurement	-	210.00	246.95	247.00	371.38
Total		11283.13	11283.13	13865.02	16141.02	16168.61

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6.2 Development Budget

Development budget includes all expenditures mentioned in Annual Development Plan (ADP).

Table 4: Development budget of DoF (Taka in lakh)

Financial Year	No. of Project	Development Budget						Achievement
		Expenditure			Allocation			
		Total	LC	PA	Total	LC	PA	
2009-10	21	8851.71	5132.41	3719.30	10119.00	5342.00	4777.00	87%
2010-11	23	12903.42	-	-	13547.00	-	-	96%
2011-12	28	19410.00	-	-	19410.00	-	-	100%
2012-13	27	15618.06	9282.99	6335.07	15337.00	9331.00	6006.00	102%
2013-14	26	23407.57	14932.23	8475.34	21761.00	14979.00	6782.00	107%
2014-15	21	31035.11	23536.45	7498.66	30906.00	24390.00	6516.00	100%

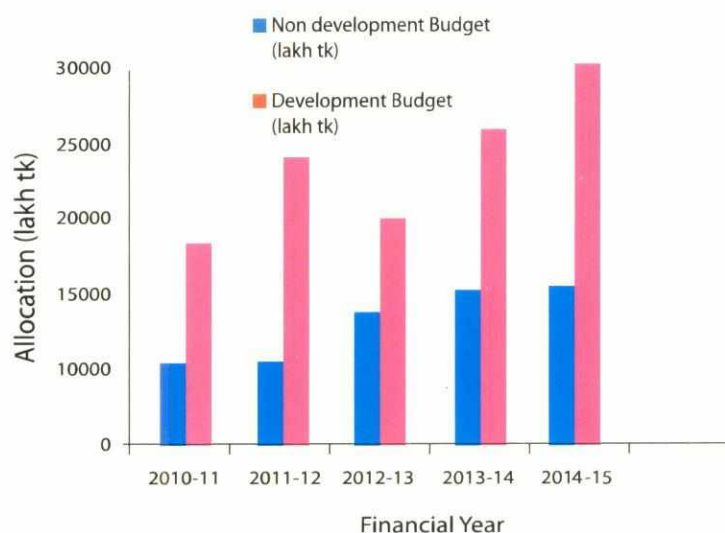


Figure 1: Development and Non-Development budgetary allocation of last five years

7. Sources of Revenue

There are two major sources for government revenue earning:

1. Tax Revenues (TR)
2. Non-tax Revenues (NTR)

All revenue earning by the DoF is Non-tax Revenues. During last five years, non tax revenue earned by the DoF is shown in Table 5.

Table 5: Non tax revenue earned in last five years

(Taka in Thousand)

Economic Code	Description	Financial Year				
		2010-11	2011-12	2012-13	2013-14	2014-15
1901	Punishment	0	0	0	2830	2556
2037	Rent of Govt. Vehicles	80	80	80	67	52
2047	Fish hunting fee	450	250	450	35	1438
2071	Other service fee	4	0	0	183	17744
2101	Rent of non residence	-	-	-	168	265
2111	Rent of Residences	900	40	200	1784	869
2326	Fish and fisheries product	102537	88737	140000	63782	62947
2366	Tenders and other documents	2950	6000	3260	1031	1812
2371	Non usable materials and scrap etc.	250	250	300	2332	3
2376	Miscellaneous non commercial sale	1950	1750	2370	163	138
2671	Refund of extra payment	9960	5860	10000	30	9
2681	Miscellaneous revenue earning	25646	15548	20000	21380	4012
	Total	144727	118477	176660	94590	98298

8. Status of Fisheries Resources and Production

Bangladesh is endowed with rich and vast fisheries resources. Due to favorable natural conditions and geographical location, these fisheries resources having high potential Continue to continual increase of fisheries production. Country's fisheries resources are divided into two major groups such as inland fisheries and marine fisheries. Inland fisheries is further divided into two groups i.e. aquaculture and inland capture. Inland fisheries occupies an area of 46.99 lakh ha and marine capture covers 118813 sq.km along with 200 nautical miles of EEZ from the base line.



Inland open water, Dawudkandi, Comilla.



Some fishing trawlers in the port, Chittagong

The Culture fisheries include ponds,ox-bow lakes and coastal shrimp farms. The flood-plains and the beels, with an area of 28.10 lakh ha, offering tremendous potential for augmenting fish production through adopting aquaculture-based enhancement techniques The country has huge opportunities for the development of brackish water aquaculture boosting shrimp production and earning substantial amount of foreign currencies. Production of shrimp from culture and capture fisheries has increased to a great extent in the beginning of 1980's. Since then, brackish water shrimp farming has been expanded to over 2.75 lakh

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ha of land by 2013 from 1.4 lakh ha in 1980. It is expected that with the introduction of re-excavated scientific method of shrimp culture, the present production of shrimp will be increased substantially. The country has limited access to marine fisheries resources in the Bay of Bengal. Only demersal fish and shrimp are being trapped from here. Other potential marine resources are yet to be exploited on commercial scale. Only 17% of total fish production comes from Marine capture fisheries and 83% from inland fisheries. The status of fisheries resources and fish production of the Country is shown in Figure-2.

The present democratic government has undertaken new policy for sustainable aquaculture production; provide need based aquaculture extension services, implements fish conservation activities which increase the national fisheries production as well as the growth rate in fisheries sector. Besides these, fisheries extension and conservation activities, AIGA and rehabilitation program for poor fishers etc. were undertaken. Through the Execution of Fisheries Friendly Policy of the present government, total fish production has been increased from 30.62 lakh metric ton in 2010-11 to 36.84 lakh metric ton in 2014-15.

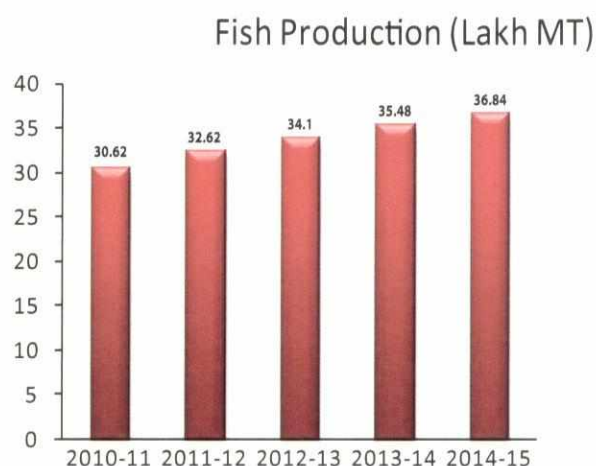


Figure 2 : Fish Production of last 5 years

9. Fisheries Extension Activities

9.1 Fish Seed and PL Production

9.1.1 Spawn collection from natural sources and fry production

During sixties and early seventies aquaculture activities included mainly rearing of natural carp hatchlings collected from the river Jamuna, Padma, Boral, Old Brahmaputra and fertilized eggs from the river Halda of Chittagong and other natural sources during the monsoon (April- August). Availability of hatchlings from natural sources is being declined due to habitat destruction and change in ecological system. The carp hatchlings production from natural sources during 2010 to 2015 period is shown in Table-6. The production from natural source contributes only 0.55 % to the total production of hatchlings (2015) depicting the extent of environmental degradation.

Table 6: Carp hatchlings collection from natural sources

Year	Fish Hatchling (Kg)
2010	2204
2011	4370
2012	4093
2013	3326
2014	2695
2015	4412

9.1.2 Fish seed production through induced breeding

During 1961-62 to 1974-75 the government has established Fish Seed Multiplication Farms (FSMFs) to supply quality and required quantity of seeds to the fish farmers. During that period, mostly wild fish seeds collected from the rivers were reared in the FSMFs and supplied to the fish farmers. In addition, fish farmers used to receive practical hand on training on carp nurasery mamagement and production of carp seeds in these FSMFS. In the mid 60s, with the reduced availability of wild carp seeds in the rivers, the DoF had initiated research and studies on artificial propagation of carps and their seed rearing. In 70s, fisheries scientists have succeeded in it and developed artificial propagation technology of carp seed production. Consequently, this has triggered fish culture efforts with high demand and timely supply of fish hatchling production.



Brood Fish, and hatchling, Kotchadpur, Jhenaidah

carp seeds production. To meet up the demand, the Govt. has established fish hatcheries to produce quality fish seed and to disseminate induced breeding technology. At present, the country is self-sufficient in carp seeds production, though quality fish seeds are produced in a limited scale. To respond the quality issues of DoF has introduced Fish Hatchery Act, 2010 and Fish Hatchery rules, 2011 for the production of quality spawn and fingerlings by registered hatcheries and Farms.

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Table 7: Production of carp hatchling in 2011-2015

Source of Production	Year-2011		Year-2012		Year-2013		Year-2014		Year-2015	
	No of hatchery	Production (kg)	No of hatchery	Production (kg)	No of hatchery	Production (kg)	No of hatchery	Production (kg)	No of hatchery	Production (kg)
Government hatchery	76	7168	81	9222.00	76	9944	76	9884	78	10460
Private hatchery	845	617637	866	59858	852	477393	907	522894.4	849	622416.49
Total	921	629175	947	69080	928	486439	983	530404.4	927	632876.49



Fish seed produced by induced breeding, Raipur

Table 8: Production of fish fry in 2011-2015

Source	Year-2011		Year-2012		Year-2013		Year-2014		Year-2015	
	No. of nursery	Production (in lakh)	No. of nursery	Production (in lakh)	No. of nursery	Production (in lakh)	No. of nursery	Production (in lakh)	No. of nursery	Production (in lakh)
Govt. fish farm	124	217.00	124	222.00	136	207.115	136	231.83	136	259.2
Private nursery	10298	81821.00	10450	99653.00	10814	99769.00	13475	79731.33	13749	81816.81
Total	10422	82038.00	10422	99875.00	10950	99976.12	13611	79963.16	13885	82076.01

With the establishment of Brood Bank Project, DoF has taken initiative to produce quality brood fishes free from genetic drifts and in-breeding problems. Both Government and private fish hatcheries are provided with quality brood for production of quality hatchlings and fingerlings. Information regarding expenditures and income of Government FSMFs fish spawn and fingerlings production is shown in [Annexure-4\(a\)](#).

9.2 Post Larvae (PL) Production

9.2.1 PL collection from natural sources

At presents shrimp farming (both golda and bagda) mainly depends on hatchery produced PL. There had been practices of natural PL collection before the year 2000. To protect natural biodiversity, government has imposed ban on some natural sources PL collection by amending The Protection and Conservation of Fish Act 1950.

9.2.2 PL Production in hatchery

Due to extension of breeding technology of golda and bagda, many private entrepreneurs have established shrimp hatcheries for shrimp post larvae (PL) production. About 36 Galda and 49 Bagda hatcheries have been established by both Govt. and private sector which produced 124405 lakh bagda and 430 lakh golda PL in the country in 2015 (Table 9).

Table 9: Production of golda and bagda PL in 2011-2015

Name	Year-2011		Year-2012		Year-2013		Year-2014		Year-2015	
	No. of hatchery	Production (PL in lakh)	No. of hatchery	Production (PL in lakh)	No. of hatchery	Production (PL in lakh)	No. of hatchery	Production (PL in lakh)	No. of hatchery	Production (PL in lakh)
Golda	60	51000	80	82000	21	331	27	270	36	430
Bagda	70	10800	59	125000	60	92392	55	115880	49	124405
Total	130	61800	139	207000	81	92723	82	116150	83	124835

10. Fish and Shrimp Culture

10.1 Fish Culture

10.1.1 Pond aquaculture

Currently pond aquaculture has been practiced in a total water area of about 3.78 lakh ha which is 7.4 % of total inland water. Pond aquaculture producing about 16.10 lakh mt fish which contribute 43.72% of total inland production in 2014-15. The pond production through composite culture produces an average 4262 kg/ha whereas there are records of 90 mt/ha production of pangas under intensive farming.



Fish culture in pond, Jessore

Table 10: Status of pond aquaculture in 2014-15

SI NO	Farming System	Area (Ha)	Production
1	Extensive	60089	80252
2	Semi intensive	222986	751900
3	Intensive	83402	496807
4	Highly intensive	11491	281916
Total		377968	1610875

10.1.2 Fish culture in paddy field

Paddy fields and seasonal floodplains are promising and potential resources for aquaculture. It has been estimated that paddy fields cover an area of about 80 lakh ha of which 26.95 lakh ha floodplains which remain 4-5 months under water. Previously Government has taken initiative to increase fish production from these flood plains through stocking fish fingerlings. Through 2nd ADP and 3rd Fisheries project, farmers were motivated to stock in suitable floodplain. SHISHUK (an NGO) has been leading community based floodplain aquaculture in Daudkandi of Comilla District and achieved an average production of 2100 kg/ha/year. DoF along with partner NGOs has taken initiatives to maximize fish production from rice fields and to extend the coverage area.



Fish culture Paddy fields, Dumuria, Khulna

If 10% of paddy field comes under this culture system then near about 85 lakh mt more und will be produced annually at the rate of 300 kg fish per ha.

10.1.3 Fish culture in borrow-pit and *khal*

Different types of water bodies re-excavated under Integrated Fisheries and Livestock Development Project in Flood Control, Drainage and Irrigation (FCDI) Project area and other water bodies are also included in the aquaculture systems. Information of developed water body and its area are shown in Table 11.



Aquaculture in borrow-pit in Feni Sadar, Feni.

Table 11: Improvement of different types of water body through FCDI project

Types of water body	2 nd phase	3 rd phase	4 th phase	Total developed water body (ha)
	Developed water body in hectare 2000-2001 and 2002-2003 Financial year	Developed water body in hectare 2006-2007 to 2009-2010 Financial year	Developed water body in hectare 2011-2012 to 2014-2015 Financial year	
Borrow-pit	207.965	230.277	277.812	525.374
Close Khal	105.632	54.138	229.985	461.013
Dead river	75.49	47.393	132.837	509.940
Ponds	58.052	122.762	132.832	2077.027
Total	447.139	454.570	1143.178	3603.354

10.1.4 Fish culture in baor (Ox-bow lake)

A total of about 600 baors having an area of 5,488 ha are situated in the south west part of the country. Different development projects activities have been implemented to increase the fish production from baor. The total water area of baors have been developed and brought under improved aquaculture through fingerling stocking and management practices. Six baors of Jessore district were under disposal of DoF till Feb/2009 and now these baors are under disposal of Department of Fisheries according to the MoU signed between Ministry of Land



Fish harvesting, Jessore

and Ministry of Livestock and Fisheries for next 6 years. Besides this, 30 baors are being managed by OLP-2 project of DoF with the financial support of IFAD. These baors covered area of 1137 ha and fish production has increased from 80 kg to 750 kg/ha (DoF 2008). Local fisher communities are being involved in the baor management and improved their livelihood.

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10.1.5 Cage culture

Several decades ago, attempts were taken to raise fish in cages under different development projects by several institutions/organizations of the country. Though it is well practiced in other countries but it is not yet popular in our country for many reasons. At least 2 projects and a number of NGOs have been working with cage culture using different materials like bamboo, steel rod, net and feed and feed ingredients like rice bran, fish meal, green grass etc to culture fish species like monosex tilapia, pangas, koi, singh, magur, rui, GIFT, thai sorpunti etc.

Cage aquaculture has been identified as a means of livelihoods for landless people. Northwest Fisheries Extension Project (NFEP) in Parbatipur, Dinajpur and Patuakhali-Barguna Aquaculture Extension Project (PBAEP) demonstrated cage aquaculture as pilot basis. The production achieved through cage culture was encouraging and satisfactory but the activities were discontinued due to socio-economic condition of the farmers and some constrains. Cage culture of monosex tilapia is being practiced in Chandpur, Laxmipur Faridpur, Barishal, Mymensingh, Dhaka, Munsigonj, Gopalganj and other regions of Bangladesh. In 2014, about 22kg fish were produced per cubic meter in case of cage culture.



Cage aquaculture in open water, Chandpur

Table 12: Division wise number of cages

Sl No.	Division	Government	Nongovernment	Total
1.	Dhaka	20	1529	1549
2.	Chittagong	20	1710	1720
3.	Rajshahi	05	249	254
4.	Khulna	0	0	0
5.	Barisal	600	1204	1804
6.	Rangpur	30	07	37
7.	Sylhet	00	163	163
	Total	675	4862	5537

10.1.6 Pen culture

Pen culture is also one of the potential means of producing fish from vast water body or water channel. In recent years, pens are made with different materials like bamboo, net, iron-meshed, wooden pillar etc. The area of pen also varies in size from half to few ha. The fish species reared in the pen are carp, tilapia, pangas etc. Feeds are also applied in pen culture system but not regularly. Both single and multi owner are found in pen management. Culture period also varies from June to December depending on availability of water. Pen culture is becoming popular in and around Dhaka and Narayanganj and expanding every year.



Pen culture in channel, Jessore.

10.2 Shrimp Culture

10.2.1a Shrimp (bagda) culture

Black tiger shrimp (*Penaeus monodon*), Bagda grows faster and bigger in size, the species is very popular for coastal aquaculture among other species available in Bangladesh. Bagda culture has been starting in the South-west region of the country using agricultural land since early 1970s. The larvae of shrimp and other fish are trapped into the crop fields during high tide and reared for several months. With the increasing demand of shrimp and prawn in the international market rapid expansion of shrimp farming was observed in dyke elevated rice fields (traditionally known as gher).

In 1994 government declared the coastal region as 'Open for brackish water shrimp farming' through a government order. From then, brackish water shrimp farming has been expanded rapidly. By 2015 over 216468 ha of land were brought under shrimp culture and till it is increasing. The highest number of shrimp farm was established in Bagerhat, Khulna and Satkhira region because of abundant source of saline water and shrimp post larvae (fry) in the Sundarbans mangrove forest and surrounding rivers and estuaries. Earlier the highest production of bagda was observed in Bagerhat, Khulna, Satkhira and Cox's Bazar. The culture system of bagda involves traditional extensive to improved



Shrimp culture in Cox's Bazar

extensive. In 2014-15 bagda production in Bangladesh was 75274.00 MT.

Table 13: Shrimp farming and production

Year	Area farmed (ha)	Shrimp production (MT)	Remarks
2010-2011	213617	56569	Paddy and salt are produced in very near to coast as alternative crops. White fish and crabs are also produced in some places as by-culture.
2011-2012	209456	57784.87	
2012-2013	210053	68948	
2013-2014	215305	71430	
2014-2015	216468	75274	

Source: Fisheries statistical yearbook of Bangladesh 2014-2015, FRSS, DoF

10.2.1b Introduction of SPF black Tiger Shrimp (*Penaeus monodon*) in Bangladesh

Shrimp aquaculture is an important foreign currency earning sector employing more than a million coastal people. By 2015 over 216468 ha of lands are used for black tiger shrimp cultivation in South- West region i.e Bagerhat, Khulna, Satkhira and Cox's Bazar. At present, over 50 Bagda shrimp hatcheries are operation to produce post larvae (PL) for shrimp farms. These hatcheries produce about 1000 to 1200 crore shrimp fry annually. All these shrimp hatcheries are using the wild brood-stock from the Bay of Bengla. It is known that most of the wild broods collected from the Bay of Bengal is contaminated with microbial pathogens. Besides this, the source of supply of broods is unreliable in bad weather and monsoon season. Since the broods are collected in batches of 100 or more by fishing trawlers, it is practically impossible to screen out the broods from known pathogens through PCR test. Besides, the shrimp hatcheries use many individual brood shrimp for maturation in community tanks. It is virtually impossible to screen-out the pathogen free brood shrimp in this set up.



SPF Shrimp culture in Sathkhira

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During the last one decade, there have been intensive efforts to domesticate *P. monodon* (black tiger shrimp) broods to produce SPF stock through selection. The PL of these domesticated SPF broods have performed better in terms of disease, survival, growth and FCR. The domesticated broods are known to be produced in Hawaii, Mosambuque and Thailand. The SPF broods have been successfully introduced in Vietnam, Malaysia and Philippines. In the years 2014 Bangladesh imported and introduced SPF broods first time from Hawaii of America.

As per the government Fish Hatchery Act 2010 and fish Hatchery Rules 2011, it is mandatory for hatcheries to supply disease free PL to the farmers. Therefore, for the sustainability of tiger shrimp hatcheries and farming it is imperative that the shrimp hatcheries use SPF (Specific Pathogen Free) Black Tiger Shrimp to produce disease free PL. By introducing SPF broods, contamination of pathogens to the post larvae form the broods could wholly or largely be eliminated depending on the degree of compliance with prescribed bio-security rules.

At present, disease free PL producing programs are continuing by SPF Black Tiger Shrimp brood. In the year 2015 about 3.1 crore and in June, 2016 about 8.76 crore disease free PL are supplied among the farmers.

