FISHERY COUNTRY PROFILE	Food and Agriculture Organization of the United Nations	FID/CP/MDA
PROFIL DE LA PÊCHE PAR PAYS	Organisation des Nations Unies pour l'alimentation et l'agriculture	
RESUMEN INFORMATIVO SOBRE LA PESCA POR PAISES	Organización de las Naciones Unidas para la Agricultura y la Alimentación	September 2004

THE REPUBLIC OF MOLDOVA

GENERAL ECONOMIC DATA

Area:	33 843 km^2
of which water	472 km^2
Population (2002):	4 300 000 3 626 000*
GDP at current prices (2002):	US$ 1.6 billion
PCE per head (2002):	US$ 460
Value added in agriculture (2002):	24.1% of GDP

Note: * excluding Transnistria

FISHERIES DATA

Commodity balance (2002):

	Production	Imports	Exports	Total food supply	*Per caput supply*
	tons live weight				kg/year
Fish for direct human consumption	57 (natural waterbodies 2 258 (aquaculture) 2 315 (total)	19 315	-	21 630	5.96
Non-food uses	-	-	-	-	

Note: * excluding Transnistria

Estimated Employment (2002):	
Harvesting of fish from domestic ponds: Aquaculture (industrial fish plants): Fish farming (individuals): Processing: Total employment in fisheries :	180 726 556 434 1 896
Gross income from fisheries in natural waterbodies (2002): Gross income from aquaculture (2002):	US$ 84 000 US$ 2 610 000
Trade (2002):	

Value of imports:	$US 7 814 000
Value of exports:	-

Structure of fish production sector

Moldova is a landlocked country. Freshwater production comes from natural and artificial waterbodies, comprising:

- capture fishery on natural waterbodies (ca 22 000 ha);
- recreation fisheries, including organized fishing in natural ponds, ponds assigned to the Hunters and Fishermen Society of Moldova (1 046 ha) and licensed fishing in fish ponds; and
- aquaculture on 27 000 ha, both industrial (the former soviet fish plants) in the Association "Piscicola", and individual in ponds leased from municipal bodies by individual fish farmers, united in the Association "Propiscicola".

Capture fishery

In 2002, the water area was 22 000 ha (excluding Transnistria), with organized fishing on 14 700 ha, of which the major areas were Dubosari reservoir on the Dniester river (6 500 ha); Lower Dniester (from Dubosari town to Palanca village) (3 000 ha); Costesti-Stynca reservoir on the Prut river (3000 ha belonging to of Moldova); and Lower Prut including Manta lake (2 200 ha).

Fish was harvested by 19 economic entities that had obtained a licence for industrial fishing from the Fish Protection Service (Table 1). According to the licence conditions, these economic entities had the right to catch 102 t of fish, but only 57 t of fish was reportedly harvested.

Table 1. Fish harvesting data (2002, tonne)

Fish harvesting area	Established quota	Economic entities	Allowed harvest volume	Actual harvest
Dubosari reservoir	65	4	39.5	25.3
Lower Dniester	50	7	34.5	16.8
Costesti-Stynca reservoir	37	7	24	13.2
Lower Prut	10	1	4	1.7
Total	162	19	102	57

The catches are mostly bream, crucian carp, roach and common carp, together with herbivorous fishes (*Aristhichthys nobilis, Hypophthalmichthys molitrix*and *Ctenopharingodon idella*) that are found mostly in Dubosari reservoir (Dniester river) and Costesti-Stynca reservoir (Prut river).

Industrial harvesting uses stationary nets with mesh of at least 50 mm. Nets are placed in the water using motor or rowing boats. In 2002, 19 licensed economic entities employed 180 fishermen for industrial harvesting. Average catch was 317 kg/year/fisher. Fish of low value are mostly sold in local markets, while higher value fish (catfish, pike perch, large silver carp and herbivorous fishes) go to the Chisinau market.

Gross income from fish harvested in 2002 is estimated at US$ 84 000. Average price of fish was US$ 1.47/kg.

Recreational subsector

Recreational fishing has for over 50 years been organized by the Society of Hunters and Fishermen (SHF). This is a public non-governmental organization. Before 1990, SHF managed about 80 artificial waterbodies, with a total area of 3 000 ha, and 830 ha of natural waterbodies. Access to waters required a ticket purchased from SHF.

Since 1990, the structure of the recreational subsector has changed significantly. SHF is still engaged in organizing amateur fishing, but the water areas assigned to SHF have been continually reduced. During the privatization period, many SHF ponds were transferred to municipal authority administration. Currently, SHF has 12 000 members, of which about 2 400 are fishermen. It is estimated that SHF members catch 70 t/year. It is estimated that the SHF waterbodies, if stocked and managed properly, could provide more than 200 t/year.

Aquaculture subsector

Before 1990, there were only state farms operating in the aquaculture sector. Most of them were privatized in the transition period, and pond ownership passed to local municipal authority administration. Production fell. Gradually, private farmers started to lease the ponds and to develop fish farming. The main

species produced in aquaculture are white carp, silver carp and spotted silver carp (ca 35% of total harvest); and crucian carp (20%). In 2002 the aquaculture harvest was estimated at 2 258 t, giving a gross income of about US$ 2 710 000.

