

1961–2007

FISH AND FISHERY PRODUCTS

WORLD APPARENT CONSUMPTION STATISTICS BASED ON FOOD BALANCE SHEETS

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
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## PREPARATION OF THIS DOCUMENT

This document, previously published in hard copy as a FAO Fisheries Circular, is currently disseminated in electronic format as a section of the CD-ROM contained in FAO Fishery and Aquaculture Statistics Yearbook.

The data presented are based on the fishery module of FAOSTAT, the Corporate Database for Substantive Statistical Data of FAO. These statistics have been used to prepare food balance sheets globally, by individual countries, as well as by selected continental and economic aggregates. The role of fish in supplying protein and other nutritional factors to the average diet is also indicated.

The statistical data contained in the document have been compiled by G. Laurenti, Statistics and Information Service of the Fisheries and Aquaculture Department (FIPS), on the basis of records held in the Fishery Statistical Database in December 2009 and of other official and non-official data and information available to FIPS.

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#### **ABSTRACT**

The document summarizes more than four decades of statistics of apparent consumption of fish and fishery products based on supply/utilization accounts, for 223 countries, six continental aggregates, five economic groups and world totals. Data are given for total and per capita supply in live weight on a yearly basis. Indicative nutritional values in terms of animal and total proteins are also provided. For 40 major food fish consuming countries, balances are provided for supply in quantities and nutritional factors of eight main groups of species of similar biological characteristics. A section comprising descriptive and analytical graphs supplements the data.

## FOREWORD

From its foundation, FAO has recognized the importance of fish as a food source, particularly for its role in protein supply. In its first report on Fisheries<sup>1</sup> published in 1945, FAO stated that "... fish should be regarded as one of the most important sources of food in any program for raising the nutritional levels of peoples throughout the world". The same report contained the first estimate of average world fish per capita consumption published by FAO which was five pounds of edible fish meat per year (or about 5.4 kg live weight per year) and this probably referred to years before the Second World War. However, no consumption information for individual countries was provided and the report commented that national consumption figures, where available, are often not comparable due to the use of different methodologies. Further, it stated that "Accurate comparison must await the preparation of more complete and standardized international fishery statistics".

The central role of apparent consumption statistics for fish and fishery products in consideration of food security and nutrition issues is illustrated by the fact that such data were disseminated for the International Conference on Nutrition (Rome, 5–11 December 1992), the World Food Summit (Rome, 13–17 November 1996) and the World Food Summit: five years later (Rome, 10–13 June 2002).

International fishery statistics are still far from perfect but they have improved during the last five decades and the promotion of standard definitions, classifications and methodologies by FAO and other organizations has made them more comparable. The data in this publication are based on food balance sheets, which have been constructed from statistics on fish production, disposition of landings, commodity production and trade on the basis of eight major groups of species of similar biological characteristics and nine commodity groups. This publication shows summarized food balance sheets by country, continents and economic groups for years between 1961 and 2007 which allow trends in elements such as per capita fish supply and its contribution to protein supply to be examined. It also presents the composition of the total supply subdivided into major groups of species for the 40 largest consumers of food fish.

World average per capita supply of fish grew from 9.0 kg in 1961 to 17.1 kg in 2007. Fish provides a major source of protein for many countries, including many Small Island Developing States (SIDS). Compared to an average annual compound growth rate in per capita animal protein supply of 0.9 percent during 1961–2007 per capita world fish protein supply showed a rate of 1.3 percent. Some developing countries are particularly dependent on fish for food and all but six of the top 66 fish-consuming countries (in terms of fish as a proportion of animal protein) are from the developing world. It is notable that of 11 countries classified by FAO as most seriously undernourished (i.e. with 35 percent or more of the people undernourished)<sup>2</sup>, five are amongst the most dependent on fish as a source of animal protein (i.e. fish providing more than 20 percent of animal protein).

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<sup>1</sup> **FAO**. 1945. *Five technical reports on food and agriculture: fisheries*. Report of the technical Committee on Fisheries, submitted to the United Nations Interim Commission on Food and Agriculture. Washington. pp. 175–216.

<sup>2</sup> **FAO**. 2010. *The state of food insecurity in the world 2010*. (Available at [www.fao.org](http://www.fao.org)).

The contribution of national fishery statistical offices in providing basic statistics required for the construction of these food balance sheets is gratefully acknowledged. Where such basic statistics are lacking or considered unreliable, data from other sources have been utilized, when available, and FAO estimates used when there are no other usable data.

FAO welcomes comments on these statistics and suggestions as to how they can be improved. Comments may be sent to the address below.

