

# MODULE 4

## "SEAFOOD AS AN ECONOMIC PRODUCT"

### TEACHER'S GUIDE

#### Module map

Topics		
Fishery economy.		
Fishery geography.		
The commerce of seafood resources.		
Aims and rationale		
To analyse the fishery economy in order to understand which are the major wild and farmed seafood importers and exporters in the world.		
To learn about the fishing areas of the world.		
To learn about the seafood market dynamics.		
Let the students analyse imported and local seafood resources, evaluating import/export effects on economy and environment.		
Inserts		
1. An outline of the seafood economy.		
Subjects		
Geography, economy.		
Fact sheets		
Type	Title	Activities
S - Survey	1. "From the sea to the table"	Survey in class.
R - Research	2. "The fishery and aquaculture world"	Research in public library.
	3. "The fishing areas"	
E - Experience/elaboration	4. "The fish trip"	Short game.
	5. "The seafood economic map"	Graphic activity.
T - Test	6. "Discovering a nation"	Research in public library.
Link to Mr.Goodfish Campaign issues		
The commerce of seafood resources, the importance of local economies.		

## Didactic instructions

From the topics that we have discussed in the previous modules we have understood that marine resources, which constitute a source of food for man, become, inevitably, also an economic resource since historical times, just after humans started to exchange goods.

This topic, which is also a topical subject of great interest, aims at stimulating the discussion about the **importance of an economic resource such as the seafood product, in determining the economic balance of different countries and the relationships among them.**

The **contraposition between globalization and safeguard of the cultural, food and economic identities represents a main theme in the cultural debate and in the economic changes of modern civilization**; all the companies are wondering about the decisions to be taken regarding the management of natural resources in order to guarantee a future to our Planet; it is therefore clear how important this theme is in the development of this didactic project.

It is relevant to say that the present module, due to the faced topics and issues, is better addressed to older pupils, and may be adapted (by selecting or personalizing some of the proposed fact sheets) by the teacher, responding to respective young pupils levels.

The purpose of this module is particularly to focus the attention of the students on two aspects: on one hand, analysing the overall picture of the fishery economy, on the other

hand, understanding how the seafood product is marketed by examining all the steps "from the sea to the table", therefore studying what is being defined with the term "supply chain". To these aspects and issues is dedicated the **insert 1**.

The work begins with **fact sheet S 1** which substantially proposes a study on the consumption and purchasing habits of seafood products (fresh, frozen, ready-to-eat, canned etc..) of the students' families, with the objective of gaining an overall view. Therefore, the students are requested, with the help of their parents, to list the different products they have at home and for each of them, to find some information such as the origin, the manufacturer and the price. This activity, besides showing the initial data with regards to export countries and the origin of the resources (subject of the work of the following sheets), allows learning how to research information on consumer products. This will enhance a very valuable skill with regards to responsible consumption which we will discuss in module 5.

In **fact sheets R 2 and R 3** the theme of seafood economy (fishing and aquaculture) in the world is dealt with the purpose of identifying the current condition.

The students are therefore asked to do a research aimed at identifying the main countries involved in the seafood market, specifying if they are import or export countries (of fishing and aquaculture products).

In parallel with the protagonist countries of such market, the objective is to focus the attention also on the areas of origin of the

catch (fishing areas, fact sheet R 3). The information found by the students will be able to be commented on and discussed in the classroom by drawing up maps and drawings (or graphs and summarizing tables for the oldest pupils).

In order to better meet the purpose of these fact sheet, we suggest to plan a public library research session during which the students are organized into teams (i.e. one team per continent) with final (in class) confrontation, unification and share of found information and contents, thus permitting an improvement of research and teamwork students' skills too.

Finally, this work of research and confrontation allows comparing the economic aspect with the environmental one and examining how much the world population, and therefore, the world economy, depends on the exploitation of a relatively limited number of fishing areas and, consequently, of seafood stocks.

**Fact sheet E 4** instead deals with the aspect which is directly related to the marketing of seafood resources.

With this objective in mind, the student is required to reorganize in a logical manner the different steps that the seafood has to go through in its journey from the sea to the table. In particular, two situations are proposed: the first one is a reconstruction of the journey of a fish coming from China and the second one of a fish that was caught in Liguria.

This allows learning what the term "supply chain" means and thinking about the effect that the "distance" of a resource has on the product (in terms of quality and price) and on the environment (carbon footprint).