The association "Piscicola" (former state farms) occupied 9 748 ha and produced 1 643 t of marketable fish and about 250 t of grow-out fish. It employed 726 persons, with an estimated income per employee of US$ 2 261. The Association of fish-farmers "Propiscicola" gave employment to 556 persons and produced 615 t of fish.

Figure 1. Sketch-map of fish farm locations

Utilization of fish

The transition to a market economy resulted in break up of the food industry system, and reduced fish imports, freshwater fish production and consumption. In 1994, consumption of fish had slumped to 6 523 t, which was 1.5 kg per caput.

Production and imports increased after 1994, and annual per caput fish consumption had increased to 5.96 kg by 2002. At the same time, farming re-started in abandoned ponds.

Table 2. Annual fish production and consumption (tonne)

	1964	1990	1994	2002
National waterbodies:				
– capture catch	1240	500	111	57
– aquaculture harvest (industrial)	260	9 000	1 215	1 643
– fish farming (individual)	–	–	–	615
Total freshwater fish supply	1 500	9 500	1 326	2 315
Imports:				
- frozen fish		31 800	2 780	16 925
- herring		2 800	970	–
- canned fish		10 600	1 447	2 390
Total import		45 200	5 197	19 315
Sales of fish and fish products		54 700	6 523	21 547
Population*		4 352 000	4 352 000	3 626 000
Consumption of fish per caput (kg/year)		12.57	1.5	5.96

NOTE: * excluding Transnistria

Post-harvest utilization of imported fish

Traditionally in Moldova, fish is only for human consumption. Fish from inland waters is marketed mostly live or chilled. Oceanic fish is used for processing, including smoking and salting, but until now has not been canned in Moldova.

After 1995, fish processing decreased, mostly due to a reduction in imports of fish to Moldova (Tables 3). The state enterprises were privatized, and new companies appeared. There are now over twenty enterprises active in fish importing, processing and wholesale supply. Large processors import fish on their own, as a rule, and this activity was their initial activity, followed later by development of processing.

Table 3. Main suppliers (>1000 t/year) of fish and fish products to Moldova (tonne)

Country	Year						
	1996	1997	1998	1999	2000	2001	2002
Russia	5 845	3 684	4 966		1 104	2 517	2 748
Lithuania	4 563	2 602	1 062			1 567	5 023
Estonia	1 039		1 440	1 038	2 297	3 167	2 699
Bulgaria		1 081					
Poland		1 414	3 087	3 308	3 861	5 055	2 360
Norway				1 970	1 778	1 599	
The Netherlands				1 261		1 509	1 102
United Kingdom						1 463	
United States of America							1 368

In 2002, imports of ocean fish to Moldova were 16 925 t, of which 5 992 t (35.4%) was sold frozen, and 10 933 t was processed to yield 9 840 t of fish product, including 2 534 t of smoked fish and 7 306 t of salted fish products. The main species used for processing are mackerel, herring, blue whiting and capelin, with total of 9 species. There are both cold-smoked (89%) and hot-smoked fish and fish products (11%). Salted fish is mostly as traditional salted herring (93.8%), and half-cans with a range of different spices (6.2%). Income from processing is estimated at US$ 18 525 000.

Post-harvest utilization of freshwater fish

Until 2002, some fish processors in Moldova used large silver carp (over 3–4 kg) for production of *balyk* products, although the processing volume was insignificant.

In 2003, canning of freshwater fish was initiated, mostly using silver carp, with promising results. At the moment, locally produced canned products are being certified.

Fish markets

Fish and fish products are sold in Moldova through both an organized marketing chain and informal local markets. According to consumer surveys, 41 percent of fish is purchased in stores and 59 percent in local markets.