10.2.2 Prawn (*golda*) culture

The Giant freshwater prawn (*Macrobrachium rosenbergii*), called as Golda in Bangla, were being trapped and reared with other fishes in the tidal pond and low lands. Generally, the species were harvested from the river/canals, flood plains and beel areas which have connectivity with rivers. At present *Macrobrachium* sp. is being cultured in gher in organized way along with other aquaculture, agriculture and horticulture crops. Different culture systems such as monoculture, poly- culture along with other-



Golda farming in the gher, Devhata, Satkhira.



fish and prawn culture in paddy fields along with paddy are being practiced. The unit production of Golda under the different systems ranged from 375 kg/ ha to 750 kg / ha. The highest production was observed in monoculture (750 kg / ha). Currently golda are farming in gher, pond and paddy field covering an area of about 0.63 lakh ha. About additional 0.59 lakh MT fish are produced along with golda.

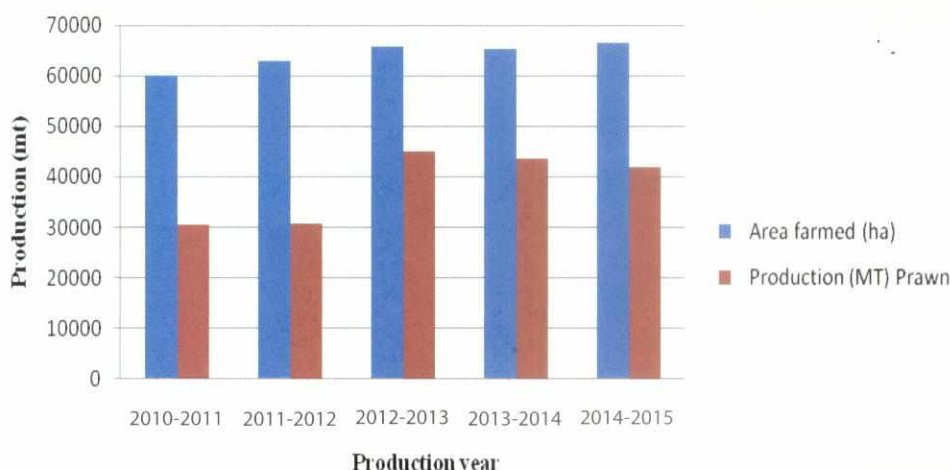


Figure3:Year-wise production of golda

Table 14: Prawn (*golda*) farming and production

Year	Area farmed (ha)	Production (MT) Prawn
2010-2011	62874	30868
2011-2012	65777	45163
2012-2013	65221	43713
2013-2014	59972	42097
2014-2015	59115	42053

Source: Fisheries statistical yearbook of Bangladesh 2014-2015, FRSS, DoF

10.2.3 Marketing and export

Almost all farmed produced shrimps are exported as processed frozen sea food and is the second largest export item in Bangladesh. The contribution of fisheries sub-sector to the total export earnings during 2014-15 was 2.09%. Presently 82 processing plants are in operation, all are HACCP certified and licensed by DoF for export of fish and fish products to European Union (EU), USA, Japan, Russia, Korea, China and India. In order to find out new market destination. Ministry of Fisheries and Livestock has already sent proposal to sign MoU with five East-European Nations for exporting fishery products.

As consequence of repeated Rapid Alert System of Food and Feed (RASFF) against Bangladeshi fresh water prawn being contamination with Nitrofurans metabolites especially Semicarbazide (SEM) in May 2009. Bangladesh Government had been imposed six-month voluntary ban on export of fresh water prawn to EU market. The number of RASFF was increased in 2009 because of adopting faulty protocol by Belgian testing laboratory. The Belgian laboratory started testing shrimp with tail and exo-skeleton instead of flesh. Under these circumstances, Bangladesh along with donors and private initiatives undertook several measures to identify source of Nitrofurans contamination. As well as the country has been engaged an international residue expert to research the issue. Finally the fact was identified that live crustaceans are able to synthesize SEM naturally and accumulate it in their shell and tail.

In order to check the quality of exported shrimp the EU authority has imposed 20% mandatory testing requirement at border entry of European countries. MoFL along with DoF taken serious measures to rectify the controlling measures, legal provisions as well as monitoring measures of food contamination. As a result the EU authority has lifted the 20% mandatory testing requirement of exported products at EU border and it is notable that this mandatory requirement still prevails in some large shrimp exporting countries.

Table 15: Contribution of shrimp in frozen food export

Financial year	Total quantity of Fish and Shrimp exported (MT)	Contribution of shrimp/Prawn			Remarks
		Quantity (MT)	Exported (%)		
			Volume	Value	
2008-2009	72888	50368	69.10	84.60	Shrimp loses about 35% of total body weight during beheading and shell off processing
2009-2010	77647	51554	66.39	84.65	
2010-2011	96469	54891	56.90	77.50	
2011-2012	92476	48007	46.21	77.00	
2012-2013	84905	50333	59.28	81.18	
2013-2014	77328	47635	61.06	86.22	
2014-2015	83524	49278	53.01	96.49	

10.2.4 Fish feed and animal feed act 2010 implementation

Fish feed is one of the most important factor for commercial aquaculture. There were no rules and regulations to maintain the quality of the feed and feed ingredients for the farmers before 2010. But the present democratic fisheries friendly government has taken the initiative to formulate the acts and rules and Fish Feed and Animal Feed Act, 2010 and Fish Feed Rules, 2011 are formulated. Now it is implementing all over the country. The Status of the Fish Feed and Animal Act 2010 and Fish Feed Rules, 2011 are given the table 16.



Fish Factory Sreepur, Gazipur



Destroy of adulterated fish feed, Gazipur



Inspection Feed Factory, Manikgonj

Table 16: Status of the fish feed act 2010 and fish feed rules 2011 implementation (2013-2014)

Serial No.	Division/Head Office	Types of fish feed company				Total revenue earn (lakh Tk)	Remarks
		Fish feed production: Category :1	Fish Feed Import-Export: Category:2	Fish Feed Sale: Category-3 a and b	Total Number		
1	2	3	4	5	6	7	8
1	Dhaka	76	40	882	998	3.50	
2	Chittagong	46	18	527	598	6.70	
3	Rajshahi	48	8	433	469	4.40	
4	Khulna	7	6	481	494	3.20	
5	Sylhet	0	0	112	112	0.51	
6	Barisal	3	2	94	99	0.77	
7	Rangpur	7	0	100	107	0.68	
Total		167	74	2629	2870	19.76	

10.2.5 Fish Hatchery act 2010 and FISH HATCHERY RULE 2011

Aquaculture of Bangladesh will be benefited with the good quality fish seed support from public and private hatcheries. The quality of fish seeds has been declined over the years. The quality reduction is mostly observed in private hatcheries. There are many reasons for the poor seed quality, for instance, inbreeding, inter-specific hybridization, negative selection, improper brood-stock management. Furthermore, hybridization and cross breeding are threatening the genetic diversity of indigenous wild stocks of Indian Major Carps. To protect these undesirable practices, Bangladesh government declared the Hatchery Act and Rules for maintaining the quality of artificial seed production in both public and private hatcheries. Under the act and rules, every hatchery must get registration from competent authority of DoF. The Status of the fish hatchery act 2010 and fish hatchery rule, 2011 are given the table below:

Table 17: Status of the Fish Hatchery Act 2010 and Fish Hatchery Rules, 2011 implementation (2014-2015)

Division	Total Hatchery	Registered	Unregistered	Total revenue earn (lakh Tk)
Dhaka	217	271	00	0.70
Chittagong	226	210	16	6.15
Rajshahi	183	120	63	1.72
Khulna	123	80	43	2.16
Sylhet	19	19	00	0.27
Barisal	39	31	08	0.56
Rangpur	71	43	28	0.74
Total =	878	720	158	12.52



Fish Hatchery in Jessore



Shrimp Hatchery in Jessore

10.2.6 Piranha fish prohibition act Implementation

Piranha, called caribe or piraya, any of more than 60 species of razor-toothed carnivorous fish of South American rivers and lakes, with a somewhat exaggerated reputation for ferocity. Piranha (1978), the piranha has been depicted as a ravenous indiscriminate killer. Most species, however, are scavengers or feed on plant material. Most species of piranha never grow larger than 60 cm (2 feet) long. Colours vary from silvery with orange undersides to almost completely black. These common fishes have deep bodies, saw-edged bellies, and large, generally blunt heads with strong jaws bearing sharp, triangular teeth that meet in a scissor like bite. Piranha fish is prohibited by the gazette notification in February' 2008 under the clause 16 of Fish preservation and conservation act 1950 due to their dangerous carnivorous nature. According this act- any kind of Pirhana group fish import, transport, breeding, culture, sale etc are completely band in Bangladesh. First time if someone breaks the act, he will be given 6 month jail and 10,000 Tk. penalties. Second time it would be double.

Table -18: Piranha Fish Prohibition act implementaion in 2014-15

Awareness meeting	No of Inspections	Number of cases	Fees/ revenue
3098	7567	06	44,000 TK.



Mobile Court aganist piranha in Comilla to Impliment Fish Act.

10.2.7 Control of Formalin use in Fish Preservation and Mass Awareness Campaign

Formalin preserved fish is very detrimental for human health due to its toxic nature and are more harmful effects of formalin abuse in foods for human body. It may cause various diseases like skin disease, diarrhoea, asthma, blindness, kidney diseases, etc and even cancer. The abuse of formalin as fish preservative will create health hazards and it might have negative impact on aquaculture production in Bangladesh. However, it is necessary to protect abuse of formalin to save human health. At the same time, it is necessary to create awareness for fish traders and other stakeholders regarding the toxic



Mobile Court Operation in Dhaka



Mobile Court Operation in Dhaka

and injurious effect of formalin abuse in fish. In this circumstance, the present democratic government has taken an initiative to stop abuse of formalin in fish. As part of its initiative, Department of Fisheries implement a project namely 'Control of Formalin use in Fish Preservation and Mass awareness Campaign'. Department of Fisheries

distributed formalin detecting digital kitbox and each district has got one kit box under this project. After supplying of 80 digital kitbox, a total of 576 mobile courts have been operated at district and upazila level including Dhaka city. A total of 2499 awareness meetings at district and upazila level and 33 workshops at district level have been organized. A workshop was organised by Department of Fisheries and Planning Commission jointly at NEC Bhaban of Planning Commission on Indiscriminate Use of Chemicals on Fish and Fruits: What Can We Do About It?" High officials from different organizations, Teachers from different Universities, Researchers and other related stakeholders participated. Besides, 31,450 representatives from fish traders and other concern stakeholders received training. Due to different activities of the project, rampant formalin abuse in fish has significantly decreased in the country.

10.2.8 Diploma in Fisheries

As per desire of Honorable Prime-minister, Government of the People's Republic of Bangladesh Department of Fisheries established a Fisheries Diploma Institute at Chandpur to generate mid level technically skilled manpower under the Fisheries Diploma Course Implementation project. A new campus of Fisheries Diploma Institute is established by the project within the Fisheries Training Institute, Chandpur campus and it is offering Diploma in Fisheries degree under proper affiliation of Bangladesh Technical Education Board (BTEB), Dhaka. Diploma in Fisheries degree consists of 08 (eight) semesters, 06 (six) months for each semester and the total duration of the diploma course is 04 (four) years. The project provides all the facilities including academic, laboratory & IT facilities, hostel facilities, sports, stipend etc. to the students studying in the Institution. The project also formulated and printed 39 books and 04 syllabuses out of 54 books and 04 syllabuses and another 14 books will be formulated and printed by the upcoming fiscal year. The academic activities of the Institution started from 2009-10 academic year of BTEB, 25 students are admitted for each batch each year and 40 students will be admitted in 2013-14 academic year. The first batch is expected to be completed their Diploma in Fisheries Degree by the end of 2013. The Planning Commission, Bangladesh is interested to make this Institution as a "center of excellence" and expects the other institutions to follow its bench mark. Another 03 (three) new Fisheries Diploma Institutes in Gopalganj, Sirajganj and Kishoreganj districts are under implementation.



Diploma Institute, Kishoreganj

10.2.9 Nimgachi Project

Nimgachi project area is one of the unique fisheries resources under the Department of Fisheries. It is situated in four upazilas of Sirajgonj and Pabna districts, having 783 ponds of 4119 bighas water area. But this project was under the control of Grameen Fish foundation of Grameen Bank for long 25 years. It has been observed with serious concerne that the communities involved in management have had no savings and their livelihood have not been developed at a minimal level, that's why DoF again took over the management control of the project to uplift the socio-economic condition of the concerned communities, through improved aquaculture practices. Nimgachi project is again handover to DoF for six years through signing a MoU on 1st January 2012 between Ministry of Land and Ministry of Fisheries and Livestock. This project will be running under the guideline of Nimgachi Community based policy, through which the community will solely enjoy the ownership of ponds by paying only petty revenue. DoF will provide all technical and management supports for aquaculture and group management under the guidance of upazila and district level committee according to the policy.



Ponds at Nimgachi, Sirajganj

In this year, 546 ponds, covering area of 3224 bighas, was taken under community based fisheries management. As revenue of the pond lease 42.19 lakh taka deposited to Government treasury in 2012. DoF also distributed 4.05 lakh taka as small loan and 10.00 lakh taka as fish feed as grant, which will create revolving fund for the beneficiaries. DoF seed a hatchery and nursery for seed production in the project area for the availability of quality seed for the area. The hatchery has been running under direct control of DoF. During last year, 400 kg hatchling and 7 lakh fingerlings was produced in the hatchery and nursery. DoF have taken initiative for the development of ponds and hatchery of Nimgachi through a development project.

10.2.10 Great Victory day Display

Department of Fisheries (DoF) under the Ministry of Fisheries and Livestock organize a truck-lorry display at the National Parade-ground every year to give a salute for the freedom fighters in liberation war of 1971 on 16th December. At present, among the top ten fish producing countries in the world, Bangladesh secured the 5th position by adopting improved technical management through the Department of Fisheries (DoF). The model in the display reflected the aspiration of present Democratic Government under the leadership of our Honorable Prime Minister Sheikh Hasina toward the development of the fisheries sector by achieving target of vision 2021.



Display of DoF at National parade ground, Dhaka 16 December'2015

11. Fisheries Resource Management

11.1 Inland Open Water Fisheries Resource management

Bangladesh has potential of inland open water resources, including 853,863 ha of rivers and estuaries, about 177,700 ha of Sundarbans, 114,161 ha of natural depressions or beels, 68,800 ha of reservoir and about 26,95,529 ha of floodplains. Annual flooding during the rainy season inundates up to 60% of the total land surface. Bangladesh possesses the 5th largest inland fisheries resources and 4th in culture. After China and India, Bangladesh is the third largest country in the world in inland fisheries. The inland open water is inhabited by 260 species of fish and 25 species of shrimp. Despite the existence of huge resources the inland capture fisheries has over the years been replaced as top fish producing source by aquaculture, due mainly to decline and degradation of resources. The priority is given to improve biological management that will restrict the declination of resources and production. The DoF has prepared a sub strategy on Inland Capture Fisheries based on the National Fisheries Strategy 2006 and National Fisheries Policy 1998.

11.1.1 Community Based Fisheries Management

Community based management of resources is a time-derived and successful activity initiated by DoF. Bangladesh is emerging as a country of having positive lessons from community based management of open water. Consultative Group on International Agricultural Research (CGIAR) awarded CGIAR Science Award-2004 to Community Based Fisheries Management Project (CBFM-2) of DoF for its outstanding innovative performance in the field of community-based fisheries management. At present 6 out of 21 ongoing development projects under implementation includes community based fisheries management and more than 0.20 million people are enjoying the benefits.

Establishment of Community Based Organizations (CBOs) and village level sub committees has been recognized as the first and fundamental step in creating sustainable co-management of fisheries resources in the decision making process by user's group. Initial work on networking by community-based organizations has been started at regional level. More emphasis has been given to work with community based fisheries management in the inland capture fisheries sub-strategy. Floodplains comprises the area of about 70% of the total inland water resources. Most of the floodplains remained unutilized 4 to 6 month earlier but aquaculture are now established as income generating activities for the stackholders.



Community based organization meeting,
Companigonj, Sylhet

11.1.2 Integrated natural resource management

Department of Fisheries is implementing Integrated Natural Resource Management Systems (INRMS) by local users contributes to conserving the biodiversity and livelihoods in the selected wetlands and floodplains of the Jamuna- Padma delta region through Wetland Biodiversity Rehabilitation Project. This activity may be extended in other suitable areas in due course of time.

11.1.3 Fingerling stocking

Natural recruitment of carp spawn and fingerling declining due to human interferences and environmental degradation hampered the productivity of open water capture fisheries resources. To improve the productivity of open water the Ministry of Fisheries and Livestock through the Department of Fisheries initiated regular program from revenue budget to release fingerlings of major carp in open water bodies, floodplains and closed water bodies throughout the country. Stocking of fish fingerling into beels and floodplains is a temporary mitigation measure to address the quick declination of fish production in open water. DoF implements its fingerling-stocking program both under development projects and revenue program.



Fingerling stocking in Dumuria, Khulna

Table 19: Stocking of fish fingerling in open waterbodies and floodplains

Financial Year	Fund allotted Tk. (crore)	Water area (hectare)	Fingerling released		No. of beneficiaries	Remarks
			number (million)	weight (MT)		
2010-11	4.00	123,092	123.92	241.12	2363631	About 40% of the stocked fingerling attain to table fish
2011-12	8.86	109,070	152.26	570.19	2365631	
2012-13	8.74	142053	171.39	480.24	1012000	
2013-14	7.16	114516	189.50	385.52	974186	
2014-15	7.15	13679	155.42	317.72	1054100	

11.1.4 Beel Nursery

Beel nursery has been proved to be a significant tool for increased production of natural water bodies and to increase fish production. DoF has continued the program in various dead rivers, beels, haor and government/non-government water bodies from 2009-10 fiscal year. During last year 211 beel nurseries were successfully established in 3134424 hac which produced 975.72 lac fingerlings. DoF has continued the program for establishing beel nurseries in suitable water bodies as regular activity from revenue budget to increase natural production in beel areas and the surrounding link water bodies i.e.; low lying rice field, floodplain, other beels, canals, rivers etc.



Beel nursery activities at Golapgonj, Sylhet

11.1.5 Establishment of fish sanctuary

To reduce the degradation of aquatic biodiversity specially species diversity of fish and other aquatic species in open water, a set of technical interventions like establishment of fish sanctuaries, fish habitat restoration have been undertaken during the past years. Establishment of aquatic sanctuary is one of the effective tool for conserving fish stock, protecting biodiversity and increasing fish production. The present democratic Government has established 534 fish sanctuaries in different water bodies during last five years. As a result, a substantial increase of fish production was found in those water bodies. At the same time there found abundance of endangered species like Chital, Foli, Kalibaosh, Air, Tengra, Meni, Rani, Sarputi, Pabda, Kajoli, Gojar, Tara baim etc. are found in those water/bodies. These efforts also restored the aquatic bio-diversity. On the other hand, to ensure the migration of fish during the breeding period, different connecting canals of rivers, dead rivers and beels were excavated and re-excavated by DoF. Besides, for the conservation and development of Hilsha fishery five sanctuaries were established in the selected river system. Hence, establishment of sanctuary has become obligatory to protect and conserve these species from extinction and increase fish biodiversity.



Fish Sanctuary, Tungipara, Gopalganj

11.1.6 Fish act implementation

The provisions of Fish Act-1950 safeguard the breeding and growth of carp and other important fishes contributing to increase fish production in the country. Public awareness program were



Fish act implementation at Goaland, Rajbari.

chalked out and implemented by the fisheries offices. Besides special awareness campaign also organized during the observance of National Fish Week 2015. Different extension materials like posters, leaflets, booklets etc. were printed and distributed. TV spot prepared and roadcasted, street drama staged. Appropriate measures were taken to implement the Fish Act-1950 with assistance from local administration and police. Mobile courts were conducted throughout the country and seized and forfeited illegal fishes and nets. Offenders were also penalized on the spot.

Table 20: Enforcement of Fish Acts and Rules during 2014-15

Division	No. of undispensed case in the last year (No)	Present Cumulative no. of case filed (No)	Present Cumulative no. of case disposed (No)	No. of case	Punishment imposed by mobile court		
					No. of Current Jail seized (Lac M.T)	Jail	Fine (Lac Tk)
Dhaka	16	35	35	54	6.18	29	7.35
Chittagong	550	934	932	11	1.38	741	23.40
Rajshahi	10	04	04	00	2.48	00	0.59
Khulna	15	01	01	00	15.63	27	1.67
Barishal	01	1013	963	398	43.00	412	35.74
Sylhet	76	03	06	12	9.6	08	2.44
Rangpur	28	07	14	00	1.7	01	0.59
Total	696	1997	1955	475	80.38	1218	71.78

Due to the implementation of the fish conservation and protection rules the fishers are affected. Considering the livelihoods of the fishers during the ban period for implementation of fish acts, govt. has provided rice free of cost and offered IGA's for the poor fishers.

