



Food and Agriculture  
Organization of the  
United Nations



CACFish/VI/2018/REPORT

# REPORT

## **Sixth Session of the Central Asian And Caucasus Regional Fisheries And Aquaculture Commission**

**Izmir, Turkey  
15-18 October 2018**

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### **OPENING OF THE SESSION**

1. The Sixth Session of the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission was held in Izmir, Turkey, from 15 to 18 October 2018. The Session was kindly hosted by the Government of Turkey. The Session was officially opened and welcomed by Mr Rauf Hajiyev, Chairperson of CACFish, Deputy Minister, Ministry of Ecology and Natural Resources of the Republic of Azerbaijan, Mr Viorel Gutu, Subregional Coordinator for Central Asia and FAO Representative in Turkey, and Mr Mustafa Altuğ Atalay, Director-General of Fisheries and Aquaculture in the Ministry of Agriculture and Forestry of Turkey.
2. The five Member countries attended the Sixth Session of the Commission: Armenia, Azerbaijan, Kyrgyzstan, Tajikistan and Turkey. Ten countries were present as Observers, namely: Albania, Bosnia and Herzegovina, China, Kazakhstan, Republic of Moldova, Mongolia, Serbia, the Former Yugoslav Republic of Macedonia, Ukraine and Uzbekistan. Intergovernmental organizations with observer status that participated were EUROFISH International Organization and the Organization of the Black Sea Economic Cooperation (BSEC). The list of participants is provided in Appendix C.
3. Ms Victoria Chomo, Secretary of the Commission highlighted that this Session was the best attended in CACFish history, with 29 delegates from 15 countries, 2 observer organizations and FAO representatives. She thanked the Government of Turkey for hosting the Sixth Session. The CACFish Chairperson then welcomed the participants to the Session and invited everyone to a group photo.

### **ADOPTION OF THE AGENDA**

4. The Commission adopted the agenda without changes as shown in Appendix A.

### **REPORT ON MAIN DECISIONS AND RECOMMENDATIONS OF FAO CONFERENCES AND COMMITTEES**

5. The Commission heard a summary of the meeting document (CACFish/VI/2018/2) on main recommendations from FAO conferences and committees since the Fifth Session. This intervention included a presentation by Mr Rodrigo Roubach, Senior Aquaculture Officer, FAO Department of Fisheries and Aquaculture on recommendations from the 33<sup>rd</sup> Session of the Committee on Fisheries (COFI) held in Rome (9-12 July 2018), specifically information related to the aquaculture sector. The Members appreciated the summary by the Secretariat and the intervention by Mr Roubach.

6. The Members commended the Secretariat for facilitating the participation of the Commission in international events like the 31<sup>st</sup> Session of the Regional Conference for Europe (ERC) in Voronezh, Russian Federation in May 2018. Members encouraged the Secretariat to increase CACFish visibility in relevant international fora.

### **REPORT ON MAIN DECISIONS AND RECOMMENDATIONS OF THE FIFTH SESSION OF CACFISH**

7. The Secretary gave a summary of decisions and recommendations of the Fifth Session of the Commission held in Tashkent, Uzbekistan, October 2016. She raised attention of participants to a decision of the Fifth Session in which Members considered to increase the overall autonomous budget of CACFish to USD 200,000. This decision was postponed by the Fifth Session to be considered by the Sixth Session. The budget had not been raised since establishment of the Commission.
8. The Secretary also highlighted the decision made in 2016 to form an ad hoc Working Group on Administrative and Financial Matters, to determine the contributions to the autonomous budget of the potential new Commission members. As of the Sixth Session the Working Group has not been established.
9. Members requested information on detailed progress of programmes identified at the Fifth Session and potential cooperation with other relevant international Fisheries organizations. The Secretary responded with examples of participation in international events on behalf of CACFish.

### **REPORT ON COMMISSION ACTIVITIES IMPLEMENTED DURING THE INTERSESSIONAL PERIOD 2016-2017**

10. The Secretary informed Members on the status of activities approved in the Second Regional Work Plan (RWP2) by the Fifth Session for implementation during the intersessional period 2016-2017 (CACFish/VI/2018/3). She also reported on FAO projects in the CACFish region and publication of CACFish reports. The Secretary explained that some activities approved by the Fifth CACFish Session were not implemented due to administrative and financial difficulties.
11. Some Members expressed concern about the functioning of the Secretariat. Clarification was received from the FAO Subregional Coordinator for Central Asia who is also the budget holder for the CACFish Trust Fund. He reassured the Commission that the Secretariat located in Ankara, Turkey has the necessary support from FAO. It was proposed that this topic be further discussed under Agenda Item 10 (Any other matters).

## **REPORT ON ADMINISTRATION, FINANCES, AND BUDGET OF THE COMMISSION**

12. The Commission reviewed meeting document (CACFish/VI/2018/4 and 5). The Secretariat provided information on the status of the CACFish Trust Fund that consists of Member mandatory and voluntary contributions. It was informed that there is a budget surplus of USD 403,826 as of 1 October 2018. Members discussed the current budget situation, including arrears, and unanimously decided to keep the annual autonomous budget at USD 180,000 for the period of 2019 onwards.
13. The Secretariat was requested to prepare a draft document explaining the calculation method for Member contributions to encourage new countries to join the Commission. The Secretariat will share this draft document with current Members for comments.
14. Members discussed the benefits of the ad hoc Working Group (WG) on Administrative and Financial Matters that was requested by the Fifth Session. BSEC made an intervention about their experience with such a WG. The Commission decided the WG was not required at this time.

## **REPORT ON THE MAIN DECISIONS AND RECOMMENDATIONS OF THE FOURTH MEETING OF THE TECHNICAL ADVISORY COMMITTEE ON FUTURE PRIORITIES OF THE COMMISSION**

15. The Chairperson of CACFish requested the Secretariat to present the main recommendations of the Fourth Meeting of the Technical Advisory Committee (TAC), held in Tbilisi, Georgia, November 2017. The Secretariat introduced Armenia as the newly-elected Chairperson of TAC and Turkey as the newly-elected Vice-Chair. Two points were raised for discussion and decision by Members.
16. The Fourth Meeting of TAC reviewed the Second Regional Work Programme (RWP2), prioritizing some activities and adding activity *1.1.2. Legal mechanisms for use of the waterbodies and lands, for the purposes of aquaculture*. Secondly, the Committee proposed activities for the intersessional period 2018-2019 from the prioritized list. It was clarified to the Members why some prioritized activities in RWP2 were not included in the intersessional workplan, namely budget constraints.
17. Members expressed appreciation for the technical work of the TAC and for the recommendations provided to the Commission. The revisions to the RWP2 and the activities for the intersessional period 2018-2019 were unanimously approved (Appendix D). In addition, due to some surplus in the CACFish Trust Fund, USD 150,000 was allocated to activity 1.1.2 in Azerbaijan to include a pilot study and regional workshop.

Table 1: Activities for intersessional period 2018-2019

Activity	Date	Estimated budget (USD)	Country
1.1.1. Review of Fisheries Law of Kyrgyz Republic		30 000	Kyrgyzstan
2.1.1. Provision of technical assistance for aquaculture production techniques and systems		45 000	Armenia
3.1.1. Inland stock assessment in selected large water bodies		60 000	Tajikistan
3.5. Provision of technical advice on restocking and culture based fisheries		40 000	Kyrgyzstan
4.1.1. Development/updating of post-harvest management by development/effective implementation of marketing measures, rules, standards for safe and quality fish and fish products		60 000	TBD
5.1.1 Advice and training on fish genetic resources		50 000	Turkey
Fifth Meeting of TAC	2019	20 000	Armenia TBC
Sixth Session of CACFish	16-18 October, 2018	60 000	Izmir, Turkey
<b>TOTAL</b>		<b>365 000*</b>	
*member contributions for 2 years estimated at 360 000			
Activities financed from budget surplus			
1.1.2. Legal mechanisms for use of the waterbodies and lands, for the purposes of aquaculture		150 000	Azerbaijan+ Regional

### MEMBER PRESENTATIONS ON ACTIVITIES AT COUNTRY LEVEL

18. Five Members presented their national reports on fisheries and aquaculture sector to the Commission and these are included in the Appendix E. The information and data provided was much appreciated by the Commission and the Secretariat. There was a productive question-and-answer period which advanced knowledge sharing and evidenced synergies of South-South Cooperation within the Commission. It was highlighted during the

discussion that CACFish membership facilitates information sharing when compared to bilateral relations between countries.

19. There was a brief intervention by Ms Yuriko Shoji, FAO Deputy Regional Representative for Europe and Central Asia on the event of World Food Day. She praised the Commission for the high number of the Members and Observers at the Sixth Session. She added that the Commission belongs to the Members and that the Secretariat is there to assist. Her comments were appreciated by the delegates.

### **REPORTS OF OBSERVERS**

20. Eight Observer countries presented information on their fisheries and aquaculture sector to the Commission and two Observer organizations, EUROFISH International Organization and the Organization of the Black Sea Economic Cooperation (BSEC), reported on their activities related to the work of the Commission. Full national reports of presenting observer countries are included in the Appendix F.
21. Members thanked the Observers for attending the Session and for sharing their experiences. Observer countries were encouraged to become a full Member to benefit more from the activities of the Commission and strengthen the regional cooperation in fisheries and aquaculture. Observer organizations also thanked the Commission for inviting them to participate in the Session and proposed future collaboration with CACFish in areas of mutual benefit.

### **ANY OTHER MATTERS**

22. The Member states expressed their serious concern that the CACFish Secretary is located in Budapest instead of Ankara and emphasized their strong demand for an arrangement that would make both the Secretary and the Secretariat be in the same location, in Ankara, as before. Members invited the relevant FAO departments to take necessary actions on this issue, as it has already been decided and adopted. Thus, the contracting Parties have demonstrated their belief that the efficiency of the Commission would be further increased.

### **DATE AND PLACE OF THE FIFTH MEETING OF THE TAC**

23. Armenia offered to host the Fifth Meeting of the TAC pending the approval of the Government. If not, Turkey is ready to be the hosting country.

### **DATE AND PLACE OF THE SEVENTH SESSION OF THE CACFISH**

24. Tajikistan kindly offered to host the Seventh session of CACFish in Dushanbe in October 2020.



**REVIEW AND ENDORSEMENT OF THE REPORT OF THE COMMISSION**

25. The report was endorsed en bloc with changes in the paragraph 20, 21 and 22 by the Commission according to the comments made by Member States.

**Appendix A****ANNOTATED AGENDA****Monday 15 October 2018*****Morning: 11:00-14:30***

Registration open for Members and Observers

***Afternoon Session: 14:30-17:30***

1. Opening of the Meeting.
2. Adoption of the provisional Agenda (CACFish/VI/2018/1).
3. Report on main decisions and recommendations of FAO Conferences and Committees (CACFish/VI/2018/2) – for information.
4. Report on main decisions and recommendations of the Fifth Session of CACFish – for information.
5. Report on Commission activities implemented during the intersessional period 2016-2017 (CACFish/VI/2018/3) – for information.

**Tuesday 16 October 2018*****Morning Session: 9:30-13:00***

6. Report on administration, finances, and budget of the Commission (CACFish/VI/2018/4 and 5) – for discussion and decision.
7. Report on the main decisions and recommendations of the Fourth Meeting of the Technical Advisory Committee on future priorities of the Commission (CACFish/VI/2018/6) - for discussion and decision.

***Afternoon Session: 14:30-17:30***

8. Member presentations on activities at country level they would like to report to the Session (approved TEMPLATE attached): completed or on-going activities such as research projects, programmes, conferences, and workshops.

**Wednesday 17 October 2018*****Morning Session: 9:30-13:00***

8. (Continued...) Member presentations on activities at country level they would like to report to the Session.
9. Observers may report on matters they would like to bring to the attention of CACFish.
10. Any other matters.
11. Date and place of the Fifth TAC Meeting in 2019.
12. Date and place of the Seventh CACFish Session in 2020.

*Afternoon Session: 15:00-17:30*  
Adoption of Report

**Thursday 18 October 2018**

Field trip to Izmir Seafood Exposition (Future Fish Eurasia'18) sponsored by the Government of Turkey (MAF).

**Appendix B****LIST OF DOCUMENTS*****Working documents***

CACFish/VI/2018/1 rev1	Provisional Agenda
CACFish/VI/2018/2	Main decisions and recommendations of relevant FAO Conferences and Committees
CACFish/VI/2018/3	Report on Commission activities and results during the intersessional period 2016-2017
CACFish/VI/2018/4	Report on the administrative and financial affairs of the Commission during the intersessional period 2016-2017
CACFish/VI/2018/5 rev1	Commission budget and member contributions for 2018 and 2019
CACFish/VI/2018/6	Report of the Fourth Meeting of TAC, Tbilisi, Georgia, 28-30 November 2017

***Information documents***

CACFish/VI/2018/Inf.1 rev3	Provisional list of documents
CACFish/VI/2018/Inf.2 rev1	Information Note
CACFish/VI/2018/Inf.3	Main findings and recommendations from activities on aquatic genetic resources
CACFish/VI/2018/Inf.4	Implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication in CACFish region
CACFish/VI/2018/Inf.5	Regional workshop on best practices for cage culture in reservoirs and lakes in Central Asia and the Caucasus, 5-8 December 2017

***Reference documents***

CACFish/VI/2018/Ref.1	Report of the Fifth Session of CACFish, Tashkent, Uzbekistan, 10-12 October 2016
CACFish/VI/2018/Ref.2	Report of the 16th Session of the COFI Sub-Committee on Fish Trade, Busan, Republic of Korea, 4-8 September 2017
CACFish/VI/2018/Ref.3	Report of the 29th Session of the European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC), Stare Jablonki, Poland, 6-8 September 2017
CACFish/VI/2018/Ref.4	Report of the 41st Session of General Fisheries Commission for the Mediterranean (GFCM), Budva, Montenegro, 16-20 October 2017

- CACFish/VI/2018/Ref.5      Report of the 9th Session of COFI Sub-Committee on Aquaculture, Rome, Italy, 24-27 October 2017
- CACFish/VI/2018/Ref.6      Report of the 31st Session of the Regional Conference for Europe, Voronezh, Russian Federation, 16-18 May 2018

## Appendix C

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## Appendix D

## REVISED SECOND REGIONAL WORK PROGRAMME (RWP2)

## Component 1: Fisheries

Activities	Timeframe	Total budget (USD)	Budget sources and status	Priority status
<b>1.1. Technical assistance for enhancing legal, regulatory frameworks and institutional structures</b>				
<b>1.1.1. Review of Fisheries Law of Kyrgyz Republic</b>	2016-2020	30,000	CACFish autonomous budget	Priority
<b>1.1.2. Legal mechanisms for use of the waterbodies and land, for the purposes of aquaculture <sup>1</sup></b>		400,000	No budget secured	Priority
<b>1.2. Capacity development for fisheries policy, management, and planning</b>			No budget secured	
<b>1.2.1. Review of technical fishing regulations, licensing and logbook systems</b>	2017	35,000	No budget secured	Priority
<b>1.2.2. A preliminary study on <a href="#">Geographic Information Systems in fisheries management</a> and planning</b>	2018	40,000	No budget secured	
<b>1.2.3. Regional Workshop on Incorporation of Ecosystem Approach to Fisheries into planning and management</b>	2019	30,000	No budget secured	
<b>1.2.4. Capacity development of key stakeholders to enhance co-management</b>	2018	30,000	No budget secured	
<b>1.3. Fisheries data collection and management</b>			No budget secured	
<b>1.3.1. Technical assistance for establishment and improvement of fisheries and aquaculture data and information systems at national level</b>	2016- 2020	40,000	No budget secured	

<sup>1</sup> Proposed to be added by the 4<sup>th</sup> meeting of TAC, November 29, 2017

## Component 2: Aquaculture

Activities	Timeframe	Total budget (USD)	Budget sources and status	Priority status
<b>2.1. Capacity building for production systems</b>				
<b>2.1.1. Provision of technical assistance for aquaculture production techniques and systems</b>	2016-2020	45,000	CACFish autonomous budget	Priority
<b>2.1.2. Capacity building for artificial propagation of fish seeds</b>	2017	35,000	No budget secured, possible FishCap <sup>2</sup>	Priority
<b>2.1.3. Ad-hoc training on hatchery production of trout</b>	2018	30,000	No budget secured, possible FishCap	
<b>2.1.4. Farming of new fish species</b>	2016-2107	30,000	No budget secured, possible FishCap	
<b>2.2. Provision of technical advice on broodstock management</b>	2016- 2020	50,000	No budget secured, possible FishCap	Priority
<b>2.3. Provision of technical advice on fish feed manufacturing</b>	2016-2020	100,000	No budget secured, possible FishCap	

<sup>2</sup> Concept note was submitted for FishCap funding under the FAO Turkey Partnership program

## Component 3: Inland Fisheries and Conservation

Activities	Timeframe	Total budget (USD)	Budget sources and status	Priority status
<b>3.1. Support to inland fisheries management and conservation objectives</b>				
<b>3.1.1. Inland stock assessment in selected large bodies</b>	2016-2018	60,000	CACFish autonomous budget	Priority
<b>3.2. Provision of technical advice on preservation of genetic resources</b>	2016-2018	35,000	No budget secured	
<b>3.3. Workshop on the Habitat Rehabilitation for Inland Fisheries</b>	2019	35,000	No budget secured	Priority
<b>3.4. Provision of technical advice on the establishment of Monitoring, Control and Surveillance (MCS) systems in inland fisheries</b>	2016-2020	40,000	No budget secured	
<b>3.5. Provision of technical advice on stocking, restocking and culture based fisheries</b>	2016-2020	40,000	CACFish autonomous budget	Priority

## Component 4: Post-Harvest and Marketing

Activities	Timeframe	Total budget (USD)	Budget sources and status	Priority status
<b>4.1. Provision of post-harvest management, food safety and quality and HACCP certification</b>				
<b>4.1.1. Development/updating of post-harvest management by development/effective implementation of marketing measures, rules, standards for safe and quality fish and fish products</b>	2016-2020	60,000	CACFish autonomous budget	Priority
<b>4.1.2. Provision of technical advice on fish marketing and fish processing and diversification of processed fish and fish products</b>	2016-2020	60,000	No budget secured, possible FishCap	Priority
<b>4.2. Provision of fish market information</b>	2016-2020			
<b>4.2.1. Development of a (national) fish market information system</b>	2017	60,000	No budget secured	

## Component 5: Research and Capacity Development

Activities	Timeframe	Total budget (USD)	Budget sources and status	Priority status
<b>5.1. Support to research, technology development, training and education in fisheries and aquaculture</b>				
<b>5.1.1 Advice and training on fish genetics resources</b>	2016-2018	50,000	CACFish autonomous budget	Priority
<b>5.2. Training of researchers, technical ministerial staff, hatchery managers and representatives of fishers' organization</b>	2016-2020	400,000	No budget secured	Priority

## Appendix E

## NATIONAL REPORTS BY COUNTRIES

## AZERBAIJAN

1. BRIEF DESCRIPTION OF FISHERIES IN AZERBAIJAN  
(CAPTURE FISHERY AND AQUACULTURE)

## 1.1. CAPTURE FISHERY

• **Capture fishery by main species:**

The capture fishery in the Republic of Azerbaijan is carried out in the Caspian Sea, in the river Kura, and in inland waters. The main capture fishery targets are sturgeons, salmon, ordinary fishes (kutum, Caspian asp, European carp, fresh water sander, shemaya, roach, Eastern bream, barb, etc.), also lamprey, shad, etc. Number one fishery target is sturgeons, number two in terms of fishery importance are semi-anadromous fishes: Eastern bream, fresh water sander, roach, European carp, etc. The 2015-2017 fish catches data by species are presented in Table 1.

Table 1

Quota-based catches in Azerbaijan in 2015-2017

Fish species	2015		2016		2017	
	River Kura	Caspian Sea	River Kura	Caspian Sea	River Kura	Caspian Sea
<b>Beluga</b> ( <i>Huso huso</i> Linne)	--	0.35	--	0.30	--	0.30
<b>Caspian Sturgeon</b> ( <i>Acipenser guldenstadti</i> Brandt)	0.23	0.87	0.15	0.84	0.21	0.85
<b>Starred Sturgeon</b> ( <i>Acipenser stellatus</i> Pallas)	0.12	0.44	0.19	0.32	0.19	0.45
<b>Shad</b>	--	118.0	--	86.1	--	74.8
<b>Kilka</b>	--	138.4	--	315.6	--	559.1
<b>Kutum</b> ( <i>Rutilus frisii kutum</i> Kamensky)	--	116.2	--	92.5	--	100.1
<b>European Carp</b> ( <i>Cyprinus caprio</i> Linne)	0.9	20.3	3.1	15.8	4.44	20.87
<b>Roach</b> ( <i>Rutilus rutilus caspicus</i> Jakovlev)	3.6	50.7	11.4	38.5	9.1	40.76
<b>Eastern Bream</b> ( <i>Abramis brama orientalis</i> Berg)	16.3	8.0	24	3.3	26.2	4.7
<b>Caspian Asp</b> ( <i>Aspius aspius</i> Linne)	0.4	--	1.7	--	1	--
<b>Fresh Water Sander</b> ( <i>Sander lucioperca</i> Linne)	2.6	--	3	--	5.1	--
<b>Leaping Gray Mullet</b> ( <i>Liza saliens</i> Risso)	--	77.3	--	67.7	--	59.1



<b>Shemaya</b> ( <i>Chalcalburnus chalcoides</i> Güeldenstäedt)	1.4	2.7	2.2	4.22	1.4	2.2
<b>Catfish</b> ( <i>Silurus glanis</i> Linne)	1.2	--	--	2.6	--	--
<b>Pike</b> ( <i>Esox lucius</i> Linne)	--	--	--	--	--	--
<b>Crucian Carp</b> ( <i>Carassius carassius</i> Linne)	4.3	0.1	--	2.51	--	--
<b>Vimba</b> ( <i>Vimba vimba persa</i> Pallas)	--	3.5	3.2	--	4.75	3.2
<b>Other species</b>	2.0	--	--	--	--	--
<b>Total:</b>	<b>32.8</b>	<b>536.86</b>	<b>60.24</b>	<b>626.36</b>	<b>55.57</b>	<b>867.18</b>

Starting from 2011, the Caspian Sea countries have been complying with a technical moratorium on commercial catches of sturgeons which are allowed solely for the purposes of artificial reproduction and replenishment of natural populations, also for research purposes. Inland capture fishery is focused on the river Kura and two major water storage reservoirs – Mingyachevirkoye and Shamkirkoye, where different species of carp (*Cyprinidae*) and perch (*Percidae*) are caught.

The Caspian has very few marine species of commercial value. Apart from shad species, they include kilka and gray mullet. Gray mullet and shad production shows a growing trend, however their stocks in the Azeri sector of the Caspian Sea are underutilized. Judging by the weight of the total catch, kilka holds the first place accounting for up to 50-75% of the total catch. In recent years, marine species have been mainly caught – kilka, shad, and gray mullet.

- **Employment in fisheries:**

The number of big companies (legal entities) engaged in the capture fishery represented by year is as follows: 2005 – 17; 2009 – 16; 2010 – 14; 2013 – 9; 2015 – 5; 2016 – 3; 2017 – 2. As can be seen, the number of fishery companies over the past 10-15 years has gone down by nearly an order of magnitude.