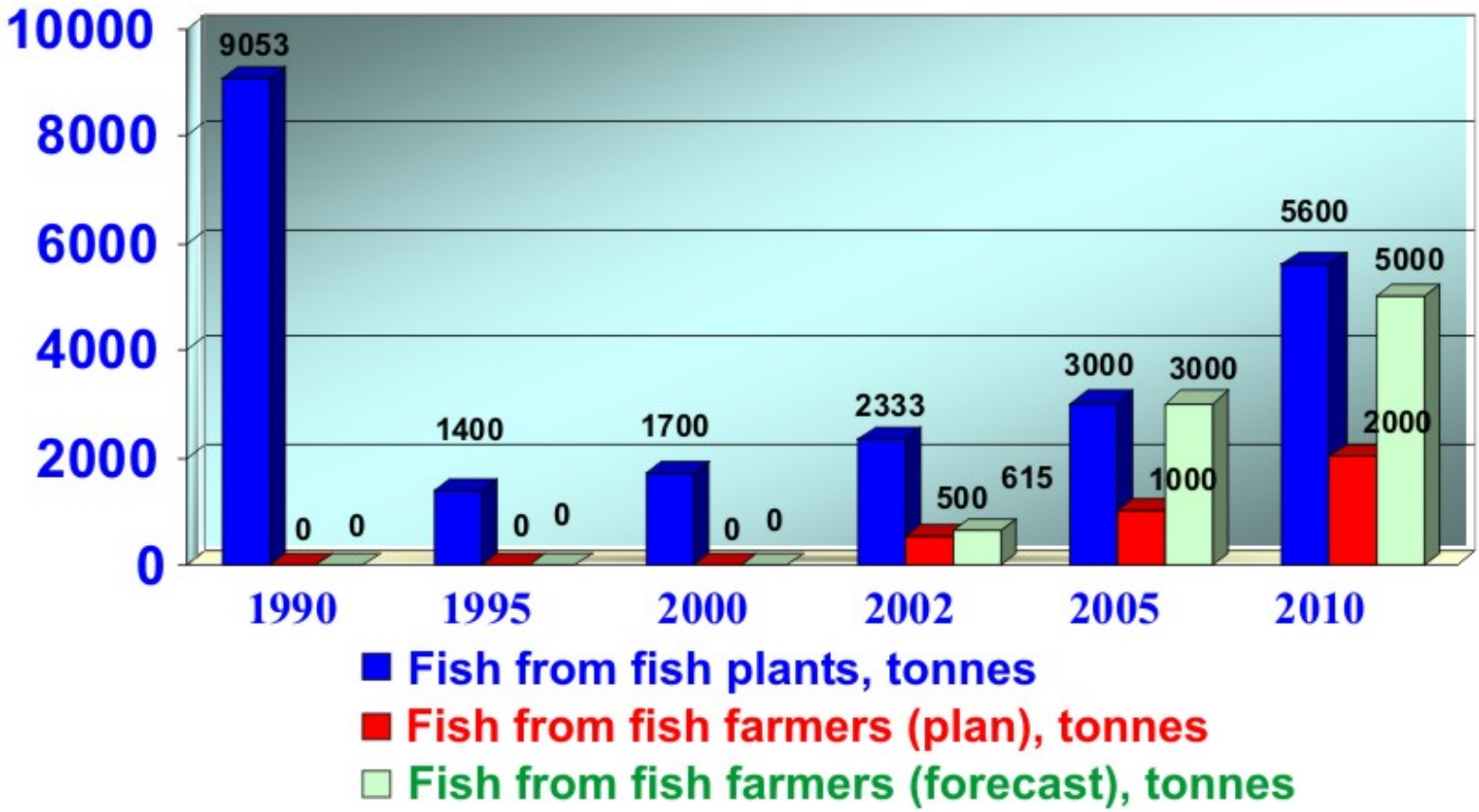
As fish farming has developed, fish began being sold in the informal sector, even in small settlements and at the roadside. Availability of fish at place of residence improved supply of fish to the rural population.

The significant difference in sales of fish products between urban and rural areas reflects the low purchasing power of the rural population, poor supply of unprocessed fish due to high transportation costs, and lack of refrigeration equipment.

Development prospects

Aquaculture is the most promising sector for supply of freshwater fish. The main problem of this subsector is the inefficient use of natural resources. It is estimated, that considering the climate and soil and water quality, aquaculture could provide at least 500 kg fish/ha without supplementary feeding. If fertilized and fed, production could double, to possibly reach 10 600 t/year, and increase even further by more intensive production.

Figure 2. Forecast of fish production in Moldova



Research

Before 1990, most research in ichthyology and fish farming was conducted by the Institute of Zoology of the Academy of Science; Zoology Department of Chisinau University; Moldovan Scientific Research Fish Farming Station (SRFFS); and Zoology Department of the Tiraspol Pedagogical Institute. Since 1990, funding for scientific research has significantly decreased, and scientific staff has been reduced to one-third. Research in the fish farming sector is conducted by:

- SRFFS, with research in the areas of aquaculture and monitoring of fish resources in natural waterbodies. In the field of aquaculture, research is conducted on selection of fishes, reproduction of fish, development of fish growing technologies, hydrochemistry and ichthyopathology. This research ties in with the Programme for development of fish industry.
- The Institute of Zoology of the Academy of Science has two laboratories (ichthyology; hydrobiology and ecotoxicology) that conduct relevant research on and monitoring of the natural bio-aquatic resources of Moldova.

Along with these former state scientific research organizations, some public, non-governmental and non-profit organizations have emerged:

- Ecological society "Biotica".
- Moldova-Ukraine organization "Akvair".

- Research and Production Alliance "Ecotoks".
- A fund "Institute of Hydrobiology and Fish Farming" to conduct research in the field of fish farming, using grants, international project and agreements with fish farming plants.

Education

Training of experts in fish farming sector in Moldova is conducted by the State University and the Institute of Applied Science.

Foreign aid

Foreign assistance is provided in the fish sector only by the USAID Project, with assistance from the AgCenter of the University of the State of Louisiana. Activities have included:

- conducting a basic seafood HACCP training course;
- training HACCP instructors;
- introducing a HACCP system in one of the fish processing plants;
- conducting training of fish farmers in basics of fish farming;
- providing information and marketing support for fish farmers;
- organizing trial processing of freshwater fish; and
- providing assistance in organization of the fish farmers' Association "Propiscicola".