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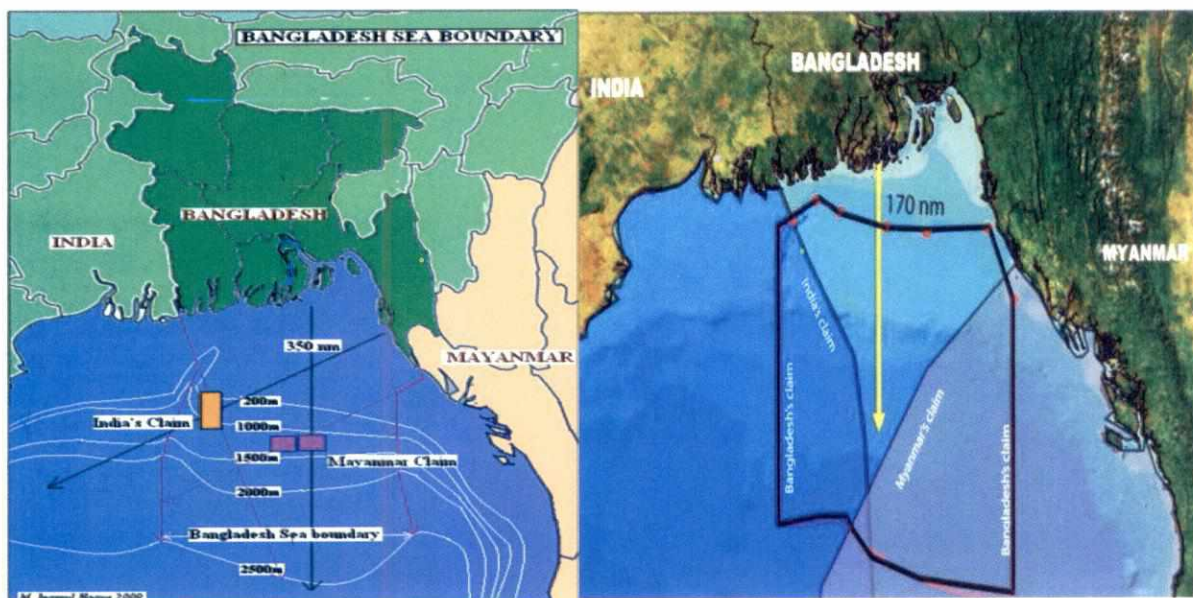
12. Marine Fisheries Resources Management

12.1 Bangladesh Marine Boundary

The maritime boundary of Bangladesh was agreed with Myanmar in an equitable manner by the International Tribunal for the Law of the Seas (ITLOS) in Hamburg on 14 March, 2012. In accordance with the Tribunal's decision, Bangladesh has achieved exclusive economic and territorial rights over the sea extending 200 nautical miles into the Bay of Bengal, a substantial share of outer continental shelf beyond 200 miles, and 19.31 km (12 nautical miles) of territorial waters around the St. Martin Islands.

Our great national leader Sheikh Mujibur Rahman led our country during her Liberation War and his meritorious daughter, Prime Minister Sheikh Hasina has now led our country to success in winning our maritime boundary case against Myanmar, and under her righteous leadership Bangladesh has won another great victory.

Bangladesh can now establish rights over maritime resources such as oil, gas, fish and the entire aquatic wealth that lies within its territorial waters, exceeding its original claim of 1,18,813 square km.



Bangladesh Sea boundary

12.2. Maritime Fisheries Resources Conservation and Management

12.2.1. Extension, Monitoring and Development Activities

A. Procurement of research vessel

Bangladesh has acquired a high-tech multipurpose survey and research vessel 'R.V. MeenShandhani' with the aid of Islamic Development Bank and Malaysian Government under the Marine Fisheries Capacity Building project of DoF. It has already been built in Malaysia and hopefully, after a successful sea trial, it will soon arrive in Bangladesh.

Land based survey:

- Baseline surveys of fishing boats and gear have been completed by the Bangladesh Marine Fisheries Capacity Building Project in 49 Upazilas of 14 coastal districts (project area) and those numbers are increasing regularly. According to updated data collected till 31 March, 2015, a total of 67,669 fishing boats were found in 1,211 Fishing villages. Of these, 32,859 are mechanized and remaining 34,810 are non-mechanized, with 188,707 operating artisanal fishing gear. Data on crafts and gear are incorporated in the project data base (192.168.2.102/bmfcb) and are ratified by the Director General of DoF. However, it is a continuous process, and cross-checking of data is ongoing.
- A total number of 35 fish landing centers in coastal districts were selected for Land based survey. Initially surveys were conducted in 12 centers and now data has been collected from 33 centers. Information on catch composition, length-weight data and gonadal maturity of 31 selected fish species are collected from each selected fish landing center on specific dates in every month.

A. Establishment of Integrated Data base:

- A database has been established which is accessible via the web site of the Department of Fisheries, consistent with project provision. Data on crafts and gears are collected and incorporated into the project Database (192.168.2.102/bmfcb). Updated data from the land based survey are incorporated into the project's website once in a year after ratification. Authorized persons and organizations can access data from the project site at www.fisheries.gov.bd.

B. Establishment of Vessel Tracking Monitoring System (VTMS) :

- Vessel Tracking Monitoring System has been established in the Project Field Office in Chittagong. This system (VTMS) will be used for tracking fishing vessels that are operating in the Bangladesh territory of the Bay of Bengal. The VTMS equipment has been installed successfully by the project in 133 industrial trawlers.

Fishers are provided with training on the FAO-CCRF, compliance with various Acts, regulations and rules emphasizing the importance of conservation for sustainable exploitation of marine and coastal resources. In addition to training, a regular bi-monthly meeting has been arranged with representatives from the Bangladesh Navy, Bangladesh Coast Guard, RAB, Police, MMD, BGB, BMFA, Mechanized boats owner associations, DFOs of coastal districts. Issues of non-compliance by fishers with Marine Fisheries Ordinance and Rules, and mitigation measures to help them to comply with rules and regulations for the conservation of marine resources are discussed at these meetings. Contemporary issues, like piracy on fishing boats, boat registration and issuances of fishing license, sea safety of sails and fishers, regular checking of fishing boats and trawlers etc. are dealt with in a strategic manner to ensure sustainable use of marine resources. According to Marine fisheries Ordinance, 1983, a fishing license is mandatory for all mechanized fishing boats, and annual registration and fitness certificates are issued by the Marine Mercantile Department (MMD).

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Mass awareness campaigns are organized in major fish landing centers and in fishing villages to actively discourage the deleterious impacts of destructive fishing methods. Fishers and the representatives of local people are motivated to show respect for Acts and Rules promulgated to restore our biodiversity and protect the resilience of the marine environment. Strong Monitoring, Control and Surveillance (MCS) procedures are in place to increase boat registration and issuance of fishing licenses. The National Plan of Action (NPOA) has been drafted to eliminate Illegal, Unregulated and Unreported (IUU) fishing in the EEZ waters of Bangladesh. In addition, catch and compliance issues are regularly monitored from the only marine fisheries surveillance check post at Patenga, Chittagong. Most of these facilities need to be established at strategic locations to ensure stringent implementation of the MCS.

12.2.2 Enacting Acts, Rules and Policies

The Fish and Fishery Products (Fish Inspection and Quality Control Rules) 1997 provide guidelines for the production of safe seafood in trawlers. Currently, 63 freezing trawlers have been licensed by the Fish Inspection and Quality Control Office as their factory vessel complied with sanitary and hygienic standards. These licenses provide for export of fish and shrimp to Japan, China, USA, Middle-East countries etc. Export to European Union nations is currently restricted as these are not yet HACCP certified. But fish and shrimp of marine origin are being exported to EU nations under EU Regulations 2005/2008 through the issuance of the mandatory IUU-catch certificate. Standard Hygiene and sanitation conditions of trawlers are regularly monitored by FIQC and MFO personnel during inspections. Non-compliance issues are dealt with using punitive measures specified under the Marine Fisheries Ordinance, 1983 and the FIQC Ordinance, 1997. Commercial and artisanal fishing boats are also advised post-harvest to improve the quality of catch. The mechanized boats engaged in small scale and artisanal fisheries are checked for navigational aids, life-saving appliances and fire-fighting equipment from asea safety perspective. There is still no Bangladesh legislation to ensure the quality of imported fisheries products, except for the checking of the presence of Formalin. The Government has amended the Marine Fisheries Ordinance, 1983 to incorporate FAO-CCRF to control, deter and eliminate Illegal, Unreported and Unregulated (IUU) fishing to conserve marine life. Due to the current prevailing situation the Marine Fisheries Ordinance, 1983 requires further amendment to better align it with the compliance requirements of the FAO-CCRF. MoFL and DoF are finalizing the "Marine Fisheries Policy 2015" to enhance the sustainable economic return for Bangladesh from its marine resources. Amendment of the Marine Fisheries Ordinance, 1983 is also underway.

12.3 Hilsa Fishery Conservation, Exploitation and Management

Hilsa is the national fish of Bangladesh. As a single species, it makes the highest contribution which is about 12% of the country's total fish production. Juvenile Hilsa measuring up to 25 cm are known as Jatka. To achieve sustainable hilsa production it is imperative to protect jatka during rearing period and berried Hilsa during the peak spawning period to ensure the unbated release of matured eggs.

The government has adopted coordinated program to conserve and protect jatka during rearing period and mother hilsa during spawning season, and has also developed a separate economic code for the conservation of jatka. Since 2007, Jatka Conservation Week has been observed in 91 coastal upazilas of 23 districts as a national program to protect jatka and ensure both of its growth and production of hilsa through reducing over-fishing of hilsa and facilitating recruitment.

During the ban period (November to June), the jatka fishers receive an annual allowance of 30 kg of food-grain per household per month for 4 months. The Government also provides financial incentives and distributes trade materials to enlisted jatka fishers as Alternative Income Generation Activation (AIGA). About 65% of Bangladesh's total catch of hilsa currently originates from the marine environment.

12.4 Exploitation of Marine Fish by Various Methods

12.4.1 Licensing Activities of Mechanized Fishing Boats

The land based survey report of Bangladesh Marine Fisheries Capacity Building project estimated 32,859 mechanized and 34,810 non-mechanized fishing boats are currently engaged in fishing in the marine and coastal waters of Bangladesh. Before they can commence fishing in the marine and coastal waters of Bangladesh, industrial fishing trawlers and mechanized boats must obtain mandatory registration and a certificate of inspection from the Mercantile Marine Department under Ministry of Ports and Shipping. They also require Fishing License from Department of Fisheries under Ministry of Fisheries and Livestock. Under Article 388 of part IX of the Bangladesh Merchant Shipping Ordinance, 1983, every fishing vessel to which this Chapter applies must be registered in accordance with the provisions of this section. After receiving registration and the COI (Certificate of Inspection) from MMD (Marine Mercantile Department), the Marine Fisheries Office is authorized to issue fishing license, consistent with Section 17 and 18 of Marine fisheries Ordinance 1983, subject to the payment of fees which are set by the government based on the gross tonnage of the vessel. Registration, COI and fishing license have been issued as one stop service at combined camps at important fishing sites supported by personnel from MMD and MFD. But unfortunately due to lack of manpower it is proving increasingly difficult to organize combined camps and this is hindering compliance.

Table- 21: Licensing Activities of last 2 year

Year	Licences Issues(Nos.)			Revenue (Lakh taka)	Remarks
	New	Renew	Total		
2013-2014	614	1226	1840	29.74	
2014-2015	319	1167	1486	45.81	

12.4.2 Licensing Activities of Industrial Fishing Vessel/Trawler

During 2013-14, a total of 199 industrial trawlers in the fleet were engaged fishing into the Bangladesh EEZ. The fleet comprised 30 shrimp and 169 fishing trawlers fishing mid-water, demersal, bottom water, white fish and a modern trawler, together with trawlers permitted to fish on trial trip basis by the Honorable High Court. The addition of these trawlers to the existing fleet is sanctioned by Cabinet Division of the Government. Following the approval of Cabinet and a very stringent review process, the Ministry of Fisheries and Livestock allows trawlers to be imported or built locally. These vessels require the same registration, fitness and fishing license as mechanized fishing boats. Based on the gross tonnage approved by the government, fees are deposited through treasury chalan prior to the fishing license being issued. All fishing vessel licenses are issued or renewed on 31 December each year.

Table 22: Amount of exploitation by the industrial trawlers

Year	No. of trawlers engaged in fishing			Amount exploited(mt)		
	Shrimp	Fish	Total	shrimp	Fish	Total
2012-2013	32	152	184	3083	69947	73030
2013-2014	30	169	199	3799	73086	76885
2014-2015	32	175	207	2733	82113	84846

12.4.3 Inspection and Catch Monitoring of Trawlers and Mechanized boats

No fishing trawler is allowed to go to the sea without prior permission from the Marine Fisheries Office (MDF). MDF issues sailing permissions (SP) for up to 13 or 14 days for non-freezer trawlers and 30 days for freezer trawlers consistent with the Marine Fisheries Rules, 1983. MDF officers check the fishing appliances and gear prior to each trip, and fishing trawlers submit their fishing logs to the MFD on the completion of each voyage. MFD officers also observe the unloading of catches and collect relevant information. Inspectors randomly inspected 345 trawlers in 2011-2012, 435 trawlers in 2012-13, 332 trawlers in 2013-14 and 287 in 2014-15. They imposed penalties of Tk 12.55 lakh, Tk. 18.70 lakh, Tk 15.45 lakh and Tk 19.05 lakh respectively, consistent with the relevant provisions of the Marine Fisheries Ordinance 1983.

12.4.4 Issuance of Illegal, Unprotected and Unregulated (IUU) - Catch Certificate

The European Union through its Council Regulation EC 1005/2008 has laid down Catch Certificate Scheme (CSS) to combat Illegal, Unprotected and Unregulated (IUU) Fishing. Under this Scheme any company wanting to export marine fishes to European Union countries must have IUU-Catch Certificate (CC) approved by the flag state's Competent Authority.

The Marine Fisheries Ordinance 1983 was amended in 2010 to facilitate issuing IUU-Catch Certificates. The Director, as Competent Authority, issued IUU-CCs under the scheme and collected revenue of Tk 1.83 lakh for 43 CC since 2013-2014. Before issuing an IUU-CC, each consignment is checked and verified to ensure the traceability of the product and to document the process followed by the Marine Fisheries Ordinance officials.

12.5 Disaster Management Activities

Disaster management is a process or strategy that is implemented before, during, or after, any type of catastrophic event, to ensure that appropriate lessons are learned, and to avoid, remedy or mitigate the impact of future disasters. Disaster management can be initiated whenever anything threatens to disrupt normal operations or puts peoples' lives at risk. All levels of government, and many businesses and non-governmental organizations, create their own disaster plans to help them overcome various catastrophes and return to normality as quickly as possible. These plans should be reviewed on an annual basis.

There are four essential elements to disaster management: prevention, preparation, relief and recovery. Inevitably, not all catastrophes can be prevented, but many can be avoided, and the effects of others can be mitigated. Preparation might include long-term plans for readiness as well as processes that can be implemented quickly when a disaster seems imminent, such as when a hurricane is expected to make land-fall. Relief involves taking appropriate action during and after a catastrophe has taken place. Recovery includes, where possible, repairing, rebuilding, restoring, or replacing whatever was damaged, injured or lost because of the disaster.

DoF has under taken activities to mitigate disaster through short term, mid term and long term planning. These include plans to:

- Restore the aquaculture production chain in the cyclone affected coastal areas providing aquaculture inputs to the coastal fish farmers.
- Restore the livelihood of cyclone-affected coastal fishers providing fishing nets and assistance to repair their boats.
- Ensure the steady economic growth of the fisheries sector of the coastal region by assisting fishing communities and families by strengthening their resilience, knowledge and capacity, and their ability to recover from disasters as quickly as possible.
- Improve the Government's knowledge-base of the existing status of coastal fishers and small-scale fisheries

12.6 Implementation of Marine Fisheries Rules 1983

12.6.1 Penalties/case against breaching Marine Fisheries Rules 1983

To conserve the ecological balance for the whole marine environment, fishing in less than 40 metres depth by the industrial fishing the trawlers is completely prohibited by MFR 1983.

12.7 Marine Fisheries Survey and Management Unit

After liberation, some survey work was done with the assistance of foreign experts working for the UNDP. Two survey vessels -R.V. Anushandhani and R.V. Machranga under Marine Fisheries Survey and Management Unit are out of commission and are waiting to be disposed as scrap. Eighty three survey cruises were undertaken by RV. Machranga up to 1996. The pre and post liberation surveys detected four fishing grounds, estimated fish and shrimp stock and MSY (Maximum sustainable yield) and identified two peak breeding seasons of shrimp. In 2000, as a precautionary management measure, the government declared 698 km² in the Bay of Bengal to be a Marine Reserve. However, the benefits of the reserve would be greatly enhanced by more effective implementation of MCS procedures. The Marine Fisheries Ordinance 1983 and Marine Fisheries Rules limited fishing areas for mechanized and non-mechanized fishing boats within the 40 m depth counter during the high tide. Proper and effective MCS procedures require a comprehensive and concerted effort by our Guardians at Sea - the Bangladesh Navy and Bangladesh Coast Guard –to permanently protect our maritime boundary.

Land base survey work is currently being conducted by technical staff and scientists of the Marine Fisheries Survey and Management Unit in 12 fish landing centers in the coastal regions of Chittagong and Cox's Bazar districts. Data generated from the land base survey, will make it possible to estimate the amount of harvested fish/shrimp in the region's artisanal sector, and will include valuable information on species composition, the catch composition of ESNB catch, length frequency, landed boats, used and destructive gear, which are essential for the planning process.

Table 23: Gear wise harvest (mt) from 12 selected landing Centers during 2014-15

Month	Harvest (MT) from Fish Landing Centre (FLC)							
	ESBN	MSBN	SMD	LMD	Tong Jal	Rog Jal	Pakua Jal	Total
Jul,14	3.558	194.877	10.055	11.785	63.716	57.240	-	341.231
Aug,14	26.195	1222.110	300.070	71.600	177.412	52.688	-	1850.075
Sep,14	41.639	1238.153	187.530	35.690	353.255	88.956	-	1945.223
Oct,14	35.672	1470.479	70.063	24.310	141.700	74.518	-	1816.742
Nov,14	54.806	2802.602	155.120	143.000	22.344	79.800	-	3257.672
Dec,14	24.007	2223.730	228.000	200.590	-	81.880	50.750	2808.957
Jan,15	20.000	790.656	41.090	175.100	-	103.000	34.371	1164.217
Feb,15	10.034	1583.060	190.200	204.191	-	96.000	21.00	2104.485
Mar,15	30.000	1891.702	175.430	300.000	-	67.450	20.910	2485.492
Apr,15	53.698	582.772	200.008	102.570	-	55.440	-	994.488
May,15	59.849	1071.543	100.018	80.182	-	72.250	-	1383.842
Jun,15	49.363	237.396	52.700	100.00	-	76.260	-	515.719
Total(MT)	408.821	15309.080	1710.284	1449.018	758.427	905.482	127.031	20668.143
Percentage (%)	1.98	74.07	8.27	7.00	3.67	4.38	0.62	100

13. Fish Inspection and Quality Control (FIQC)

The importance of exportable fisheries products' quality was realized in tandem with the expansion of export market vis-à-vis consumer's demand for quality and safe food. Envisaging this context, Government implemented the National Fish Inspection and Quality Control Project in 1976 establishing two regional offices located at Chittagong and Khulna. The office of Dhaka zone was established in 1980 under 'Establishment of National Fish Inspection and Quality Control Service (NFIQC) project' at Matsya Bhaban. Without having own laboratory, the initial activities under FIQC, Dhaka were restricted to inspection of fish processing establishments and infrastructure, advisory services for the developments of fish processing plants and processed products as well. Also, microbiological tests have been carried out with the assistance of microbiological laboratory of former Institute of Post Graduate Medicine and Research (IPGMR presently BSMRMU, Dhaka. Department of Fisheries (DoF) has transferred FIQC Laboratory by reshaping construction design, on the 11th floor of Matsya Bhaban building in 1994. In the year 2014, it has been shifted at new premises at Savar, Dhaka. Honorable Minister for the Ministry of Fisheries and Livestock Mr. Mohammed Sayedul Hoque MP has inaugurated the newly built Fish Inspection and Quality Control Laboratory at Savar, Dhaka in February, 2015. Besides FIQC Laboratory in Dhaka, two more modern laboratories having chemical and microbiological sections have been established at Chittagong and Khulna by the financial assistance of UNIDO-SFIQC project during 2008-09. Since the creation of lab facilities, testing of microbial quality of exportable fish and fishery products has routinely been performed by the officials of three FIQC laboratories. Moreover these laboratories started testing of harmful chemical residue analysis of fish and fishery products since 2007..