In 2017, only 12 fishing vessels were engaged in fish capture, they caught kilka using a cone-shaped net (deep-water fishing). Each of the 12 fishing vessels engaged in commercial activities employs 6 people on an average, the total adding up to around 72 people. Around 500 people are employed in the coastal infrastructure of preparing vessels for sea, in fish product processing and in fish markets activities.

In 2017, the total of 561 boats were registered (small boats, nearshore fishery). Each of the 561 boats employs 4 people on an average, the total equalling to around 2,250 people.

- **Specific features of the national fishing fleet:**

Currently, 12 national vessels are engaged in commercial fishery in the Southern Caspian based on permits from oversight authorities. In recent years, the fishing boats have only been catching kilka. Trawlers, seiners, smaller fishing boats and some other vessels are used to fish in the Caspian Sea. Marine nets are used for shad catching. Currently, most fishing vessels in the Azeri sector of the Southern Caspian use a cone-shaped net for electric light fishing for Caspian kilka. There are three species of kilka in the Caspian Sea: common kilka, anchovy kilka, and big-eyed kilka. All the three species are attracted by light but the bulk of the catch is common kilka. Trawl catching in the Caspian Sea is used when research surveys are done.

In 2016, the number of vessels using a cone-shaped net to catch fish (kilka) was 5, and the number of fishing boats was 726.

In 2017, the number of vessels using a cone-shaped net to catch fish (kilka) was 11, and the number of fishing boats was 561.

- **Status of main fish stocks:**

The stocks of sturgeons (beluga, fringebarbel sturgeon, sturgeon, starred sturgeon), Caspian salmon, and kilka remain at a stable low level. The reason for sturgeon and Caspian salmon stocks going down is the impossibility of their natural spawning due to the Mingechaurskaya Hydro Power Plant dam, shortage of spawners for artificial reproduction, deterioration of their feeding base (population of kilka which they feed on) in the Caspian Sea, and poaching. Azerbaijan, as all the other Caspian Sea countries, since 2011 have been complying with a technical moratorium on catches of sturgeons Caspian Sea.

The reason for kilka stocks reduction over the past 15-20 years has been poaching and invasion of *Mnemiopsis leidyi* in the Caspian Sea in the late 90-s of the previous century, whose negative effect became more pronounced and began growing after 2001. The role of the invader *M.leidyi*, which is a plankton-eater, in the Caspian ecosystem is undermining the kilka feeding base by eating out big amounts of zooplankton thus creating a catastrophic situation for its consumers. With the appearance of *M.leidyi* in the Caspian Sea, kilka stocks and catches have been going down. Kilka catches across the whole of the Caspian basin decreased from 271 k tons in 1999 to 54 k tons in 2003 (Sedov et al., 2004), i.e. fivefold. In 2007, kilka catches in Azerbaijan amounted to ca. 3,667 tons, while in 2009 – only to ca. 840 tons. In subsequent years, kilka catches continued to gradually decrease; in 2010 and 2011, they went down to 708 and 485 tons, respectively, and in 2012 and 2013, to 342 and 206 tons, respectively. In 2014 and 2015, kilka catches became even smaller, 163 and 138 tons. However, in the past two years (2016-2017), due to observed stabilisation of *Mnemiopsis* biomass, kilka stocks and catches tend to increase.

Unlike kilka, gray mullet and shad stocks and catches tend to decrease.

## 12. AQUACULTURE

- **Capture fishery by main species:**

Aquaculture facilities in Azerbaijan are functioning in two directions. The first one is artificial reproduction of fry of valuable commercial species, which are then released to feed in natural water bodies (Caspian Sea, river Kura, water storage reservoirs) to replenish the stocks of those species. This direction is also called pasturable aquaculture. Those facilities are managed by the government. The second direction is farms breeding commodity fish and growing fish seed.

Today there are 10 aquaculture farms in Azerbaijan. There are 3 sturgeon hatcheries in the downstream part of the River Kura. Four hatcheries annually reproduce and release fry of Kura sturgeon (*Acipenser persicus natio kurensis*), starred sturgeon (*Acipenser stellatus natio kurensis*), fringebarbel sturgeon (*Acipenser nudiiventris*), and beluga (*Huso huso*) into the Kura region of the sea. Three hatcheries reproduce Kura salmon (*Salmo trutta caspius*). Up to 200,000 50-gram small fry are annually released into the Caspian Sea. Another four facilities specialise in carp species, including European carp (*Cyprinus carpio*), kutum (*Rutilus frisii kutum*), Caspian asp (*Aspius aspius*), roach (*Rutilus rutilus caspicus*), Eastern bream (*Abramis brama orientalis*), and in herbivorous fishes – grass carp (*Ctenopharyngodon idella*) and silver carp (*Hypophthalmichthys molitrix*). Annual output of carp species by these facilities is ca.

400mln specimens of fry. Aquaculture production data in 2015-2017 by species are presented in Table 2.

**Table 2**

**Aquaculture production of valuable commercial fishes  
in Azerbaijan, 2015-2017**

Fish species	Measurement unit	Years		
		2015	2016	2017
<b>Sturgeons, subtotal</b>	<b>mln specimens</b>	<b>6.52</b>	<b>7.57</b>	<b>8.3</b>
<b>Kura salmon</b>	<b>thou. specimens</b>	<b>181.02</b>	<b>199.8</b>	<b>190.0</b>
<b>Ordinary fishes, subtotal</b>	<b>mln specimens</b>	<b>389.803</b>	<b>398.81</b>	<b>428,5</b>
<b>TOTAL:</b>	<b>mln specimens</b>	<b>396.50</b>	<b>406.5</b>	<b>437.0</b>

Commodity fish rearing and fish seed growing is privately owned. In production, the farms are closely associated with one another as links of the common chain. Some have nursery ponds and grow fish seed selling it to those farms which have feeding areas; some others grow grain, the main ingredient of aquafeed. The main commodity aquaculture species are European carp, common carp, silver carp, grass carp, and trout.

Over the past 20 years aquaculture production in Azerbaijan has significantly gone down. It went down from 1700 tons per annum to 100 tons per annum in 2006-2008, while the cost of fish products went up several-fold. In 2006-2008, total aquaculture production varied from 100 to 150 tons per annum (vs. 40 k tons in the 80-s of the previous century). In 2006-2008, aquaculture production made up ca. 10-15% of the total fish products in the country. Pond and lake aquaculture dynamics in 2015-2017 is presented in Table 5.

**Table 3**

**Aquaculture development dynamics in Azerbaijan, 2015-2017**

Indicators	Years		
	2015	2016	2017
Number of individuals engaged in pond and lake aquaculture	161	108	104
Pond and lake aquaculture area, hectare	1,847	1,093	4,946
Aquaculture fish (grown/caught), tons, including:	603	645	707
Sturgeons	-	-	5
European carp	177	201	213
Common carp	28	31	30
Grass carp	20	23	28
Silver carp	24	20	43
Trout	304	315	312
Other fish species	50	55	76

In recent years, the number of people employed in the private aquaculture sector has been ca. 1000 people, and the total amount of bred and caught fish has been 603-707 tons per annum, mainly European carp (177-213 tons). Freshwater aquaculture production potential is underutilised; mariculture is at the initial stage of development. Efforts to develop

freshwater aquaculture and mariculture are clearly lagging behind both the global trends of dynamic development of this sector, and the potential existing in the Republic of Azerbaijan.

The total number of legally registered farms engaged in the business of commodity aquaculture is as follows: 2015 – 161, 2016 – 108, and 2017 – 104. The biggest of them is *Caspian Fish Co Azerbaijan*. The law on accounting for aquaculture farms and regulation of their activities became effective in 2017, now their preliminary recorded number is ca. 600. However, according to expert estimates, the number of farms engaged in commodity aquaculture is ca. 2,000 farms. After the Cabinet of Ministers Decree on the Rules of Aquaculture Activities took effect in 2017, all illegal farms will be taken account of.

- **Employment in aquaculture:**

Today, the country's fisheries sector has around 104 legally operating enterprises of different forms of ownership. Aquaculture farms (fish-breeding enterprises) employ around 1000 people. The staff of aquaculture farms varies from 5 to 300 employees depending on the scope and type of work. In recent years, the number of individuals engaged in the private aquaculture sector has been as follows: 2009 – 54, 2012 – 89, 2014 – 90, 2015 – 161, 2016 – 108, and 2017 – 104.

## 2. STATISTICS, RESEARCH AND RESOURCE ASSESSMENT

The food market of the country in its overall mix of protein-containing products has a mere 2 % of fish and fish products. Per-capita consumption of fish products in 2007-2009 was ca. 1.7 kg per annum. In recent years, however, there has been an increase in the fish product per-capita consumption indicator: 2005 – 3.4 kg, 2009 – 6.5 kg, 2011 – 7.0 kg, 2012 – 8.2 kg, 2013 – 7.5 kg, 2014 – 7.2 kg, 2015 – 7.0 kg, 2016 – 7.6 kg, 2017 – 7.9 kg. This is happening due to both increasing food product imports and increasing aquaculture production in 2011-2017.

Currently, the demand and needs of Azerbaijan population are met mainly by fish products imported from other countries (up to 70-90%).

There are no specialised markets selling fish and fish products in the republic. Markets in cities and regional centres have fish and fish product selling sections. These sections function as part of the overall market infrastructure. Due to small fish catches, fish and fish products do not come to the markets in big consignments, and no auctions for such small product receipts are held. Individuals sell their catches themselves or via legal entities or sole traders acting as intermediaries.

Fish product markets and wholesale companies are privately owned. The size of the fresh and frozen fish market is seasonal.

The only fish processing company, *Caspian Fish Co Azerbaijan*, has around 300 contract-based individuals working for them with around 70% being women.

## 3. POLICIES AND LEGISLATION

Azerbaijan officially joined the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission (CACFish) in March 2014. In June 2014, the 3<sup>rd</sup> CACFish Session was held in Baku.

Fisheries organization, management, fish reproduction, water bio resource protection and regulation of its use in Azerbaijan are governed by the Fisheries Law adopted in 1998. The new amended Fisheries Law, №1015-IVQD, prepared with FAO technical support was passed

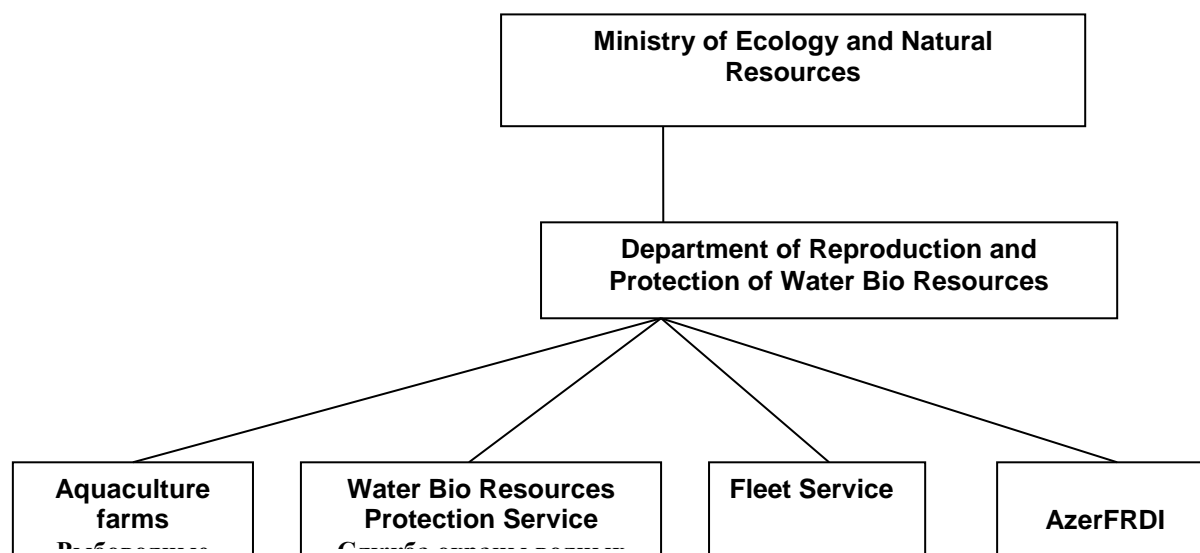
by the country's Parliament, Milli Mejlis, June 27, 2014 and approved by the Decree of the President of the Republic of Azerbaijan. Included in the new law were clauses stipulating development of aquaculture in the country. In 2016-2017, a number of by-laws in the form of Cabinet of Ministers' decrees were passed which make it possible to improve regulation of fisheries, aquaculture, activities on specially protected fisheries territories, accounting for farms and other fisheries facilities, work on acclimatisation and with hybrids, and other activities.

In the new conditions of potential implementation of a moratorium on sturgeon catching in the Caspian Sea, development of inland fishery and aquaculture is the priority for all Caspian countries and Central Asia and Caucasus countries. Of paramount importance for Azerbaijan will be creation of legal and socio-economic conditions for reorientation of the population engaged in sturgeon capture fishery to sturgeon commodity aquaculture. This will reduce man-made pressure on natural populations of fishes (especially sturgeons), which, in turn, will help biodiversity preservation and environment protection.

In the near term, the Commission on Water Bio Resources of the Caspian Sea will develop and adopt a comprehensive pentilateral Intergovernmental Agreement on a Moratorium on Commercial Catching of Sturgeon in the Caspian Sea.

#### 4. FISHERIES MANAGEMENT AND CONSERVATION MEASURES

The Government authority supervising capture fishery and aquaculture is the Ministry of Ecology and Natural Resources (MENR) of Azerbaijan and its structural subdivisions – the Department of Reproduction and Protection of Water Bioresources (DRPWB) and the Azerbaijan Fisheries Research and Development Institute (AzerFRDI).



**Figure. Fisheries and Aquaculture Management Scheme**

AzerFRDI carries out work on determining fish stocks, forecasting permissible catches, determining quotas for catching water bio resources. DRPWB issues permits to catch in certain sections of water storage reservoirs during a certain season and for a certain amount of fish subject to the given quota. DRPWB has water bio resource protection bodies to fight illegal fish catching and violations of fisheries rules using applicable laws and regulations.

DRPWB has a section on reproduction of water bio resources which coordinates and supervises 3 sturgeon, 3 salmon, and 4 carp aquaculture farms which replenish the stocks of valuable commercial fish species in the Caspian Sea, River Kura and inland waters.

Currently, the capture fishery and aquaculture management system is undergoing a reform with structural changes aimed at improving the infrastructure.

**CACFish-Related Current and Planned Regional Actions (Research Projects,  
Programs, Conferences, Workshops, Events)  
(member-state speaker presentation)**

During the intersessional period, after the CACFish Fifth Session held in Tashkent (10-12 October, 2016), the following actions were carried out in Azerbaijan and with its participation related to CACFish Commission and the Technical Advisory Committee.

On 24-25 October, 2016, Azerbaijan was invited to the High-Level Conference Towards Enhanced Cooperation on Black Sea Fisheries and Aquaculture organised by the General Fisheries Commission for the Mediterranean and the Black Sea (GFCM) under the aegis of FAO where a report by Mr. Rauf Hajiyev, Deputy Minister of Ecology and Natural Resources, was heard.

In 2017, Azerbaijan prepared and sent answers to the FAO Questionnaire on compliance with the FAO Code of Conduct for Responsible Fisheries, notably, implementation of article 9: "Aquaculture".

In 2018, Azerbaijan prepared and sent answers to the Questionnaire on monitoring application of the FAO 1995 Code of Conduct for Responsible Fisheries, International Plans of Action for Management of Fishing Capacity, Conservation of Sharks, Reduction of Seabird Bycatch, Fight against Illegal, Unreported and Unregulated Fishing, and the Strategy for Improving Information on Status and Trends of Capture Fisheries and Aquaculture Development.

In May 2017, Azerbaijan participated in the Regional Expert Meeting on Conservation and Management of Fish Genetic Resources at the Trabzon Fisheries Institute, Turkey.

In September 2017, Azerbaijan participated in and led the working group at the 2<sup>nd</sup> Meeting of the Regional Expert Group on Small-Scale Fishing (Isparta, Lake Egirdir, Turkey) to develop the guiding principles for the Central Asia and Caucasus countries.

Azerbaijan participated in the work of the 9<sup>th</sup> session of the COFI Sub-Committee on Aquaculture in Rome, Italy (October, 2017).

In November 2017, Azerbaijan took part in the work of the 4<sup>th</sup> Session of the Technical Advisory Committee (TAC) in Tbilisi, Georgia.

Currently, Azerbaijan is chairing 2 regional commissions – 1) the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission (CACFish) under the aegis of FAO, and 2) the Intergovernmental Commission for the Conservation and Rational Use of Aquatic

Biological Resources and Management of Shared Stocks of Such Resources of the Caspian Sea. This certainly gives the country particular responsibility.

In November 2017, Baku hosted the First (Inauguration) Session of the Intergovernmental Commission for the Conservation and Rational Use of Aquatic Biological Resources and Management of Shared Stocks of Such Resources of the Caspian Sea, which was for the first time attended as an invited observer by a FAO representative who made a report on Scientific and Technological Cooperation for Responsible Fisheries in the Caspian Sea.

In December 2017, Azerbaijan took part in the Regional Training on Best Practices for Cage Culture in Reservoirs and Lakes in Elazig, Turkey.

After the adoption of the new Fisheries Law by Milli Mejlis (Parliament) in 2014 prepared with FAO technical support, in 2017, the Cabinet of Ministers approved a number of by-laws aimed at fisheries development: 1) on the fisheries fund, 2) on accounting in the fisheries, 3) on acclimatisation, 4) on hybridisation, 5) list of water bodies fit for fisheries, 6) on special protection of fish resources, 7) on fishery expert reviews, 8) fishing rules, 9) aquaculture rules.

Azerbaijan attaches a lot of importance to cooperation with Black Sea and Caspian countries as well as with international organisations in the sphere of fisheries, fight against poaching, commodity aquaculture development and rational use of natural resources. Azerbaijan shares the common concern of the region about the current state of the environment and bio resources of the Black and Caspian Seas. Within the format of multilateral cooperation of Black Sea and Caspian Sea countries, special attention should be given to harmonisation of regional and international approaches to activities related to natural resources and nature protection honouring national interests.

## KYRGYZ REPUBLIC National Report

### 1. Summary

The fisheries require a holistic approach to development focusing on maintaining the functioning and integrity of ecosystems, support for social goals, and comprehensive management of natural resources. The opportunities the Kyrgyz Republic has for fisheries development are as follows:

- existing waters with the volume sufficient to develop fisheries;
- growing domestic demand for fish and fish products encouraging increase of local production;
- substantial past experience of production, acclimatised valuable commercial fish species;
- entrepreneurial activity and self-organisation of fisheries sector actors. Established associations provide for adequate measures to protect their members' interests and engagement with government institutions and donor organisations.

At the same time, fisheries development encounters a number of challenges:

- major fishery waters of the country have largely lost their fish resource as a result of unsustainable fishing practices. Low fish capacity of water reservoirs is a barrier to increasing volumes and improving efficiency of the capture fishery sector;
- poaching undermines the fish resource and deteriorates the effectiveness of reproduction efforts. Measures of punishment for poaching do not lead to its reduction;
- overall, various entities in the fisheries sector suffer a shortage of skilled personnel.

### 2. Capture Fishery and Aquaculture

The total area of lakes, water storage reservoirs, and ponds where capture fishery and aquaculture can be pursued amounts to over 700,000 hectares. Aquaculture, recreational and sport fishing are developing at a fairly fast pace there.

*Recreational and sport fishing.* Permit-based (fishing cards and tickets) fishing has been practised in the rivers for only about 30 years. Recreational and sport fishing focuses on 15 species, of which 2 species are valuable restricted-catch fishes (Amu-Dariya trout (*Salmo trutta oxianus*) and river osman (*Diptychus*)).

The total number of those who practise recreational and sport fishing may amount to around 100,000 people (taking into account local population).

The specific issue for this area of capture fishery is diminishing fish resource in the rivers due to the growing demand for this type of recreation and catches themselves getting intensified.

*Pond aquaculture.* Currently, the total pond area is around 1,020 hectares, including 825 ha of the feeding area and 195 ha of the nursery area. Pond aquaculture is based on polycultural breeding of rainbow trout, carps and herbivorous fishes. In 2017, fish farms and other types of entities produced 2138.4 tons of commodity fish with the average pond capacity of ca. 10.4 dt/ha.

Fish farms are far from being active in what concerns intensification of production, renewal and maintenance of the brood stock, use of organic and mineral fertilisers, etc. There are outstanding issues related to protecting the interests of fishery and aquaculture actors when it comes to water discharge from water storage reservoirs created for irrigational and hydro-power generation purposes.

*Dynamics of commodity fish production in the Kyrgyz Republic*



Years	2012	2013	2014	2015	2016	2017
Catches, tons	297.1	654.0	805.3	1,100.3	2,020	2,138.4

*Industrial cage culture* is a promising area in terms of economic efficiency. Issyk-Kul Lake and some other water bodies have the most favourable water and climate conditions for its development.

Cage culture farms using water storage reservoirs of the Naryn cascade of Hydro-Power Plants, which is best suited for cage culture, have to adapt their production technologies to their water and climate conditions (wind and wave regimes, temperature, current) and to a wide range of seasonal water level fluctuations caused by water discharge for power generation purposes.

### 3. Statistics, Research and Resource Assessment

CACFish is assisting the republic in training and retraining its fisheries specialists, providing methodological and financial help towards ichthyologic research, regulatory and legislative document development, etc.

In 2013, this Department received from CACFish a grant worth \$11,000 for ichthyologic research aimed at studying the status of fish stocks and assessing the effect of the moratorium on ichtyofauna of Issyk Kul and Son Kul lakes.

In 2014, CACFish provided to the Department a grant worth 778,498 somoni (\$15,000) to take inventory of and issue passports to the republic's water bodies. The Department conducted the inventory-taking campaign in 2015–2017 resulting in the total number of water bodies of different categories - those which are used for fishery purposes and those which are not - being equal to 724 units. Thus the actual number of utilised water bodies increased by 583 units.

The five-year work program includes technical assistance in improving information collection, organising a workshop on the application of an ecosystem-based approach to fisheries planning and management, key stakeholders enablement, technical assistance in improving national regulations. In case these actions are implemented, this will be a significant contribution to the development of national aquaculture.

According to clause III of the Agreement, the key contribution of CACFish is development of guidelines incorporating best practices of the developed countries, in particular, rational, ecosystem-based approach to the use of water bioresources.

### 4. Policies and Legislation

Laws and regulations in the sphere of fisheries have been developed since 1997. These applicable laws and decrees of the Kyrgyz Government have established the general principles of and form the basis for organising and pursuing fishery activities in the country (*aquaculture, fishing, reproduction, conservation and studying fish resources*).

The key goal of developing laws and regulations in the sphere of fisheries in the Kyrgyz Republic is achievement of sustainable functioning of the fisheries sector and development of aquaculture (*pond culture, cage culture, pasturable culture*), capture fishery (*commercial, recreational, sport*), conservation and rational use of fish stocks, artificial reproduction, acclimatisation, and protection of fish stocks.

However, the law-making process was largely inconsistent and narrowly departmental, which led to legal gaps and discrepancies between some laws, by-laws and regulations. The key issue today is flaws and inconsistencies in the applicable legislation in the sphere of

environment protection, conservation and rational use of wildlife, including fish legislation. This leads to contradictions in interpreting clauses of many laws resulting in multiple conflicting by-laws and regulations.