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## INTRODUCTION

This document presents a compendium of four decades of statistics of apparent consumption for fish and fishery products for 223 countries, six continental aggregates, five economic groups and global totals based on the Supply/Utilization Accounts (SUAs) held in FAOSTAT, the Corporate Database for Substantive Statistical Data of FAO. Although FAOSTAT is currently undergoing a restructuring process in conceptual and technical aspects, the consolidated methodology used to calculate Food Balance Sheets for fish and fishery products will basically remain unchanged. The Fishery module maintains SUAs for eight groups of primary fishery commodities and nine groups of processed products derived from them for almost all the countries and areas in the world from 1961 to 2007. SUAs contain the estimates of supplies from different sources matched against estimates of different forms of utilization of each product. These series are regularly updated and revised in the light of any new information. Accordingly, the Food Balance Sheets derived from the SUAs of food products are consistent internally. In FAO's work these data are required to meet the requests of its statutory bodies to keep the world's food and nutritional situation under constant review, to update the Organization's analytical work in the field of food and population and to provide the statistical base for the projections of demand and other assessment studies.

The Food Balance Sheets included in this document have been calculated from individual SUA's series for each primary and processed fishery commodity, prepared on a calendar-year basis. In constructing the SUA's and the food balance sheets derived from them, both official and unofficial data available in the databases of the Statistics and Information Service of the Fisheries and Aquaculture Department have been used.

In order to facilitate descriptions and analyses of data, graphs are provided. Section 1 presents summarized FBS for the world in 2007 and long-term series starting from 1961 and ending with 2007, in live weight, for continental aggregates, economic groups and global totals. On each FBS the fish contribution to animal and total protein supply is indicated as a percentage. Section 2 gives, in live weight, the same data as described in Section 1, for 223 countries that represent more than 99 percent of the world population. For 40 major food fish consuming countries, whose aggregated population represents 78.4 percent of the world total, food fish balance in live weight, including fish-derived calories, proteins and fats, are provided as ten-year averages for each decade and for the six most recent years (2002–2007). These balances, provided by totals and eight main groups of fish species, are presented in Section 3.

The derived consumption data are as reliable as the basic production, trade and domestic utilization data on which they are based. Trends in food availability may reflect improved primary data rather than real changes in food intake. For a full description of the concepts used in the construction of food balance sheets and the major shortcomings of such data as indicators of consumption, the reader may refer to the publications indicated in References (in particular to: "Food balance sheets. A handbook". FAO, 2001, also available at <http://www.fao.org/docrep/003/x9892e/x9892e00.htm>). Nutritional values have been calculated utilizing appropriate standard food composition factors (see Appendix 1).

For information on other food commodities and the role of fish in national diets, see "Food Supply" and "SUA/FBS" domains in FAOSTAT at:  
<http://faostat.fao.org/>

More detailed fishery production and trade statistics of specific products are accessible as online or downloadable databases at :  
<http://www.fao.org/fishery/statistics/en>

## GENERAL NOTES

Data	The data shown in this document were calculated on the basis of information available to the Statistics and Information Service of the Fisheries and Aquaculture Department (FIPS) in December 2009. Discrepancies which may occur in certain instances with data held in other fishery statistical databases are due to a different updating timeframe. Where necessary, historical series previously published have been revised. In particular, China fishery and aquaculture production statistics have been revised significantly downwards starting from 1997, based on the outcome of the National Agricultural Census of 2006, which included for the first time questions related to fisheries and aquaculture, as well as fishery surveys. Revised statistics for the last few years have been published by FAO in March 2009 with the release of the updated databases on capture and aquaculture fisheries production.
Country names	Countries are indicated by the FAO English name used for statistical purposes (12 and 24 characters). They are listed in alphabetical order and preceded by their FAO Code.
Population	Refers to the present-in-area (de facto) population, i.e. includes all persons physically present within the geographical boundaries of countries, at the mid-point of the reference period. The source of the data is <i>World population prospects: the 2008 Revision</i> , published by the Population Division of the United Nations.
Live weight	The weight of finfish and shellfish at the time of their capture or harvest. Calculated on the basis of conversion factors from landed to nominal weight and on rates prevailing among national industries for each type of processing.
Production	Refers to <u>catch and culture</u> of all fish, crustaceans, molluscs and aquatic organisms.
Non-food uses	Include utilization of aquatic products for reduction to meal and oil, for feed and bait, for ornamental purposes, withdrawals from markets and any other non-food use of fish production (e.g. fertilizers, medical uses).
Imports/exports	In accordance with the internationally-recommended practice, imports and exports statistics have been adjusted to include as imports fish caught by foreign fishing vessels and landed in domestic ports and as exports fish caught by domestic fishing vessels and landed directly in foreign ports. World totals of major groups of species may be understated due to statistics being reported as unspecified fish in some national trade statistics. This results also in imbalances between figures for world imports and exports of given major groups.
Stocks	Information on changes in stocks occurring between the production and the retail levels, or in levels of inventories, is very incomplete. In most instances data indicated are the minimum required to avoid a negative balance.
Total food supply	The total fish available for apparent human consumption is derived by using the following equation:  total food supply <u>equals</u> production <u>less</u> reduction to meal and other non-food uses, <u>plus</u> imports, <u>less</u> exports and re-exports, <u>plus or less</u> variation in stocks.