Hon'ble Minister of MOFL Mr. Mohammed Sayedul Hoque MP visits FIQC Lab, Savar, Dhaka

To address EU requirements, the Department of Fisheries (DoF) has installed four LC-MS-MS machines at FIQC laboratory, Dhaka to check the contamination of residues of prohibited antibiotics, dyes and anthelmintics in fishery product. Out of the four LC-MS-MS machines of FIQC laboratory, Dhaka, two were shifted to FIQC laboratory, Khulna in May, 2014. Meanwhile single LC-MS-MS machine was installed at each of FIQC laboratory in Dhaka and Chittagong in 2015. Confirmatory test of the residues of chloramphenicol, nitrofurantoin metabolites, malachite green, leuco-malachite green, crystal violet, leuco-crystal violet, anthelmintics etc. in fishery product are being tested through these LC-MS-MS machines at FIQC laboratory, Dhaka. Method validation of testing of chloramphenicol, nitrofurantoin metabolites and malachite green through LC-MS-MS machines is underway at FIQC laboratory, Khulna. Furthermore,

two ELISA system have been added to each of FIQC laboratory, Chittagong and Khulna for screening tests of the residues of chloramphenicol, nitrofurans metabolites, oxy-tetracycline, tetracycline, chlor-tetracycline, metronidazole, malachite green, leuco-malachite green, crystal violet, leuco-crystal violet, histamine etc of fishery products. Moreover, one GC-MS(TOF) machine was installed at each of FIQC laboratory, Dhaka and Chittagong.; two UPLC machines were installed at FIQC laboratory, Chittagong and Khulna in 2014. Besides these, for nutritional analysis of feed and feed ingredients, new equipments like Kjeldahl Digesters, Distiller; DUMAS Nitrogen Analyzer, Fat Extractor and Near Infra-red Spectroscopy (NIR) and FAO TCP respectively have been installed at FIQC laboratory, Dhaka through the financial assistance of BEST-BFQ project. The analysts of the laboratories were trained both locally and abroad to operate the machines as well as performing tests maintaining international standard as well as requirements of the importing countries.

13.1 Laboratory services

Testing as per requirements of EU (DG-SANTE), Russia (Rosselkhoz nadzor), USA (FDA & FSIS) and other importing countries for fish and fishery products as well as for residue monitoring program (RMP) are fulfilled by the three FIQC laboratories. Most of the test scopes of three FIQC laboratories are accredited according to ISO 17025: 2005 by Bangladesh Accreditation Board (BAB).

There are two supporting laboratories (out sourcing). They are-

- Institute of Food Science and Technology (IFST) Laboratory of Bangladesh Council for Scientific and Industrial Research (BCSIR), Dhaka
- Pesticide Laboratory of Bangladesh Agriculture Research Institute (BARI), Gazipur

International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR), Dhaka is the reference laboratory for microbiological test.



New GC-MS (TOF) machine installed at FIQC Laboratory, Savar, Dhaka

13.2 Analytical services provided by the FIQC and supporting Laboratories

Laboratories render analytical service through testing of pre-export samples, NRCP & FRCP samples. With the requirement of the importing countries and direction of the competent authorities, FIQC laboratories carry out method validation and testing of new parameters. Regarding analytical capacity of three FIQC laboratories, the overall comments of EU-FVO Audit report-2015 was depicted as "Significant improvements have also been noted in the performance of the laboratory network, accreditation of laboratories and validation of analytical methods and the competent authority can in general, have confidence in the reliability of analytical results". According to the recommendations of EU-FVO Audit Report-2015, the FIQC laboratories have validated new methods of testing of metronidazole, histamine, mebendazole, phosphate etc. and method validation for testing of pesticides PCBs through GC-MS(TOF) is and phosphate underway. In addition to test fishery products, methods have been validated for testing of proximate analysis of fish feed and feed ingredients.

Name of Lab	Test parameters
Fish Inspection & Quality Control Laboratory (FIQC), Dhaka	<ul style="list-style-type: none"> • Microbiological: Standard Plate Count (SPC), Total coliforms (MPN), Faecal coliforms/<i>E. coli</i> (MPN), <i>Salmonella</i>, <i>Vibrio cholerae</i>.) • Antibiotics-Nitrofurantoin metabolites, Chloramphenicol • Dyes (Crystal violet, Leucocrystal violet, Malachite green, Leucomalachite green) • Anthelmintics (Flubendazole, Febendazole, Mebendazole) • Proximate test of feed and feed ingredients (Protein, Non-protein nitrogen, fat, fibre, ash and moisture)
Fish Inspection & Quality Control Laboratory (FIQC), Khulna and Chittagong	<ul style="list-style-type: none"> • Microbiological (Standard Plate Count (SPC), Total coliforms (MPN), Faecal coliforms/<i>E. coli</i> (MPN), <i>Salmonella</i> spp., <i>Vibrio cholerae</i>, <i>Vibrio parahaemolyticus</i>, <i>Listeria monocytogenes</i>, <i>Staphylococcus aureus</i> etc.) • Antibiotics-Nitrofurantoin metabolites, Chloramphenicol, Tetracycline, Oxy-tetracycline, Chlortetracycline, Metronidazole • Dyes (Crystal violet, Leucocrystal violet, Malachite green, Leucomalachite green) • Heavy metals (As, Hg, Pb, Cd, Cr) • Methyltestosterone (MTS), Di-ethyl stilbestrol (DES) • Histamine, TVBN/TMA, Filth, Formalin
Laboratory of Institute of Food Science and Technology (IFST), BCSIR, Dhaka	<ul style="list-style-type: none"> • Antibiotics (Tetracycline, Oxy-tetracycline, Chlortetracycline) • Mycotoxin
Pesticide Laboratory of Bangladesh Agricultural Research Institute (BARI), Gazipur	<ul style="list-style-type: none"> • Pesticides (DDT, Aldrin, Heptachlor, Endrin, Dieldrin)
International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR), Dhaka	<ul style="list-style-type: none"> • Microbiological tests for reference

Most of the scopes of testing FIQC Laboratories are accredited according to ISO 17025:2005. With a view to ensure external quality control, each FIQC Laboratory participates in international proficiency tests (PT) offered by world renowned PT provider organizations on regular basis. In the year 2015, three FIQC Laboratories participated in proficiency tests organized by different world renowned PT provider organizations which is described below-

Name of FIQC Laboratory	Name and address of PT provider	Period of PT	Name of test parameters	Results/ Comments
FIQC Laboratory, Dhaka	Fera Science Ltd., FAO Finance Group, Sand Hutton, York, YO41 HZ, United Kingdom	September, 2015	Dyes (Fish muscle)	Passed/ Satisfactory
FIQC Laboratory, Chittagong	National Food Agency, SE-75126, UPSALA, Sweden	January, 2015	Specific Plate Count (SPC) and <i>Salmonella</i> spp.	Passed/ Satisfactory

FIQC Laboratory, Khulna	National Food Agency, LIVSMDELSVERKET, SE- 75126, UPSALA, Sweden	January, 2015	Aerobic plate count, <i>Listeria monocytogenes</i> , <i>Salmonella</i> , Pathogenic <i>Vibrio</i> spp (<i>Vibrio cholerae</i> & <i>V. parahaemolyticus</i>)	Passed/ Satisfactory
	TESTVERITAS SRL, Via Svizzera 16, 35127 Padova (PD), Italy	October, 2015	Nitrofurantol metabolites (AOZ, AMOZ, AHD, SEM), Tetracyclines (OTC, CTC, TC)	Passed/ Satisfactory

13.3 Licensing of Fish Processing Establishments

Licenses are issued or renewed annually considering overall condition of Fish processing plants, Non packer exporters, Fish packing centers, Fish drying yards, Factory trawlers, Fish suppliers and Depots according to Fish and Fish Products (Inspection and Quality Control) Rules, 1997 (amended in 2008 & 2014). The check list used for evaluation of fish processing plants have been revised and rearranged in 2014. The numbers of Fish processing plants, Non-packer exporters, Factory trawlers, Fish packing centres etc. are presented in Table 24

Table 24. Number of different of establishments involved in fish export value chain:

Sl.No.	Type of Establishment	Number	Remarks
1.	Fish Processing plants	104	76 are EU-approved
2.	Factory Trawlers	46	
3.	Fish Packing Centre	41	
4.	Non Packer	106	
5.	Suppliers	213	
6.	Fish drying yards	30	
7.	Depots	1141	
8.	Service centre/Landing centre	48	

13.4 Routine Monitoring of Quality Assurance Program (QAP)

To ensure HACCP system of Fish processing plants, factory trawlers, packing centres and other establishments involved in fish processing activities are regularly inspected and monitored as per provisions of Fish and Fish product (Inspection and Quality Control) Rules 1997 (amended in 2008 & 2014). During routine inspection, emphasis are given on:

- Hygiene and sanitation of the establishment concerned
- Personal hygiene of working personnel
- Monitoring of the activities involved in fish process line

- Monitoring and verification of own-check systems of the establishment concerned
- Verifications of traceability documents
- Evaluate GMP and verification of HACCP documents

In 2015, number of routine inspection of fish processing plants carried out by three FIQC offices was 255. Besides this, fish processing establishments intended to export fish and fishery products are inspected through a set of criteria by a team formed by Central Competent Authority (CCA) at the beginning of each year as a pre-requisite for renewal of licenses. During inspection, if any short coming is identified, the concerned fish processing establishment is notified for necessary measures and action is taken according to Fish and Fish Product (Inspection & Quality Control) Rules-1997 (amended in 2008 & 2014). In 2015, in total 5,45,000 Taka was fined from different fish processing establishments due to breach of Fish and Fish Product (Inspection & Quality Control) Rules-1997 (amended in 2008 & 2014). During 2015, 228 ice-plants and 505 quality improvement and traceability documents of depots/arots were also inspected.

13.5 Fish Products Inspection

13.5.1 Export of Fishery Products

DoF competent authority inspect a declared consignment of exporter after getting an application along with commercial invoice, packing list, purchase contract or L/C copy for pre-shipment inspection and application fees. Assigned Inspector verifies traceability documents, stock, storage condition, packing, labelling and relevant documents of processed products during inspection. Then Inspectors check organoleptic quality of randomly selected samples. Having satisfactory organoleptic assessment and product documentation the assigned Inspector draws samples as per sampling plans for bacteriological and chemical analysis as required by the importing countries. Finally, Inspector submits report on products, processing practice and relevant documentation process to the competent authority for pre-export test and certification. A form diagram of issuance of health certificate is presented in fig 13.5.1. In 2015, total 4,864 declared consignments of fish and fish products were inspected as a part of pre-export inspection by three FIQC offices.

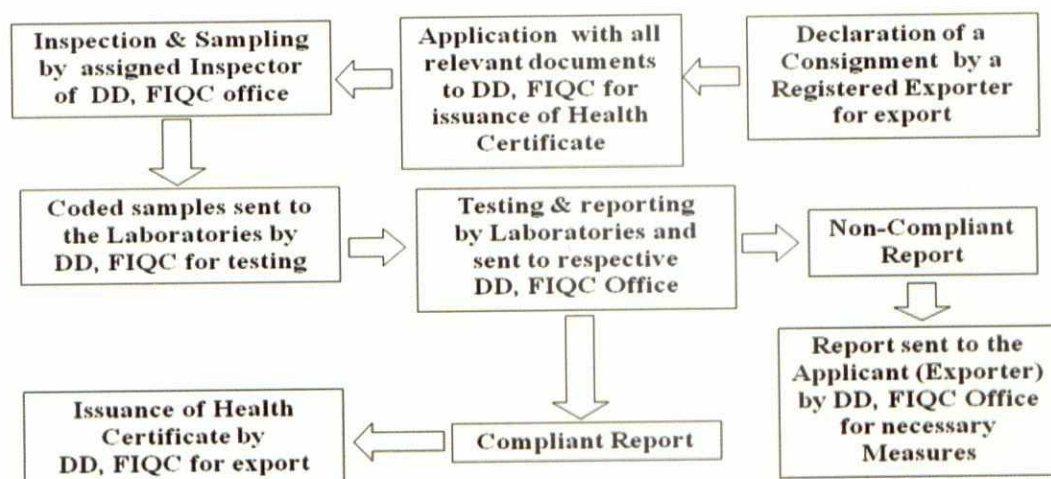


Fig. Flow diagram of issuance of health certificate

13.5.2 Imports of Fishery Products

Upon request of Customs authority, representatives of the DoF inspect the quality of imported fish through checking the presence of formalin and physical condition for each exported consignments. Moreover, under regular monitoring program, DoF also check the presence of heavy metal like Cd, Pb & Hg in any one consignment randomly chosen from every ten consignments of imported frozen fish; and the presence of heavy metal like Cr & As; chloramphenicol, nitrofurantoin metabolites and oxytetracycline in any one consignment randomly chosen from every ten consignments of imported frozen freshwater fish. In case of testing of each sample, fees according to Fish and Fish Products (Inspection & Quality Control) 1997 (amended in 2008 & 2014) will be charged from the respective importer. If the test result is compliant, the imported consignment will be released for selling among the consumers of the country.



Quality checking at a processing factory in Chittagong

13.6 Quality Assurance of Fish Products

13.6.1 Microbiological tests

Samples drawn by Inspectors are tested at microbiological laboratory under respective FIQC office for assessment of *Salmonella sp.*, *Vibrio cholerae*, *Vibrio parahaemolyticus*, Total and Faecal coliforms and to estimate Standard Plate Count (SPC). Reports of microbial tests are evaluated for compliances with microbiological standards stated in ISO/ICMSF for issuing Salubrity certificates.

13.6.2 Chemical tests

Presence of prohibited antibiotics especially Chloramphenicol (CAP) and Nitrofurantoin (NF) metabolites in shrimp has become the major concern for EU countries in the recent years. FIQC laboratories, Dhaka, Chittagong and Khulna used to conduct tests for analysing residues of CAP and NF metabolites (AMOX, AOZ, AHD & SEM), Crystal violet (CV) and Malachite green (MG) and its metabolites (LCV & LMG) as well as Flubendazole by LC-MS-MS and ELISA screening as per EU regulation and FIQC Rules 1997 (amended in 2008 & 2014). Moreover, FIQC laboratories, Chittagong and Khulna also conducted tests for antibacterial substances (Tetracycline, Oxytetracycline, Chlortetracycline and Metronidazole), Stilbenes and Steroids, heavy metals (Lead, Cadmium, Mercury, Chromium and Arsenic) and Histamine. Tests concerning Mycotoxins and Pesticides were carried out by outsourced laboratories.

13.6.3 Water, Ice and Swab tests

Monitoring samples of water, ice and swab samples collected from fish processing industries are analyzed for SPC and total/faecal coliforms in order to assess the quality of water and ice of fish processing industries, and swab tests results indicate general hygienic and sanitation condition of contact

surfaces (workers hand surface and food contact surfaces). Any non-compliance situation if detected by test is soon reported to concerned factory authorities for taking corrective measures as per Fish and Fish Product (Inspection and Quality Control) Rules 1997 (Amended in 2008).

13.7 Aquaculture Residues monitoring through NRCP

The National Residue Control Plan (NRCP) of DoF, is a program to monitor fish and fishery products at different levels of production in regard to residues of undesirable substances. The aim of the control on fish and fishery product is to assess the compliance with the tolerance limits (for contaminants), maximum residue limits (MRLS for permitted substances), to reveal the illegal use of banned or unauthorized substances as well as to determine the origin of residue contamination. For implementation of NRCP, 'NRCP Policy Guidelines 2011 (amended in 2012)' was formulated in line with the Fish and Fish Product (Inspection & Quality Control) Rules-1997 (amended in 2008 & 2014). The National Residue Control Plan is based on measures to monitor certain substances and residues thereof in live animals and animal product and fixing the levels and frequencies of sampling provided the control of certain substances and residues thereof in certain animal products. A database on NRCP has been developed by BEST-BFQ project. Department of Fisheries under the Ministry of Fisheries and Livestock operates NRCP, meeting the following requirements:

- There is a well designed residue monitoring plan place centrally coordinated by Central Competent Authority (CCA).
- CCA is assisted by a NRCP Coordination Committee to monitor the progress of implementation of NRCP. The committee has representatives from each Regional Competent Authority (RCA) and one approved laboratory.
- RCA acts as facilitator in organizing NRCP while sampling is carried out by Local Competent Authority (LCA).
- The program is as per the national legislation governing the use of veterinary medicinal products in fishery products and aquaculture.
- It is as per the stipulated sampling strategies (levels and frequencies) stated in this document.
- It prohibits exporting fish and fishery products containing unauthorized veterinary medicinal products, environmental contaminants, permitted substances beyond MRLs and other substances having anabolic effects.
- Department of Fisheries has enough financial resources to carry out NRCP as planned.

The NRCP Coordination Committee formulates National Residue Control Plan for each year as per provisions of 'NRCP Policy Guidelines 2011 (amended in 2012)' and with the approval of CCA sends it to concerned officials of DG(SANTE) for review and approval. The approved NRCP is then implanted through three RCA offices and officials concerned. The substance and groups that are monitored under NRCP are as follows:

Compound Groups	Test parameters	Remarks
A ₁	Stilbenes (Diethylstilbestrol)	_____
A ₃	Steroids (Methyl Testosterone)	_____
A ₆	Banned Antibiotics (Chloramphenicol (CAP), Nitrofurans (NF) metabolites (AHD, AMOZ, AOZ, SEM), Metronidazole (MNZ))	Metronidazole was included in NRCP-2016 as per recommendations of EU-FVO Audit Report-2015

B ₁	Antibacterial substances (Tetracycline (TC), Oxytetracycline (OTC), Chlortetracycline (CTC))	
B _{2a}	Anthelmintics (Flubendazole, Mebendazole)	Mebendazole was included in lieu of Flubendazole in NRCP-2016 as per recommendations of EU-FVO Audit Report-2015
B _{3(a)}	Pesticides (Organochlorine / Organophosphorus) (DDT, Aldrin, Heptachlor, Endrin and Dieldrin)	
B _{3(c)}	Chemical elements (As, Cd, Cr, Hg, Pb)	
B _{3(d)}	Mycotoxin (Aflatoxin (B1, B2, G1, & G2))	
B _{3(e)}	Dyes (Malachite Green (MG), Leucomelachite Green (LMG), Crystal Violet (CV) & Leucocrystal Violet (LCV))	

13.7.1 Planned NRCP-2016 for Shrimp and Finfish

Summary of National Residue Control Plan-2016 is as follows:

National Plan									Khulna Zone								Chittagong Zone								Dhaka Zone		
Test Parameter	<i>M.rosen-bergii</i>	<i>P. monodon</i>		<i>M. mono-ceros</i>		Fin-fish		Total	<i>M. rosen-bergii</i>	<i>P. monodon</i>		<i>M. mono-ceros</i>		Total	<i>M. rossen-bergii</i>	<i>P. Mono-don</i>		<i>M. mono-ceros</i>		Fin fish		Total	<i>M. rosen-bergii</i>	Fin fish		Total	
	Plan	Plan	N.C. Plan	Plan	N.C. Plan	Plan	Plan	N.C. Plan	Plan	Plan	N.C. Plan	Plan	N.C. Plan	Plan	Plan	Plan	N.C. Plan	Plan	Plan	Plan	N.C. Plan	Plan	Plan	Plan	Plan	Plan	
A1	0	0	0	0	0	16	16	0	0	0	0	0	0	0	0	0	0	0	12	12	0	0	4	4			
A3	0	0	0	0	0	16	16	0	0	0	0	0	0	0	0	0	0	0	12	12	0	0	4	4			
A6 (CAP)	56	99	0	6	0	8	170	0	54	80	0	5	0	139	0	1	20	0	1	5	27	0	1	3	4		
A6 (NF)	56	100	5	5	1	8	170	6	54	80	5	5	1	139	6	1	20	0	1	6	28	0	1	2	3		
A6 (MNZ)	27	50	0	3	0	0	78	0	26	39	0	2	0	67	0	0	10	0	0	0	10	0	1	0	1		
A6 (Total)	139	249	5	14	1	16	418	6	134	199	5	12	1	345	6	2	50	0	2	11	65	0	3	5	8		
B1	141	252	0	15	0	49	457	0	136	201	0	13	0	350	0	3	51	0	2	35	91	0	2	14	16		
B2a	56	101	0	6	0	19	182	0	54	81	0	5	0	140	0	1	20	0	1	14	36	0	1	5	6		
B3a	19	37	0	2	0	7	65	0	19	30	0	2	0	51	0	0	7	0	0	5	12	0	0	2	2		
B3c	23	37	0	2	0	7	69	0	22	29	0	2	0	53	0	0	8	0	0	5	13	0	1	2	3		
B3d	20	37	0	2	0	7	66	0	20	30	0	2	0	52	0	0	7	0	0	5	12	0	0	2	2		
B3e	23	40	1	3	0	8	74	1	22	31	0	2	0	55	0	0	9	1	1	6	16	1	1	2	3		
Total	421	753	6	44	1	145	1363	7	407	601	5	38	1	1046	6	6	152	1	6	105	269	1	8	40	48		

13.7.2 NRCP 2015 –Test details

Result of NRCP-2015 is as follows

Group of Compounds	Test Parameters	Number of Samples tested			Total	No. of Non-compliant samples
		FIQC, Dhaka	FIQC, Khulna	FIQC, Chittagong		
A ₁	Stilbenes	04	-	11	15	-
A ₃	Steroids	04	-	15	15	-
A ₆	Antibiotics	07	363	60	452	06 (SEM-06)
B ₁	Antibacterial substances	15	347	85	447	-
B _{2a}	Anthelmintics	06	138	34	159	-
B _{3a}	Pesticides	2	50	11	63	-
B _{3c}	Chemical elements	03	54	13	70	-
B _{3d}	Mycotoxin	02	51	13	66	-
B _{3e}	Dyes	04	54	13	71	01 (CV)-
Total		47	1057	251	1355	07

13.7.3 NRCP Findings in last 04 years

The total number of NRCP samples and number of non-compliant samples is presented in the following table and Fig. 17.3. From the figure 17.3, it is clear that with the continuous effort and vigilance of the Department of Fisheries, Bangladesh the number of non-compliant samples was reduced remarkably.