Lack of clarity in respect of legal relations in the sphere of fishery and aquaculture characteristic of laws, by-laws, regulations and other acts currently applicable in the Kyrgyz Republic generates conflicts between those entities who use water bodies for fishery purposes, water management organisations, and local communities. Lack of mechanisms regulating legal relations pertaining to water and land use, specifically with regard to their use for fishery purposes is also a potential source of socio-ecological conflicts.

Therefore, there is a need for amending the existing legislation or developing new norms and procedures towards incorporating international norms in the national legislation.

### 5. Industry and Institutional Development Actions

Fish processing companies use locally bred fish to make different products (chilled, frozen, salted, cold- and hot-smoked, caviar, etc.). Trout processing capacity is 5,000 tons per annum. Food production, storage, sale, transportation, and disposal processes are governed by the Technical Regulations of the Customs Union - On Fish and Fish Product Safety, On Foodstuff Safety, etc.

	Fish and fish products, tons		
	2015	2016	2017
Imports	7,519.0	3,236.6	1,162.6
Exports	-	232.6	897.5

#### *Key shortcomings and issues*

- lack of processing specialists (process engineers, etc.);
- lack of accredited laboratories to QC fish products for customs clearance purposes when exported.

#### *Ways to resolve existing issues*

- government institutions (veterinary, sanitary, national standards, customs bodies) need to develop guidelines on procedures for obtaining documents (statements, certificates, marking forms and other related documents) required for fish and fish product exporters to export to the EAEU, CIS, EU countries, and China;
- set up fish companies covering the whole value chain – breeding - feeding-processing – marketing;
- create a logistical centre to sell fish and fish products;
- establish veterinary and sanitary control of small businesses engaged in fish processing.

#### *Government Strategy of Aquaculture Development*

The Program of Fishery and Aquaculture Development in the Kyrgyz Republic for 2018-2022 was developed to ensure sustainable functioning of the fishery sector and creation of favourable conditions for successful attraction of investment in fishery and aquaculture development.

#### *Goal and Priorities*

The goal is to create legal and economic conditions for the Kyrgyz Republic to have an advanced and sustainable fishery and aquaculture sector.

The Program contains three priorities. The first one is revival and development of fishing potential on the basis of pasturable culture, small-scale commercial fishing, recreational and sport fishing.

The second priority is ensuring rapid development of aquaculture by supporting small and medium businesses engaged in carp and trout culture and supporting creation of value-added chains and cooperation.

The third priority is improvement of fisheries management system by optimising its structure, developing focused and effective ecosystem-based action plans supporting fish seed and commodity fish producers and encouraging private sector investment.

### 6. Conservation Actions

Number of checks	Number of breach reports	Number of cases brought before law enforcement authorities	Number of seized fishing gear items (pcs)	Amount of claims made (in local currency somoni)	Returned to the republican budget (somon)
48	38	4	915	600, 240	90,990

## TAJIKISTAN





**SIXTH SESSION OF THE CENTRAL ASIAN AND  
CAUCASUS REGIONAL FISHERIES AND  
AQUACULTURE COMMISSION (CACFish)**

Presentation of  
**Alimakhmad GULOV**  
**Chairman of Fishery Association of  
Khatlon Region**

**the Republic of Tajikistan**

**Izmir, Turkey  
15-18 October 2018**





**Dear presiding,  
Dear ladies and gentlemen!**

**Salom!**

Taking the opportunity I would like to present you information about fish farming in the Republic of Tajikistan.



The Republic of Tajikistan is located in Central Asia - mountainous areas constitute 93% of the Republic, and 7% of the territory are valleys.











- The population of the Republic of Tajikistan is over 9 million people;
- Country's territory is 143 100 km<sup>2</sup>;
- More than 70% of the population of the republic live in rural areas, of which 46% are directly engaged in agriculture;
- The share of agriculture in the country's GDP is 21-23 percent;
- Tajikistan has excellent climatic conditions for the development of agriculture, which contributes to the cultivation of almost all types of crops;
- There are more than 87.6 thousand dehqan farms, 456 cooperative farms, 621 dehqan collective farms, 6 agricultural firms, 119 associations of dehqan farms and 270 fish farms in the country's agriculture.







 **CULTIVATION OF FISH SPECIES** 

 <b>Silver carp</b>	 <b>Grass carp</b>
 <b>Common carp</b>	 <b>Mirror carp</b>
 <b>Trout</b>	

### WATER RESOURCES OF THE REPUBLIC OF TAJIKISTAN

- The Republic of Tajikistan has 1,300 lakes of a total area of 705 km<sup>2</sup> for a total water volume of 45.3 km<sup>3</sup>, and of these, 20 km<sup>3</sup> is potable water.
- There are also 8 reservoirs with a total area of 556.31 km<sup>2</sup>, and 6 large rivers with a total area of 5,555 km<sup>2</sup>.

### OPPORTUNITIES OF FISHING INDUSTRY IN THE REPUBLIC OF TAJIKISTAN



The potential of the fish farming industry in the Republic of Tajikistan is estimated as over 200,000 (two hundred thousand) tonnes of fish stock, of which 55% in the Gorno-Badakhshan Autonomous Region, 25% in the Khatlon Region, 15% in the Sogd Region and 5% in the districts of the Republican subordination.

There is a possibility of growing up to 60% trout and 40% of the cyprinids.

In the process of growing, it is possible to get trout up to 80-100 tonnes of marketable fish from 1 ha .

When growing the *Cyprinidae* fishes, warm-water or herbivorous, it is possible to get 30-50 centners per ha.

In accordance with the sectoral Program, from an area of 14,000 ha of warm-water fish lakes and also from 1000 ha of trout farming, we will receive up to 120,000 tonnes of fish products.

**FISH FARMING** in Tajikistan is considered one of the most profitable industries. For the development of this industry there are large reserves of natural water resources, which have a positive effect for the all-round development.

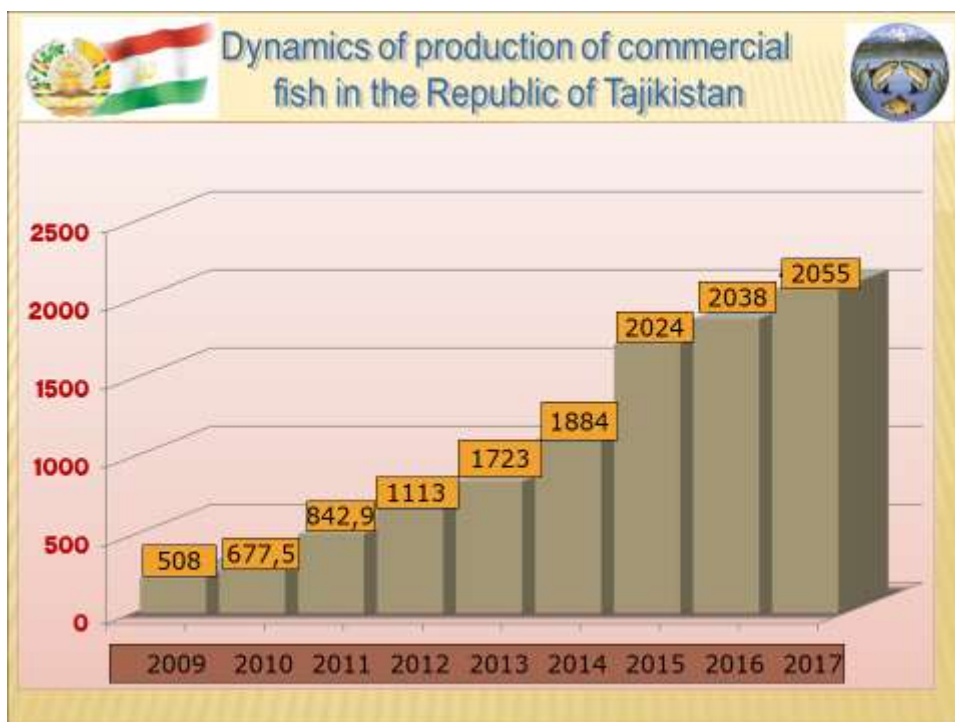
It is well known that in the 90s of the last century more than 3,550 tonnes of marketable fish were on average produced in the Republic from 1 ha of fish lakes, which amounts to 30 centners.

Until 2008, there were 7 specialized fish farms in the republic, where from 6 to 7% of the total production capacity was produced.

The coordinating body of the fish farming industry is the State Enterprise "Mokhii Tochikiston" under the Ministry of Agriculture of the Republic of Tajikistan. The main task of the state-owned enterprise "Mokhii Tochikiston" is to improve and develop breeds of fish, to increase and provide the population with fresh fish farming products.

Along with this, a number of governmental programs approved by the Government of the Republic of Tajikistan have been adopted.

The programs adopted have generally contributed to the development and increase of fish farms, 270 fish farms are registered in the Republic, where in 2017, after the adoption of the sectoral Program, 2,055 tonnes of fish products were produced, which meant an increase by 5.5 times.







## OUTCOMES OF THE SESSION



- × I want to personally thank you for the organization of this Session and present my gratitude to FAO for promoting the development of fishery industry.
- × In the future, I want to express our readiness for the implementation of international programs and I call for support of our Republic in the sustainable development of this industry, especially the the *Cyprinidae* family and warm-water fish. Our region allows us to get good results in this sphere.
- × For the development of the fish farming industry, it is necessary to introduce new technologies, such as new breeds of fish, incubators, small feed processing shops and equipment for the fish industry.
- × Also, in order to develop this industry, it is essential to develop the provision of highly productive breeding fish species in our Republic.
- × In addition, training of specialists using the example of international achievements and monitoring of fish farms of the Republic will have a crucial impact on the development of fish industry.
- × Thank you for your attention and I look forward to our further cooperation.

## THANK YOU FOR ATTENTION!



## COUNTRY PROFILE TURKEY

### 1. BRIEF DESCRIPTION OF NATIONAL INLAND CAPTURE FISHERIES

#### *Fisheries production by main species*

The capture fishery is concentrated on marine in Turkey. Republic of Turkey Ministry of Agriculture and Forestry has decided to stop licensing of fishing marine vessels in 2002. As the result of this decision, capture fish production is between 300 000 and 400 000 tons per year. In 2017, the fishing production was 322.173 tons in the seas and 32.145 tons in inland waters, comprising a total of 354.318 tons. The freshwater capture fish production is given in Table 1.

*Table 1. Freshwater capture fish production in 2013-2017 (tons)*

Year	Inland		Total
	Amount (ton)	% in total catch	Inland and Marine (ton)
2013	35.074	6	374.121
2014	36.134	12	302.211
2015	34.176	8	431.907
2016	33.856	10	335.320
2017	32.145	9	354.318

Source BSGM

Inland capture fishery amount has not changed so much by years, it is about 34 000 tons and the share of inland capture fishery amount in total catch (inland+marine) is about 9,4% in the last five years (2013-2017).

The inland fisheries generated revenue of 117.1 million TL (38.7 million USD) in 2016 with common carp, pearl mullet, sand smelt and gibel carp as the most important species.

Freshwater fish is mainly sold on the local market and generally consumed close to the production site. The preference is for whole fresh fish.

#### *National fishing fleet structure*

It is mandatory to get a fishing licence for the fishermen and the vessels due to the Fishery Law. The procedures related to the issue of licence are performed by the provincial directorates of the Ministry.

*Table 3. Fishing vessels by length, 2017*

Size (m)	0-4.9	5-7.9	8-9.9	10-11.9	12-14.9	15-19.9	20-29.9	30-49.9	50+	Total (Number)
<b>Marine</b>	722	9.258	3.139	749	517	288	461	265	7	15.406
<b>Inland</b>	280	2.042	199	24	59	14	0	0	0	2.618
<b>Total</b>	<b>1.002</b>	<b>11.300</b>	<b>3.338</b>	<b>773</b>	<b>576</b>	<b>302</b>	<b>461</b>	<b>265</b>	<b>7</b>	<b>18.024</b>

Source: BSGM

The fishing gears used in catching in inland are gillnets, fyke-nets and traps. Trawl nets is completely forbidden. 96% of the fisheries fleet is consisted of the vessels smaller than 10 m in inland fishing vessels. Fleet records are kept in internet-based vessel register system in whole country.

### *Status of main fish stocks*

In inland capture fishery, the main stocks are common carp, pearl mullet, sand smelt, snail, mullet, pike perch, wels, cray fish and tench. The most important species are common carp and an endemic species, pearl mullet that is found only Lake Van (Table 4). The shares of both species pearl mullet and common carp in inland capture fishery production have been 26% and 22% respectively in last five years (2012-2016).

*Table 4. Catches of freshwater products in 2012-2016 (ton)*

Years	Pearl mullet	Common carp	Sand smelt	Snail	Mullet	Frog
<b>2012</b>	9.621	9.973	3.609	1.193	1.138	648
<b>2013</b>	8.600	8.277	5.012	1.431	1.094	831
<b>2014</b>	8.310	8.036	6.471	1.547	1.192	742
<b>2015</b>	8.850	7.223	4.930	733	1.161	535
<b>2016</b>	9.950	4.736	4.640	1.317	1.136	486

Source: TUIK

*Table 5. Catches of freshwater products (ton), 2016*

Species	Quantity (ton)
<b>Total</b>	33.856
Pearl mullet (Tarek)	9.950
Common Carp	4.736
Gibel carp	7.652
Sand smelt	4.640
Snail	1.317
Mullet	1.136
Frog	486
Transcaucasian barb	708
Wels	512
Cray fish	544
Pike perch	461
Trout	374
Catfish	262
Pike	226
Rudd	137
Bream	74
Gökçe*	27
Tench	50
Chub	40
Eel	75
Bighand goby	37
Other	412

Source: TUIK, \* Local product

## 2. BRIEF DESCRIPTION OF NATIONAL AQUACULTURE

Turkey supports the aquaculture sector in the aim of producing safe and sustainable food. The support provides for environmentally friendly production, taking animal welfare and hygiene standards into account. It also facilitates the development of technical infrastructure at facilities to smooth the transition to new regulation preventing the collection of fish fry from nature. Minor funds support recordkeeping at aquaculture facilities, and increasing productivity, range and quality of fisheries products.

Aquaculture production has been increasing in Turkey over the last twenty years, although it is still a relatively young industry. Since the introduction of the National Marine Aquaculture Development Plan that was amended in 2009 and aligned with EU regulations, production capacity increased, while feeding and labour costs decreased by means of automation and stability was granted as aquaculturists gained legal assurance.

Republic of Turkey Ministry of Agriculture and Forestry, which is tasked with development of the sector, prioritizes the following in its 10th Development Plan (2014-2018):

- Preparation of breeding stock management and breeding programmes
- Encouraging environmentally-friendly aquaculture systems
- Taking measures to ensure continuous supply of feedstuff for aquaculture production
- Investigation of alternative feedstuffs sources

### *Aquaculture production by main species*

Today, there are 1.881 inland fish farms with 233.419 ton/year capacity and 427 marine farms with 254.440 ton/year capacity and both of freshwater and sea farming play an increasingly important role in the production of fisheries products (Table 6).

*Table 6. Fish farms and capacities, 2016*

Species	Quantity (Tons)	Price (TL/kg)	Value (TL)
<b>Total</b>	253.395	-	3.239.416.760
<b>Inland water</b>			
Trout	101.297	9,47	773.154.430
Carp	196	5,90	1.156.990
Sturgeon	6	35,46	212.750
Tilapia	58	7,10	411.800
Frog	44	12,89	567.200
	<b>101.601</b>		

*Table 7. Distribution of aquaculture productions by species in 2016*

Marine water			
Trout	5.716	10,15	56.900.910
Sea bream	58.254	14,04	817.960.450
Sea bass	80.847	16,80	1.357.945.360
Mussel	329	5,77	1.898.330
Other*	6.977	-	229.208.540
	<b>151.794</b>		

\* Other (Marine water): Red porgy, shi drum, meagre, common dentex, sharpsnout seabream, pink dentex and Atlantic Bluefin tuna.

In 2016, the aquaculture production was 253.395 tons, the share of marine water 151.794 tons and the share of inland water 101.601 tons (Table 7).

*Table 8. Aquaculture Fish Production in 2013-2017 (tons)*

Years	Aquaculture Production Marine (tons)	(%)	Aquaculture Production Freshwater (tons)	(%)	Total (tons)
2013	110.375	47,3	123.018	52,7	233.393
2014	126.894	54,0	108.239	46,0	235.133
2015	138.879	57,8	101.455	42,2	240.334
2016	151.794	59,9	101.601	40,1	253.395
2017	172.492	62,4	104.010	37,6	276.502

Source: BSGM

In recent years, fish production through aquaculture has increased. Competition between fish farmers dealing with aquaculture in trout, sea bass and sea bream production has led the sector in seeking new fish species.

### ***Employment in Fisheries and Aquaculture***

In 2016, the overall employment in the harvesting sector (i.e. marine and inland fisheries) was 36 907 fishers, a 32% decrease compared to 2010. Aquaculture sector employment in 2016 was 9 950, nearly double comparing with the early 2000s. In 2016, there were 2 326 farms (1 901 inland and 425 marine) with 485 227 tonnes total capacity. About two-thirds of these farms were rainbow trout farms. The remaining were mainly producing sea bass and sea bream farms. Aquaculture production is mostly done by small to medium size family-operated units. The processing sector is also growing. In 2016, it employed 6 250 people, over triple comparing with the late 1990s.

## **3. MANAGEMENT IMPROVEMENTS IN FISHERIES AND AQUACULTURE**

Republic of Turkey Ministry of Agriculture and Forestry is the main legislative body responsible for developing and implementing policies on fishing, aquaculture, conservation of fisheries resources, quality, safety and hygiene of fisheries products and fisheries research. The Ministry conducts its services and activities through 81 Provincial Directorates. Law-1380 on Fisheries is the main legislative instrument governing fisheries, aquaculture and fisheries-related activities in Turkey.

Throughout the country, in order to increase the effectiveness of the Directorate General of the Fisheries and Aquaculture in the provinces, 43 Fisheries and Aquaculture Branch Offices within the MoFAL Provincial Directorates have been established. Those Branch Offices have become operational as of 2015. Of 43 provinces in which Branch Offices operate, 28 provinces reside in coastal provinces, while 15 provinces are shoreless.

The Ministry of Development provides the broad guidelines and framework for how the fisheries and aquaculture sectors contribute towards national objectives and strategy. The Ministry of Interior (Coastguard and Gendarmerie), the Ministry of Environment and Urbanization, the Ministry of Forestry and Water Affairs, the Agricultural Bank and the Turkish Statistical Institute (TurkStat) are responsible for other functions related to fisheries and aquaculture sectors. Turkish municipalities are responsible for quality control and conservation in the local open markets.

### ***Policies and policy-making***

Policies are formulated under national development plans prepared by the Ministry. The 10th Development Plan covers priority areas identified for the 2014- 2018 period.

Turkey's priority for fisheries and aquaculture is to use its resources sustainably to improve the welfare of the country. Some of the current and future measures aimed at sustainable fisheries and aquaculture include:

- Creating an effective control and investigation mechanism
- Aligning fishing capacity to available resources

- Improving data collection and analysis
- Introducing new species for aquaculture
- Researching alternative feed materials for aquaculture
- Extending research and knowledge related to both sectors

### ***Management Applied to Main Fisheries and Aquaculture***

#### ***Fisheries***

National policy towards the fisheries and aquaculture sector has traditionally focused on stimulating production and has included both fisheries and aquaculture management and development measures. These management measures have focused on the control of fishing effort via restrictions on gear and equipment and the enforcement of fishing seasons. Law No. 1380 of 1971, as amended by Laws 3288 of 1986 and 4950 of 2003, is the framework law for all fisheries and aquaculture and related activities. The law provides the basis for the regulations and notifications, issued under the authority of the Minister, which are used to regulate the fisheries. Article 1 of the Law gives the scope of the Act- “protection, production and inspection of fishery products” – and Article 2 gives the definitions, including the fishery products, which are amplified by other regulations.

#### ***Technical measures***

The Turkish Implementing Regulation on Fisheries, 1995, is the fundamental regulatory instrument for marine and inland fisheries. The regulation covers:

- Fishing License Issue and Formats
- Provisions on Production Areas
- Prohibition on Explosives and Hazardous Substances
- Fishing Gear
- Prohibitions, Limitations and Liabilities
- Fishery Product Hygiene
- Inspection and Control

The main mechanism for the regulation of the fisheries is through the medium of Notifications, which are issued half-yearly after consultations. Notifications are published and announced in the Official Gazette. The Notifications set the rules and general principles for the technical measures to be taken. Technical measures by notifications include: gear restrictions and prohibitions; control measures for fishing areas; establishment and extent of protected areas; seasonal limitations; species size limits; and capture prohibitions for species.

### ***Progress Related to Achieving a Sustainable Fisheries Sector Management***

#### ***Fisheries Information System***

Turkey has continued to implement SUBIS to improve its fisheries management system through collection and analysing fisheries data. The system in question comprises data on landings, logbooks, vessel monitoring system, sale notes, observer and control forms, first buyer notification, and storage notification. The Ministry has established a new version of

GSM/Satellite based vessel monitoring system and electronic logbook in 2016. The Vessel Monitoring System covers fishing vessels over 12 meters in length.

### *Vessel Decommissioning Scheme*

*Turkish fishing fleet is mostly dominated by small scale fishing vessels in terms of number. There are 15.663 fishing vessels in total and only 1.501 of them are larger than 12 meters. Since 2012, number of fishing vessels has been decreasing because of the buyback programs for the fishing vessels larger than 10 meters initiated by DG-Fisheries and Aquaculture (DG-Fish). So far, 4 programs finalized in 2012, 2013, 2014, 2016 and 2017. Thanks to the buyback programs, a total of 1.264 vessels were decommissioned until end of the 2017.*

### *Aquaculture*

Article 13 of the Law states that those who wish to farm aquatic species for commercial purposes are obliged to apply to the Ministry by informing the Ministry about the location, characteristics and management of the facilities, and submit the enterprise's project and plans. Permission is issued by the Ministry if there are no adverse effects in terms of public health, the national economy, navigation or science and technology. The provisions of the last paragraph of Article 4 of the *Fisheries Law 1380* are also applicable for production units to be established in the sea and inland waters.

According to Article 13 of the Fisheries Law, the procedures and principles related to aquaculture are determined by the Aquaculture Regulation, which was issued in 2004. Aquaculture Regulation was amended 3 times by order of 2007, 2009 and 2010. This regulation covers and sets out rules for the following issues:

- Site selection for inland and marine farms
- Application and evaluation procedures for fish farming licenses
- Approving the projects and issuing licenses
- Improving production capacity, species etc., cancellation (closing down farms), site changes and sales
- Other aquaculture activities (tuna fattening, organic farming, integrated production systems)
- Importing brood fish, egg and fry,
- Compulsory technical staff employment,
- Fish health management
- Environmental impacts and protection
- Monitoring and control of farming activities

All aquaculture producers must have an aquaculture license of registration from the DG for Fisheries and Aquaculture. The details of the application, issuing and cancellation of the aquaculture license are described in the Aquaculture Regulation, 2004. Entrepreneurs or applicants need to submit their applications either to central offices or Provincial Directorates of the Ministry with all the relevant supporting documentation - for example a written application with species, capacity and production system clearly mentioned and a map of the



area (1/25,000 scale). Applications for trout, carp, sea bass and sea bream on-growing farms and hatcheries for these species up to two million fry/year capacity can be submitted to the Provincial Directorates, whilst applicants for other on-growing species (namely turbot, sturgeon, eel, algae, molluscs and crustacean species) and trout, carp and sea bass/sea bream hatcheries with a annual capacity of more than two million have to apply directly to the Aquaculture Department in Ankara.