**Fact sheet E 5** talks again about the concepts of economy of the seafood market which was the object of sheet 2, in order to re-elaborate them and show them in graphic form by drawing a geographical map which represents, on the continents, the countries exporting and importing seafood products and on the oceans, the geographical areas which bound the different fishing areas.

Finally, in the activity of verification (**fact sheet T 6**), all students are invited to do a research on a country of their choice among those that have been identified with the purpose of having, overall, a complete and in-depth picture of the fishing economy. To get the best results in this assignment, the teachers are recommended to invite the students to choose different countries on which carry out their research.

The activities of this module offer, besides learning the topics that are dealt with, the opportunity to apply and expand the knowledge acquired in the geographical sector and to elaborate and propose the topics under discussion in a personal manner.

## INSERT 1

### “AN OUTLINE OF THE SEAFOOD ECONOMY”

*With the purpose of examining the marketing and economic aspects related to the seafood production, we deem appropriate to relate hereinafter some information and general data which can be useful and provide some suggestions to deal with this module. The aspects related to the sales processes and price formation are more precisely dealt with and a synthesis on the current condition of the world seafood economy is introduced.*

#### The sales process

Once the fishing activity has ended, always at sea, the sorting activity of the edible products begins: the washing, the selection of the product according to size and species, the packaging into cases, the icing, refrigeration and storing in the freezers on board. After returning to the harbour and the unloading of the cases, the land stage begins, with the product being sent to the retailers, the fishmongers, the seafood market and/or the processing establishment. All these operations have to be performed quickly and they have to guarantee optimal quality levels. The cold chain is an important factor.

Conveying the product to the market has also to be promptly, where the first marketing process and even the price transformation usually begin. This process also needs to be done rapidly in order to avoid useless waits which could compromise the freshness of the

product and, therefore, its right price.

Going back to the unloading operations, it is necessary to underline that, often, these are carried out in harbours that are different from those where the market to which the product has to be conveyed is located; in such instance, the market is reached by land with trucks adequately equipped for cold storage. In the majority of countries in the European Union, fresh fish is sold to the production or auctioned in the harbour markets, which have to ensure a series of operations aimed at guaranteeing that the sale takes place according to the existing laws.

*The wholesale seafood market can be defined as a complex of organized services of public interest, aimed at a rational marketing and a quick sorting, keeping the cost at the best market conditions. The essential functions that a market has to guarantee are:*

- *a balanced, rational and transparent process of price formation, therefore a marketing guarantee;*
- *the safeguard of the production through an efficient process of valorisation of its products;*
- *the quickness and dynamism in the sales operations, in relation to the characteristics of the products and their easy perishability;*
- *the concentration of the two variables, demand and offer, to guarantee a real price quotation;*
- *health and hygienic guarantees.*

*Therefore, the seafood market represents an important infrastructure in the process of marketing and distribution of fishery products; an essential ring of the marketing chain which starts from the producer and arrives to the final consumer.*

From a typological point of view, it is possible to identify three essential categories in which wholesale seafood markets can be classed:

- production markets or origin's marketplaces;
- mixed markets;
- consumer markets.

Within these categories, additional sub-classes can be identified; it is possible to talk about redistribution or sorting markets, terminal markets, mixed production and consumer markets, production and redistribution, and consumer and redistribution markets. In any case, the typological definition is given by the function that the marketplace has in the sales process. In the production markets the public auction system is mandatory, because the product has to get its price established the first time it is marketed. Instead, in the consumer markets, the sale is represented by a direct negotiation between the seller and the buyer, as those are products that have already received their quotation. Finally, in mixed markets, both systems are used depending on the product for sale.

### The process of price formation

We have already mentioned how the seafood product is characterized by a rapid perishability; therefore, its marketing life is very short, which contributes to weaken the

bargaining power of the producer. In other terms, the product's dwell times, from the moment it is caught to the moment when the same is transferred to the consumer through marketing and retail processes, have to be as short as possible.

*In summary, we can illustrate the factors that affect the price formation processes of the seafood products as follows:*

- offer, based on the quantity that has been unloaded and given to the market;
- demand, based on the number of buyers present in the market structure, on the propensity to buy and on the income capacity of the consumer area;
- efficiency, quickness and rationality of the market operations and of the sales processes;
- hours of operations and opening days;
- seasonality;
- fish species, size and conservation status;
- food habits and health expectations of the consumers.