SL No.	Year	Number of Sample Tested	Number of Non-compliance	Number of Non-compliance in substance
1	2015	1355	07	SEM-06, CV-01
2	2014	1388	23	CAP-02, SEM-19, AHD-01, As-01
3	2013	1332	49	CAP-08, SEM-33, AHD-02, CV-01, Pb-04, Afl-01
4	2012	1342	34	CAP-03, AOZ-1, SEM-20, AHD-10

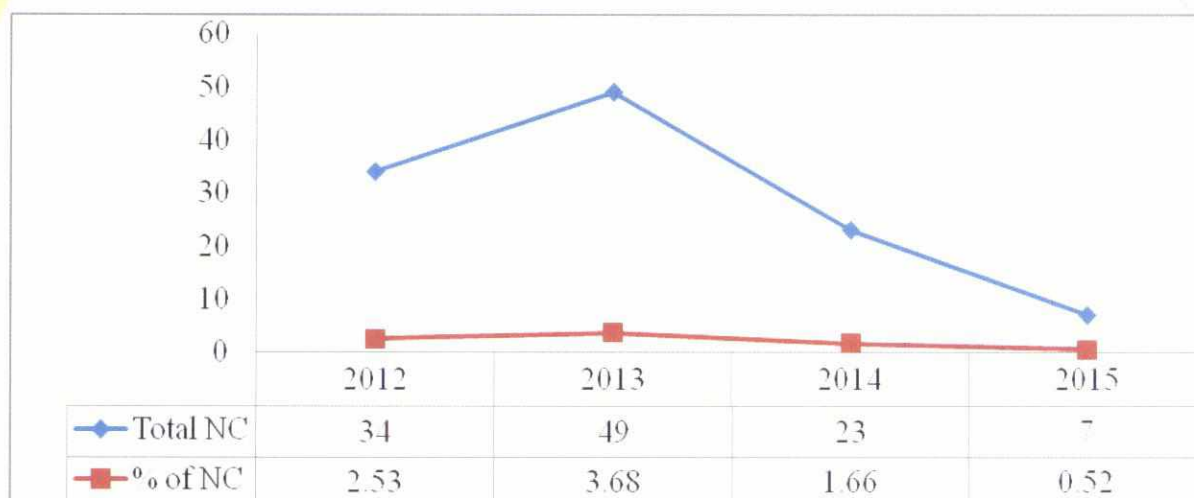


Fig. 4 Number of non-compliant samples under NRCP activities in last four years

13.8 Export condition of Fish and Fishery products

13.8.1 Export performance of recent years

Bangladesh exports frozen shrimp and other fish and fisheries products to a number of developed countries in EU, USA, Japan, Russia, Hong Kong, Saudi Arabia, Singapore and other countries by properly addressing international food safety regulations throughout the supply chain. This success is due to export of quality products processed by introducing HACCP and traceability system implemented in the country according to the requirements of EU and USA. Fisheries sector is contributing significantly to the national foreign exchange earnings and often holds the second highest position. Bangladesh exports frozen shrimp eg. Golda, Bagda, Horina etc. and other fish such as Koral, Datina, Kamila, Lakha, Poa, Rui, Catla, Pabda, Chapila, Sorputi, Air, Koi, Pangas, Sol, Gazar etc. Besides these, a noticeable amount of live crab and cuchia (eel) are also exported.

Export statistics of Fish and Fishery Products of the last four fiscal years are presented below. The present government has extended continued support for exporting shrimp including 10% cost incentives, reduced interest rate etc. to sustain continuous growth of exports which reflected with the increasing export of high valued shrimp. Bangladesh earned foreign currencies equivalent to about 4,660.60 crore taka (599.05 million USD) during 2014-15 by exporting 83,524.37 mt of fish and fishery products.

SL. No	Fiscal Year	Exported Quantity (mt)	Value in Million USD	Value in Crore BDT
1.	2011-12	92,479	598.00	4703.94
2.	2012-13	84,905	534.92	4158.97
3.	2013-14	77,328	630.29	4898.22
4.	2014-15	83,524	599.05	4,660.60

13.8.2 New Entrepreneurship in Fish Processing

The exporters are investigating more to produce value added products instead of traditional block products to meet the demands of the global market. Now a days, exporters are focusing more on production and export of value added products of shrimp and fish. As for example, in order to cope up with the requirements of competitive global seafood market two fin fish processing factories named Virgo Fish and Agro Process Ltd. and Earth Agro Ltd. have started construction at Mymensingh and Gazipur respectively with the facilities of fish fillet, fish oil and canned items with the support jointly provided by INFOFISH and Department of Fisheries, Bangladesh. Among them, Virgo Fish and Agro Process Ltd. has already got license and it was inaugurated by the Honorable Minister of Public Administration Syed Ashraful Islam, MP. Meanwhile another fish processing factory named Seven Oceans Fish Process Ltd. was also established at Trishal, Mymensingh and got License from the competent authority. A company named Bangladesh-America Agro-process Ltd. located at Comilla has already started production of value added products of fish for local consumers.



A shrimp and fish Processing Factory in Chittagong

13.8.3 Traceability

To ensure the traceability of shrimp value chain rule-23 has been incorporated in the Fish and Fish Product (Inspection and Quality Control) rules 1997 (amended in 2008). Upazilla Fisheries Officers as well as shrimp farmers of the coastal belt trained up on the implementation of traceability. About 2.07 lac shrimp farms and 9,624 fin fish farms were registered for implementing traceability. About 22,000 number of officers, shrimp farmers and other stakeholders who are directly involved in this sector were trained on HACCP system and traceability for strengthening fisheries quality control program. Piloting on e-traceability has been started through EU-funded BEST-BFQ Project of DoF.

13.8.4 Hazard Analysis and Critical Control Point (HACCP) implementation

Safe and reliable production of quality seafood for global market is a recent challenge for Bangladesh.



Checking of the temperature control system of a fish processing industry in Khulna

Previously quality issues mainly dealt with decomposition, filth content and pathogenic bacteria contamination from post harvest chain. Recently, environmental aspects, human rights, i.e. child labor, gender issues, etc. have gained prominence. To ensure safe fish and fish products for the markets, the government has undertaken stringent measures to improve QAP and strong compliances of HACCP guidelines and to ensure that all fish processing establishments follow HACCP principles mandatorily. Department of Fisheries has imparted training to the relevant manpower on HACCP system. Sanitary and phyto-sanitary measures are followed as per WTO agreement. Transportation network was developed. Waste water treatment plants (ETP) were installed. Awareness building training on traceability as well as Eco-leveling Act is given to the processors and suppliers.

13.8.5 Surveillance and mobile court to prevent fish adulteration:

Regular inspection and mobile court was operating at landing centres, depot and processing plants to control adulteration (pushing water, gel etc.) of fish and shrimp. Numbers of accused establishments and persons were taken under punitive measures with the help of law enforcing agencies and adulterated fish and shrimps were destroyed on regular basis. In 2015, FIQC operated 213 mobile court, imposed fine Tk. 8,93,300; and destroyed 20,824.00 kg Shrimp and 20.0 kg white Fish. Five persons were sentenced to jail for breach of Fish and Fish Product (Inspection and Quality Control) Rules 1997 (amended in 2008 and 2014).



EU-FVO Audit team visits a depot in Khulna

13.8.6 Task Force Committee:

In shrimp production and processing areas Task Force Committee was formed mainly in Khulna and Chittagong to control the unhygienic systems in every stages of the production, transportation and processing of shrimp. District level Task Force Committee was formed headed by respective Deputy Commissioner with Member - Secretary of respective District Fisheries Officer. Their activities are to develop depot, landing centres and registration of Shrimp hatchery, nursery and shrimp farm /gher etc. Ensure establishment of sanitary latrine removing unhygienic kacha latrine in the adjacent shrimp farming area. According to HACCP system, shrimp production and processing should be ensured by task force committee.

13.8.7 FIQC training activities:

As training is essential tool for increasing skills and competence to provide quality services, the department provides training for the officers of FIQC on Food Safety, ISO standards, GMP, GAP and GLP, operation of LC-MS/MS machine, operation of GC-MS(TOF), Pesticide residue analysis, Proximate analysis of fish feed and feed ingredients and other Lab related activities and other necessary topics related to quality control. Some FIQC officers were trained from abroad both in Laboratory (microbiological and chemical aspects) and Inspection side.



Hands on training on fish feed analysis at FIQC Laboratory, Savar, Dhaka

13.9 Laws, Policies and Documents

Proposed Fish and Fish Products (Inspection and Quality Control) Act-2016 has been submitted to the Ministry of Fisheries and Livestock for approval of the Parliament. Proposals for amendment of present Fish and Fish Products (Inspection and Quality Control) Rules has already been sent to the Ministry. Legal basis for production of safe fish and fish products to ensure the safety and quality of exportable fish and fishery products from farm to fork are as follows-

Legal Framework

- The Fish and Fish Product (Inspection and Quality Control) Ordinance, 1983
- The Marine Fisheries Ordinance, 1983
- The Marine Fisheries Rules, 1983
- The Fish and Fish Product (Inspection and quality control) Rules, 1997 (amended in 2008 & 2014)
- The Fish Hatchery Act, 2010
- The Fish Feed and Animal Feed Act, 2010
- The Fish Feed Rules, 2011
- The Fish Hatchery Rules, 2011

In addition to the regulations, the following policies and guidelines are also in place for official control of fish products

- National Fisheries Policy-1998
- National Residue Control Plan Policy Guidelines, 2011 (amended in 2012)
- National Shrimp Policy, 2014
- Fish and Fishery Products Official Control Protocol, 2015
- Guidelines for the Control of Aquaculture Medicinal Products-AMPs, 2015
- Manual on Good Aquaculture Practice- Trainer Manual
- Compliance Guidelines for Fish Feed Production, Import & Marketing
- Guidebook on Waste Management in Fish and Fishery Industries
- Good Aquaculture Practice – A Farmer's Guide
- Compliance Guidelines for Shrimp Hatchery
- ISO/IEC 17025:2005 General Requirements for Competence of testing Laboratories

The following rules and regulations of different importing countries are applicable for exporting fish and fish products to different countries-

- The Public Health Security and Bioterrorism Preparedness and Response Act, commonly known as The Bioterrorism Act of 2002 of FDA
- US Anti Dumping Act of different exporting countries
- Food Safety Modernization Act 2011
- Commission Decision 2015/2260
- Commission Regulation 188/2008; 488/2014
- Regulations (EC) No. 178/2002; 852/2004; 853/2004; 854/2004; 2073/2005
- EU Directive 96/23/EC
- Russian Sanitary Rules and Norms SanPiN 2.3.2.1078-01 & 2.3.4.050-96 etc.

13.10 Rapid Alert System for Food and Feed (RASFF)

Shrimp of aquaculture origin of Bangladesh being contaminated by the NF metabolite evolved through repeated Rapid Alert System for food in the year 2009. Meanwhile substantial actions/ programs have been implemented for the total development of infra-structure, management and documentation. Motivational programme and training has been undertaken to increase the awareness about products quality and safety and to comply with HACCP and international obligations. Beside this, traceability system in aquaculture and processed products are being implemented and taskforce activities related to develop HACCP system in every stage from hatchery to processing of shrimp are also implemented according to EU requirements. Due to the repeated Rapid Alert System for Food and Feed (RASFF) from EU, National Working Committee was formed and that committee is working and guiding to mitigate the problem. With the continuous effort and progress achieved in residue analysis the number of rapid has been reduced to zero in 2013 and 2014 from the highest number of 50 in the year 2009 (Fig. 13.10). However, the no. of RASFF in 2015 was only 01 caused not to maintain due cold chain during transportation. For ensuring properly maintaining cold chain in processing plants, data logger has been installed and monitored in each processing plants.

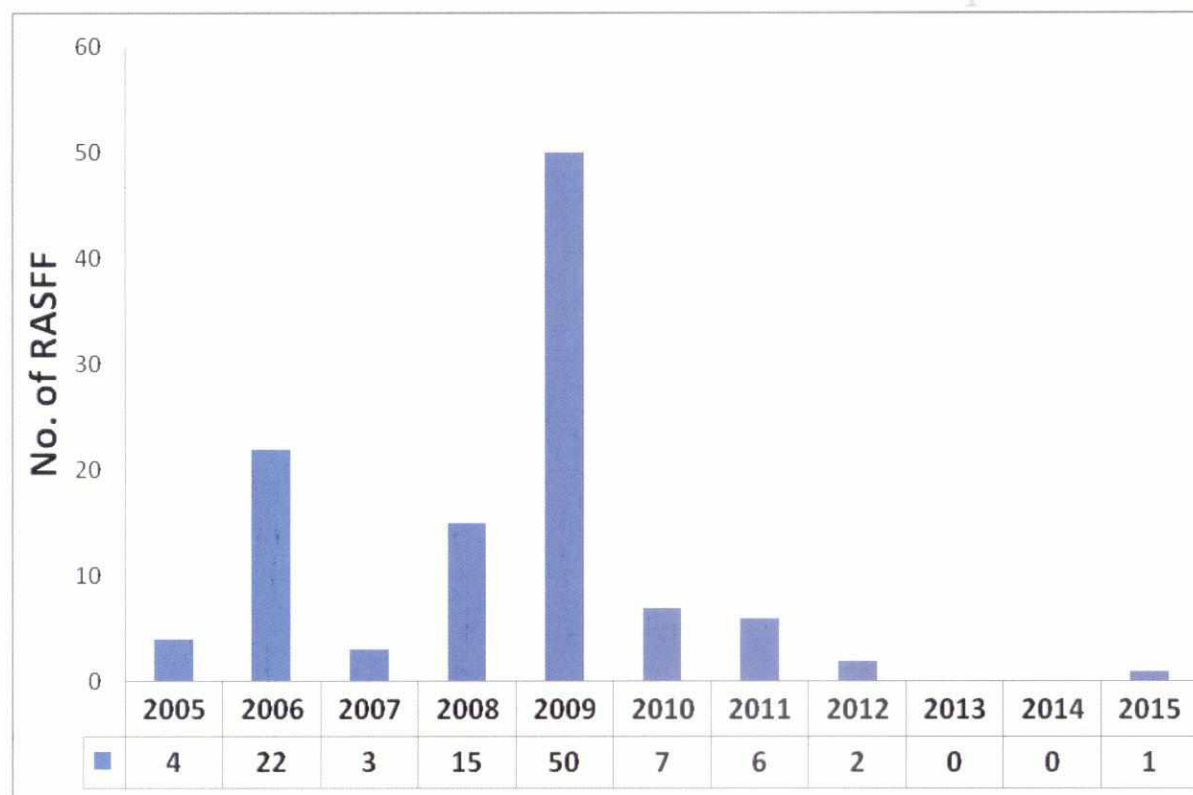


Fig. 5: Number of rapid alerts concerning fish and fishery products exported to EU from 2005 to 2015.

With increasing population in Bangladesh has exerted pressure on the natural fish resources resulting in renewed impetus towards fish and shrimp farming like other countries. Improved aquaculture technology like gene manipulation practice is being used to increase the aquaculture production. Additionally the attempt are being made to reduce the indiscriminate use of pesticides in agriculture and pollution from industrial effluents to keep at minimum level contamination in fish. To ensure the market share in the global trade we need to produce products free from contamination and safe for human consumption through the implementation of HACCP and Traceability. In the developed world, health consciousness is increasing day by day. So, currently safe food is the major issue in the developed countries. Significant efforts have been made for official control of fishery products & monitoring of residues in aquaculture towards ensuring export of fish and fishery products worldwide including EU countries, USA, Japan, Russia etc. Official protocol has been formulated & are being enforced. Capacity has been improved along with ISO accreditation of the Lab. With all this developments, Bangladesh is now on the way to achieve better standards in food safety. The continuous progress and effort of Bangladesh for ensuring safe fish and fish products for export has been approved through the comments of EU-FVO Audit Report-2015. Regarding public health of food safety of fisheries sector, the comments were as follows

- Improvements have been made since last audit and in principle, the current organization of the CA and its documented operational procedures provide for an acceptable official control system for Fishery products which is implemented in satisfactory way.

- The residue monitoring plan satisfies the minimum requirements laid down in EU legislation and both it and PET program are effectively implemented as evidenced by a significant decrease in the no. of N/C samples relative to previous years.

Considering the comments of EU-FVO Audit Report-2015 and on very minimum number of non-compliant consignments, the European Commission has repealed the EC's Decision No. EC/630/2008 and comments of EC regarding repeal of the decision was- "it appears unnecessary to require that consignments of the products imported into the Union from Bangladesh be accompanied by analytical tests".



Hon'ble Secretary Shelina Afroza, PhD presents greetings to the members of EU-FVO Audit team

14. Human Resource Development (HRD)

Human resource development is mandatory for DoF to enhance administrative, management and technological capacity in fisheries sector. The HRD activities meant to enhance capacity in the area of administrative, management, technological aspects and relevant cross cutting issues for conserving and managing the fisheries resources in sustainable manner. The ultimate objective is to augment productivity in fisheries sector, alleviate poverty, address gender issues, reduce unemployment and contribute balanced development having regard to goals and objectives of the national development plans. As a part of National Fisheries Policy implementation, DoF has developed a HRD Sub-strategy. DoF has organized both in-country and overseas training as major tool for technology transfer and for providing extension services in order to disseminate new technologies at field level. For this purpose regular training programs are being conducted from both revenue and development budget of DoF for the skill development of concerned personnel including DoF officials, fishers, fish farmers, unemployed youths, distressed women, landless and marginal farmers etc. For the continuation of fisheries training, Government already created a new sub-head named "training" in the revenue budget. The progress of training activities at a glance is shown in Table 25.

Table 25: Progress of training activities

Financial Year	In Country Training	Foreign Training		
	Government personnel	Fish Farmers/ Fishers/ NGO personnel	Government personnel	Fish Farmers/ Fishers/ NGO personnel
2009-2010	3230	54,527	69	08
2010-2011	3500	60000	99	13
2011-2012	3750	65873	166	03
2012-2013	3995	275437	103	00
2013-2014	3154	298783	76	00
2014-2015	3143	76369	130	00

14.1 Gender Issue

About 50% of our population is women. Therefore, women's participation in aquaculture and fisheries activities is very crucial for the overall socio-economic development of the country. Department of Fisheries (DoF) is trying to introduce women friendly aquaculture and fisheries technology so that more and more women especially poor women can come up with these activities to make them self dependent as well as empowered in the family and in the society. With this view, Department of Fisheries (DoF) has been carrying different development projects and programs throughout the country where at least 25% women's participation is mandatory. Department of Fisheries (DoF) also has been providing need based training especially for women in different field of aquaculture and fisheries. On the other hand, women also showed their capability by successful operation of some of these programs.