A team of experts from the central or provincial office then visits the site and prepares a preliminary survey report. If the report is positive, a preliminary license is issued for eight months and can be extended up to four months. Supporting documentation submitted for the preliminary license must include an application letter, site map (1/25.000 scale), the preliminary survey report and a water quality report.

The entrepreneur can then prepare the full project documentation, which includes a farm or hatchery design and feasibility report and an environmental impact assessment (EIA) report. Approval is also needed from other related institutions dependent on the nature of the project. If the project is approved the license (Fish Farming Document) is issued and is issued with a 'Producer Certificate'; this usually takes about 1 year. The rental contract period for marine cages sites is a maximum 15 years and the contract can be terminated earlier by the government.

According to current EIA legislation (a Regulation was issued in 2003) those farms with annual capacity of less than 30 tonnes do not require an EIA. Farms having annual capacities between 30-1.000 tonnes may require EIA and this is decided upon by EIA commissions in each province. Farms aiming to produce over 1.000 tonnes per annum must submit an EIA report.

#### **4. BRIEF INFORMATION ON PROCESSING, PRESERVING, STORING, TRANSPORTING, AND MARKETING OF FISH AND FISH PRODUCTS**

##### ***Fish utilization***

The consumption of fish in Turkey is mainly dependent on the marine capture, particularly of anchovy, and the fish are generally consumed fresh. Per capita consumption of fish over the last years has been around 7-8 kg per capita, with yearly variations in the availability of small pelagic fish.

Generally the products produced by the sector are fresh, chilled, frozen, canned, marinated and brine fishery products.

Fish processing establishments are concentrated in Marmara and Aegean regions, near to both main aquaculture and catching areas as well as consumers centres.

Regarding fish processing establishments, they have to be registered according to the national Fishery Law No 1380 and relevant regulations; furthermore, those exporting to the EU have to be approved by the Ministry as the Competent Authority. There are 165 licensed fish processing establishments nationwide, of which more than 100 are approved for exports to the EU.

### ***Domestic and international markets***

Domestic market for aquaculture products has largely extended over the last years. Main species that are being sold on domestic market are trout, sea bass and sea bream. Freshwater fish is mainly sold on the local market and generally consumed close to the production site. Over the last years, there have been growing interests among large companies towards domestic-market-oriented products.

The opening of fishery products sections in big supermarkets and their better hygienic conditions have resulted in positive pressure in sector for improvements since the consumers prefer these products. The retail sale markets have developed their conditions and accelerated their works with regard to implementation of rules.

In volume terms, the main export trade is directed to Netherlands, followed by Germany and Italy, with the trade predominated by the sale of trout, sea bream, sea bass in 2013. Almost all of the Turkey's tuna production was exported to Japan.

In 2013, the main source of imported fish is Norway followed by the Iceland as key suppliers of fishery products to Turkey. The main important species were mackerel, tuna fish, herrings, salmon species, cods, sardines and cuttlefish.

## **5. IMPROVEMENTS IN FISHERIES AND AQUACULTURE RESEARCH INCLUDING MAIN RESULTS OF RESEARCH STUDIES OF RELEVANCE TO THE TAC**

*For the result of the projects;*

Central Fisheries Research Institute, Trabzon, Türkiye

<http://arastirma.tarim.gov.tr/sumae>

Mediterranean Fisheries Research Production and Training Institute, Antalya, Türkiye

<http://arastirma.tarim.gov.tr/akdenizsuurunleri>

## **6. IMPROVEMENTS IN FISHERIES DATA AND COLLECTION**

Turkish Statistics Institute (TURKSTAT) is the competent authority for statistics and undertakes its duties in close collaboration with the Ministry of Agriculture and Forestry. TURKSTAT has collected landings and effort data since 1967. Apart from marine statistics, TURKSTAT collects inland and aquaculture statistics through the Ministry and publishes yearly. TURKSTAT data sets include number of fishing vessels, Length Overall (LOA), Gross Tons (GT) and Kilowatts (kW) of the main engine and many other important variables for vessels from 5 m and over. The Fisheries Information System (SUBIS) was installed at Ministry in 2009. Data regarding inland fisheries and aquaculture are collected through 81 provinces.

## **7. PRIORITIZED RESEARCH AREAS SUGGESTED FOR CONSIDERATION OF THE TAC**

### **Aquaculture including culture-based fisheries**

- 1- Aquaculture of endangered species

- 2- Harmonization and updating of aquaculture legislation
- 3- Good aquaculture practices/Organic aquaculture
- 4- Marketing, Market access and Trade
- 5- Species diversification
- 6- Ecosystem approach aquaculture management
- 7- Aquaculture certification
- 8- Fish welfare
- 9- Food safety and security
- 10- Integrated coastal management plan
- 11- Institutional capacity building
- 12- Increasing of domestic fish consumption
- 13- Increasing of processing technologies and ad-value products

### **Capture fisheries including recreational fisheries**

- 1- Conservation and development of the habitat of living marine organisms
- 2- Policy formulation and programme planning
- 3- Development of rules and regulations
- 4- Sustainable exploitation and management of capture based fisheries and fishing resources
- 5- Improvement of the efficiency of Monitoring Control and Surveillance (MCS) measures through strengthening fisheries inspections
- 6- Development of a comprehensive and operational fisheries data collection system
- 7- Contribution to the food security
- 8- Institutional capacity building

**Appendix F****NATIONAL REPORTS BY OBSERVER COUNTRIES****ALBANIA**

Albanian coastline is approximately 380km long, with about 284km stretching along the wide, shallow and more dynamic Adriatic Sea in the north and the remaining southern 96km of facing the narrow, deeper and more stable Ionian Sea. There are eight large coastal lagoons in Albania that support commercial fisheries, ranging from Butrinti on the Greek border in the south to the Velipoja on the border with Montenegro to the north with a total lagoon area of around 10,635 hectares. Butrinti lagoon is unique in that it is deep (c. 11 m), largely enclosed by steep rocky slopes and is a stable physical environment. In contrast most Albanian coastal lagoons are very shallow (c. 1 m) and highly dynamic subject to seasonal changes in freshwater inflows, water temperature, high levels of evaporation on top of variable tidal exchange through narrow openings to the sea that are vulnerable to deposition and sudden closures. They are important havens for wildlife and birds, and two (Butrinti and Karavasta) are globally recognised Ramsar Convention wetland sites as well as being designated National Parks. Coastal lagoons represent the most sensitive and important of the Albanian coastal ecosystems. They are area of multiple ecological and economic values and uses, providing fish and wildlife habitats, supporting complex food webs, absorbing water to reduce flooding and damage from storms, provide erosion control, improve the quality of water and provide open spaces of great aesthetic value. The lagoons are important crossroad and flyway for the migration of birds, bats, and insects. Despite their ecological importance around 50% of the lagoon area has been lost through drainage and landfill projects since the 1950s and surrounding agricultural, urban and industrial development further threatens the quality and nature of water flows into these unique wetlands.

Marine resources in Albanian waters are shared Adriatic stocks and it is therefore appropriate that stock assessment be undertaken through regional co-operation. The University and NGOs/private sector have been given varied responsibility for data collection and engagement with regional fisheries science under GFCM. However, the ability to deliver against those responsibilities is hampered by a very limited budget, which is almost entirely dependent on ad hoc project support. There are also serious institutional capacity gaps in the delivery of fisheries research and stock assessment services. A positive recent development in Albania is the establishment and maintenance of a national fleet register. This software was prepared by FAO (GFCM) and while not to the same level as the EU fleet registry, does provide an acceptable level of detail. The main concern is the limited capacity within the ministry to maintain the accuracy of the register, despite FAO providing training in this aspect. MCS of the marine fleet is now the responsibility of the Interinstitutional Maritime Operations Centre (IMOC), based in Durres, which co-ordinates wider maritime policing duties. The MCS system remains very constrained with a small administrative body and poorly resourced regional inspectors. Various databases and information support systems have been proposed, but these are yet to be developed. The extent of fisheries enforcement in port and at sea remains limited despite the presence and resources of the maritime police within the fishing ports. These are known by all 'actors' in the sector (fishers, vessel owners etc.) to be focused on illegal activity (including drugs and human trafficking) rather than fisheries enforcement.

Distribution of fishing vessels in Albania are as 38.5% of these in Durres, 34.4% in Vlore, 13.7% in Sarande and 11.6% in Shengjin. The fleet operates almost entirely within the

Geographical Sub-area (GSA) 18 (Southern Adriatic) and comprises only a small proportion of active vessels in the Adriatic, accounting for less than 8% of trawlers (by number).

Three of Albania largest lakes are Lake Ohrid (Liqeni Ohrit), Great Prespa Lake (Prespa e Madhe), and Small Prespa Lake (Prespa e Vogël). Each of the to larger lakes have a total surface areas of about 260 square kilometres, and Prespa e Vogël is about one-fifth as large. The surface elevation is about 695 m for Lake Ohrid and 855m for the Prespa lakes. The other large lake, Lake Shkodra to the north is much lower in atitude and drains into the Adriatic by the 41km long Buna River. Connection with the River Drin ensures the migration of mainly fish species from the Adriatic via Shkodra Lake to and from Ohrid and Prespa Lakes.

### **Resource management**

Fisheries Management Organisations (FMOs) have been operating in the lagoons for some years, yet their involvement in both management of the fisheries themselves, as well as wider management of the lagoon wider environment, is limited. Government involvement in lagoon fisheries management also has its weaknesses, with little knowledge of their carrying capacity, a limited ability to control fishing effort and a lack of ecosystem-based management. Governance in inland waters: Although larger than coastal lagoons, the defined and enclosed nature of large inland water bodies such as lakes and reservoirs also lends itself to management by FMOs. All four major lakes, as well as the Fier, Elbasan, Ulez and Shijak artificial lake reservoirs have had FMOs in place since 2002. But like that the coastal lagoons, the large inland waters are also suffering from the current weak institutional capacity of the national fisheries administration, with low levels of co-management with the FMOs and high levels of IUU activity especially at night. Management is further weakened by a lack of political will to ensure fishing effort remains within biological limits as well as a poor biosecurity regime that has allowed the uncontrolled introduction of non-endemic species into the lakes, threatening these unique ecosystems. Recreational fisheries: whilst currently at low levels, there is considerable scope for expanding high value sports fishing, especially in inland waters. This sub-sector is regulated though the overall fisheries and aquaculture legislation but essentially remains open Access.

### **Aquaculture**

**Marine and estuarine waters:** Albania benefits from a wide range of environmental conditions that make it suitable for different forms of aquaculture, from the deep Ionian Sea and the shallower Adriatic coastline. Sea water salinity varies between 30 and 39.1‰, while the mean water temperature at the surface is 19.2°C at Sarande (Ionian Sea) and 17.7°C at Shengjin (Adriatic Sea). Maximum wave altitude is in the order of 3.5 m within bays and 7-8 m in the open sea. Open-sea currents flow in a northward direction at a speed of 0.3- 0.5m/sec while tidal range varies between 20 and 30 cm. These conditions make Albanian waters suitable for the marine farming of high value species such sea bass, sea bream and potentially meagre.

**Inland waters:** The climate of the Lake Ohrid / Prespa basins is classified as a localcontinental type. Lake Ohrid is fed by a combination of ground and surface water. The water temperature in the deepest layers of Lake Ohrid is approximately 6°C, whereas the surface layers may warm up to 24°C, and even to 26°C closer to the shore. The Prespa lake basin, which is 150 m higher, is connected to Lake Ohrid. These lakes' highest mid-month surface water temperatures occur in August (21.6°C) and lowest in February (4.8°C), while the average annual value is 12.9°C. In contrast the lower lying, shallower and highly produktive Lake Shkodra is a subtropical body of water lying in an area that has an extremely high evaporation rate. Water temperatures

vary from between 22 - 27 °C in June and 5 - 8 °C in January. This implies that there is currently extensive capacity for potential ground water use in aquaculture.

### **Production**

Aquaculture production in Albania provides around 3000-3200t of finfish and 950t of mussels (*Mytilus Galloprovincialis*). Now are sea cages of sea bass and sea bream with 16 operators all working in the Vlora / Sarande region of southern Albania where they take advantage of the deep, clean waters of the Ionian Sea. The production of trout in raceways is the second largest form of finfish aquaculture, producing ~600t from 40 operators, mainly located in the cooler highlands of southern and eastern Albania. There are also carp hatcheries producing around 2 million of fingerlings and regarding the restocking program of Ohrid Lake with Koran fish (*Salmo letnica*), this year in the Lin Station (Pogradec) are produced a total of 980000 fingerlings.

Marine aquaculture is the fastest growing sub-sector of Albanian aquaculture, but is still very small and unsophisticated compared to the sea bass and sea bream production in Greece, Italy and Turkey. At present there are no marine hatcheries operating on a commercial basis in Albania and thus all fingerlings are imported, as is feed.

### **Sector support**

**Aquaculture planning:** At present aquaculture in Albania is regulated with “Law on Aquaculture” that has been agreed in October 2016. One major element missing from Albanian aquaculture planning is the lack of spatial management. There is a need for a comprehensive assessment of potential aquaculture areas in Albania, both at sea and on land, in order to identify ‘allocated zones for aquaculture’, as promoted by GFCM’s Resolution GFCM/36/2012/1 on guidelines on allocated zones for aquaculture (GFCM, 2012) and the need to conform to these.

Permitting and licensing; The right to use private land for undertaking aquaculture activities is given through special procedures, in conformity with legislation in force. The right to use state controlled lands for undertaking aquaculture activities is permitted by the same license, taking into consideration recommendations and the consent of local competent authorities of the proposed area. The right to use Albanian waters for undertaking aquaculture is determined through the same aquaculture licence. State controlled land for aquaculture purposes is classified in the same classes with agricultural land according to legislation in force. Although long established in Albania, aquaculture development is still largely small-scale and semi-intensive at most. However as Albania moves closer to joining the EU, there is increasing interest from foreign partners – both technical and purely financial – in developing aquaculture in both marine waters as well as using the lakes, streams and ground water resources in upland areas for trout and other high value species. with this potential expansion comes a need to ensure sustainability in terms of environmental impact, social responsibility and integrated planning. A key to this will be allocating aquaculture zones that will allow cumulative EIAs and environmental carrying capacity studies, strict water quality standards that are aligned with the EU’s Water Framework Directive, and importantly, the high level inclusion of aquaculture in coastal and rural development planning. A further element for consideration is biosecurity, both in marine and inland waters.

### **Legal, administrative and institutional framework**

- The institutional capacity of MoA is strengthened to effectively and efficiently administer the fisheries and aquaculture sector.

- A transparent, accountable and sustainable system of co-management between Government, FMOs and other stakeholders is re-established in accordance with the legal framework and AFP
- Alignment of fisheries and aquaculture sector management, control, marketing, structural policy, planning procedures and legislation to the relevant components of the Fisheries Acquis.
- Commercial marine resources are sustainably managed with effective control and basen on sound science.
- A viable and competitive marine fleet in balance with available fishing opportunities
- Well-managed marine environment supporting a sustainable artisanal fishing sektor
- Coastal lagoon and inland fisheries management is based on a sound knowledge of the resources, fishing effort and the needs of those who depend on these fisheries for their livelihoods
- Fishing effort is commensurate with the maximum sustainable yield of the available fish stocks.
- A management and enforcement regime that controls access to fisheries resources in an equitable and sustainable manner.
- The aquaculture sector is developed through a holistic, ecosystem-based strategia planning approach that is reviewed and updated on a recurrent basis.
- Investment into aquaculture is facilitated through the identification of allowable aquaculture areas as part of a multi-sectoral marine and inland water spatial plan
- A diverse, technically competent and internationally competitive aquaculture industry that thrives in, and contributes to, European seafood production
- Albania creates synergies between national research programmes and collaboration within and between the industry and the scientific community
- Public health and hygiene conditions are improved and promoted
- Market transparency is enhanced and market management strengthened
- Strong political will for improved fisheries management and development
- Active membership of GFCM and other jonit management bodies (ICCAT, EIFAAC, etc.)
- New fisheries port in Durrës region.
- Established restocking programes
- Established infrastructure in Butrinti Lagoon for mussel culture and good reputation of Butrinti mussel industry (nationally)

### **National institutional linkages**

**The Ministry of Environment** – this has an Environment Inspectorate that deals with environmental management and protection issues not covered under the Fisheries and Aquaculture Laws, in particular protected species and areas. Is also responsible for issuing the environmental permission in intensive aquaculture, coastal national resource planning and biodiversity action planning;

**The Fishery and Aquaculture Laboratory (Durrës)** within the Agricultural University;

**The Ministry of Transport and Infrastructure** is responsible for port management and, through Port Authorities;

**The Coastguard (a part of the Navy)** patrols the territorial waters of Albania;

**The Police and Border Police** assist fisheries inspectors on legislation application;

**The Ministry of Finance** is responsible for government budget planning;

**The Veterinary Inspectorate** of the Directorate of Veterinary Services of the MOA responsible for food inspection monitoring and management systems and the protection of public health;

**Food Safety and Veterinary Institute** undertakes the testing for poisons, mollusc monitoring and confirmation of evidence of disease;

**The Institute of Public Health** is responsible for water quality management, pollution control, potable water and sewage management;

**The National Food Authority** is responsible for the inspection of ‘fish as food’ and is the recognised EU Competent Authority for food safety;

#### **Fisheries/Aquaculture Law and Fisheries National Strategy**

The MoA is responsible for implementation of the Law ‘On Fisheries’ (**Law No. 64 dated 31.05.2012 as amended by Law No. 129 dated 27.12.2012 and Law No. 29 dated 24.02.2013**). The objective of this law is the management of fishing activity and to ensure protection of marine and inland water species, by promoting sustainable development of fishing activities.

#### **Aquaculture Law**

“Law on Aquaculture 103/2016” has been approved.

#### **Fisheries Strategy**

Albanian Fisheries Strategy 2016-2021 (Nr.701, date 12.10.2016)



## BOSNIA AND HERZEGOVINA

The Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina (MoFTER) (state level) is sending it's a representative for the first time to take part on Participation at the Fisheries and Aquaculture Commission of Central Asia and Kakvaz (CACFish) and this is the reason that we want to use this opportunity to introduce the position of Bosnia and Herzegovina as a partly maritime country and generally more oriented on aquaculture sector rather than fishery in terms of developing fishery sector in the coastal region of Adriatic Sea.

Bosnia and Herzegovina is a maritime country with 24 km and territorial sea coverage of 12,2 km.

### 1. Executive Summary

In introduction of this Report is given general data on Bosnia and Herzegovina relevant for clarification of position of Bosnia and Herzegovina to the topic of this 6<sup>th</sup> session: maritime position of Bosnia and Herzegovina.

Description of the national fishing (fisheries and aquaculture) industry: in this part is given overview of fishery and aquaculture resources in Bosnia and Herzegovina with general point that Bosnia and Herzegovina is net importer of fish and fishery products rather than exporter.

In the part of Statistics, Research and Resource Assessment is given production of fishery in the sector of aquaculture with main products freshwater fishes: trout, carps and other freshwater fishes, trade (import, export) with table data and graphs for the period of the last seven years (2010 – 2017).

Policy and Legislation – in this part is given the list of the main laws regarding the fishery and protection of water resources and environment.

Industry and institutional development activities – in this part is given main processing fish industry – We treat fish industry as infant industry and expect more FDI in this sector in the future.

Other issues:

- **Establishment of the marine research center**

Establishment of the state marine research center is priority since Bosnia and Herzegovina is only maritime country at least in Europe and Mediterranean region which has no such institute. So, we have presented here UN document of financial assistance (ICSP8/UNFSA/INF.4/Rev) where Bosnia and Herzegovina submitted request for technical assistance for establishment of research infrastructure (Marine research center) so Bosnia and Herzegovina on that way is to increase its capacity in the conservation and management of fishery resources, including straddling fish stocks and highly migratory fish stocks. The information is provided pursuant to a recommendation of the seventh round of informal consultations of States parties to the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the Agreement), held in New York, 11 to 12 March 2008 (ICSP-7).

- **Bosnia and Herzegovina is closer to the European Union**

From the aspect of bringing Bosnia and Herzegovina closer to the European Union one of the conditions is harmonization of the regulations in the field of fisheries and aquaculture, as these are areas to which the *acquis* from Chapter 13 and Article 96. of the Stabilization and Association Agreement (SAA) applies, a part of fisheries related to catch and breeding of marine fish, and the protection of fish stocks from illegal, unreported and unregulated fish catch as well as sustainable development of aquaculture related to fish farming itself, both in river rivers and lakes as well as in the sea.

- **European eel (*Anguilla anguilla*)**

For the subpart of this Part is given the situation about European eel (*Anguilla anguilla*) and we emphasize the importance for further detailed research of existence the European eel in Bosnia and Herzegovina in future and for achieving this task we have to look for cooperation and technical assistance through international assistance to protect this extremely important fish species.

## INTRODUCTION

Bosnia and Herzegovina (BiH) is a small country located in the western part of the Balkan Peninsula and covers an area of 51,129 km<sup>2</sup>, with a small access to Adriatic Sea whose marine resources are sufficiently underexploited when we are talking about fishing, nor does Bosnia intend to catch the fish and seafood anyway. But we should make an advantage rather than a disadvantage under the motto: "Explore, but not exploit".

With 24 km the length of the sea coast and with sea coverage of 12,2 km<sup>2</sup> Bosnia and Herzegovina is a maritime country.

For us, the priority resources are people who are living in coastal areas and in the hinterland of the Adriatic Sea, and the Adriatic Sea as we look out narrowly through the window against the natural aquarium where the fish is freely moving, without fishing, especially not any threats to be excessively overfished anyway, and this will be guaranteed by harmonising, adopting and implementing all relevant EU regulations that prevent excessive, unregistered and illegal fishing. This attitude, which is expressed in the Common Fisheries Policy (CFP) of the EU, corresponding to the BiH and BiH is very interested in dealing with the preservation and conservation of species in the sea and that this attitude actively advocates within the global forums such as this one.

Therefore, we should first see the availability of resources in the sea (exploration), and from that aspect BiH is interested in improving research infrastructure to build up the capacities to provide a valid data on the biological status of fishing grounds, freshwater fish species and a variety of seafood. It is essential that these data be done by ourselves and that we have qualified experts and scientific research institutions, which are ready for closer regional cooperation and to exchange data by agreed protocols on cooperation in this field with neighbouring countries. These institutions will be the solid basis for the creation of special projects in the area, later on, in one of the next phase of project development and project implementation under the usage of other EU funds (EUSAIR). In this context, Bosnia and Herzegovina has requested and obtained

in 2016 the co-operating non-Contracting Party status within the GFCM and, from the beginning of 2018, has started to participate in the FAO AdriaMed project.