All calculations have been made in terms of live-weight equivalent.

Per caput food supply	The estimate of the total supply available for human consumption divided by the population total.	
Percentages	Percentages have been calculated on <u>unrounded</u> figures, though such figures are rounded in the tables due to space requirements.	
Standard symbols	...	= data not available/unavailable
	0 ; 0.0	= magnitude known to be nil or more than zero, but less than half the unit used.
Groups of species	Statistics of apparent consumption for finfish and shellfish are divided into the following eight broad groups of species:	
	Freshwater and Diadromous fish:	including carps, barbels, tilapias, etc.
	Demersal fish:	including sturgeons, eels, salmons, trouts, shads, etc.
	Pelagic fish:	including flatfishes, cods, hakes, haddocks, redfishes, sharks, coastal demersal fish, etc.
	Marine fish, other:	including anchovies, herrings, sardines, tunas, mackerels, etc.
	Crustaceans:	including unidentified marine fish.
	Molluscs (excl. Cephalopods):	including crabs, lobsters, shrimps, krill, etc.
	Cephalopods:	including abalones, oysters, mussels, scallops, clams, etc.
	Aquatic animals, others:	including squids, cuttlefishes, octopuses, etc.
		including frogs, turtles, sea-cucumbers, sea-urchins, etc.

For more detailed information on catch and culture, trade composition and other variables, please refer to the relevant sections of the FAO Yearbook of Fishery and Aquaculture Statistics. For information on food consumption in general, please refer to relevant publications included in References (page 416).

## **NOTES ON GRAPHS**

This section includes statistical graphs based on 2007 data and data from the whole time series contained in this report and analysed for the world, continents and economic groups.

## **NOTES ON SECTION 1**

This section provides 2007 Food Balance Sheets for fish and fishery products in live weight for the world total, seven global tables by country, continent and economic groups and two tables by major food fish consuming countries. Balances are also provided from 1961–2007 for 12 tables showing totals for continents and economic groups including and excluding China, one table showing 1961–1991 for the area of former USSR and two tables for world and world excluding China totals. In addition, yearly calculation of percentages of fish contribution to animal and total proteins are provided in each of the above tables.

The quality of data in the time series may vary.

## **NOTES ON SECTION 2**

This section provides historical food balance sheet for fish and fishery products in live weight for 223 countries from 1961 to 2007. As for Section 1, yearly calculation of percentages of fish contribution to animal and total proteins are provided.

The quality of data in the time series may vary.

## **NOTES ON SECTION 3**

This section provides, for the top 40 food fish consuming countries and the world total, food balance sheets in live weight for eight main groups of species (see pages xi and xiii) and the total calculated as ten-year averages for each decade and for the last six most recent years (2002–2007). Fish nutritional factors for calories, proteins and fats are also provided. Stock variations are not indicated.

The quality of data in the time series may vary.

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Food balance sheets  
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Non-food uses  
Imports  
Exports  
Stock variations  
Total food supply  
Population  
Calories  
Proteins  
Fats  
Per capita supply  
Per capita per year  
Per capita per day  
Tonnes  
Thousands  
Kilograms  
Grams

### List of groups of species

Freshwater and diadromous fish  
Demersal fish  
Pelagic fish  
Marine fish, other  
Crustaceans  
Molluscs, excluding cephalopods  
Cephalopods  
Aquatic animals, others

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Variations de stock  
Disponibilité alimentaire totale  
Population  
Calories  
Protéines  
Lipides  
Disponibilité par personne  
Par personne par année  
Par personne par jour  
Tonnes  
Milliers  
Kilogrammes  
Grammes

### Liste des groupes d'espèces

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Poissons démersaux  
Poissons pélagiques  
Poissons d'eau de mer, autres  
Crustacés  
Mollusques, à l'excl. des céphalopodes  
Céphalopodes  
Animaux aquatiques, autres

### Contenido de los cuadros

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Consumo aparente  
Hojas de balance de alimentos  
País  
Año  
Producción  
Usos no alimentarios  
Importaciones  
Exportaciones  
Cambios de existencias  
Suministro total de alimentos  
Población  
Calorías  
Proteínas  
Grasas  
Suministro por persona  
Por persona por año  
Por persona por día  
Toneladas  
Miles  
Kilogramos  
Gramos

### Lista de grupos de especies

Peces de agua dulce y diádromos  
Peces demersales  
Peces pelágicos  
Otros peces marinos  
Crustáceos  
Moluscos, excl. cefalópodos  
Cefalópodos  
Animales acuáticos, otros