14.1.1 Gender equity

There has been spacefic provision in the development projects and programmes of DoF to include 25-30% women in the community groups. Department of Fisheries (DoF) is responsible for the protection, conservation and development of fisheries resources in Bangladesh. For this purpose, DoF has been executing various programs and plan of actions irrespective of social stratification, geo-location, and gender. However, from the recent past, Department of Fisheries (DoF) has shifted its focus from individual approach to community based approach, from common aquaculture to pro-poor aquaculture and also shifted focus on gender issues.

14.1.2 Women participation in fish culture



Fish Feeding by a rural women, Dohar, Dhaka.

At present women (specially rural women) are successfully participating in different types of aquaculture like pond aquaculture, integrated aquaculture, fry rearing, shrimp culture, crab culture etc, and also fish feed preparation. Fourth Fisheries Project (FFP), one of the biggest projects of DoF,, which covered nearly half of the (211no.) Upazilas of the country, has trained up 200,000 farmers in different aspect of aquaculture.

Out of these 200,000 farmers 25% (about 50,000) are women. In IFAD project of Faridpur 96% beneficiaries were women. In Greater Noakhali Aquaculture Extension Project (GNAEP), total 35,064 beneficiaries are engaged in aquaculture, out of which 50% (17081) are women. In poverty alleviation through integrated aquaculture project, at least 40% are rural women beneficiaries. Some national and local NGOs involve women in aquaculture activities along with DoF. The women participation in NGO assisted aquaculture is also very encouraging. The aquaculture program run by the NGO, CARITAS included 53% women participants.

14.1.3 Women participation in fish harvesting and processing

Bangladesh is earning a substantial amount of foreign currency by exporting processed fish and shrimp. In the fish processing industries throughout the country, 90% are women workers. DoF has been providing necessary training on HACCP and traceability as well as health- hygiene of the workers as such more and more women are involved in this process and exporters can export their goods maintaining EU regulations. A large number of women are also engaged in icing and drying fish especially in the coastal region of the country. Some are engaged in fish trade and some are working as middle men. In the rural Bangladesh, women are taking part in pond digging, de-weeding, de-watering etc. Fishers' women of Bangladesh are also engaged in making and mending fishing gears like nets, traps etc.

14.1.4 Women participation in jalmohal management

During the recent years, women are also involved in managing waterbodies like beel, haor, baor, flood plain etc. along with the male members and sometimes in a separate female group. DoF has special package of training program for these female groups. As a result, they are now managing these types of jalmohals very successfully and contributing to the national production. On the other hand, female members are encouraging people not to use harmful chemicals, insecticides in fish culture and playing vital role in the execution of fish act by motivating people.

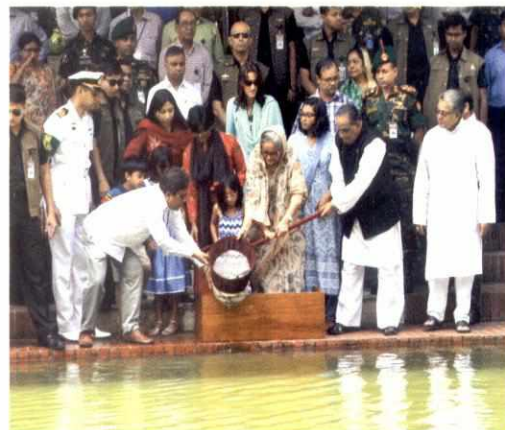
15. National Fish Week 2015

The Father of the Nation Bangabandhu Sheikh Mujibur Rahman inaugurated **More Fish Culture Movement in 1974** by releasing 20,000 carp fingerlings at Gonobhabon Lake. Following that movement, National Fish Campaign is being observed throughout the nation to create mass awareness to impart in the process for harnessing the potential from fisheries sector for economic growth of the country since 1993. National Fish Week 2015 has been commemorative slogan for National Fish Week 2015 was ***Sagor Nodi Sakol Jolae, Mas CashaeSona Folae***. At the instruction of the Prime Minister, the Ministry of Fisheries and Livestock through the Department of Fisheries took up a program to build up awareness for conservation and utilization of fisheries resources among the people and to motivate them for choosing technology based improved fish culture for increased production of fish and shrimp observed country wide from 28 July to 3 August with due emphasis on fish culture for food safety.



National inaugural session of the National Fish Week 2015 in KIB, Dhaka.

A distinctive character of the "National Fish Week" has been the direct participation of the head of the state, the President; head of the government, the Prime Minister; Speakers of the National Parliament; Cabinet Ministers. The Honorable Prime Minister of Bangladesh has inaugurated the national event on 29 July 2015 in the Krishibid Institution Auditorium. Before the inauguration a grand Road Rally was arranged where the Hon'able Minister and respected Secretary MoFL, DG, DoF and BFRI, Chairman, BFDC and officials from MoFL, DoF, BFRI, BFDC, DLS, NGO representatives and other sections of peoples were present. In the inaugural day, special supplements were published in four national dailies- The Daily Star; The Daily Ittefaq, The Daily Janokontha and The Daily Samokal. A press briefing was also arranged on 28 July 2015 to disseminate the significance of the national Fish week. Four seminars were organized on various topics of fisheries importance. Various events like discussion and awareness meeting, fish fair, organized training for unemployed youths, essay competition for school and college students, art competition, execution of Fish Acts and mobile courts were also arranged.



Fingerling releasing by the Honorable Prime Minister Sheikh Hasina

16. Implementation of Development Projects

Government has taken necessary initiatives at the very beginning to increase investment for expected development of fisheries sector. An amount of taka 30906.00 lakh has been allocated for 21 development projects in the financial year 2014-2015 under the annual development program of DoF. The actual expenditure and achievements were 31035.11 lakh and 100% respectively. Some programs are also submitted to the ministry for budget allocation from revenue head. The list of allocation and expenditure of DoF development projects and programs for vision 2021 are shown in Annexure 9 and 10

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17. Information and Communication Technology (ICT) in Fisheries

While Awami League's Charter for Change announced the concept of Digital Bangladesh as an integral Component of Vision 2021, The 6th Five Year Plan places an equal importance to Digital Bangladesh as part of the nation's development strategy. The Information and communication Technology (ICT) Policy 2009, ICT Act 2009, Right to Information Act 2009, various local government acts promulgated in 2009 laid the foundation for identifying the Digital Bangladesh priorities for the government. As such, a strategy document 'Setting Digital Bangladesh Priorities' is being drafted to integrate the goals of Digital Bangladesh with those of key development sectors to harmonize top level priority setting through a participatory and inclusive approach. Digital Bangladesh is an Idea that includes the IT use for management, administration and governance to ensure transparency, accountability and answerability at all levels of society and state.

“Digital Bangladesh” does not only mean the broad use of computers, perhaps it means the modern philosophy of effective and useful use of technology in terms of implementing the promises in education, health, job placement, poverty reduction etc. Therefore, the government underscores a changing attitude, positive thinking and innovative ideas for the success of “Digital Bangladesh”.



Figure 6 Diagram of Digital Bangladesh

This is the backbone of any digital initiative. ICT covers the vast area of information technology, communication technology and the telecommunication technology. Computer systems, network machineries, software, wire and wireless connectivity systems, broadcast hardware and many other hardware and accessories are the physical backbone. The trained human behind the backbone are the intellect. Digital Bangladesh is an Idea that includes the IT use for management, administration and governance to ensure transparency,

accountability and answerability at all levels of society and state. To materialize the idea of digital Bangladesh, development of countrywide backbone and expected number of human recourses are the basic needs.

Despite having 50 years of history the government has only started the process of developing a national ICT strategy from 1997 In 2002 Bangladesh identified ICT as a "thrust sector" as it represents potential for quick wins in reforms, job creation, industry growth, improving governance and facilitating inclusion, and it has high spillover effects to other sectors.

17.1 Door step Services

This issue covers what delivery channels are used for solving the fish farmers 'problem for taking services to citizens in disadvantaged areas. This issue covers Digital Communication particularly.

What is doorstep service?

In last 2011 DoF are Connected Headquarters to District level office under E-mail connectivity for quick service. In last 2011 fisheries mail system have been modernized to improve service quality. Mail has been converted into group mail system. As a result, if the group address is written in the address bar and send the mail, all member of that group get mail in a moment which increase as it the quality of office work and also save much time? Why we choose doorstep service as it-

- Save travel time
- Save parking hassle
- Avoid long queue
- Uninterrupted service Delivery
- At your convenient and comfort and location

What are the services?

- Information exchange / Fisheries Information service through internet.
- Fish farm registration
- Licensing fish Hatchery

Licensing fish feed retailer, producers and Importer.

- E-mail service in the office of internal service
- Vessel Tracking and Monitoring etc.

How to get services?

- In order to receive service one must log in to Fisheries website. For receiving domestic service click on the following links -Office orders, transfers, budget allocation, webmail, Activities, training, Tender Notice etc taken to the service.
- Fish farmers and other stake holder for taking fisheries consultancy services can be clicked on e-books, publications, laws and policies, etc links. You can get information on those links;
- Fish hatcheries and fish feed import licensing; production and sales in order to receive the license, stakeholder must be a member of DoF ERP. Beneficiaries will apply for licenses online, and after the specified time, he will get a license online.
- For Fish and Shrimp farm Registration stakeholder must be a member of DoF ERP.

Basic requirement:

- Service charges:
- All services are provided free of charge, only the license fees payable to the Government to receive a copy of the Treasury Challan (softcopy) attached to the application.

Requirement to received service:

- If the service recipient has a computer and internet, there is no problem, the government established by the information service center can receive the service.

17.2 Activities of Fisheries Information and Communication Center (FICC)

The philosophy of “Digital Bangladesh” comprises ensuring people’s democracy and rights, transparency, accountability, establishing justice and ensuring delivery of government services in each door through maximum use of technology-with the ultimate goal to improve the daily lifestyle of general people. Government’s “Digital Bangladesh” includes all classes of people and does not discriminate people in terms of technology. Hence, government have emphasized on the four elements of “Digital Bangladesh Vision” which are human resource development, people involvement, civil

services and use of information technology in business. In this section *e-Extension Services for Need Based Aquaculture Extension* is an on-going pilot program of DoF. The fish farmers can receive the following services:

- Fish farmer will get support in solution of their problem from e-LEAF(e-Local Extension Agent for Fisheries). If the e-LEAF cannot solve the problem or unable to solve any problem, the e-LEAF would immediately contact with the Senior/Upazila Fisheries Officer or District Fisheries Officer through mobile phone/teleconference or videoconference and discuss the particular problem with them for getting suitable suggestions of the problem.
- Successful implementation of this FICC program will ensure and provide quick and on spot solutions to fish farmers.
- Information regarding fish culture/aquaculture will be easy reachable to general mass through this program. FICC will be enriched with extension videos, audios and other extension materials and tools regarding fish farming.
- As per demand of fish farmer e-LEAF will visit fish farmers' pond/farm/gher and suggest on spot to solve the problems.
- This program will augment mass awareness among those who wants to go for fish farming or those who are engaged in fish farming.
- Fish farmers will get hand-on practical and technical knowledge regarding fish farming.
- e-LEAF can provide easy and door steps service delivery on fish farming and extension to fish farmers using IT equipments and related accessories.
- Selected e-LEAF will serve on honorary basis (with no salary) without affecting the aims and objectives of the FICC. It may support to his livelihood using the IT tools.
- For unknown and special problems SUFOs/UFOs and the DFOs have to consult with respective personnel of DoF HQ through video conferencing to get quick solution of the problem. A video conference team is already formed by DG of DoF to provide such services immediate solution of farmer's problem.
- "We may not reap the benefits of the programme, immediately we undertook in the past years as we had to start everything afresh. for Successfully implement e-Leaf program, two projects Department of Fisheries a) Expansion of Aquaculture Technology Services upto Union Level Project and b) The National Agricultural Technology Project (DoF Part) appointed e-Leaf in almost all upazila in the country.

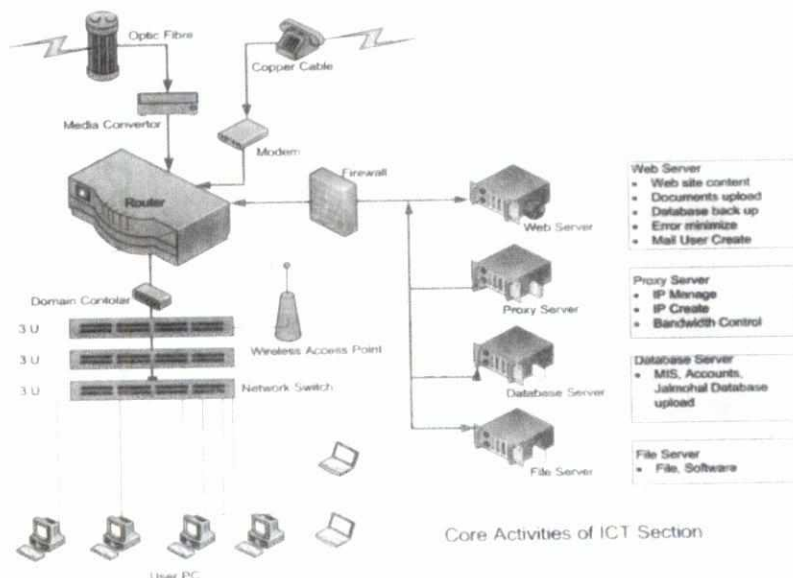
17.3 Success Story of ICT Section of DoF

ICT is the backbone of any digital initiative. ICT covers the vast area of information technology, communication technology and the telecommunication technology. ICT is also a combination of physical backbone and intellect. Computer systems, network machineries, software, wire and wireless connectivity systems, broadcast hardware and many other hardware and accessories are the physical backbone. The trained human behind the backbone is the intellect. Digital Bangladesh is an idea that includes the IT use for management,

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administration and governance to ensure transparency, accountability and answerability at all levels of society and state. To materialize the idea of digital Bangladesh, development of countrywide network and expected number of human resources are the basic needs. Since the ICT Section, Department of Fisheries began to express itself as a separate Section in the year 2011. The success of the ICT section is given below.

- Web-based fish advice system: Fish farmer get information service when he come to fisheries officers, similar service that he can get through this software. The software supports mobile and Tab also. Farmer also receives services from the data center near to his house.
- FAQs: When a Fish farmer came to office, and asked some general question, that answer also given in this link. That content supports mobile and Tab also.
- DoF PDS: DoF Officers / staff employment aimed at obtaining the necessary information quickly and accurately has been made this software. This has been successfully running.
- Automation services are aimed to report automated (Accounts/Audit and Budget System, MIS for extension report automation, Jamahal Database, database software for computer distribution etc), Which is managed by DoF ERP. Reports from the field level to come activities of the Directorate of Fisheries. The reports are extremely difficult to integrate. Field reports have been made to integrate this software for the creation of Headquarters report. All reports will be in the process of fisheries in the next two years.
- DoF update mail system: DoF was before Web mail, updates have been added to the mail as group mail. Mail message to everyone in the group if the group goes to an single address. It is an innovation in the ICT Section.
- LAN Connection: with the Directorate of Fisheries to the field office there is no direct connection to the Internet. Field offices are connected to different service provider, or accepts the connection BTCL is offering. But the Head office has its own LAN connection. In addition to exchanges of officials via the LAN, resources via the Internet are being exchanged. LAN Topography Department of Fisheries are given below.



17.4 Future plan

The use of information and communication technology has been playing a vital role in the 21st century due to globalization and the government is encouraged to adapting with the coming future. Bangladesh Awami League has declared the “Vision 2021” in the election manifesto which targets establishment of a resourceful and modern country by 2021 through effective use of information and communication technology-a “Digital Bangladesh”.

The country has made major strides in achieving its vision of Digital Bangladesh and there is likelihood that it could make the vision a reality before the 2021 deadline.

The data of the Access to Information Programme shows that the digital centres provide 60 kinds of public and private services, including computer trainings, land registrations, public exam results, government form downloads, birth and death registrations, online university admissions, employment information, and mobile banking and online fish farm registration.

With the aim of building '*Digital Bangladesh*' by the year 2021 the Government is committed to support and ensure the use of IT in the respective areas of aquaculture and management. For timely and need based service delivery to the door steps entrepreneurs, fish farmers and fishers can be ensured with transparency and good governance.

- Prepare database on geo-physical environment related to fisheries and regular update;
- Prepare resource-wise database on inland open waters and regular update;
- Introduce use of geographical information systems (GIS) in fish culture and resource management planning;
- Introduce IT based monitoring, control and surveillance in marine fisheries management;
- In order to provide fast service to the people, ICT Section has developed 14 service delivery process map, According to the process map, service for the DoF will creating software for providing on-line service to the people;
- All content will be made Mobile supported, so that the information can be reached to the people's Pocket

18. Good Aquaculture Practice

There are a good number of success stories in both public and private sectors for enhanced aquaculture production and fisheries resources management through participatory co-management system. It is imperative to disseminate the success stories of this sector under the pervue of "Dissemination of Good Practices in Fisheries Sector" for promotion and expansion of the technological interventions to other regions of the country for improved resource management. In these dissemination workshops all categories of stakeholders viz. the beneficiaries, NGO's, DoF officials, local administration, social workers and local representatives get the opportunity to share the best practices which expand the possibility to replicate it to other regions or locations.

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Department of Fisheries through assistance from Strengthening Institutional capacity of DoF Project, IPAC, WorldFish Centre organized seven dissemination workshops in different districts as titled "Dissemination of Good Practices in Fisheries Sector" in Deputy Commissioner's Conference office under his chairmanship and Secretary, Ministry of Fisheries and Livestock was the Chief Guest of the seminar covering a hundred of participants in related discipline including all categories of stakeholders. The good practices on open water management and other innovative technologies were highly appreciated in the seminar and the administration was convinced to cooperate in dissemination process.

19. International cooperation and liaison with development partner Agencies

To intensify the enhancement fisheries development of the country DoF has joined the international Fisheries Cooperation. DoF maintain a close liaison with a member of donors for technical and financial assistance for implementation of diversified activities under the sector. DoF recognizes the assistance receipt from the donors with great pleasure and importance. DoF welcomed more involvement of donors for manages the diversified fisheries resources of the country to obtain the enefits for her population. At present UNDP, FAO, World Bank, USAID, GiZ, IFAD,, EU, DANIDA, IDB, The World Fish Center etc. are the development partners of the different ongoing projects.

20. Conclusion:

Bangladesh is one of the world's leading fish producing countries with a total production of 36.84 lac MT in the last financial year 2014-15. The overall growth performance from inland aquaculture shows a moderate increased trend due to dissemination of improved technology packages and supportive/ need-based extension services at farmer's level. A slight growth in the production from both inland capture and marine fisheries was also noticed during the last two and half decades with some exceptions. Besides this, this sector will be able to create per time employment for 6.5 lac in the financial year 2014-15 and up to 32.71 lac by the financial year 2020-21. The declaration of Honorable Prime Minister Shiekh Hasina for food security, government has undertaken massive activities to desired production of fish to meet the animal protein requirements up to 63% as well as crop production. It is believed that if the increasing trend of development activities of present democratic government it will be possible to achieve the millennium development goal 2021 by which creation of huge employment opportunity, poverty alleviation and food security will be ensured the Sonar Bangla the dream of 'The Father of the nation, "**Bangabandhu** Sheikh Mujibur Rahman".