In the perspective of a potential accession of Bosnia and Herzegovina to the EU, on 16 June 2008 the European Union and Bosnia and Herzegovina signed the Stabilization and Association Agreement (SAA), which entered into force in 2015. In the context, a pre-accession strategy and national programs for the adoption of the *acquis* (NPAA) have been developed to be implemented, including chapter 13 focusing on fisheries and aquaculture. In this regard, the point of departure for this study is article 96 of the SAA on fisheries whereby *“The Parties shall explore the possibility of identifying mutually beneficial areas of common interest in the fisheries sector. Cooperation shall take due account of priority areas related to the Community acquis in the field of fisheries, including the respect of international obligations concerning International and Regional Fisheries Organisation rules of management and conservation of fishery resources.”* The reference to Regional Fisheries Organisation is de facto a reference to the GFCM as this is the competent RFMO operating in the Mediterranean Sea and adopting rules of management and conservation of fishery resources. These rules are also binding on the European Union as well as on Bosnia and Herzegovina consistent with its cooperating non-Contracting Party status.

Consequently, a priority objective of Bosnia and Herzegovina is to enhance the national law in the light of the recommendations adopted by the GFCM and in view of becoming a Contracting party to the GFCM. This will imply full correspondence with relevant provisions in the CFP facilitating upcoming negotiations under Chapter 13. This calls for the need to review the current legislation of Bosnia and Herzegovina though.

## **2. Description of the national fishing (fisheries and aquaculture) industry**

Regarding small-scale fishing activities those activities are very sporadic and there is no available data on catches since they are very minimal, just for supplying family market and local market of municipality Neum with population 4.653 (2013), specifically during summer season when the number of population is doubled.

There are a few Fish processing capacities, mainly based on processing trout, one of them is the regional leading company situated in suburb of Banjaluka, another one is processing company for marine fish (can fish) situated in municipality Stolac southern part of Bosnia and Herzegovina.

The fish industry generally is infant industry and very perspective in terms of attractiveness of foreign direct investment. There are also possibilities for opening vessel fish companies under the flag of Bosnia and Herzegovina or other partner country interested in doing such kind of business activities in future. For such activities is already existing very good legal bases given in regulations of Hygienic Package (described more under the point 4. Policy and Legislation).

It should be emphasized that BiH in the field of marine fisheries has no economic interest or has any resources (fleet) for exploitation of marine resources, but from an international point of view, it is important that BiH's action plan for aligning legislation with the *acquis* is very important and for this activity technical assistance is indispensable.

## **3. Statistics, Research and Resource Assessment**

Contribution of the Agri-Food Sector to GVA in 2015 amounted to 7.6%. One of the most important employment sectors with share in total employment of 19%. Agricultural production in BiH has is extensive and is largely dependent on weather conditions.

FISH production:

The total production of table fish in 2017 was 3.761 tonnes:

- trout 3.037 tonnes, (81% )
- carp 468 tonnes (12.4%) and
- other freshwater fish 256 tonnes (7%).

The total production of table fish in 2017 is lower by 17.6% compared to 2016. Production of carp is lower by 41%, and trout by 11.0% compared to 2016.

### Production – Aquaculture (2010-2017)

Trout tons	2010.	2011.	2012.	2013.	2014.	2015.	2016.	2017
	2.900,90	3.052,80	2.818,00	2.381,80	2.930,20	3.163,10	3.394,90	3.036,70
Carp tons	2010.	2011.	2012.	2013.	2014.	2015.	2016.	2017.
	1.355,80	925,8	573,2	317	218	940,6	789,4	467,8
Other freshwater fish tons	2010.	2011.	2012	2013	2014	2015	2016	2017
	355	250	193	154,5	209,50	345,80	379,60	256,00

In 2017, the exports of agricultural products amounted to 1.08 billion KM (0,54 billion €) the imports of agricultural products was 3.15 billion KM (1,575 billion €), and the trade deficit amounted 2.06 billion KM (1,03 billion €).

- Coverage of imports by BiH exports in the exchange of agricultural products amounted to 34.47% in 2017.
- The main trading partners: EU and CEFTA.
- Share in total exports of agricultural products in 2017: EU 35%, CEFTA 30%, TR 26%.
- Share in total imports of agricultural products in 2017: EU 52%, CEFTA 31%.

### Export - Import of Fish and fishery products (2014-2017) in thousands EUR

Fish and fishery products (HS 03; 1605) in thousand EUR	2014.	2015.	2016.	2017
<b>Export</b>	<b>9.717,67</b>	<b>10.969,65</b>	<b>15.507,45</b>	<b>15.504,84</b>
<b>Import</b>	<b>30.200,56</b>	<b>28.981,80</b>	<b>33.735,52</b>	<b>32.925,30</b>

Coverage import/export 47,09

Share in import agri – 2,06%

Share in export agri - 3,01%

### **Characteristics of the Fish market in Bosnia and Herzegovina**

- High demand, high supply: all fish products are sold before closing time in the official market (advantages) ;
- Prices of Marine fish higher two-three times as much as prices of freshwater fish ;
- Fish – potential goods of a high criminal trade rate arise from fishing: no drugs, no alcohol, no tobacco, no migrants: - all security and customs efforts are more focusing on those issues rather than fish;
- BiH as a net importer country of marine fish – eligible for being easily recognised as „soft landed country“ on IUU - arising awareness;
- Internal waters are highly affected by illegal fishing on rivers, lakes....; pollution;
- Cca a half aquaculture objects are not registered and not deliver statistical data to the Statistical Office
- High share of informal fish market ;
- No specific laboratory for marine fish control ;
- No specific inspectors for fish safety control ;
- No specific fish market research and market analysis: needs for doing research projects and science degrees: MSc, PhD...);
- Expecting technical assistance for all above issues (EC, FAO/GFCM) .

### **4. Policy and Legislation**

The Council of Ministers of Bosnia and Herzegovina held its 131st session on 30.01.2018. drafted and adopted Information on taking action on harmonization of domestic legislation and implementation of the *acquis* in the field of fisheries and aquaculture, and obliged the Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina to continue co-ordinating activities with the competent institutions of Entities and Brcko District of Bosnia and Herzegovina fisheries in the context of Bosnia and Herzegovina's accession to the European Union.

Related laws and by-laws in BiH for fisheries and aquaculture

Law related to overall state level coordination of the sector:

The Law on Agriculture, Food and Rural development – Official Gazette of BiH, No 50/08

Laws related to water resource management:

- Law on Water - Official Gazette of FBIH No. 70, 2006
  - Rulebook on general and special water fees - Official Gazette of FBIH No. 92, 2007 and 46, 2009
  - Decision on the rate of special water fees - Official Gazette of FBIH No. 46, 2007
  - Law on Water - Official Gazette of RS No. 50, 2006
  - Decision on the rate of special water fees - Official Gazette of RS No. 22, 2008
  - Rulebook on special water fees - Official Gazette of RS No. 92, 2007 and 74, 2009
- Laws related to the protection and conservation of nature and the fish fauna:
- Law on Nature Protection - Official Gazette of FBIH No. 33, 2003
  - Rulebook on new measures about significant negative impacts on animal species either by capture or killing - Official Gazette of FBIH No. 65, 2006

- Law on Nature Protection - Official Gazette of RS No. 113, 2008
  - Rulebook on establishing a monitoring system for deliberate keeping and killing of protected animals -  
Official Gazette of RS No. 113, 2008
  - Law on Nature Protection - Official Gazette of BD No. 24, 2004
- Laws related to fisheries and aquaculture:
- Law on Freshwater Fishing - Official Gazette of FBIH No. 64, 2004
  - Law on Freshwater Fishing - Official Gazette of BD No. 35, 2005
  - Law on Fishing - Official Gazette of RS No. 72, 2012

At state level, Bosnia and Herzegovina fully harmonized all regulations from Hygienic Package. For fishery is the most relevant:

Regulation (EC) No 853/2004 laying down specific hygiene rules for on the hygiene of foodstuffs (Official Gazette BiH, No 103/2012),

Regulation (EC) NO 854/2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption (Official Gazette BiH, No 9 103/2012),

Regulation (EC) No 852/2004 on the hygiene of foodstuffs (Official Gazette BiH, No 4/2013),  
Regulation (EC) No 882/2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules (Official Gazette BiH, No 5/2013),

Regulation (EC) No 2073/2005 on microbiological criteria for foodstuffs (Official Gazette BiH, No 11/2013).

Bosnia and Herzegovina is doing Action plan for preparation the Law on marine fishery under coordination of the Ministry of Foreign Trade and Economic Relation and close cooperation with the GFCM.

## **5. Industry and institutional development activities**

There are just a few processing companies in the fishery sector and they are not enough to cover market demand, so Bosnia and Herzegovina is net importer of fish and fishery products more details give under the points 2 and 3).

## **6. Fisheries management and conservation activities**

As net importer with a high market demand Bosnia and Herzegovina is highly interested in following international standards on illegal fishery, so it is priority to be established catch certification procedure. This should be implemented through technical cooperation within CEFTA countries (Albania, Bosnia and Herzegovina, Serbia, FYR Macedonia, Kosovo, Moldova and Montenegro).

This issue will be a high priority of applying commitments through negotiation process of applying Stabilisation and Association Agreement (SAA) signed between Bosnia and Herzegovina and European Commission.

Article 96. of the SAA *“The Parties shall explore the possibility of identifying mutually beneficial areas of common interest in the fisheries sector. Cooperation shall take due account of priority areas related to the Community acquis in the field of fisheries, including the respect of international obligations concerning International and Regional Fisheries Organisation rules of management and conservation of fishery resources”* (more details under the point 7.).

## **7. Other issues**

- **UN Technical assistance - Establishment of the marine research center**

Bosnia and Herzegovina is one of the respondents to the request for information regarding assistance needs submitted in the UN document ICSP8/UNFSA/INF.4/Rev

Eighth round of informal consultations of States parties to the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks Sources of available assistance for developing States and the needs of developing States for capacity-building and assistance in the conservation and management of straddling fish stocks and highly migratory fish stocks, vision launched and announced in the UN document:

[http://www.un.org/Depts/los/convention\\_agreements/fishstockmeetings/compilation2009updated.pdf](http://www.un.org/Depts/los/convention_agreements/fishstockmeetings/compilation2009updated.pdf)

The excerpt from the document, with parts as follows:

### **C. Stock assessment and scientific research**

A priority ("second priority") would be the establishment of the Institute for Marine Sciences with a broad capacity for scientific activities including: fish stock assessment, the roles of ecological and physiological processes on the human life (socio-economic aspect upon the sustainability of the fishery for economic survival) and biodiversities of flora and fauna (conservation and management measures), coastal biology, marine vertebrate biology, marine and coastal geology, environmental toxicology, etc. The amount required for developing the Institute is approximately US\$ 25 million.

Bosnia and Herzegovina has to develop data collection and research programmes to assess the impact of fishing on dependent species and humans (population dynamics) as well as existing and predicted environmental and socioeconomic conditions. To achieve this objective, Bosnia and Herzegovina could be assisted by the FAO Trust Fund (Assistance Fund under Articles 25 and 26, Part VII, of the United Nations Fish Stock Agreement.)

### **D. Human resource development Bosnia and Herzegovina**

Bosnia and Herzegovina As a priority ("first priority"), financial assistance could be directed to education and training programmes for qualified staff in governmental and research institutions for better understanding of and transferring a modern approach for improved conservation and management of straddling fish stocks and highly migratory fish stocks through collection, reporting, verification, exchange and analysis of fisheries data and related information as well as stock assessment and scientific research and monitoring, control, and surveillance and application of modern technology and usage of equipment. For this purpose, Bosnia and Herzegovina will announce a tender inviting potential candidates for five persons to participate in this programme in 2008/2009.

### **E. Development of fisheries for straddling fish stocks and highly migratory fish stocks**

Bosnia and Herzegovina as a priority (“third priority”), based on the application of modern scientific methodologies (see the “first priority” and “second priority” above), and in accordance with the Convention, Bosnia and Herzegovina will prepare the Programme for Development of fisheries for straddling fish stocks and highly migratory fish stocks for the midterm (2009-2012). For this purpose, it would be highly desirable for technical assistance to be funded in accordance with the Terms of Reference of the Assistance Fund.

#### **H. Port State control Bosnia and Herzegovina**

Although Bosnia and Herzegovina does not have a marine port, there are plans to develop a port. These plans must be in accordance with the four priorities identified previously and are due to be updated accordingly. Meeting the “second priority” (establishment of the Institute for Marine Sciences) would be linked to the construction of the port and adoption of an appropriate legislative control system.

#### **I. Compliance with market and trade-related measures and meeting market access requirements**

Bosnia and Herzegovina A priority (“fourth priority”) is compliance with international standards, set out primarily by the *Codex Alimentarius* and EU regulations and directives. Bosnia and Herzegovina will develop standardization and certification procedures based on the envisaged adoption of the fishery policy framework. For this purpose, it would be necessary for technical assistance to be funded under the Terms of Reference of the Assistance Fund.

#### **J. Other needs for assistance**

Bosnia and Herzegovina Facilitating the participation of representatives from Bosnia and Herzegovina and assisting them with travel costs associated with the participation in relevant meetings and activities of regional and global fishery management organizations (e.g. UNDP, FAO and other specialized agencies) and arrangements. At the moment, we are not informed of the schedule for the forthcoming events. Some of events will be subject to the recent accession of Bosnia and Herzegovina to the Union for the Mediterranean.

- **Bosnia and Herzegovina is closer to the European Union**

From the aspect of bringing Bosnia and Herzegovina closer to the European Union one of the conditions is harmonization of the regulations in the field of fisheries and aquaculture, as these are areas to which the *acquis* from Chapter 13 and Article 96. of the Stabilization and Association Agreement (SAA) applies, a part of fisheries related to catch and breeding of marine fish, and the protection of fish stocks from illegal, unreported and unregulated fish catch as well as sustainable development of aquaculture related to fish farming itself, both in river rivers and lakes as well as in the sea.

Under Article 96 of the SAA, the parties undertook to examine the possibility of identifying areas of common interest in the fisheries sector. Within the framework of cooperation, particular attention will be paid to the priorities of the Community *acquis* in the field of fisheries, including compliance with international obligations concerning the rules of international and regional fisheries organizations on the management and conservation of fish



resources. In this respect, the objectives related to the application of the SAA in the field of fisheries have been:

- Establishing areas of common interest in the fisheries sector.
- Determining the priorities of the acquis in the area of fisheries,
- Compliance with international obligations regarding the rules of international and regional fisheries organizations on the management and conservation of fish resources
  
- **European eel (*Anguilla anguilla*)**

The European eel, *Anguilla anguilla* (Linnaeus, 1758) is a species in all European estuaries, as well as in the wider area of the river Neretva, place Capljina in Bosnia and Herzegovina and lagoon ecosystems in Croatia.

In accordance with EU legislation (Council Regulation (EC) No 1100/2007 of 18 September 2007 establishing measures for the recovery of stock of European eel) Bosnia and Herzegovina needs to adopt a detailed management plan that will determine the needs for landing and catch quotas, the number of fishermen and tools that will be used in the catch in the future, and the control mechanisms of catches and markets having in mind its high market value.

The question of the protection of the European eel is associated with regional cooperation with the Republic of Croatia, because the Neretva River (total length of 225 km) springs and flows mostly through Bosnia and Herzegovina (203 km long) and flows and outflows into the Adriatic Sea over the territory of the Republic of Croatia only 22 km in length, but for the survival of the European eel a very important route) it is obvious that Bosnia and Herzegovina will in future have to look for cooperation and technical assistance from the European Union to protect this extremely important fish species.

## CHINA

### Development of Chinese Fishery and Aquaculture

#### 1. Executive Summary

Global fish production continues to outpace world population growth, and aquaculture remains one of the fastest-growing food producing sectors. If responsibly developed and practiced, aquaculture can generate lasting benefits for global food security and economic growth.

Fishery is a very important sector in agriculture, it has important role in food security and contribute a lot of animal proteins for people and increase the income of farmers. China has a long history of aquaculture. Since reformation and opening policies were carried out, Chinese fishery has gained a rapid development and Chinese fishery production has continuously occupied the first position of world for more than 20 years. The gross production of Chinese aquatic products occupied 1/3 of the world production while aquaculture production occupied around 70% of the world. The labor force in fishery production is 13.02 million in China and occupies 1/3 of the world fisher including aquaculturists. Hence, China holds the balance of the world fishery, especially aquaculture development.

#### 2. Description of the national fishing (fisheries and aquaculture) industry

China's aquaculture production was ranked the first of the world in 1989. Aquaculture production was higher than the capture in China Since 1988. In 2016, the aquatic production was 69.01 million tons, and aquaculture was 51.42 million, in the increase of aquatic production, 74.5% were from aquaculture. For aquaculture sector, freshwater aquaculture production reached to 31.7 million tons, accounting for about 62% of total aquaculture production. While mariculture production was 19.6 million tons, accounting for about 38%. The total area of aquaculture was around 8.34 million hectares with 6.17 million ha for freshwater and 2.17 million ha for marine respectively.

Total amount of imported and exported aquatic products was 8.27 million tons: volume of exports 4.23 million tons, volume of imports 4.04 million tons. Value of import and export was 30.1 billion US dollars: Value of export 20.7 billion dollars; Value of import 9.4 billion dollars. The export value of aquatic products ranked as the top 1 in agricultural products exportation, and accounted of 28.4% of value of total agro-products export. The Chinese fishermen, which accounted for 2% of agricultural population, provide 1/3 animal protein to all Chinese people.

The supply of aquaculture products has been fundamentally improved and it plays a positive role in securing Chinese food safety. China's aquatic product per capita has been increasing year by year and has been exceeding the world average since 1995. In 2016, aquatic product per capita was 49.91 kg, twice larger than that of the world average.

In 2016, about 19.73 million labors are engaging in fishery, of which 70% are involving in aquaculture. Freshwater aquaculture has become an important sector to promote rural economy and prosperity. Aquaculture has driven the development of aquatic products storage, processing, logistics and distribution, marketing, seed production, feed, chemicals and drugs, and other related industries, which are the income source of large number of labor force.

Per capita income for farmers has increased from 626 RMB in 1985 to 16,904 RMB in 2016, increased by over 24 times, which is 4,173 RMB higher than that of agriculture practitioners.

### 3. Statistics, Research and Resource Assessment

#### 3.1 The choice of cultured species

Species suitable for processing-tilapia, prawn, crayfish, et al. Species with enhanced and efficient industrialized technology-Chinese mitten crab, large yellow croaker, et al. Species with water-saving, land-saving, feed-saving and convenient for improving environment-conventional freshwater fishes (black carp, grass carp, silver carp, bighead carp, common carp, crucian carp, wuchang fish), seaweed, et al.

#### 3.2 The choice of new aquaculture models

New aquaculture models: the healthy aquaculture models, ecological farming models, integrated multitrophic aquaculture (IMTA) models, recirculating aquaculture system (RAS) models, and an integrated rice-fish farming models; Ecosystem-based approach for aquaculture (EAA): based on carrying capacity to enable the construction of environmentally friendly aquaculture.

#### 3.3 Management of seeds and fries

Protection system of aquaculture germplasm resources; Permission system of aquatic seed production; Authorizing system of aquatic seed importation and exportation; Approval system of new aquatic varieties; Inspection and quarantine system of aquatic seed.

#### 3.4 System of disease monitoring and prevention of aquaculture

The disease control system of aquaculture started in 1990's. In 1998, the national, provincial, municipal and county monitoring network was established to monitor aquaculture disease monthly, seasonally and annually. Then there were 30 provinces joined in. In 2000, the epidemic prevention of aquatic animals started.

#### 3.5 The system of fisheries chemicals and drugs usage and aquatic products quality management

Log system of aquaculture producing; Records of aquaculture production; System of products labeling; Medicine usage system of aquaculture; Quality management on procedures of aquaculture production: Culture environment Inputs (seed, feed, fishery medicine); Disease control; Quarantine prevention on epidemic.

### 4. Policy and Legislation

As a team of technical experts, we are not authorized to talk about governmental policy and legislation.

### 5. Industry and institutional development activities

As a team of technical experts, we are not authorized to talk about governmental plans.

### 6. Fisheries management and conservation activities

### 6.1 Fishery management in open waters.

Give priority to environment protection and recover the ecological environment. Release fish seed for the protection of ecological environment. Adjust the structure of fish species. Protect the benthos. Restore and protect aquatic plants.

Strengthen the Fishery Administration, Maintain Order of Fishery Production. Make more intensified efforts to promote the publicity and education. Do management of the lake accordance with the law. Strengthen capacity building of fishery administration staff. Strengthen the consciousness to serve fish farmer.

Control area for pen culture, promote ecological culture model. Rationalize the layout of culture section. Reduce the pen culture area. Promote ecological culture technology. Trace the whole production process. Create famous brand product. Promote exportation of the products.

### 6.2 Countermeasures for Sustainable Development of Fishery.

Build ecological functional zone in Lake. Three core zones: bio-diversity protection, fishery resource protection and aquaculture zone; two assorting zone: buffering zone (50-100m from the bank) and ecological recovering zone. Build state level conservation grounds for aquatic genetic resources and bio-diversity protection system. Build an ecological and recreational fishery industry chain.

### 6.3 Recreational fishery and industry chain.

The recreational fishery zones for tourism along the bank of lake were constructed when nature reserves were built. Encouraging fish farmer to engage recreational fishery from fishing or aquaculture only to reduce fishing intensity in lake. Combine with tourism, catering, angling, leisure and sport, a series of industry chain in fishery community or fishing harbor was established.

### 6.4 Water purification fish.

Through releasing large number of silver carp and bighead carp to the river, lake, reservoir, inhibit water eutrophication increase fish resources and increase fishermen income.

## 7. Other issues

### The Current Industry Situation of Cold-Water Fish in China

China is rich in cold water resources. The cold water area accounts for about one-third to One-half of the total inland water area, pregnant with abundant cold-water fish. At present, there are about 88 species (subspecies) of cold-water fishes in China, of which 50 species, such as Amur sturgeon (*Acipenser schrenckii*), Kaluga (*Huso dauricus*), Chum Salmon (*Oncorhynchus keta*), Taimen (*Hucho taimen*), Lenok (*Brachymystax lenok*), Amur pike (*Esox reichertii*), have high economic utilization value.

The cold-water fish culture in China started late, but it developed rapidly. It began in the 1950s, mainly concentrated in the northeast, northwest, north and southwest areas with abundant cold water resources. The cold-water fish culture in China is dominated by sturgeons, salmon and trout. Farming methods mainly consist of cold springs, mountain streams and other running water ponds, and gradually developed to semi-cycle water aquaculture, recirculating water aquaculture, net cage culture, large-surface grazing culture and other culture forms.

Since the beginning of the 21st century, Chinese sturgeon industry has formed a set of unique artificial breeding and culture techniques, which have basically solved the technical problems encountered in the process of artificial propagation, larva breeding and adult fish culture. With the rapid expansion of the scale of artificial culture, China has become the world's largest

sturgeon farming country. In 2016, China's sturgeon output was 89,773 tons, accounting for 86.5% of the world's total production. The main cultured varieties also gradually concentrated to 5 or so, that is, Amur sturgeon, hybrid variety Xunlong NO.1 (*H. dauricus*♀×*A. schrenckii*♂), hybrid variety (*A. baeri*×*A. schrenckii*), Siberian sturgeon (*Acipenser baeri*) and paddlefish (*Polyodon spathula*). These sturgeon yield accounted for more than 90% of the total production of sturgeon. The annual demand for sturgeon fertilized eggs in China is more than 160 million, and about 150 million can be produced independently in China. The import demand is less than 5 million, basically realizing self-sufficiency. Since the first export of artificially cultured sturgeon caviar in China in 2016, the export volume of sturgeon caviar in China has exceeded 90 tons, which has been exported to more than 20 European and American countries and regions, such as Russia, Germany, France, the United States and Belgium.