Some of these factors affect more directly the quality of the product and its quality grading, instead, others are elements which, together with quality, influence the dynamics of price formation.

*Consequently it is important to consider that the same fish species can, depending on the markets and consumer areas, receive a different quality grading and therefore, a different price.*

### An outline of the current condition of the seafood production and economy (from FAO sources, 2008)

Capture fisheries and aquaculture supplied the world with about 110 million tonnes of food fish in 2006, providing an apparent *per capita* supply of 16.7 kg (live weight equivalent), which is among the highest on record. Of this total, aquaculture accounted for 47 %. Outside China, *per capita* supply has shown a modest growth rate of about 0.5 % per year since 1992 (following a decline from 1987), as growth in supply from aquaculture more than offset the effects of static capture fishery production and a rising population. In 2006, *per capita* food fish supply was estimated at 13.6 kg, if data for China are excluded. Overall, fish provided more than 2.9 billion people with at least 15 % of their average *per capita* animal protein intake.

Fish and fishery products are highly traded with more than 37 % (live weight equivalent) of total production entering international trade as various food and feed products. **A specific feature of the trade in fish is the wide range of product types and participants.** In 2006, 194 countries reported exports of fish and fishery products. World exports of fish and fishery products reached US\$85.9 billion in 2006. This represented an increase of 9.6 % on 2005 and of 62.7 % on 1996.

*The growing exports of the last few years reflect the increase in consumption of fish and fishery products not only in the EU and the United States of America but in many other regions of the world, including Asia (with the notable exception of Japan). Furthermore, progress in processing, packaging,*

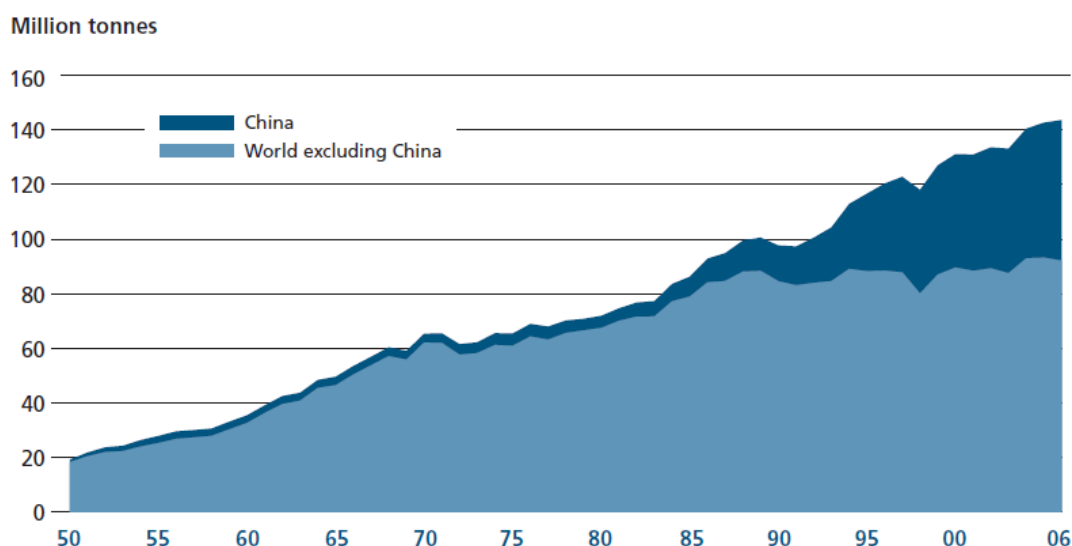
*handling and transportation has enabled more rapid and efficient trade. Rising trade quantities (except for fishmeal) and values reflect the increasing globalization of the fisheries value chain, with the outsourcing of processing to other countries. At the same time, the growth of international and global distribution channels through large retailers has furthered this development.*

Developing countries have significantly increased their share of the quantity of fish exports destined for human consumption, from 43 % in 1996 to 53 % in 2006. But, the fishery industries of developing countries rely heavily on the markets of developed countries, not only as outlets for their exports, but also as suppliers of their imports for local consumption (mainly low-priced, small pelagics as well as high-value fishery species for emerging economies) or for their processing industries. In 2006, in value terms, 40 % of the imports of fish and fishery products by developing countries originated from developed countries. In fact, owing to the above-mentioned phenomenon of outsourcing, several developing countries are importing an increasing quantity of raw material for further processing and re-export to developed countries. Fishery exports of developing countries are gradually evolving from raw material for the processing industry in developed countries to value-added products and also high-value live fish. In 2006, in value terms, 75 % of the fishery exports of developing countries were destined for developed countries. A share of these exports consisted of processed fishery products prepared using imported fish.