Annexure

Annexure : 1 Winners of the National Fish Award, 2015

Area of field	Name of the Person/Organization	Award
Export of fish products (Frozen shrimp/fish/dried fish)	Bagerhat Sea Food Ltd. Managing Director S. M. Amzad Hosen, Village-Town Nowapara, P.O: Nowapara, Upazila: Fakirhat, Dist: Bagerhat.	Gold Medal, 50000/- cash and a Certificate
Contribution of Social Organization for Fisheries Development	Md. Asraf Khatun Duburi Village: saraghat, P.O: Pakshi, Upazila: Ishsordi, Dist: Pabna.	Gold Medal, 50000/- cash and a Certificate
Bagda PL production	Balaka Hatchery, Propr.: Md. Nazibul Islam Village: Cox'sbazar, P.O: Cox'sbazar, Upazila: Sadar, Dist: Cox'sbazar	Gold Medal, 50000/- cash and a Certificate
Spawn production	Matre Fish Hatchery and Integrated Farm, Propr.: Village: Chachra (goldar para), P.O.: Chachra, Upazila: Sadar, Dist: Jessore	Gold Medal, 50000/- cash and a Certificate
Spawn production	Vai Vai Matshya Projonon Kendro Propr.: Md. Siddique-Rahman Village: Dhurua, Upazila: Gouripur, Dist: Mymensingh	Silver Medal, 30000/- cash and a Certificate
Spawn production	Md. Soleman Ali Village: Molani, P.O.: Velazan, Upazila: Sadar, Dist: Thakurgaon	Silver Medal, 30000/- cash and a Certificate
Fry/Fingerling production	Biswas Agro Fisheries and Hatchery Propr.: Md. Mahbubur Rahman, Dorilla Para, 8 no. Ward, Trishal Pourosova, Trishal, Mymensingh	Silver Medal, 30000/- cash and a Certificate
Fry/Fingerling production	M/S Adorso Matshya Khamar Propr.: Md. Anowar Hosen (Nannu), Village: Chachra (goldar para), P.O.: Chachra, Upazila: Sadar, Dist: Jessore	Silver Medal, 30000/- cash and a Certificate
Fish production	Md. Asadul Haque Biswas Village-Monirampur, P.O: Alubdia, Upazila: Sadar, Dist: Chuadanga	Silver Medal, 30000/- cash and a Certificate
Fish production	Alina Fish Farm Propr.: Tahera Sobha, Husband's name: Sheikh Afil Uddin, Village-Sharsha, P.O.: Sharsha, Upazila: Sharsha, Dist: Jessore	Silver Medal, 30000/- cash and a Certificate
Fish production	Md. Masud Rana Village: Sontospur, P.O.: Lalpur, Upazila: Lalpur, Dist: Naotore	Silver Medal, 30000/- cash and a Certificate
Fish production	Md. Anowar Hosen (Masum) Village-Gonamajajampur P.O.: Rajarampur, Upazila: Sadar, Dist: Chapainabagonj	Silver Medal, 30000/- cash and a Certificate
Fish production	Begum Hamida Khanom Husband's name: Dead Babul Hosen Talukdar, Village: Deopara, P.O.: Batazor, Upazila: Gouronadi, Dist: Barisal	Silver Medal, 30000/- cash and a Certificate
Fish production	Ms. Kharun Nahar, Husband Name- Md. Abul Kalam Azad Atharbain, Ishagonj, Mymensingh	Silver Medal, 30000/- cash and a Certificate
Fish production	Md. Lokman S/O= Late Ishaq Mia Upazila. Bagaishonri, Rangamati	Silver Medal, 30000/- cash and a Certificate
Bagda Production	A klima Agro farm Md. Abdur Rahim Lama, Bandarban	Silver Medal, 30000/- cash and a Certificate
Role of Person/Institute to fisheries resources development	Alhaj Md. Safiqur Rahman Shamnagor, Sathkhira	Silver Medal, 30000/- cash and a Certificate

Annexure 2: Year-wise fish production in Bangladesh during last 10 years

										Metric Ton]	
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	
A. INLAND FISHERIES	1,848,735	1,952,573	2,065,723	2,381,917	2,381,916	25,15354	26,83162	28,21266	29,52730	30,85048	
(a) Inland Openwater (Capture)	956,686	1,006,761	1,060,181	1,029,937	1,029,937	10,54585	957095	961458	995805	10,23991	
(1) River and Estuaries	137,859	136,958	136,812	153695	153,695	144566	145613	147264	167373	174878	
(2) Sundarbans	16,423	17,751	18,151	8109	8,109	22451	21610	15945	18366	17580	
(3) Beel (Depression)	76,365	75,137	77,524	70209	70,209	81564	85208	87902	88911	92678	
(4) Kaptai Lake	7,548	8,085	8,248	7117	7,117	8980	8537	9017	8179	8645	
(5) Flood Plain	718,491	768,830	819,446	790807	790,807	797024	696127	701330	712976	730210	
(b) Inland Closewater (Culture)	892,049	945,812	1,005,542	1,351,980	1,351,979	1460769	1726067	1859808	1956925	2061057	
(1) Pond and Ditch	759,628	811,954	866,049	1,140,485	1,140,484	1,270,966	1,392,412	1,446,594	1,526,160	1,610,875	
(2) Semi-Closed	0	0	0	0	46,902	51,230	132,163	200,833	193,303	201,280	
(3) Baor (Ox-bow Lake)	4,498	4,698	4,778	8,727	8,727	4,868	5,186	6,146	6,514	7,267	
(4) Shrimp/Prawn Farm	127,923	129,160	134,715	145,585	155,866	184,939	196,306	206,235	216,447	223,582	
(5) Pen culture	-	-	-	-	-	-	-	-	13,054	16,084	
(6) Cage culture	-	-	-	-	-	-	-	-	1,447	1,969	
B. MARINE FISHERIES	479,810	487,438	497,573	517,282	517,282	546,333	578,620	588,988	595,385	599,846	
(a) Industrial	34,084	35,391	34,159	34,182	34,182	41,665	73,386	73,030	76,885	84,846	
(b) Artisanal	445,726	452,047	463,414	483,100	483,100	504,668	505,234	515,958	518,500	515,000	
COUNTRY TOTAL (A+B)	2,328,545	2,440,011	2,563,296	2,899,199	2,899,198	3,061,687	3,261,782	3,410,254	3,548,115	3,684,894	
ANNUAL GROWTH RATE (%)	5.08	4.79	5.05	5.39	7.32	5.6	6.5	4.55	4.04	3.85	

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Annexure 3: Comparison of Annual Fish Production between 2013-14 and 2014-15

Sector of Fisheries	2014-15			2013-14			Prod. increase	Growth Rate %
	Water Area (Ha)	Prod. (MT)	(Kg/ Ha)	Water Area (Ha)	Prod. (MT)	(Kg/ Ha)		
i) Inland Open Water (Capture)								
1. River and Estuary	853863	174878	205	853863	167373	196	7505	4.48
2. Sundarbans	177700	17580	99	177700	18366	103	-786	-4.28
3. Beel								
(a) Natural	101021	78758	780	105186	78070	742	688	0.88
(b) Beel Nursery	13140	13920	1059	8975	10841	1208	3079	28.40
Sub Total	114161	92678	812	114161	88911	779	3767	4.24
4. Kaptai Lake	68800	8645	126	68800	8179	119	466	5.70
5. Floodplain								
(a) Subsistance Fisheries	2318229	600876	259	2324731	600258	258	618	0.10
(b) Fry Released Program	145912	40478	277	141975	39270	277	1208	3.08
(c) Haor	228823	88856	388	228823	73448	321	15408	20.98
Sub Total	2692964	730210	271	2695529	712976	265	17234	2.42
ii) Inland Close Water (Culture)								
6. Pond	377968	1610875	4262	371309	1526160	4110	84715	5.55
7. Seasonal cultured waterbody								
(a) Paddy Field/Floodplain	124868	187073	1498	122026	179345	1470	7728	4.31
(b) Boropit	8462	14207	1679	8462	13958	1649	249	1.78
Total	133330	201280	1510	130488	193303	1481	7977	4.13
8. Baor	5488	7267	1324	5488	6514	1187	753	11.56
9. Shrimp/Prawn Farm								
(a) Shrimp/Prawn Production		126077	457		122790	446	3287	2.68
(b) Fish Production		97505	354		93657	340	3848	4.11
Sub Total	275583	223582	811	275274	216447	786	7135	3.30
10. Pen Culture	8326	16084	1932	6775	13054	1927	3030	23.21
11. Cage Culture	10	1969	19	7	1447	22	522	36.07
			kg/cum			kg/cum		
iii) Marine Fisheries								
12. Industrial		84846			76885		7961	10.35
13. Artisanal		515000			518500		-3500	-0.68
Total Fish Production		3684894			3548115		136779	3.85

Item	2014-15	2013-14	Prod. Increase	Growth Rate %
Hilsa Production (MT)	387211	385140	2071.00	0.54
Shrimp/Prawn Production (MT)	230182	223788	6394.00	2.86
Hatchling Production (Kg)	551814.0	492026.0	59788.00	12.15
PL Production (Core)	1248.18	1161.50	86.68	7.46

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Annexure : 4(a). Annual Carp Hatchling Production - 2015

Source of Production	No of Hatchery	Hatchling Production (Kg)	%
1. Natural			
Jamuna River		1541	
Padma River		1919	
Arialkha River		230	
Brahmaputra River		100	
Garai/Madhumati River		515	
Halda River		107	
Natural Total		4412	0.80
2. Artificial			
Govt. Hatchery	87	10419	1.89
Private Hatchery	800	536983	97.31
Artificial Total	887	547402	99.20
COUNTRY TOTAL	887	551814	100.00

Note: Hatchling of 4-5 days old.

Annexure : 4 (b). Hatchling Production of Private Hatchery -2015

Division	No. of Hatchery	Hatchling Production (Kg)									Tilapia Juvenile (Lakh)
		Major Carp	Exotic Carp	Pangas	Thai Puntl	Bata	Koi	Shingi/Magur	Other	Total	
Dhaka	200	79042	43214	6337	11783	5601	4477	6005	4575	161034	6689.90
Khulna	104	40689	26880	4753	3325	2148	671	261	435	79162	379.27
Barisal	33	8728	1778	321	397	40	0	0	6	11270	154.00
Rangpur	78	18593.5	18125.2	0	3861.86	6135.37	239	545	217	47717	235.50
Rajshahi	176	40434	35877	47963	4285	12427	1607	3067	505	146165	2430.00
Chittagong	189	47111	12979	12207	4208	1072	529	653	1848	80607	5624.85
Sylhet	20	6623	2676	32	1230	377	0	90	0	11028	726.00
TOTAL	800	241221	141529	71613	29089.9	27800.4	7523	10621	7586	536983	16239.52

Note : (1) About four lakh hatchlings contain in one kg spawn and one kg juvenile contains 1000-1200 Tilapia.

(2) Other Species: Ghonia, Chitol, Gulsa, Pabda etc.

(3) No. of Hatchery mentioned which is under operation only.

Annexure : 4 (c). Hatchling Production of Govt. Hatchery -2015

Name/Location of Hatchery	No. of Hatchery	Hatchling Production (Kg)								
		Major Carp	Exotic Carp	Pangas	Thai Punti	Bata	Koi	Shingi/ Magur	Other	Total
Fish Seed Multiplication Farm										
1. Dhaka Division	16	1398	415	5	155	103	5	0	3	2084
2. Khulna Division	7	420	102	0	2	1	0	0	0	525
3. Barisal Division	10	397	73	80	0	25	0	2	0	577
4. Rangpur Division	10	250	271	0	53	45	0	0	0	619
5. Rajshahi Division	14	958	773	77	73	329	0	0	0	2210
6. Chittagong Division	18	686	113	9	45	9	2	0	31	895
7. Sylhet Division	7	569	24	0	40	0	0	0	0	633
Sub Total	82	4678	1771	171	368	512	7	2	34	7543
Other Govt. Hatchery										
1. Central Hatchery Complex, Baor Fish Development Project, Jhenaidah.	1	540	682	0	10	20	0	0	0	1252
2. Raipur Fish Hatchery and Training Centre, Lakshmipur.	1	560	72	10	60	0	0	0	0	702
3. Hatchery of Bangladesh Fisheries Research Institute, Mymensingh.	1	250	50	50	0	0	0	0	0	350
4. Hatchery of Riverine Station, Bangladesh Fisheries Research Institute, Chandpur.	1	2	0	0	2	0	0	0	0	4
5. Parbatipur Hatchery, Dinajpur.	1	211	241	37	79	0	0	0	0	568
Sub Total	5	1563	1045	97	151	20	0	0	0	2876
TOTAL	87	6241	2816	268	519	532	7	2	34	10419

4.d Annual PL (Post Larva) Production-2015

Source of Production	Galda Hatchery		Bagda Hatchery		Total	
	No. of Hatchery	PL Production (Core)	No. of Hatchery	PL Production (Core)	No. of Hatchery	PL Production (Core)
Govt. Hatchery	15	0.32	0	0.00	15	0.32
Private Hatchery	19	3.80	49	1244.05	68	1247.85
TOTAL	34	4.13	49	1244.05	83	1248.18

Note: No. of Hatchery mentioned which is under operation only.

Annexure 5. . Annual Catch of Marine Fisheries- 2014-15

Type of Fishing	Number of Craft (Trawler/ Boat)	Number of Unit (Gear/Net)	Catch in Metric Ton			
			Shrimp	Hilsa	Other Fish	Total
A. Industrial						
Trawl Fishing						
a) Shrimp Trawler	36	108	2338	0	1779	4117
b) Fish Trawler	207	621	395	1815	78519	80729
TOTAL INDUSTRIAL	243	729	2733	1815	80298	84846
B. Artisanal						
1. Gill Net Fishing						
a) Mechanized	23595	74443	0	225000	62170	287170
b) Non Mechanized	13820	40585	0	25000	22250	47250
SUB-TOTAL	37415	115028	0	250000	84420	334420
2. Set Bag Net Fishing						
a) Seasonal (MB)	7875	20799	30000	0	112175	142175
b) Seasonal (NMB)	6100	10000	8000	0	2000	10000
c) All Seasonal (NMB)	6550	10025	1500	0	570	2070
SUB-TOTAL	20525	40824	39500	0	114745	154245
3. Long Line Fishing						
a) Jew Fish Long Line						
Mechanized	2500	10191	0	0	14880	14880
Non Mechanized	400	900	0	0	720	720
b) Other Long Line (NMB)	325	772	0	0	385	385
SUB-TOTAL	3225	11863	0	0	15985	15985
4. Trammel Net Fishing (NMB)	131	422	1500	0	2850	4350
5. Other Gears Fishing (NMB)	6373	15640	2000	0	4000	6000
TOTAL ARTISANAL	67669	183777	43000	250000	222000	515000
GRAND TOTAL (A+B)	67912	184506	45733	251815	302298	599846

Trawler		Boat		Gear	
Type	No.	Type	No.	Type	No.
Shrimp Trawler	36	MB (Mechanized Boat)	33970	Gill Net	115028
Fish Trawler	207	NMB (Non-Mechanized Boat)	33699	Set Bag Net	40824
				Long Line	11863
				Trammel Net	422
				Other Gear	15640
Total	243		67669		183777

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Annexure 6. Species-wise Catch of Marine Fisheries- 2014-15

[Unit : MetricTon]

Type of Fishing	Shrimp (A)	Hilsha (B)	Other Species									Grand Total (A+B+C)
			Sardine	Bombay Duck	Indian Salmon	Pom fret	Jew Fish	Cat Fish	Shark/ Skate/ Ray	Other Marine Fish	Total (C)	
A. Industrial												
Trawl Fishing	2733	1815	30385	0	0	487	3826	2866	918	41816	80298	84846
B. Artisanal												
1. Gill Net Fishing												
a) Mechanized	0	225000	2300	3100	920	850	15700	1500	1800	36000	62170	287170
b) Non-mechanized	0	25000	0	100	0	0	3000	100	50	19000	22250	47250
SUB-TOTAL	0	250000	2300	3200	920	850	18700	1600	1850	55000	84420	334420
2. Set Bag Net Fishing												
a) Seasonal	38000	0	100	50300	0	10100	1500	30	200	51945	114175	152175
b) All Seasonal	1500	0	0	200	0	0	0	20	50	300	570	2070
SUB-TOTAL	39500	0	100	50500	0	10100	1500	50	250	52245	114745	154245
3. Long Line Fishing												
a) Jew Fish Long Line												
Mechanized	0	0	0	0	80	0	4000	3800	2000	5000	14880	14880
Non-Mechanized	0	0	0	0	20	0	300	50	50	300	720	720
b) Other Long Line	0	0	0	0	0	0	200	60	25	100	385	385
SUB-TOTAL	0	0	0	0	100	0	4500	3910	2075	5400	15985	15985
4. Trammel Net Fishing	1500	0	0	50	0	0	1800	800	0	200	2850	4350
5. Other Gears	2000	0	50	200	0	0	1500	250	0	2000	4000	6000

Species- wise Shrimp Catch of Marine Fisheries -2014-15

[Unit : Metric Ton]

Species	Production in 2014-15	Production in 2013-14	Production Increase	Growth Rate %
Bagda (Tiger)	3509	3240	269	8.30
Harina (Brown)	28331	30899	-2568	-8.31
Chaka (White)	4080	4367	-287	-6.57
Other Shrimp	9813	9162	651	7.11
Total Shrimp Prod.	45733	47668	-1935	-4.06
Hilsha	251815	257626	-5811	-2.26
Other Fish	302298	290091	12207	4.21
Total Prod.	599846	595385	4461	0.75

Annexure- 7. Brief on NRCP during 2015

Compound Group	Test Parameters	Samples tested (2012)			Samples tested (2013)			Samples tested (2014)			2015
		Shrimp	Fish	Total	Shrimp	Fish	Total	Shrimp	Fish	Total	
A ₁	Stilbenes		15	15	-	15	15	-	15	15	15
A ₃	Steroids	-	15	15	-	15	15	-	15	15	15
A ₆	Antibiotics	438	17	455	405	15	420	438	15	453	452
B ₁	Antibacterial substances	378	47	425	389	47	436	403	47	450	447
B _{2a}	Anthelmintics	152	19	171	156	19	175	160	19	179	159
B _{3a}	Pesticides	54	7	61	57	7	64	59	7	66	63
B _{3c}	Chemical elements	54	7	61	57	7	64	63	7	70	70
B _{3d}	Mycotoxin	54	7	61	57	7	64	60	7	67	66
B _{3e}	Dyes	67	7	74	63	8	71	65	8	73	71
A.Total (Fish & shrimp)		1140	141	1281	1192	140	1332	1248	140	1388	1355
B. Fish Feed				300			195			200	200
GT (A+B)				1581			1527			1588	1588

Annexure-8: Year-wise Annual Export of Fish and Fish Product 1999-2000 to 2014-15

Year	Frozen Shrimp/ Prawn		Live Fish		Frozen Fish		Chilled Fish		Dry fish		Salted/ dehydrated fish		Crab		Shark fin/ Fish Maws		Others		Total		% of Total Export (Value)
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	
1999-00	28514	1612.2	-	-	9484	137.19	-	-	215	3.65	809	25.96	107	1.44	262	31.17	-	-	39391	1811.56	6.28
2000-01	29713	1885.2	-	-	7965	94.89	-	-	137	2.02	838	27.73	154	2.33	181	20.63	-	-	38988	2032.75	5.77
2001-02	30209	1447.8	-	-	9864	137.39	-	-	517	8.32	293	9.53	336	7.07	263	27.07	-	-	41482	1637.14	4.76
2002-03	36864	1719.9	-	-	8846	158.64	-	-	333	7.02	526	19.12	630	14.58	172	22.35	-	-	47371	1941.59	5.10
2003-04	42943	2152.8	-	-	10229	202.24	-	-	472	4.16	377	1.38	116	1.39	4	1.53	-	-	54141	2363.47	5.71
2004-05	46533	2281.6	-	-	15763	256.2	-	-	272	3.71	770	28.97	38	0.86	1	0.39	-	-	63377	2571.72	5.90
2005-06	49317	2698.4	57	0.48	17429	294.14	-	-	150	2.19	591	19.84	1107	12.95	78	0.80	100	1.09	68829	3029.84	4.56
2006-07	53361	2992.3	4	0.07	18376	325.9	-	-	77	1.34	441	12.80	1123	15.48	244	4.11	78	0.86	73704	3352.89	4.90
2007-08	49907	2863.9	10	0.15	23515	495.46	-	-	210	2.67	658	26.97	439	4.88	266	1.82	294	0.41	75299	3396.28	4.04
2008-09	50368	2744.1	0.3	0.006	19294	450.89	-	-	341	11.99	84	3.92	1217	11.98	276	1.77	1308	18.73	72888	3243.41	3.00
2009-10	51599	2885.2	1783	13.22	21464	458.11	-	-	622	25.06	0	0.00	692	10.41	955	12.66	528	3.85	77643	3408.52	2.74
2010-11	54891	3568.2	0.60	0.045	16743	490.00	16369	421.05	623	5.57	577	30.86	4485	54.11	0	0.00	2780	33.97	96469	4603.83	2.73
2011-12	48007	3640.2	0.46	0.04	15513	396.18	19026	520.74	996	9.43	411	27.46	5767	95.77	0	0.00	2758	14.14	92479	4703.94	2.46
2012-13	50333	3376.2	0	0.00	11435	316.36	11831	246.86	1278	36.03	0	0.00	7428	169.49	1	0.09	2599	13.93	84905	4158.97	2.01
2013-14	47635	4118.8	0	0.00	11677	337.11	5021	89.07	2634	29.67	261	21.65	7707	164.75	0	0.00	2393	15.89	77328	4776.92	2.09
2014-15	44278	3937.6	0	0	10656	277.63	11629	177.08	2845	36.74	261	25.37	12558	199.38	0	0	1297	6.81	83524	4660.60	1.92

1 US Dollar =

Value in Core Taka

Quantity in Metric Ton

77.80 Taka

Source: EPB (Export Promotion Bureau) and FIQC (Fish Inspection and Quality Control), Department of Fisheries.