The culture history of salmon and trout in China has been over 50 years. The main production areas of commercial fish are concentrated in north, northeast, northwest and southwest of China, distributed in 23 provinces. The main cultured varieties include triploid rainbow trout (*Oncorhynchus mykiss*), Golden Rainbow Trout, Coho salmon (*Oncorhynchus kisutch*), Atlantic salmon (*Salmo salar*), Amur Whitefish (*Coregonus ussuriensis*), Taimen, Lenok and so on. In 2016, the production of salmon and trout was 41,075 tons, including 37,635 tons of trout and 3440 tons of salmon. A total of 500 aquaculture enterprises participated in the salmon and trout culture with average production of 100 tons. The largest aquaculture enterprise is Longyangxia Eco-aquaculture Co., Ltd., with annual production of about 3000 tons. Rainbow trout and Atlantic salmon do not natural distribute in China. As the largest aquatic product producing country in the world in the last 30 years, salmon and trout are the only major international aquatic product species that cannot meet the domestic market demand. According to the incomplete statistics, the total import of salmon and trout in China is 629,000 tons in the past three years, of which the total amount of fresh fish is 112,000 tons, accounting for 17.8% of the total import. The raw food products accounted for more than 90% of the total fresh fish products, while the total amount of frozen is 517,000 tons, accounting for 85.1% of the total.

## THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA FISHERIES

### 1. Executive Summary

2. Description of the national fishing (fisheries and aquaculture) industry  
-General overview of the Fisheries sector in Republic of Macedonia.
3. Statistics, research and resource assessment  
-Contents statistic information from the Ministry of Agriculture, Forestry and Water Economy.
4. Policy and Legislation  
-Contents legal acts for fisheries sector.
5. Industry and institutional development activities  
-Institutions responsible
6. Other issues

### 2. Description of the national fishing (fisheries and aquaculture) industry

Republic of Macedonia is a landlocked country and has 56.000 ha of water surfaces usable for fishery purposes, of which 46.700 ha are natural lakes, 6.400 ha are water accumulations, 2.200 ha are rivers and 700 ha are fish ponds.

Total fish production in the Republic of Macedonia is based on aquaculture production and catch of commercial fishing which is done only in freshwaters.

The commercial catch is in freshwaters, primarily from the three large natural lakes - Ohrid, Prespa and Dojran. In addition to this, there is significant number of fish farms for fish production. Recreative and sport fishing is carried out on all water surfaces.

Fisheries contribution to the national GDP is minor of some what 0,1%. The main activities in the sector are linked to inland catches and aquaculture production, as well as the linked service activities.

### 3. Statistics, research and resource assessment

In regard of reporting on the relevant areas addressed in Article III (objectives and Functions) of the CACFish Agreement, the CACAFish Five yaer regional Work Programme and the decisions made at recent CACFish sessions Republic of Macedonia has no concretely activities.

The State Statistical Office of Republic of Macedonia and Ministry of Agriculture, Forestry and Water Economy collecting statistical data for fisheries and aquaculture.

According to the MAFWE records, the production of more important fish species in the Republic of Macedonia in 2015, 2016 and 2017 for aquaculture production and inland capture fisheries was as follows:

Fish	2015*	2016*	2017*
	Total/kg.	Total/kg.	Total/kg.

Trout	822205	1142840	1128413
Carp	381400	513819	588887
Catfish	521	3207	4747
Eel	794	905	914
Others	106005	130953	85946
<b>Total</b>	<b>1310131</b>	<b>1791724</b>	<b>1808907</b>

\*Data source: Ministry of agriculture, forestry and water economy

#### Aquaculture production

Most important aquaculture production of fresh fish is of trout and carp. In addition to these species, catfish, grass carp and big head carp are also produced in aquaculture. Total production in 2017 was 1 730 000, or about 95 % of total production of fish.

#### Commercial inland fisheries

The total production from inland capture fisheries in 2017 year was 78 907 kg. or 5% of total production of fish.

Besides fish production, it is estimated that by performing annual recreational fishing about 120 to 140 tons of all kinds of fish are caught.

According to the statistical data, the average family consumption of fish and fish products was about 20kg, or about 5-7kg, annual consumption per capita.

The trade of fish and fish products reveals relative dependence of the Republic of Macedonia on sea fish and fish products, as a result of geographical features of the country (land locked). Share of fish and fish products in the total import of agro-food and fish products from EU-28 for 2017 was 1,7%. The import of fish and fish products in the period of 2016-2017 from the EU countries was as follows:

Most important imported fish/fish product into the Republic of Macedonia from the EU-28

		MK Import from EU-28					
		2016			2017		
Tariff Code	Description	Quantity in tones	value in 1000€	share of value	Quantity in tones	value in 1000€	share of value
1604	Prepared or preserved fish; caviar	547	2.068	47,2%	611	2.239	36,1%
1605	Crustaceans, molluscs and other aquatic invertebrates, prepared or preserved:	3	23	0,5%	4	15	0,2%
0303	Fish, frozen,	652	770	17,6%	1.124	1.495	24,1%
0302	Fish, fresh or chilled,	223	1.198	27,4%	350	1.834	29,5%
0307	Molluscs, whether in shell or not, live, fresh, chilled, frozen,	10	55	1,3%	81	381	6,1%

	dried, salted or in brine;						
0306	Crustaceans, whether in shell or not, live, fresh, chilled, frozen, dried, salted or in brine;	5	54	1,2%	6	62	1%
<b>Total Import of Fish and Fish Products</b>		<b>1.492</b>	<b>4.377</b>	<b>100%</b>	<b>2.245</b>	<b>6.200</b>	<b>100%</b>

Data source: State Statistical Office

Share of fish and fish products in the total export of agro-food and fish products to EU-28 for 2017 was 0,01%. The export of fish and fish products in the period of 2016-2017 to the EU countries was as follows:

Most important Exported fish/fish product from the Republic of Macedonia into the EU-28

		MK Export into EU-28					
		2016			2017		
Tariff Code	Description	Quantity in tones	value in 1000€	share of value	Quantity in tones	value in 1000€	share of value
1605580000	Crustaceans, molluscs and other aquatic invertebrates, prepared or preserved, Other:	42	70	56%	0	0	0%
0304	Fish fillets and other fish meat, fresh, chilled or frozen	0	0	0%	2	6	23%
0303	Fish, frozen, excluding fish fillets and other fish meat of heading 0304	0	0	0%	1	1	4%
0308		0	0	0%	2	2	8%
0307 60	Snails, other than sea snails	56	55	44%	12	12	46%
<b>Total Export of Fish and Fish Products</b>		<b>98</b>	<b>125</b>	<b>100%</b>	<b>18</b>	<b>26</b>	<b>100%</b>

Data source: State Statistical Office

In the part of science, authorized institutions are responsible for the research, science and development in the field of fisheries and aquaculture.

#### 4. Policy and Legislation

##### Legal framework



The management and use of fish, the aquaculture, the protection of fish and marketing, production of reproduction material, the establishments, association and financing, state aid, as well other issues related to fisheries and aquaculture are regulated with *Law on fisheries and aquaculture* (“Official Gazette of the Republic of Macedonia” no 7/08) and the Laws amending the law on fisheries and aquaculture (“Official Gazette of the Republic of Macedonia“ no. 67/10, 47/11, 53/11 , 95/12, 164/13, 116/14, 154/15, 193/15, 36/16 and 83/18 ) and several accompanying acts published in the “Official Gazette of the Republic of Macedonia“ no 53/08, 54/08, 07/09, 94/09, 93/10, 117/10, 162/10, 24/11, 109/11, 153/11, 57/13, 184/14, 188/14, 20/15, 76/15 and 117/16).

The area of management, inspection and control of fisheries, beside the Law on fisheries and aquaculture and its accompanying acts as main regulations, is supplemented or is directly linked with the provisions of the:

- Law on State Agriculture Inspectorate (“Official Gazette of the Republic of Macedonia“ No. 20/09, 53/11, 164/13, 43/14, 33/15, 88/15 and 149/15), and their 10 accompanying acts which regulates and ensures organized and efficient performance of inspection supervision in the field of agriculture, rural development and fisheries and aquaculture (“Official Gazette of the Republic of Macedonia“ no. 59/09, 79/09, 4/10, 15/10, 30/10, 74/10 и 148/10);
- Law on Concessions (“Official Gazette of the Republic of Macedonia“ no. 6/12 and 144/14) which regulates the conditions, the manner and the procedure of concessions, content of the agreement, rights and obligations, as well the method and procedure for concession;
- Law on waters (“Official Gazette of the Republic of Macedonia“ no. 87/08) and the Laws amending the law on waters (“Official Gazette of the Republic of Macedonia“ no. 6/09, 161/09, 83/10, 51/11, 44/12 and 23/13) regulates matters pertaining to surface water, including permanent watercourses in which water occasionally flows, lakes, reservoirs and springs, groundwater, wetlands and their management, protection and conservation of water, water facilities and conditions, methods and procedures by which the water can be used and discharged water.
- Law on Nature Protection (“Official Gazette of the Republic of Macedonia“ no. 67/04) regulates nature conservation by way of biological and landscape diversity and protection on the nature inheritance;
- Law on Internal Navigation (“Official Gazette of the Republic of Macedonia“ no. 55/2007, 26/2009, 22/10 and 23/11) regulates the area of internal security of navigation and sailing on inland waters in the Republic of Macedonia , conditions and manner of use, maintenance and protection of maritime routes and ports and vessels records keeping.

It should be noted that the *acquis* on resources management, inspection and control is only very marginally applicable to land-locked countries, and that the *acquis on fleet registration* only applies to those countries that have fishing vessels under their flag.

The part of *structural activities* is supplemented with the Law establishing the Agency for Financial Support of Agriculture and Rural Development (“Official Gazette of the Republic of Macedonia” no. 72/07 and 05/09). The Law ensures the implementation of agricultural policy and support for rural development in the Republic of Macedonia, using funds from the pre-accession assistance from EU for rural development, implementation of measures similar to EU’s Common Agriculture and Common Fishery Policy in the Republic of Macedonia and implementation of the state aid measures provided in the Government annual programs in accordance with the laws.

The part of the *market policy and aquaculture health*, is regulated with basic veterinary legislation- Law on veterinary health and Law on food safety. Beside these main regulations secondary legislation is put in place to regulate animal health, surveillance programmes and for the purpose of ensuring the status of a country free from fish diseases in order to export salmonid fish species to the EU markets. In 2017 Book of Rules on measures for control and eradication of certain diseases in aquaculture animals (Official Gazette of Republic of Macedonia No. 185/11, 114/14 and 31/18) and Book of rules on requirements for placing on the market of aquaculture, their intended use and methods for performing official controls during placing on the market of aquaculture (Official Gazette of Republic of Macedonia No. 85/13, 132/14 and 190/17) were amended in line with the EU legislation relevant for this area.

Currently, public support to fisheries and aquaculture is provided only from the Governmental annual support programs. The strategic planning and allocation of the funds is carried within the overall process of definition of national strategic priorities under the National Agriculture and Rural Development Strategy 2014-2020 drafting and more specifically within short-term planning document that derived from the strategy – the National program for agriculture and rural development 2013-2017. However, detailed sectoral planning document where financial resources for investment in aquaculture and for the protection of flora and fauna are anticipated on a level of measures is the Program for Fisheries for 12 years (published in the Official Gazette" No. 46/12). The implementation of the structural and direct financial support is conducted through specific annual Programs for Financial Support in the fishery and aquaculture.

## **5. Industry and institutional development activities**

### *Administrative capacities*

Within the Ministry of Agriculture, Forestry and Water Economy, the *Unit of Fisheries and Aquaculture* (Agriculture Department) with 2 employees is responsible for preparing, proposing and implementing legal acts, as well as the managerial and technical issues in the fisheries area.

For the monitoring of production and trade with fresh fish and fish reproductive material, the Unit of Fisheries and Aquaculture records data and maintains the following:

- Data base on produced fresh fish (data for production of fish from registered entities for aquaculture production and catch of commercial fishing);
- Data base of entities with permits for production of reproductive material for fish ponds breeders(34 entity registered);
- Data base of State Aid in the field of fisheries and aquaculture (data from Agency for Financial Support of Agriculture and Rural Development);
- Register of fish breeders (( 101 registered entity) and
- Register of repro-centers (5 repro-centers are listed).

The Unit for fishery maintains records for concessionaires, their catch and traded fish, as well as the number of recreational fishermen and the quantity of fish caught by recreational fishing.

The State Agricultural Inspectorate within the Ministry of Agriculture, Forestry and Water Economy is directly responsible for controlling Illegal, unreported and unregistered (IUU) fishing through inspection and controls in fishery. There are two units directly responsible for the fisheries area: Unit for inspection controls in the area of fisheries and aquaculture with 13

employees (state inspectors for fisheries and aquaculture) and Unit for fishing waters protection with 2 employee), within the Sector for inspection control in the area of fisheries and aquaculture, livestock and apiculture, cereals and land management

Food and Veterinary Agency (FVA) is the competent authority for animal health protection for aquaculture animals, primary production, placing on the market of fish and aquaculture animals, hygiene requirements for fish and aquaculture, registration of fish farms, registration of processing establishments for food of animal origin, import and export of fish, aquaculture and products thereof.

Official controls in FVA are conducted true three departments.

- Department for animal health and welfare is responsible for official controls and surveillance in the area of animal health and registration of fish holdings and these controls are done by 40 official veterinarians working on animal health.
- Department for veterinary public health has 44 official veterinarians responsible for controls in the primary production, hygiene of production, placing on the market and food safety, and
- Department for border inspection responsible for the controls of import of aquaculture and products thereof. These controls are done by 20 official veterinarians working on 9 border inspection posts.

## 6. Other issues

Right now the Republic of Macedonia does not have any formal international agreements regarding the fishery.

## REPUBLIC OF MOLDOVA

### Capture fishery and aquaculture in the Republic of Moldova

#### 1. Brief description

Dynamic growth of the production volumes of autochthonic fish and its consumption demand in the last decade highlight that aquaculture sector takes on greater importance in the economy of Moldova.

Logic potential in place: unused water bodies, human resources, developed gene bank and scientific platform provide for further realistic increase of domestic fish products. Missing links in the system of aquaculture management in the Republic are the following: lending policy, granting subsidies to breeding farms and subventions to fish farmers for purchasing quality fish seed. Profile scientific institutions also require strengthening of governmental financial support.

Capture fishery does not have a significant meaning in fish supply to national markets. Depletion of capture fish stock represents an issue resulted from poaching, insufficient and incorrect stocking, violation of conditions of natural reproduction, change of catch principles without accounting volumes and structure of capture fish catch based on the feedstock research. Development of aquaculture will have a priority role in this situation, in particular, improvement and genetic preservation, domesticated fish stocks for pond farming as well as their controllable reproduction and replacement of these species in natural environment. Production growth of quality fish seed will push the development of the most meaningful subsectors of aquaculture as per their resource potential, that is, pasture fish farming.

Laws and declarations provide a legislative platform for regulation of relations in the sphere of fish stock, capture fisheries and aquaculture and suggest a number of security activities and requirements striving to long term use of water biological resources.

A Complex program of aquaculture is under elaboration in Moldova related to management of capture fisheries 2018-20-30, which suggest improvement of exploitation of fisheries waters by introduction of a number of modernization measures, short and long term plans and ways of heir implementation.

#### 2. Description of national fish industry (capture fisheries and aquaculture)

**Fisheries.** Fisheries does not have a significant meaning in fish supply of the national markets in Moldova. Population of main capture fish present in the main rivers of the country Dniestr and Prut and in reservoirs built in the river courses: Dubossarskoye and Kotesht-Stynka has sharply decreased: bream, carp, fresh water sander, Caspian asp, silver and bighead carp, pike, catfish, European roach, Crucian carp, perch. Amounts of catches constitute not more than 0.07-0.3% of the total fish products consumed by the country. Natural water bodies are the source and reserve of genetic diversity and it can be used for reproduction in artificial conditions and replenishment of reserves of capture fish as well as for expansion of the market assortment and reduction of fisheries load on natural populations.

Reduction of catches from the year 2000 could be explained by following reasons:

- Interruption of systematic stocking of reservoirs with carp and herbivorous species of the Amur complex;
- Violation of conditions of natural reproduction of non-migratory fish;
- Change of catches principles without accounting volumes and structure of capture catches based on the feedstock research;
- Expansion of poaching catches.



Catches in natural waters in the Republic of Moldova  
Quotas                      Catch, t

License catch in natural waters was interrupted in 2016 aimed at restoration of capture reserves. Compensatory stocking of rivers and reservoirs is implemented by Inspection for environment protection as capture fisheries aimed at reproduction of non - migratory fish species was privatized in 2000 and switched to rearing of commodity fish.

**Aquaculture.** Main source of autochthonic fish production in Moldova is the pond aquaculture. Dominating share of all fish catches falls on pond polyculture with a semi-intensive method of breeding carps. Traditionally, among them are carp, silver carp, bighead, grass carp, Crucian carp. Additional objects are: fresh water sander, pike and perch and European catfish artificially reproduced by fish farms in recent years. Fish productivity of commodity fish in the ponds amount at an average to 700 kg/ha across the country, 2000-2200 kg/ha when technologies are implemented and breed carps seed used and up to 3000 kg/ha of youngeryearling.

Cage culture fishery in cooling fishery waters and reservoirs present a prospect for the Republic in absence of maritime zone and limited reserves of local natural waters and serve as one of the methods of a more comprehensive use of bio potential of multipurpose water facilities. Carp cage productivity in monoculture constituted 52–74 kg/m<sup>2</sup> across the country. However, development of cage aquaculture was interrupted due to political reasons as part of cage fisheries of Moldova remained in the separated region of Transdniestr.

Aquaculture requires substantial investment in conditions of enclosed water supply and so far it is more developed in the region of Transdniestr. Among the most common species of intensive rearing in the recirculating aquaculture system (RAS) are sturgeons and hybrids, namely, Russian sturgeon, beluga, sterlet and bester reared mainly for production of food caviar. African catfish (*Clarias gariepinus*) was introduced in Moldova for commercial rearing in RAS.

Pasture aquaculture is not sufficiently developed. There is an ongoing partial stocking of certain reservoirs with carp seed of the first and second order, herbivorous species of the Amur complex with a goal to receive additional production or organize an amateur catch. This trend is one of priorities according to its resource potential.

There are no State owned fisheries and farms in the Moldova aquaculture sector and water reservoirs could be rented on a long term basis. Users take responsibility for maintenance and reconstruction of hydro-technical utilities, organize production and protection of fish resources. Over 4000 people are employed in this industry.

Unfortunately, the weak link is lack of production of mixed feed balanced formulation for feeding fish. Most of the farmers use available cereal crops and their waste for feeding fish.

Volume of autochthonic fish products has increased by six times since 2000 in Moldova and amounted to ca.12083 tons or 33% of fish and fish products consumption. Legal Entities Union “National Association of Moldova Fisheries” produce over 70% of all fish products.

Existing logic potential allows to increase production of domestic fish species up to 25 000 tons, i.e. 65% of the total volume of consumption, including import:

- a) 4220 water reservoirs with a total space of 51710 ha, over 1000 active fisheries farms producing seed and commodity fish;
- b) Quality breeding pool: four autochthonic highly productive carp breeds with an increased resistance to infections, constituting 95% of carp brood stock in the country; new selection lines of herbivorous fish being one of the main components of traditional polyculture, pond population of European catfish, fresh water sander and pike;
- c) Available scientific potential and its scientific – innovation research

### **3. Evaluation of statistics, research and resources**

Ministry of Agriculture, Regional development and Environment collect statistical information on stock of capture fish and on objects reared in aquaculture. Information on biodiversity of live water resources in natural reservoirs, ichthyocenosis, fish species, populations structure and their succession is submitted annually by two profile scientific organizations in the format of reports.

The State having rather limited resources of natural water reservoirs and available reserve of artificial reservoirs. i.e. only 50% used in fisheries, the main focus should be on pond and pasture aquaculture in the coming years. In this sense, it is important to develop and preserve gene pool created by scholars specialized in selection in the Centre for research of water genetic resources “AQUAGENRESURS”. It is thanks to this Centre, Moldova receives annually over 200 mln. of carp and herbivorous fry in five reproduction complexes. Developed brood stock allow to increase production of seed by 30% for the time being. Seed of the European catfish, fresh water sander and pike produced artificially, provide the opportunity to replenish reserves of these species in natural reservoirs and will contribute to maintain biological diversity and protect environment.

All breeding farms have been privatized in Moldova before 2014 but in the absence of specialists in selection there is a risk to lose certain breeds. The following scheme of breeding was proposed by scientists and is being realized with the goal to preserve highly productive gene pool: breeding farms – profile scientific institution – Ministry of Agriculture, Regional development and Environment.

Improvement of breeding and fish reproduction in Moldova is implemented according to a Law on livestock breeding No. 371-XIII of February 15, 1995 and a Law on livestock farming

No.412-XIV of 27.05.99 by way of scientific research, fish selection based on official accounting data of their productivity and targeted reproduction.

Ongoing research are focused on improvement, preservation and management of water genetic resources, perfection of existing breeds, lines and crosses, formation of domesticated stocks for rearing in ponds; search and testing of new objects of aquaculture, i.e. fish, crustaceans, mollusks, elaboration and adaptation of modern technologies, stocks monitoring of commercial and extinguishing species, improvement of bio production potential of water reservoirs, biological methods of control of weediness of water reservoirs as well as on the elaboration of system of fish protection, including use of inoffensive methods of prevention and treatment.

#### **4. Policy and legislation**

Constitution of the Republic of Moldova, laws, Parliament Executive orders, Decrees of the President of the Republic of Moldova, ordinances and Government Executive orders, international agreements with Moldova being one of the participating countries, and other rules and regulations constitute legal platform for regulating relations in the sphere of fish stock, fisheries and aquaculture.

Ministry of Agriculture, Regional development and Environment and its branches, i.e. Department of biodiversity policy and Department of production, processing, and quality control of foods of animal origin implement functions of state regulation in the sphere of establishment and protection of fish stock, elaboration and realization of aquaculture development strategies in fisheries.

Management of water biological resources is based on the following principles:

- a) Preservation of water biological resources;
- b) Support of biological potential and maintenance of biological diversity;
- c) Long term use of water biological resources;
- d) Restoration and protection of water biological resources;
- e) Development of fisheries;
- f) Monitoring of water quality and water biological resources;
- g) Development of aquaculture;
- h) Transparency and openness in granting rights for catches in natural water fisheries.

There is no State financial support, i.e. subsidies to breeding farms for maintenance of brood stock or subventions to fisheries for purchase of quality seed in breeding farms and there is no loans policy focused on development of aquaculture in the Republic.

Financial State support of the fisheries science is not sufficient to expand complex research focused on implementation of the following tasks:

- a) Study of water environment and its interplay with water biological resources;
- b) Assessment of impact of economic activity on water ecosystems;
- c) Organization of systematic ichthyopathological fish control aimed at prevention of massive invasions;
- d) Elaboration of mechanism for preservation of fish gene pool and restoration of population of commercially valuable species.

Principal documents regulating fisheries and aquaculture:

- Law on pedigree livestock farming No. 371-XIII of 15.02.1995
- Law on water conservation zones and river belts and water basins No.440 of 27.04.95
- Wildlife Law No.439-XIII of 27.04.95
- Law on animal farming No412-XIV of 27.05.99
- Law on Red Book of the Republic of Moldova No.325-XVI of 15.12.2005

- Law on fish stock, fisheries and aquaculture No.149 of 08.06.2006
- Executive order of the Government of the Republic of Moldova on import and export of breeding resources No.1203 of October 8, 2003

## **5. Industry and activities focused on institutional development**

Import of fish products has slightly reduced since 2013 in the Republic from ca. 28698 tons in 2013 to ca. 22663 tons in 2015 and ca. 26436 tons in 2017. Due to the fact that prices increased for import products its consumption reduced compared to 2013 from 8.1 kg to 7.4 kg/person/year. Consumption of autochthonic fish products increased in the last 10 years from 2.1 kg to 3.4 kg/person/year.

Realization of produced commodity fish is mainly seasonal, wholesale and retail. There are no specialized fish and fish products markets in Moldova. There are designated sections at the cities and regional markets opened for these purposes. There are also supermarkets selling fish and seafood, i.e. Pește, Ocean Fish, and Telemar.

Fish processing is poorly developed and mostly involves smoking, salting and curing of imported fish. Local fish is subjected to primary processing, i.e. gutting, thinning, mincing or sold live or cooled

Increase of the fish production volumes is directly related to quality stocking and, therefore, to development of own gene pool. Long term strategy aimed at improvement of genetic resources by method of selection, and short term strategy, i.e. hybridization, are used in breeding aquaculture in the country.

A program of selection was worked out and realized in carp breeding aimed at improvement of carp resistance to inflectional diseases, i.e. use of genetic methods of prophylaxis (two resistant highly productive breeds were approbated).

Commercial carp hybrids recommended by scientists for production allow to use heterosis effect with a growth of 15-30% extra production and are widely used in commodity fisheries. It reduces prime cost of farmed fish.

A structure of two level organization of selective breeding work, i.e. breeding reproducers – commercial entities, was launched in the system where many small and medium size fish farms have one or two small ponds. This system is commercially justified as expenditures for purchase of fish larvae are not high compared to expenditures required for maintenance of breeding seed, rearing breeders and organization of mass reproduction.

At present, a Complex program of aquaculture sector development is under elaboration in Moldova 2018-20-30 with a goal to improve exploitation of fisheries striving to implement the following measures of modernization:

- To expand production sites used for intensive fish farming;
- To develop pasture aquaculture;
- To preserve fish gene pool and improve conditions of breeding by establishing a collector's fish farm.

The goal of setting up of a new structure is to create a bank of live fish collections including rare and extinguishing species aimed at their further reproduction and restoration in natural waters.

## **6. Management of fisheries and security measures**

System of water basins in Moldova, including fisheries, has its impact on:

- Level of surface and soil waters
- Micro climate



- Irrigation
- Bio diversity.

For the time being, fisheries sector is in contradiction with other sectors of economy in Moldova, in particular, with hydro energy and irrigation as their activity has a deteriorating impact on spawning and migration.

Main trends of development of this sector, significant for Moldova, short and long term plans and ways of their implementation will be determined in the Complex development program which is under elaboration.

With a goal to effectively manage water resources for aquaculture, to evaluate the possibilities to use water for irrigation and to prevent fish losses it is expedient to organize waters audit and inventory according to bio productive potential for all aquaculture zones of Moldova and to assess economic practicality of their use in fisheries or for other purposes.

Protection of water biological resources in natural aquaculture facilities is implemented by annual catch ban, ban of activities considered as breach of law or crime.

Fisheries water basins are designated for following purposes:

- a) for protection of reproduction, i.e. sites preferable for spawning and larvae development;
- b) for protection of diversity of species inhabiting unique water ecosystem;
- c) for fish protection in winter season.

Nature reserves Prutul de Jos and Pădurea Domnească located at the Prut river flood plain are considered as fisheries water basins in Moldovato and Iagorlyck is used for protection and study of the unique water ecosystem of river Dniestr.

Financial means for remuneration of damages made to fisheries natural water biological resources have to be transferred to a special account of Inspection for protection of environment with their further use for aquaculture reclamation activities. Compensatory stockings do not meet quantitative and qualitative requested characteristics, thus, volumes are next smaller and stocked with mostly four or five species available in fish farms. The reason is lack of compensatory reproductive complex and insufficient relevant financing.

Prut and Dniestr are trans-border Rivers, and there is a necessity to realize joint programs and projects aimed at restoration of rare and extinguishing species, sturgeons in particular.

Joint meetings of Taskforce groups representing the Republic of Moldova and Transdniestr were held in 2018 with a goal to work out the agreement and approval of the Plan of joint activities on nature protection events in the Basin of Dniestr River, including such issues as:

- mutual approval of catches ban periods according to bilateral agreement with Ukraine on cooperation in the sphere of environment protection and sustainable development of the Dniestr river basin, signed in Rome on November 29, 2017 or according to bylaws of the Law of the Republic of Moldova on fish stock, fisheries and aquaculture No. 149 of 08.06.2006;
- ongoing maintenance of water level in Dubossarskoye reservoir and down the stream in order to provide conditions for reproduction of fish and other water organisms;
- reclamation measures;
- development and implementation of joint programs focused on protection and use of fish resources;
- approval of mixed teams representing the Republic of Moldova and Transdniestr region for holding of joint inspection and control activities on both Dniestr riversides;
- establishment of a common platform for mapping of spawning grounds and wintering holes and limitation of catches in these zones;
- exchange of operative information on fisheries management, etc.

Red Book of the Republic of Moldova 2015 includes twelve fish species, including Caspian sturgeon *Acipenser gueldenstaedtii colchicus (Dniestr)* and Starred sturgeon *Acipenser stellatus (Dniestr and Prut)* as well as one species of crustaceans and their ranks of conservation status under State protection. The List of relatively rare species and systematic fauna groups, natural landmarks under State protection, includes two species: sterlet *Acipenser ruthenus L.* and vimba *Vimba vimba vimba L.*

Non-Governmental Organizations (NGO), for instance, International Association of River Keepers- Eco-TIRAS, play a more important role in preservation and protection of biodiversity of marine life. Based on the Concept of cooperation between the Parliament of the Republic of Moldova and civil society effective participation of NGO in providing their comments to draft laws became feasible.

International cooperation on protection of water genetic resources and their restoration is based on signing and abidance by International conventions and agreements on preservation of their biological diversity and protection of their habitat; cooperation on research in this field is implemented via participation of scientists in bilateral and multilateral projects, symposia, exhibitions. Two Moldovan scientific – research organizations, Centre for study of water genetic resources “AQUAGENRESOURCE” and Zoology Institute, are members of a network of Aquaculture Centers in Central and Eastern Europe (NACEE) providing continuous exchange of information in the fields of aquaculture, fisheries, protection and safeguard of water bio-resources, holding and participating in joint events, publication in universal journals, exchange of scientists under bilateral programs.

## SERBIA

### 1. Executive Summary

This document contains data on fisheries sector in the Republic of Serbia, volume of production and potential for further development through the development of production and processing of fishery products. It also shows current Serbian legislation in this area and necessity for further development.

### 2. Description of the national fishing (fisheries and aquaculture) industry

Republic of Serbia is a land-locked country and has neither any marine fisheries activities nor any fishing vessels operating at sea under Serbian flag. The inland fishery is represented by small scale fisheries very simple equipped (e.g. fishing boats average length of 4 meters).

Due to the fact that the Republic of Serbia does not have marine fishery, there is a continuous deficit in the trade of fish and fishery products.

Aquaculture activity is very important for production of fish in the Republic of Serbia. Share of aquaculture production in total fish production in Serbia was between 54 and 77%, in the period 2011-2016 and in 2017 share of aquaculture production in total fish production was 70%. Carp and trout are two most important species for Serbian aquaculture. There is significant potential for the development of aquaculture, particularly carp production on barren or low quality land in lowland region. Aquaculture and fresh water fisheries contribute 0.1 % to the national gross value added

Table 1: Value of fish production from trout and carp fish ponds

	Measuring unit	2012	2013	2014	2015	2016	2017
<b>Carp fish ponds</b>	t	6853	5080	6432	6438	6081	4148
<b>Trout fish ponds</b>	t	808	856	736	949	797	922
<b>Total</b>	t	7661	5936	7168	7387	6878	5070

Source: Republic Statistical Office

Table 2: Utilised area of trout and carp fishponds

	Measuring unit	2012	2013	2014	2015	2016	2017
<b>Area of carp fishponds</b>	ha	8704	8690	8724	8003	7684*	7117
<b>Area of trout fishponds</b>	m2	36302	42743	49583	65527	54744	62281

Source: Republic Statistical Office

\* corrected value

Table 3: Fish caught

Fish caught (kg)						
	2012	2013	2014	2015	2016	2017

<b>PF</b>	<b>1934769</b>	<b>2234979</b>	<b>908241</b>	<b>850658</b>	<b>581034</b>	<b>589517</b>
<b>RF</b>	2863345	2804978	2683164	2298720	1487845	1618339
<b>TOTAL (PF + RF)</b>	<b>4798114</b>	<b>5039957</b>	<b>3591405</b>	<b>3149378</b>	<b>2068879</b>	<b>2207856</b>

**PF – professional fishing**

**RF – recreational fishing**

**T – Total**

Sixteen processing facilities are on the list for export of fishery products to the EU. Of that number, fourteen processing facilities are licensed for export of aquaculture products.

### 3. Statistics, Research and Resource Assessment

Data collection in the Republic of Serbia is governed by the following legislation:

- Official Statistics Law ("Off. Gazette of RS" No. 104/09);
- Regulation on establishing the Plan of official statistics for the reference year;

In accordance with the Official Statistics Law ("Off. Gazette of RS", No. 104/09) and the Regulation on establishing the Plan of official statistics for the reference year, data are collected on commercial and recreational catches of fish in the rivers, lakes and canals, as well as data on the production of fish for consumption and juveniles from aquaculture that are in accordance with Regulation (EC) No. 762/2008 of the European Parliament and of the Council of 9 July 2008 on the submission by Member States of statistics on aquaculture and repealing Council Regulation (EC ) No. 788/96. In the fisheries sector, socio-economic data are not collected, except for data on the number of employees in the aquaculture sector and the number of commercial fishermen. The collected socio-economic data are shown in relation to gender and length of realized working hours in the reference year.

### 4. Policy and Legislation

National legislation in the fisheries area is covered with following legal acts:

- Law on Protection and Sustainable Use of the Fish Stocks ("Off. Gazette of RS" No. 128/14);
- Official Statistics Law ("Off. Gazette of RS" No. 104/09);
- Law on Organic Production ("Off. Gazette of RS", No. 30/10);
- The Law on Animal Husbandry ("Off. Gazette of RS", Nos. 41/09, 93/12 and 14/16);
- The Law on Nature Protection ("Off. Gazette of RS", Nos. 36/09, 88/10 и 91/10 - corr. and 14/16);
- The Law on Veterinary Matters ("Off. Gazette of RS", Nos. 91/05, 30/10 and 93/12);
- The Law on Food Safety ("Off. Gazette of RS", No. 41/09);
- Due to the fact that the Republic of Serbia in the EU accession process in the upcoming period is necessary further alignment with the EU acquis.
- A number of strategies are relevant for fisheries sector:
- National strategy for the sustainable use of natural resources and goods;
- National sustainable development agency; Biodiversity strategy of the Republic of Serbia 2011 - 2018;

Strategy of agriculture and rural development, 2014 – 2024 (which also lays out a strategic framework for aquaculture).

#### 5. Industry and institutional development activities

Support programmes for aquaculture are financed from the budget of the Republic of Serbia based on the Law on Subsidies in Agriculture and Rural Development ("Off. Gazette of RS", Nos. 10/13, 142/14, 103/15 and 101/16), as well as the budgets of Autonomous Provinces and local self-government units.

Law on Subsidies in Agriculture and Rural Development defines the types of subsidies for producers of fish for consumption and quality trout and carp female brood fish. Also, the mentioned Law defines the minimum amount of funds earmarked to an incentive beneficiary. Producers may exercise their right to loan support for the purchase of juveniles through short-term loans from commercial banks, with interest costs subsidized by the Ministry of Agriculture, Forestry and Water Management. There are also possibilities for producers to get investment support in the aquaculture farms.

#### 6. Fisheries management and conservation activities

Based on Resolution Conf 12.7 Conference members CITES in Santiago 2002, has been reached an agreement in Tulcea (Romania) 24-27 of November 2003 between Ukraine, Bulgaria, Serbia and Montenegro on establishing of Regional strategy for protection and sustainable management of sturgeon populations in North-west Black Sea and lower Danube, in accordance with CITES. The main goals of the strategy are:

- data collection on population and their life cycles;
- habitat protection;
- genetic research;
- breeding, restocking and reintroduction;
- data collection on fisheries;
- improvement of legislation;
- implementation of Conf 12.7 into national legislation
- creation of national management plans.

Strategy covers species *Huso huso*, *Acipenser gueldenstaedti*, *Acipenser stellatus*, *Acipenser nudiventris* and *Acipenser ruthenus*.

The ban on catching sturgeon species in the lower Danube region and the north-west Black Sea has expired in 2015, and the countries of the region have decided that the ban will remain in force in the upcoming period.

The Republic of Serbia has no plans for restocking Danube with sturgeon species. Within the framework of the EU Strategy for the Danube Region (Danube Strategy) a priority area 6 (PA 6) was established with the aim of protecting biodiversity, landscape, air and soil quality and coordinated by the Republic of Bavaria - Germany and Croatia.

Within this priority area, the program for the protection and rehabilitation of the Danube sturgeons "Sturgeon 2020" was financed, as a regional strategy for the protection of sturgeon

species in the Danube basin.

Implementation of the Rulebook on international catch certificate and the list of fishery products that do not require international catch certificates ("Off. Gazette of RS" No. 10/17, 52/17, 115/17 and 39/18) has been postponed to 1st January 2019. Regarding the fact that Republic of Serbia is not on the EU list of countries requesting catch certificate, it is important to consider the necessary steps in order for the system establishing and properly functioning. This has to be done in cooperation with EC.

## UKRAINE

Capture fisheries in Ukraine is a specific industry going back several centuries and supplying population with valuable food products.

The main trends in fisheries are the following: catches and fish processing, reproduction, protection of fish reserves, regulation of fisheries, aquaculture, scientific research.

On the whole, there are 4500 entities operating in the sphere of aquaculture, over 100 enterprises, producers of canned fish and fish preserves, 4 state owned fish breeding farms specializing in stocking of water basins, 5 profile scientific/research institutes and organizations provide their scientific support to fisheries activity. There are 665 territorial inspectors of the State Agency of Fisheries, who control water bio resources in Ukraine. Over 400 enterprises deal with commercial catches of water bio resources.

There are 116 decked and 3340 undecked vessels involved in the commercial catches of fish and other water bio resources.

Thus, capture fisheries in Ukraine is a comprehensive complex with fisheries science, aquaculture, commercial fisheries, reproduction and protection of water bio resources united under its umbrella.

Fish products in Ukraine feature the third important source of animal protein after products received from cattle or poultry and that is why, they present a substantial interest to the State who has the authority to solve issues related to food supply, as well as to business community.

In 2017, annual consumption level of fish products in Ukraine amounted to 10.7 kg per capita according to official statistical data and this is by all means below the average level of fish consumption per capita globally, i.e. 17 kg and in EU countries, i.e. 25.5 kg., and this is related to deterioration of the overall economic situation in the country, however, compared to 2016, i.e. 9.6 kg, consumption of fish products has slightly increased.

Main sources of statistical and profile data:

State Statistics Service of Ukraine (<http://ukrstat.gov.ua/>)

State Agency of Fisheries of Ukraine(<http://darg.gov.ua/>)

Types of reporting:

### 1. State statistical reporting

Annual report on harvesting of water bio resources

Quarter report on harvesting of water bio resources

State Statistics Service of Ukraine collect and prepare State statistical reporting. Information on fish and other water resources catches is collected based on data of state statistical observation, submitted by fisheries enterprises, legal entities, independent of their size, form of organization of economic activity and subordination.

## 2. Profile reporting

Report on volumes of catches of water bio resources as per «\_\_\_\_\_»\_\_\_\_\_20\_\_\_\_. This reporting is collected operatively by territorial departments of the State Agency of Fisheries of Ukraine who control commercial catches of bio resources.

## 3. Administrative reporting

Output of aquaculture products for 20\_\_\_\_ No.1A-fish (annual).

Territorial departments of the State Agency of Fisheries of Ukraine collect administrative information related to aquaculture rearing and catches. According to the Law of Ukraine “On aquaculture” every producer of aquaculture including individuals, entrepreneurs and farmers, has to submit this information without taking into consideration the form of ownership.

Demand of the Ukrainian population for fish and seafood is traditionally satisfied by import, commercial catches in Black and Azov Sea, in the inland water bodies and also by aquaculture.

Aquaculture in Ukraine can be divided by: (1) pond aquaculture, (2) cage aquaculture in natural conditions, (3) facilities of recirculating aquaculture system (RAS) and (4) pasture aquaculture in natural water bodies. Pond policulture based on carp with a different level of intensity is the dominating type of aquaculture.

Volume of reared fish varies in aquaculture around 20-25.000 tons per annum and this sector does not expect any significant changes in the near future. Carp and Far East carps, i.e. silver and bighead carps, grass carp constitute over 90% of the overall aquaculture production. Production of additional fish species, i.e. European catfish, pike, fresh water sander, tench, paddlefish slightly increases every year in traditional ponds but it does not exceed 1% in total.

Development of marine aquaculture has significantly reduced after 2014. Major part of the Black Sea waters under effective jurisdiction of Ukraine is characterized by a sufficiently expressed seasonality, alternation of winter and summer, severe storms and very low water temperatures in winter. Besides, ports are located in the most suitable bays. Large coastal and offshore areas are designated for recreation and natural reserves. However, we may see prospects of the national marine culture development, new enterprises have been opened and State authorities work for the improvement of legislation platform in order to set up optimal conditions for small and medium size business. At present, the most perspective for marine culture is to rear mussels (*Mytilus galloprovincialis*).

Specialized commodity fisheries combining elements of pasture aquaculture and commercial catches operate at lakes and reservoirs of Ukraine. In 2017, the number of these fisheries reached 612 covering the space of 142.000 ha. In 2017, the total amount of catches by specialized fisheries reached 7.8 tons of fish.

On the whole, commercial fisheries and aquaculture in Ukraine provided 92.6 thousand tons of raw water bio resources in 2017.

About 400 companies were involved in catches of water bio resources in Azov Sea, Black Sea, inland water bodies, and produced 62.3 thousand tons of fish and other water bio resources in 2017 and exceeded results of 2016 by 8.2%. Among them:

- 37.500 thousand tons produced in Azov Sea;
- 5.2 thousand tons produced in Black Sea;



- 19.6 thousand produced in inland water bodies;

Carp gudgeon, common kilka, sprat, anchovy and conch shell make for 98% of the total catches in Azov- Black Sea basin. There was a substantial increase of catches of such water bio resources as carp gudgeon, sprat (kilka), conch shell, prawns during 2017. At the same time, catches of kilka, chironomids larvae, anchovy, mussels, silverside and gray mullet reduced.

Catches of crucian carp, kilka, blue bream (*Abramis ballerus*) and herbivorous species increased in inland waters. However, catches of Eastern bream, roach, white bream (*Blicca bjorkna*) and fresh water sander reduced.

Almost all fish caught and reared by Ukrainian enterprises is realized in Ukraine while insignificant part is exported.

Ukraine remains the country operating in waters of the world ocean and in 2017 produced 7.9 thousand tons of Antarctic krill in waters of Antarctic.

The share of import makes for 80 %, and it should be mentioned that Ukraine does not practically import fish caught and reared in Ukraine. All these years, main role in import was played by pelagic fish, i.e. shad and mackerel accounting up to 50% of import volumes. The share of fresh and cooled fish production with salmon and other salmonid fishes of aquaculture origin prevailing gradually increases. Norway, Iceland, Estonia, United Kingdom dominate in the Ukrainian market for many years. After unlawful occupation of Crimea and diminished possibilities to catch anchovy during autumn/winter fishing season, import of this fish, frozen and salted, has significantly increased from Georgia. Greece and Turkey have leading positions in supply of fresh and cooled fish, i.e. sea perch and gilt-head bream, to Ukrainian territory.

Important function of the State is to take care of reproduction of water bio resources aimed to improve fish productivity, support biological diversity of fishery waters of national significance and preserve reproductive potential of natural populations of valuable fish species. Four State owned fish reproductive complexes (plants) fulfil the task on restoration of valuable fish species in Ukraine releasing about 13.0 mln. mixed age fish fry in water bodies of national significance. Among them are: common carp, carp, herbivorous species, i.e. silver carp, grass carp as well as catfish, fresh water sander, pike, sterlet, Russian sturgeon, brown trout, Danube salmon.

Legal framework includes national documents, i.e. Constitution, laws, Parliament statements, Government statements and international acts, i.e. bilateral and multilateral agreements and conventions as well as regulatory/legislative acts in the sphere of fisheries and aquaculture.

Three laws were adopted in the fisheries industry of Ukraine:

Law of Ukraine "On Fishery, Industrial Fishing and Protection of Aquatic Bioresources of 08.07.2011, No. 3677-VI);

Law of Ukraine "On Aquaculture of 18.09.2012, No. 5293-VI);

Law of Ukraine "On Fish, other Living Aquatic Bioresources and thereof Food Products of 06.02.2003, No. 486-IV)

It should be mentioned that Ukrainian legislation does not envisage licensing in the sphere of aquaculture. Water objects including offshore zones are used for aquaculture purposes based on lease agreements. However, only water should be considered as subject of lease for offshore zones rather than underlying sections of sea floor.

Licenses for commercial catches of water bio resources shall be granted only to those enterprises who operate in the open sea beyond jurisdiction of Ukraine. Inland catches does not require licenses in Ukraine.

Amateur and sport fisheries are not licensed. This type of fisheries is regulated by specially approved rules and there are restrictions acting with regard to fishing gear and amount of catches.

The following scientific/research institutions conduct their fisheries research in Ukraine under the State Fish Agency governance: State Enterprise “Institute of Fisheries and Marine Ecology” Berdyansk; State Enterprise "Odessa Center YugNIRO", Odessa and National Academy of Agrarian Sciences of Ukraine (Institute of Fishery, Kiev). Ministry of Education and Science of Ukraine provide their small share of fisheries scientific research.

Ministry of Agrarian Policy and Food Supply of Ukraine technically supported by State Agency of Fisheries of Ukraine approve by their Decree the annual acceptable amount of water bio resources extraction for commercial and other purposes in natural water bodies. Limits of allowed extraction have to be approved for those species of water bio resources that have high risk of overfishing. For those species of water bio resources that are not subjected to significant fishery pressing, forecasts for further extraction, i.e. expected catches, are being worked out. Limit and forecasts do not have to be approved for those species of water resources when their main reserves are formed beyond Ukrainian waters or when there is practically no risk of their overfishing.

Limits and forecasts have to be approved based on biological rationale worked out by fisheries scientific/research institutions conducting their activity under the State Agency of Fisheries or National Academy of Agrarian Sciences of Ukraine.

Biological data collected in the course of specialized scientific expeditions at research control/observation stations as well as during catches serve as a main scientific platform for working out biological rationale for limits and forecasts of extraction of water bio resources. State budget of Ukraine and subjects of fisheries finance research aimed at evaluation of fish reserves.