Note : Chilled fish was included in the column of frozen fish before the year 2010-11.

Exported Frozen Shrimp/ Prawn in 2014-15

	(MT)	Core Taka
Galda	6587.58	828.46
Bagda	32539.11	2831.57
Others	5151.52	277.57
Total	44278.21	3937.60

Annexure-9. List of ongoing development projects (2013-14)

SL No.	Name of the project and Implementation Period	Total PP Cost (Fig. in lakh)	Project Area	Objectives	Major Activities	Achievement (%)
1.	Bangladesh Marine Fisheries Capacity Building Project (IDB/GOB) (July 2007-June 2017)	16545.06	14 coastal districts, 49 upazilas	<ol style="list-style-type: none"> 1. Assess the standing stock and MSY of estuarine and coastal fisheries resources. 2. Assess the standing stock of pelagic and demersal stocks of aquatic resources. 3. Undertake census and establish data bank on different types of fishing crafts and gears. 4. Develop a catch assessment program for routine maintaining of the coastal and marine fisheries as to changes due to the dynamics of fishing. 5. Develop mechanism to implement MCS system to oversee and manage the resources. 	<ol style="list-style-type: none"> 1. Marine fisheries survey and development of management framework. 2. Staff training for HRD. 3. Procurement of Research/Survey Vessel. 4. Development of an integrated data base for MCS. 	100%
2.	Jatka Conservation, Alternate Income Generation for the Jatka Fishers and Research Project (July/2008-June/2015) (DoF Part)	4095.80	12 Districts, 51 Upazilas	<ol style="list-style-type: none"> 1. To Increase Hilsa production by saving Jatka (juvenile Hilsa) and brood Hilsa. 2. Support to strengthen and enhance Hilsa Sanctuary activities. 3. To create alternate job opportunities for the Jatka/Hilsa Fishers for improving their Socio-Economic status. 4. To create mass awareness for the conservation of Jatka-Hilsa. 	<ol style="list-style-type: none"> 1. Support to enhance Hilsa sanctuary Activities. 2. Conduct mobile court. 3. Fishers' training on AIGAs. 4. Develop and printing/preparation of posters, leaflets, TV spots, video, CD/DVD etc. 5. Alternative income generating activities (AIG) for fishers. 	99.98%
3.	Poverty reduction and livelihoods Security for the People of Economically Depressed Area (April/2010-June/2016)	8380.00	5 Divisions, 34 Districts, 185 Upazilas	<ol style="list-style-type: none"> 1. To create employment opportunities in fisheries sector through excavation and re-excavation of water bodies for the people below poverty line. 2. To develop the skill and knowledge of unemployed poor people through training and involve them in aquaculture and other income generating activities. 3. To reduce malnutrition in the poverty region through increase fish culture. 	<ol style="list-style-type: none"> 1. Training for AIG, Small Fish farmers, service provides. 2. Stocking of fish fingerlings. 3. Exchange visit. 4. Establishment of fish sanctuaries. 5. Excavation and re-excavation of pond/borrow pits & installation of spill way. 	99.98%
4.	Greater Faridpur Fisheries	7884.89	28 Upazilas,	<ol style="list-style-type: none"> 1. To increase fish production from culture and capture fisheries of Faridpur region. 	<ol style="list-style-type: none"> 1. Development of boro-pits and Khas/private ponds/Canals & Pen 	99.96%

SL No.	Name of the project and Implementation Period	Total PP Cost (Fig. in lakh)	Project Area	Objectives	Major Activities	Achievement (%)
Greater Faridpur Fisheries Development Project (January/2010-June/2016)	7884.89	28 Upazilas, Greater Faridpur	<ol style="list-style-type: none">1. To increase fish production from culture and capture fisheries of Faridpur region.2. To create employment opportunities by various fish culture activities for the poor and landless one member in each family.3. To protect fish bio-diversity through establishing fish sanctuary, stocking endangered fish fingerlings and creating awareness.4. To improve fish habitat through development of water bodies and minor infrastructure development.	<ol style="list-style-type: none">1. Development of boro-pits and Khas/private ponds/Canals & Pen culture/ Cage culture.2. Establishment of sanctuaries, re-excavation of Beel Nursery pond/ Baors and dead rivers.3. Construction of earthen dyke/ box/Pipe-culvert/ sluice gate.4. Stocking of indigenous fish and carp fingerlings.5. Implementation of Fish Conservation Act.6. Group mobilization and facilitate AIGAs through livestock.	99.96%	
Aquaculture and Fisheries Management Project in Haor Area (October/2010-June/2016)	3726.00	3 Divisions, 7 Districts, 48 upazilas	<ol style="list-style-type: none">1. Increase fish production by Establishing beel nursery, fish sanctuary and stocking of fish fry.2. Poverty elevation of fishers and fish farmers through technology dissemination & employment generation.3. Development of a sustainable community-based improved management framework for the selected water bodies.4. Development of knowledge & skills of DoF, selected NGO employees & CBO members involved in the project.5. Capacity building of DoF technical personnel for managing ICL resources along with CBO members & other stake holders.	<ol style="list-style-type: none">1. Establishment fish sanctuary in haor and connecting river.2. Stocking of fish fingerlings.3. Community Based Fisheries Management.4. Renovation of fish Hatchery in Haor areas.5. Implementation of Fish act.6. Group formation and community mobilization.	99.98%	
Fish production, conservation and strengthening management project at Kaptai lake (Component -B: DoF part) (January/2011-December/2014)	337.45	3 Districts Rangamati, Khagrachay, and Bandorban	<ol style="list-style-type: none">1. To support to increase fish production in Kaptai lake by producing quality fry/fingerlings production through hatchery and nursery production.2. To establish training center to train the stakeholders for grow up their consciousness through training program.3. To support legislative enforcement to implement fish act & regulations.	<ol style="list-style-type: none">1. Construction of training centre in Rangamati.2. Procurement of speed boat.3. Awareness training program.4. Fingerling stocking.5. Procurement of desktop computer & furniture.	95.16%	

SL No.	Name of the project and Implementation Period	Total PP Cost (Fig. in lakh)	Project Area	Objectives	Major Activities	Achievement (%)
Fish production, conservation and strengthening management project at Kaptai lake (Component –B: DoF part) (January/2011-December/2014)	337.45	3 Districts Rangamati, Khagrachay, and Bandorban	1. To support to increase fish production in Kaptai lake by producing quality fry/ fingerlings production through hatchery and nursery production. 2. To establish training center to train the stakeholders for grow up their consciousness through training program. 3. To support legislative enforcement to implement fish act & regulations.	1. Construction of training centre in Rangamati. 2. Procurement of speed boat. 3. Awareness training program. 4. Fingerling stocking. 5. Procurement of desktop computer & furniture.	95.16%	
Hura Sagar Aquaculture and Fisheries Management Project (July/2011-June/2015)	1880.00	Hura Sagar in Belkuchi, Kamarkhand a and sadar upazila of Sirajganj district	1. To improve the fish habitat in the riverbed. 2. To improve production of non stocked indigenous fish and biodiversity and establishing fish sanctuaries. 3. To increase high production by stocking fingerling. 4. To produce fish fingerling in the river. 5. To establish CBO approach.	1. Re-excavation of dead river. 2. Establishment of fish sanctuaries. 3. Fingerling stocking. 4. Establishment of fish nursery. 5. Establishment of cage culture. 6. Construction of road for water regulatory structure.	99.82%	
Establishment of Fisheries Diploma Institute at Gopalganj, Kishorganj & Sirajganj Districts (July/2011-June/2016)	13543.00	Gopalganj Sadar, Kishorganj Sadar & Belkuchi, Sirajganj Districts.	1. To develop skilled technical manpower for the fast growing fisheries sector through offering Fisheries Diploma Course to eligible candidates. 2. To establish a well equipped three diploma institutes with modern teaching facilities for the purpose of running Fisheries Diploma Course.	1. Construction of administrative, academic building, hostels, residence, dormitories, auditorium, prayer mosque, guard room, garage, sub-station & building hatchery building. 2. Construction of internal road, compound drainage system & boundary wall. 3. Pond excavation (1ha) & turfing constructions of pond water supply system & hatchery compounds. 4. Reconstruction of pond dyke with carted earth & pond protection work by RCC retaining wall.	100%	
Rehabilitation & development of fisheries infrastructure to increase production of quality fish seed & fingerlings (Jan/2012-June/2015)	12849.32	All over Bangladesh (61 Districts, 132 Upazilas)	1. To increase good quality seed & fingerlings production by controlling genetic decadence of carps. 2. To demonstrate and dissemination of modern aquaculture technologies among the farmers. 3. Increase production capacity of infrastructures through application of improved aquaculture technologies.	1. Land acquisition for new constructed DD, DFOs & UFOs office buildings. 2. Construction of DD, DFOs & UFOs offices buildings. 3. Repairing & renovation of FSMF -83, FBRTC-04 & DFTC-04 (Shrimp), DD/DFOs including the Savar academy Bhaban & all necessary civil works.	100%	

SL No.	Name of the project and Implementation Period	Total PP Cost (Fig. in lakh)	Project Area	Objectives	Major Activities	Achievement (%)
10.	Fishermen Registration & Issuing of Identity Card Project (Jan/2012-June-2016)	8180.68	64 Districts, 482 Upazilas	<ol style="list-style-type: none"> To identify the genuine fishermen for registration & supply the identity card (ID). To develop the database of genuine fishermen for the better management & sustainable development of the fisheries resources. Financial support (as grant) to the family of decrease fishermen by natural disaster (storm, cyclone & tidal surge). 	<ol style="list-style-type: none"> Examination & verification of the primary list of the fishermen and finalization of the primary list of the genuine fishermen by concerned upazila committee. Installed Software support service and data entry (with photo) of fishermen's. Provides the one time grants to the family of deceased fishermen by natural calamities for the rehabilitation. 	99.98%
11.	Integrated Agricultural Productivity Project (IAPP), Fisheries Component. (July/2011-Dec/2016)	4504.91	8 Districts 54 Upazila	<ol style="list-style-type: none"> The overall objective of the IAPP is to enhance the productivity of Fisheries in specific agro-economically constrained and economically depressed areas of the 4 districts in the North and 4 districts in the south. The main objectives include productivity increase through develop brood and mass seed production techniques for pond fish culture and introducing adapting aquaculture technologies. 	<ol style="list-style-type: none"> Technology Packages, demonstration, adaptation. Training. Workshop. Module formation. Exchange visit. Printing project documents & materials. 	99.80%
12.	National Agricultural Technology Project (DoF) Component (IDA) (July/2007-December/2014)	8857.00	150 Selected upazilas of 31 districts	<ol style="list-style-type: none"> Decentralized, participatory, demand-led and knowledge based approach for agricultural extension. Improved post harvest technology and management practices for high value agriculture by promoting farmer market linkages as part of the development of supply chains. 	<ol style="list-style-type: none"> Establish demonstration farms at different upazila. National and International training. Exchange visit. Survey and studies. MS and Phd program. 	99.13%
13.	Fresh Water Prawn Culture extension Project (2 nd Phase) (July/2012-June/2017)	6081.34	7 Division, 61 Districts, 400 Upazilas	<ol style="list-style-type: none"> Establishment of one prawn culture demonstration farm cum training center in Filer Char, sathkira and two training centers in Gopalganj & Barisal Districts. Renovation & operation of existing 20 small-scale demonstration hatcheries & nurseries. Establishment of 10 small-scale demonstration hatcheries & nurseries. 	<ol style="list-style-type: none"> Establishment of Training Centers. Old hatchery renovation work. Galda brood development. Establishment of Prawn Hatchery. Management of Prawn Nursery. Prawn Demonstration Nursery Programme. Training programme. 	96.35%

SL No.	Name of the project and Implementation Period	Total PP Cost (Fig. in lakh)	Project Area	Objectives	Major Activities	Achievement (%)
Fresh Water Prawn Culture extension Project (2 nd Phase) (July/2012-June/2017)	6081.34	7 Division, 61 Districts, 400 Upazilas	1. Establishment of one prawn culture demonstration farm cum training center in Fier Char, sathkira and two training centers in Gopalganj & Barisal Districts. 2. Renovation & operation of existing 20 small-scale demonstration hatcheries & nurseries. 3. Establishment of 10 small-scale demonstration hatcheries & nurseries. 4. Operation of Demonstration nursery ponds in potential upazilas of 61 Districts. 5. Skill development training on prawn hatchery and farm management. 6. Extension of GAP & GMP in prawn production & safe aquaculture food production. 7. Prawn brood development in selected public & private farm.	1. Establishment of Training Centers. 2. Old hatchery renovation work. 3. Galda brood development. 4. Establishment of Prawn Hatchery. 5. Management of Prawn Nursery. 6. Prawn Demonstration Nursery Programme. 7. Training programme. 8. Extension material preparation. 9. Data base preparation & conservation. 10. Field tour for the beneficiaries (Exchange visit).	96.35%	
Aquaculture Development & Extension Project (3 rd Phase) in Chittagong Hill Tracts (July/2012-June/2017)	6847.24	All Upazilas in Rangamati, khagrachari & Bandarban districts	1. To increase fish production, enhance income & fulfill the nutritional demand of the household of the hilly people. 2. To develop hilly creeks/wetlands for aquaculture by making dam. 3. To develop nursery for fish fry rearing. 4. To provide training on aquaculture through different technology packages.	1. Creek development. 2. Nursery development. 3. Establishment of Khagrachari mini hatchery. 4. Spawns and fry production. 5. Training for fish farmers. 6. Repairing & renovation of existing mini hatchery.	99.94%	
Establishment of Beel Nursery and Fingerling Stocking in Inland Open Waters (Feb/2014-June/2016)	11809.19	Suitable beel and open waters in 60 districts of the country	1. Increase fish production from the capture fisheries through establishment of beel nursery. 2. Develop fish stock in the open water bodies through stocking fingerlings. 3. Improve socio-economic condition of the open water dependent poor fishers. 4. Restore aquatic bio diversity through stocking endangered fish species. 5. Create awareness among the open water dependent people for its sustainable management.	1. Stocking fingerlings. 2. Training of fishers and fish farmers. 3. Radio/TV advertisement. 4. Workshop/Seminar. 5. Establishment of beel nursery. 6. Group mobilization.	100%	

SL No.	Name of the project and Implementation Period	Total PP Cost (Fig. in lakh)	Project Area	Objectives	Major Activities	Achievement (%)
16.	Neemgachi Community Based Aquaculture Project (Sep/2014-June/2019)	3364.44	Raiganj and Tarash Upazila in Sirajgonj District and Chatmohar and Bhanura Upazila in Pabna District	<ol style="list-style-type: none"> 1. Introduce community based aquaculture interventions in the public/khas ponds through community mobilization and increase fish production in the Neemgachi and adjacent districts. 2. Sustainable aquaculture production from different water-bodies by adopting suitable technologies. 3. Management of good quality broods at hatchery complex ponds and supply to the private and private hatchery owners at affordable price. 4. Produce good quality fish fry and fingerling by using genetically improved broods as well as avoiding inbreeding and maintaining other protocols of fish breeding. 5. Create employment opportunities for the poor beneficiaries and to improve their livelihoods. 6. Improve socio-economic condition and establishment of rights through group formation by involving ponds/water-body surrounding poor and marginal people. 	<ol style="list-style-type: none"> 1. Construction, repair, and renovation of hatchery building. 2. Pond/water-body development. 3. Demonstration to transfer modern fish culture technology. 4. Farmers rally/field day. 5. Institutional capacity building. 6. Empowerment and capacity building for sustainable management. 	99.79%
17.	Fisheries Development Project in Rangpur Division (Jan/2015-Dec/2018)	5051.80	40 Upazila, 08 Districts in Rangpur Division	<ol style="list-style-type: none"> 1. To increase fish production through development of degraded water bodies. 2. To conserve biodiversity by establishing fish sanctuaries. 3. To enhance fish production by establishing beel nursery and stocking fish species. 4. To create employment through aquaculture. 5. Skill development of revelent beneficiaries through local training and demonstration. 6. To disseminate aquaculture technologies through local extension agent for fisheries (LEAF). 	<ol style="list-style-type: none"> 1. Development water bodies through re-excitation and minor infrastructure development. 2. Establishment of fish sanctuaries. 3. Establishment of Beel nursery in beels/flood plains. 4. Aquaculture in unutilized semi open water water bodies (Beels, Canals, Dead River etc.) 5. Construction of earthen Enclosure. 6. Stocking of indigenous fish and fingerlings. 7. Implementation of fish conservation Act. 	99.98%

SL No.	Name of the project and Implementation Period	Total PP Cost (Fig. in lakh)	Project Area	Objectives	Major Activities	Achievement (%)
17.	Fisheries Development Project in Rangpur Division (Jan/2015-Dec/2018)	5051.80	40 Upazila, 08 Districts in Rangpur Division	<ol style="list-style-type: none"> To increase fish production through development of degraded water bodies. To conserve biodiversity by establishing fish sanctuaries. To enhance fish production by establishing beel nursery and stocking fish species. To create employment through aquaculture. Skill development of revelent beneficiaries through local training and demonstration. To disseminate aquaculture technologies through local extension agent for fisheries (LEAF). To strengthen institutional capacity by aquaculture and fisheries development. 	<ol style="list-style-type: none"> Development water bodies through re-excavation and minor infrastructure development. Establishment of fish sanctuaries. Establishment of Bell nursery in beels/flood plains. Aquaculture in unutilized semi open water water bodies (Beels, Canals, Dead River etc.) Construction of earthen Enclosure. Stocking of indigenous fish and fingerlings. Implementation of fish conservation Act. 	99.98%
18.	Brood Bank Establishment Project (3 RD Phase) (Sep/2014-Dec/2019)	5542.38	27 Upazilas, 23 Districts	<ol style="list-style-type: none"> Ensuring supply of quality brood and fingerling by addressing inbreeding and cross-breeding problems to the Government and Private Farms. Genetic improvement of broodstock of Carp and SIS species. Supply of quality fry/fingerling at farmers level. Increase fish production. Employment generation. Poverty reduction. 	<ol style="list-style-type: none"> Modernization of hatchery. Pond development. Installation of water supply system. Construction of structures/repair/renovation. Repair/Construction of boundary wall. 	99.92%
19.	National Agricultural Technology Program (NATP-2): Preparation Facility-Fisheries Component (Jan/2015-Sep/2015)	28.00	270 Upazila, 57 Districts	<ol style="list-style-type: none"> To prepare Development Project Proposal (DPP) for National Agricultural Technology Program: Phase-II (NATP-2). To perform preparatory works, appraise the activities to research and extension staff and officials and other stakeholders for launching of NATP-2 with good understanding of stakeholders. 	<ol style="list-style-type: none"> To prepare DPP and create awareness about this project in stakeholders level. 	98.13%
20.	Wetland Biodiversity Rehabilitation Project (July/2009-	7802.00	9 upazilas in Pabna, Sirajganj	<ol style="list-style-type: none"> To improve the natural resource management system (NRMS) in the command area. 	<ol style="list-style-type: none"> Excavation/ re-excavation of floodplain basin. Establishment of sanctuary & 	100%

SL No.	Name of the project and Implementation Period	Total PP Cost (Fig. in lakh)	Project Area	Objectives	Major Activities	Achievement (%)
20.	Wetland Biodiversity Rehabilitation Project (July/2009-June/2016)	7802.00	9 upazilas in Pabna, Sirajganj and Natore districts	<ol style="list-style-type: none"> 1. To improve the natural resource management system (NRMS) in the command area. 2. To increase the income of wetland dependent families as well as fish production. 3. To increase the populations and numbers of species present for key wetland dependent wildlife. 4. To improve the biodiversity of the wetland. 	<ol style="list-style-type: none"> 1. Excavation/ re-excavation of floodplain basin. 2. Establishment of sanctuary & restoration of habitat. 3. Community mobilization and training. 4. Stocking of fingerlings and endangered species. 5. Support for alternate income generating activities (AIGs). 	100%
21.	Strengthening of Fisheries and Aquaculture Food Safety & Quality Management System in Bangladesh (BEST project) (July/2010-Dec/2015)	10255.81	All over Bangladesh	<ol style="list-style-type: none"> 1. To strengthen the national quality infrastructure for fish and fish products to meet safety and quality requirements in export markets, improve competitiveness and take advantage of global market opportunities, particular in EU market. 	<ol style="list-style-type: none"> 1. Laboratory Accreditation fee & Assessors Training. 2. Water/soil testing kit box (for QCW, Upazila office & Demo Farmers). 3. Network installation. 4. Construction of FIQC laboratory building. 5. Creation of ice preservation facilities at depots (private owner). 	99.99%