Inventions in the sphere of aquaculture technologies are an important and developing sector of fisheries research. This research includes developments striving to support commodity aquaculture and artificial reproduction of natural populations of valuable fish species.

In 2017, six hundred and sixty five (665) officers equipped with new water and land transportation, uniform, night vision devices fulfilled safety measures aimed at protection of water bio resources. About 35000 infringements of fisheries rules are revealed every year in the last years. The process of restructuring of fisheries protection bodies is going on. The State Agency of Fisheries wishes to introduce new standards and technologies to the system of fish protection.

Small- scale fisheries providing up to 65% of the total catches of Ukraine in Black, Azov Seas and inland water bodies has an obvious significant meaning for national fisheries sector.

We understand that a certain amount of water bio resources is extracted under UUU- fisheries (unlawful, unregulated, and unregistered) and small scale enterprises may play a substantial role in hiding of realistic catches.

Further promotion of the draft law “On monitoring the origin of water bio resources and thereof products” worked out in Ukraine under direct support of the European Union seems to be up-to-date in this context. Draft law suggests reporting in the electronic format at the first stages of transfer, i.e. unloading and the first sales of the monitored species of water bio resources. There is an intention to introduce such reporting for all channels of supply of fish products to the market, whether it is fisheries, aquaculture and import. The main goal is to reduce the level of unlawful, unaccountable, uncontrolled fisheries, UUU –fisheries in Ukraine by introduction of mechanism of controlling origin of water bio resources and thereof products and operations related to their transportation.

Despite all economic and political challenges, we may see prospects for further development of national fisheries in Ukraine. Ukraine possesses rather vast water resources, i.e. up to 1.5 mln. hectares of inland surface waters which have an enormous potential for development of aquaculture. In addition, there is scientific potential and availability of qualified fish experts.

Continuous work is going on aimed at improvement of legislation in the sphere of fisheries and related areas.

Framework strategy of fisheries restructuring was elaborated in Ukraine with main approaches harmonized with respective FAO approaches, i.e. ecological, economic and social.

Special draft law aimed at facilitation and optimization of the activities in the sphere of aquaculture, in particular, organization of cage and marine aquaculture was elaborated.

According to draft law “On main principles and requirements towards safety and quality of food products”, it is suggested to introduce systems controlling safety and quality of food products in Ukraine based on HACCP (Hazard Analysis and Critical Control Point) procedures. Realization of provisions of the mentioned draft law will provide transparency tool for confirmation of safety and quality of fish products and introduction of state quality control “from water to table” in accordance with requirements of European legislation.

We should like to express our gratitude to CACFish for ongoing support of Ukraine in her efforts to develop national fisheries and for the platform provided for communication.

Technical manuals prepared on initiative and under support of CACFish and FAO are extensively used in Ukraine. Such documents as “Best management methods for rearing carps in Central and Eastern Europe, Central Asia and at the Caucasus» and “Manual on artificial reproduction of sturgeons” are the most popular and recognized publications in Ukraine.

Thanks to cooperation with CACFish, knowledge and experience received at the regional training “Best experience in cage aquaculture in reservoirs and lakes” Ukrainian specialists

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projected a cage farm of a new generation in accordance with shape of cages submitted in the course of training. In 2018, the first series of commodity carp and African sharp tooth catfish was reared and there are plans to replicate this experience all over Ukraine.

## UZBEKISTAN

### 1. Brief description

Association “Uzbekbaliksanoat” was set up as an implementation of the Executive Order of the President of the Republic of Uzbekistan No. IIII-2939 of May 1, 2017 “On measures for improvement fisheries management system”.

Association “Uzbekbaliksanoat” has the following main tasks and trends of activity:

1. Improvement of stocking reproduction:
  - to assist fisheries organizations and enterprises in the implementation of reproduction of valuable fish species, setting up new incubatory centers for larvae release, increase of production of fish fry.
2. Rational use of resources of natural and artificial water bodies:
  - to introduce modern intensive technologies, including cage methods of fish rearing, strengthening of fisheries food reserves, setting up new production assets for production of balanced highly protein fish fodder.
3. Coordination of a program of measures striving for development of fisheries, consistent unique scientific/technical, technological, investment and export policy.
4. Introduction of motivation tools required for aquaculture development in the country.
5. State support to fisheries organizations and enterprises granting privileges and preferences, attracting financial means of international financial institutions and donor countries.
6. Introduction of modern methods of the quality management system, product certification and standardization, industrial processing and packaging of fish products in accordance with international requirements.
7. Scientific research aimed at introduction of innovation technologies in the process of fish production and processing.

Territorial branches “Baliksanoat” Ltd. staffed with appropriate experts, were set up for the purpose of realization and coordination of the Association activity.

### 2. Description of fisheries (capture fisheries and aquaculture) in the Republic of Uzbekistan

#### Actual situation of fisheries

- there are **3.852** fisheries operating on **38.000 ha** of artificial and **383.000 ha** of natural water bodies with **628 (16.3%)** of them being members of Uzbekbaliksanoat;
- in 2017, harvest in artificial water bodies amounted to **22.6** quintals/ha (in 2016 – 15.2 quintals/ha, growth – **49%**) while in natural water bodies it was **65.5** kg (in 2016 – 46.8 kg/ha, growth – **40%**);
- in 2017, harvest amounted to **84.000** tons and exceeded the result of 2016 (65.000 tons) by **19.000** tons (**29%**); there are plans for 2018 to rear **150.000** tons of fish; 59.800 tons of fish were reared in 2015; the result of 2016 was 65.000 tons of fish.
- Ipoteka-bankom financed **958** projects for the overall amount of **232.6** billion sum compared to **437** projects for the amount **166.4** billion sum;
- in 2018, external investments amounted to **4.6** billion USD exceeding by **3.3** times investments made in the previous year, i.e.1.4 million USD; 8 investment projects were implemented compared to 4 in 2017;

- in 2018, **32** production units with a total capacity of 145 000 tons were opened aimed at production of mixed fodder based on Chinese, Vietnamese, Iranian and Russian technologies, **25** production units and in total 59 production units with a capacity of 1.561 million pieces for rearing of larvae and fry amounting to 500 million pieces per annum and 11 cooling chambers with a capacity of **6.7** thousand tons;
- fish rearing is organized in **880** personal households; natural ponds and reservoirs are equipped with **3240** cages **22 RAS** with an average capacity of **150-200** tons per annum; 72 fisheries rearing fish at the space of 242 ha using method of small intensive water basins with a capacity of **19.5** thousand tons per annum for intensive rearing.

Cooperation in development of fisheries was established with China, Hungary, Russia, Finland, Iran and Vietnam. As a result, 7 projects based on cooperation with foreign partners and 31 foreign specialists from China, Vietnam, Russia, Hungary and Iran are under implementation.

Eight (8) million eggs of impregnated roe, 2.4 million fry and 260 fish brood stock were imported striving to improve rearing of new species, i.e. Hungarian carp, trout, Caspian sturgeon, Grass carp, Eastern bream, tilapia.

Education of 142 students of Tashkent Agrarian University and in its Nukus affiliated branch was launched aimed at improvement of qualification in the fisheries industry. Same process was implemented in the Samarkand Veterinarian Medical Institute for 82 students and in Namangan and Fergana State Universities for 31 students.

In addition, 6 Republican colleges opened fish farming qualification upgrading courses for 266 persons.

Intensive rearing of local species such as carp, African catfish and such valuable species as Caspian sturgeon, salmon, trout, using cages, RAS, small artificial basins, started in the last years.

### **3. Statistical evaluation, research and resources**

From the very beginning since its establishment, “Uzbekbaliksanoat” focused on increase of volumes of fish rearing in artificial ponds and on improvement of harvesting in natural water bodies, use of intensive rearing methods, cages, innovations (RAS) for rearing fish in reservoirs and natural waters, setting up modern incubators for larvae production and new reproductive reservoirs, construction of small intensive aquatic basins.

Association “Uzbekbaliksanoat” together with interested Ministries and administrative departments worked out a draft of a regulatory act aimed at realization of the abovementioned proposals with a purpose to supply the population of Uzbekistan with quality and affordable fish.

Executive Order of the President of the Republic of Uzbekistan No. IIII-3505 of February 3, 2018 “On additional measures aimed at increase of fish rearing” was approved based on the draft of a regulatory act suggesting to increase the volumes of rearing up to 150.000 tons in 2018.

Based on this document, the following standards were approved for 2018:

- Predictive parameters of stocking of water basins and rice fields: 205.6 million of fry;
- Predictive parameters of fish rearing in artificial reservoirs: 74.800 tons, natural water bodies: 33.800 tons, cages: 13.900 tons, small artificial basins: 7.900 tons, RAS: 4.800 tons and rice fields: 15.400 tons;
- Predictive parameters for construction of modern and rearing facilities. Incubators: 7 with a capacity of 350 million pieces of larvae, small artificial reservoirs with a space of 84 ha, 3070 cages, 13 RAS;
- Predictive parameters for supply: 186.300 tons of mixed fodder and 26.100 tons of mineral fertilizers used for fish feeding and improvement of aquatic basins harvesting;
- Predictive parameters for setting up of 1.347 ha of fish nursery farms with a capacity of 67.4 million pieces of stock, 23 new production lines for storage and processing of 8.800 tons.
  - Production of required amount of enriched and granulated (expansion extruded) fodder for fish reared according to intensive technologies and mineral fertilizers for improvement of harvesting.
  - This document provides customs tax relief except for duties for customs formalities to fisheries for a period until January 1, 2020, when they import mixed fodder (extruded, starting feed, production fodder to the territory of the Republic of Uzbekistan.

It is suggested to invite experienced foreign experts from China, Vietnam, Indonesia and other countries and to introduce state-of-the-art international fisheries technologies for the purposes of setting up and further improvement of rearing of highly productive fish species in natural and artificial aquatic basins and support of fisheries industry.

#### **4. Policy and legislation**

Executive Order of the President of the Republic of Uzbekistan No. IIII-3657 of April 6, 2018 was approved for the purpose of establishing conditions for further development of fisheries industry, improvement of training and upgrading qualification quality of employees, improvement of scientific/innovation research and development, implementation of their results in practical activities.

Based on this document, a free economic zone “Balik ishlab chikaruvchi” (FEZ “Balikishlab chikaruvchi”) in Kujichirchik district of the Tashkent region was set up.

Main goals of FEZ “Balik ishlab chikaruvchi:

- To set up brood seed by way of acclimatization of new and approbated species for stocking of artificial reservoirs and supply of fisheries;
- To launch activities of a modern incubator for production of brood fry, increase of volumes of fish fry production;
- To improve food reserves by establishment of modern production of balanced and highly protein food for own purposes and fisheries;
- To increase volume of catch at the expense of an extensive implementation of innovation and modern intensive technologies including cages method and RAS for improvement of harvesting of artificial reservoirs;

- To set up modern fish processing factories, production of conserves, caviar, delicacies, etc. to satisfy the demand of population and for further export;
- To arrange hydro-chemical water laboratory analysis, to detect fish diseases, to treat and prevent these diseases;
- To launch scientific/research activities aimed at introduction of innovation ideas, technologies and developments in the process of rearing, catches and fish processing, training and practical sessions for students of educational institutions in fisheries industry.
- The period of FEZ “Balik ishlab chikaruvchi” is 30 years with a probability of its prolongation.
- During this period, a special tax, customs and currency modes act at the territory of FEZ “Balik ishlab chikaruvchi”;
- Direction is the operative management body of FEZ “Balin ishlab chikaruvchi”;
- Direction place orders of the already approved investment projects and approves all required permissive documents based on principle “one window”, including permissions allowing to connect to networks of engineering/communication infrastructure.

Provisions of paragraphs 3, 4 and 5 of the Executive Order of the President of the Republic of Uzbekistan No. VII-4853 of October 26, 2016 “On additional measures aimed at activation and expansion of free economic zones” are applicable to participants of FEZ “Balik ishlab chikaruvchi”, namely:

- Unification of tax and customs regulations acting in free economic zones, relieving their participants from payment of the following taxes:
- Land tax, profit tax, property tax for legal entities, unique tax for micro companies and small size enterprises;
- Customs duties, except for duties for customs formalities, for equipment, raw materials, materials and component parts imported for own production needs;
- Customs duties, except for duties for customs formalities, for construction materials that are not produced in the Republic and imported under implementation of projects according to inventory approved by the Cabinet of Ministers of the Republic of Uzbekistan;

Privileges are provided for a period from 3 to 10 years depending on the volume of investments including, inter alia, equivalents:

- from 300.000 USD to 3 million USD for a period of 3 years;
- from 3 million USD to 5 million USD for a period of 5 years;
- from 5 million USD to 10 million USD for a period of 7 years;
- from 10 million USD and above for a period of 10 years with a rate for profit tax and unique tax payment 50% below existing rates for a period of 5 following years.

Participants of free economic zones enjoy the following facilitating procedures:

- They will be relieved from payment of customs duties, except for duties for customs formalities, for imported raw materials, materials and components of exported production for the whole period of their participation;



- They are eligible to use comfortable conditions and accounting and forms of payment for exported and imported goods.

Moreover, there is a magazine “Balikchilik” established under “Uzbekbaliksanoat” highlighting up-to-date matters of fisheries development including national and international scientific/ practical and innovation achievements, informative/explanatory materials for beginners and practicing fish farmers on correct organization of rearing technologies, important events in fisheries industry taking place in the country and abroad.

According to above mentioned Executive Order of the President of the Republic of Uzbekistan No.III-3657 of April 6, 2018 a “Program aimed at expedient development of fisheries industry in the Republic of Uzbekistan for 2018–2023” was approved with the following goal:

1. To improve selective/breeding activities for intensive rearing of valuable species, seed (larvae) based on conditions of state/private partnership;
2. To increase production of fish conserves, caviar, delicacies, etc.;
3. To implement measures for development of aquaculture, effective and rational use of land and water resources;
4. To develop further scientific/research activities in fisheries;
5. To improve, prepare, train, upgrade qualification of employees;
6. To improve of the export potential of fisheries;
7. To increase quantity of mixed fodder, improve culture of fish consumption, strengthen further the role of the Association “Uzbekbaliksanoat” in management and coordination of fisheries;

Moreover, ratification of UN Convention on Marine right” of December 10, 1992, is under consideration now. Association “Uzbekbaliksanoat” worked out an analytical review providing rationale to ratify this Convention, which was submitted to the Ministry of Foreign Affairs for further consideration by the Cabinet of Ministers of the Republic of Uzbekistan. Association “Uzbekbaliksanoat” worked out a draft of “Agreement between the Government of the Republic of Uzbekistan and the Government of the Russian Federation on cooperation in fisheries”. This draft was approved by Ministries and Administrative Departments and submitted for approval of the Cabinet of Ministries of the Republic of Uzbekistan.

Draft of the Agreement suggest:

- To hold regular bilateral consultations, symposia, seminars, thematic sessions and exhibitions in the sphere of fisheries and aquaculture;
- To work out measures on improvement of efficiency of fisheries, fish farming and aquaculture;
- To maintain regular exchange of experience between production and scientific/research organizations on fisheries and fish farming;
- To elaborate and implement joint projects in the sphere of fisheries, extraction, transportation, fish processing and storage of fish products;
- Conduct a coordinated policy in the sphere of production and sales of fish products and its standardization with the purpose of protection of customers and economic interests of producers;

- To set up joint ventures aimed at extraction, rearing, processing and sales of fish as well as subsidiaries of these ventures;
- To exchange scientific/technical information and regulatory documentation in the field of fisheries, fish farming and fish processing;

The following documents were signed:

**Memorandum on cooperation in fisheries between Association “Rosrybkhoz” of the Russian Federation and Association “Uzbekbaliksanoat” of the Republic of Uzbekistan.**

- This Memorandum suggest:
- To build – up scientific/research cooperation between institutions in the field of selection and acclimatization of new fish species and breeds in the Republic of Uzbekistan and protection against vermin and diseases;
- To introduce intensive methods and technologies on rearing of fresh-water fish in natural and artificial water basins in the Republic of Uzbekistan;
- To introduce methods of aquaculture and hydroponics for rearing of fresh-water fish in the Republic of Uzbekistan;
- To set up joint ventures on rearing fresh-water fish in natural and artificial water basins, RAS (recirculating aquaculture system), storage and processing, production of fodder in the Republic of Uzbekistan;
- To set up incubators and breeding joint ventures for production of trout, salmon, sturgeons and other fish species;
- To work out and submit the proposal to Governments of both countries aimed at opening of the affiliated branch of the Astrakhan Institute of Fisheries, Biology and Management of Natural Resources in the Republic of Uzbekistan.
- To prepare and conclude agreements with “Scientific Centre on Fish Genetics and Selection”, Ltd., “Scientific Centre Selectcenter” for purchase of 3 million larvae.

**Protocol on cooperation between Association “Uzbekbaliksanoat” of the Republic of Uzbekistan and Chinese Academy of Fisheries.**

**Memorandum between Association “Uzbekbaliksanoat” of the Republic of Uzbekistan and All-China Association on international cooperation in agriculture.**

**Agreement on cooperation between Associations “Uzbekbaliksanoat” and “Finnish Aquatic Forum” including the following main trends:**

- Restoration and re-cultivation of natural and artificial water basins;
- Development of fish farming and aquaculture;
- Training of employees and specialists;
- Supply of equipment, seed, mixed fodder and other materials for fish farms.

**5. Industry and activities on institutional development**

About 190.000 tons of mixed fodder and 26.000 tons of mineral fertilizers are required for rearing of 150.000 tons of fish in 2018.

As per September 1, 2018, 49.000 tons of fish have been reared in total in Uzbekistan exceeding the same period of 2017 by 11.000 tons.

These results were achieved primary due to a targeted policy of the state aimed at the food safety of the country. Since establishment of the Association “Uzbekbaliksanoat”, **three Executive Orders of the President of the Republic of Uzbekistan and six Executive Orders of the Cabinet of Ministers** were prepared and approved within a short period of time, aimed at support of fisheries. According to these documents, fisheries are supplied on systematic basis with mineral fertilizers, crops, fuels and lubricants, they are granted advantages and preferences on taxes and import of mixed fodder, etc.

Methodological manuals on rearing of different fish species were published and provided to fisheries; seminars and training of leaders and employees of fisheries are organized in the regions of Uzbekistan. Education of future specialists in fisheries is organized in four higher educational universities, i.e. Tashkent State Agrarian University and its Nukus affiliated branch, Samarkand Veterinarian Medical Institute, Namangan and Fergana State Universities as well as in five colleges.

As per January 1, 2018, there are nine fish processing enterprises with a productive capacity of 2.780 tons and 20 cooling facilities for fisheries with a capacity of 3.120 tons.

There are plans to launch eight fish processing enterprises with a capacity of 3.450 tons by the end of 2018 and thirteen cooling facilities for fisheries with a capacity of 3.225 tons.

Achievements of 2018:

- Two hundred forty two (242) hectares of artificial small water basins for intensive fish rearing with a capacity of 6.900 tons per annum were allocated in 72 fisheries; twenty two RAS fisheries with a capacity of 3.200 tons per annum, 32 enterprises set up for production of fish fodder with a capacity of 113.000 tons per annum; 26 incubators, in total 59 incubators with a capacity of 1.561 million larvae producing 516 million larvae per annum.

Thirty one foreign experts from Vietnam, Russia, China, Hungary and Iran work in fisheries transferring their experience on fish rearing and use of innovation technologies.

These activities strive for increase of fish and fish products amount and growth of export.

In addition, Association “Uzbekbaliksanoat” together with respective Ministries work out a draft of a regulatory act, that is, Executive Order of the President of the Republic of Uzbekistan, suggesting to heighten interest of fisheries in order to switch to intensive fish rearing method, to supply water resources to fisheries, establish new modern capacities and invite international leading experts on production of highly protein fodder, to provide mineral fertilizers on a continuous basis, invite foreign experts, set up electronic information system for fisheries, organize sales markets for sales of reared production and attract investment from abroad.

## **6. Fisheries management and safety activities.**

Cabinet of Ministers of the Republic of Uzbekistan approved Executive Order No. 572 of July

24, 2018 “On measures for effective use of available capacity for rearing of trout and sturgeons in Namangan region.

It was decided to increase production of trout and sturgeons along Naryn River in Namangan region aimed at food safety and effective exploration of existing capacity.

Land plots are located at 251 hectares of Uchkurgan, Naryn and Uychinsky districts of Namangan region for rearing of trout and sturgeons in Naryn River.

Leaders and employees of fisheries in Namangan region go on business trips to study intensive technologies and best practices.

Ministry of Water Resources of the Republic of Uzbekistan allocate special technique and equipment for construction of artificial water basins for newly opened fisheries along Naryn River and provide services on preferential tariffs.

Construction of modern trade centers for sales of fish, fish products, conserves and semi-prepared food is planned in all regional cities.

Besides, Cabinet of Ministers of the Republic of Uzbekistan approved Executive Order No. 606 of July 32, 2018 “On measures for further improvement of scientific activity in fisheries.

“Program of measures on improvement of scientific activity in fisheries in 2018 – 2021 and international cooperation with major scientific/research institutions” was approved in accordance with this document.

Basic tasks and trends of activity of the Scientific/Research Fisheries Institute:

- To determine strategic trends of scientific research in fisheries and perspective topics for research aimed at solution of existing local issues;
- To implement scientific research on expedient development of fisheries sector based on fundamental, applied and innovation projects under state scientific/technical programs;
- To work out methodological and practical recommendations on fish selection and rearing and measures on prevention and treatment of fish diseases on site;
- To introduce innovation methods of fish rearing according to intensive technologies including equipment for cages, RAS, inland water streams, irrigation systems and coastal river areas;
- To take part in the education, training and skill upgrading in fisheries sector, organization of profile seminars and training;
- To establish international cooperation with leading international research institutions with the purpose of elaboration and implementation of new innovation technologies.

Association “Uzbekbaliksanoat” is working out a draft of a regulatory act aimed at preclusion of poaching in natural and artificial water bodies. This document has to be agreed upon with State Committee for Ecology and Protection of Environment and respective Ministries and Administration offices.

In order to increase fish rearing it is required to switch gradually from extensive to intensive method of rearing using modern technologies such as RAS, small intensive water basins, cages, aerators, economic pumps, automatic feeders.

At present, Government of the Republic of Uzbekistan is working out a mechanism intended to improve interest of fisheries towards gradual switch to intensive methods of rearing and relieving them from customs payments for imported equipment and mechanical parts. There are also plans to grant privileges for electricity payment when rearing assumes RAS equipment, use of pumps for small intensive basins, aerators, automatic feeders, etc.

### **7. Other matters**

It seems to be reasonable to set up a Project Bureau for the purpose of fisheries development and invite foreign and local experts working for project organizations, so that they could provide technical support for elaboration of project/budget documentation, i.e. project feasibility study, on construction of modern innovation fisheries (clusters) with integrated cycle of fish intensive rearing.

Association “Uzbekbaliksanoat” consider a draft of a regulatory act on granting privileges and relief of customs duties to fisheries on import of modern fish processing and production equipment, spare parts, alimentary tin for production of conserves, refrigerators, equipment for production of highly protein fodders, specialized technique, i.e. marsh excavators, bulldozers, loaders, dredges, for mechanical clearing, aerators, pump equipment, RAS, incubators, cages, fishing gear, motor boats, vessels and engines, breeding stock, impregnated roe, larvae, fingerling, extruded and granulated fodder for fish, automatic equipment for feeding, vehicles for transportation of live fish, etc., aimed at increase of the volumes of reared fish.