	2002	2003	2004	2005	2006
<i>(Million tonnes)</i>					
<b>PRODUCTION</b>					
<b>INLAND</b>					
Capture	8.7	9.0	8.9	9.7	10.1
Aquaculture	24.0	25.5	27.8	29.6	31.6
<b>Total inland</b>	<b>32.7</b>	<b>34.4</b>	<b>36.7</b>	<b>39.3</b>	<b>41.7</b>
<b>MARINE</b>					
Capture	84.5	81.5	85.7	84.5	81.9
Aquaculture	16.4	17.2	18.1	18.9	20.1
<b>Total marine</b>	<b>100.9</b>	<b>98.7</b>	<b>103.8</b>	<b>103.4</b>	<b>102.0</b>
<b>TOTAL CAPTURE</b>	<b>93.2</b>	<b>90.5</b>	<b>94.6</b>	<b>94.2</b>	<b>92.0</b>
<b>TOTAL AQUACULTURE</b>	<b>40.4</b>	<b>42.7</b>	<b>45.9</b>	<b>48.5</b>	<b>51.7</b>
<b>TOTAL WORLD FISHERIES</b>	<b>133.6</b>	<b>133.2</b>	<b>140.5</b>	<b>142.7</b>	<b>143.6</b>
<b>UTILIZATION</b>					
Human consumption	100.7	103.4	104.5	107.1	110.4
Non-food uses	32.9	29.8	36.0	35.6	33.3
Population ( <i>billions</i> )	6.3	6.4	6.4	6.5	6.6
Per capita food fish supply ( <i>kg</i> )	16.0	16.3	16.2	16.4	16.7

World fisheries and aquaculture production and utilization. NOTE: excluding aquatic plants.

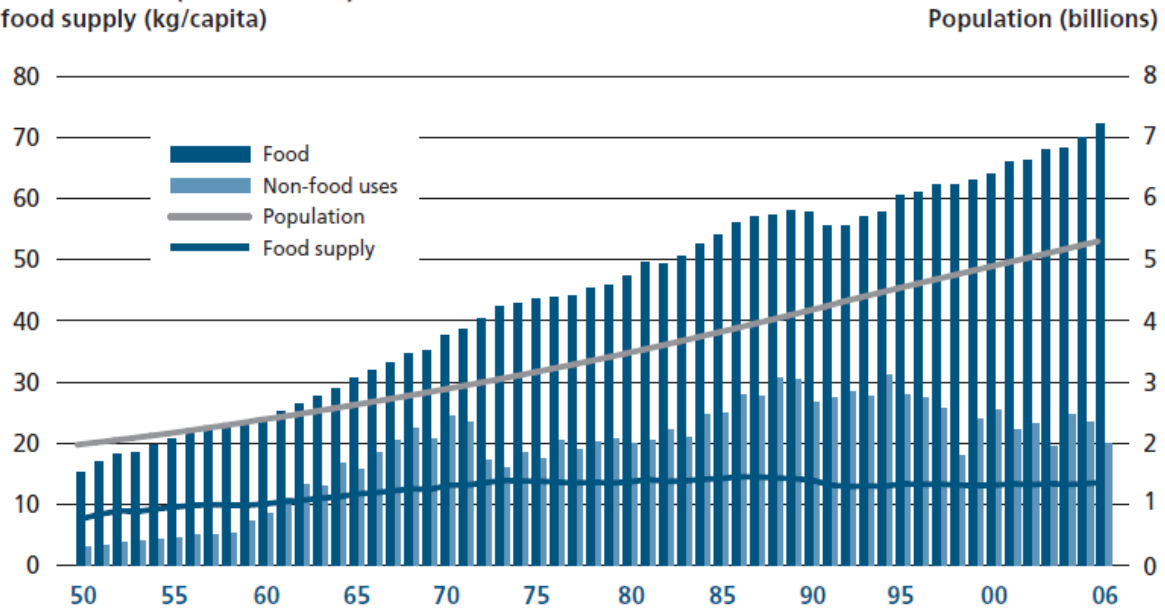
(from FAO source "The state of world fisheries and aquaculture 2008")



World capture and aquaculture production.

(from FAO source "The state of world fisheries and aquaculture 2008")

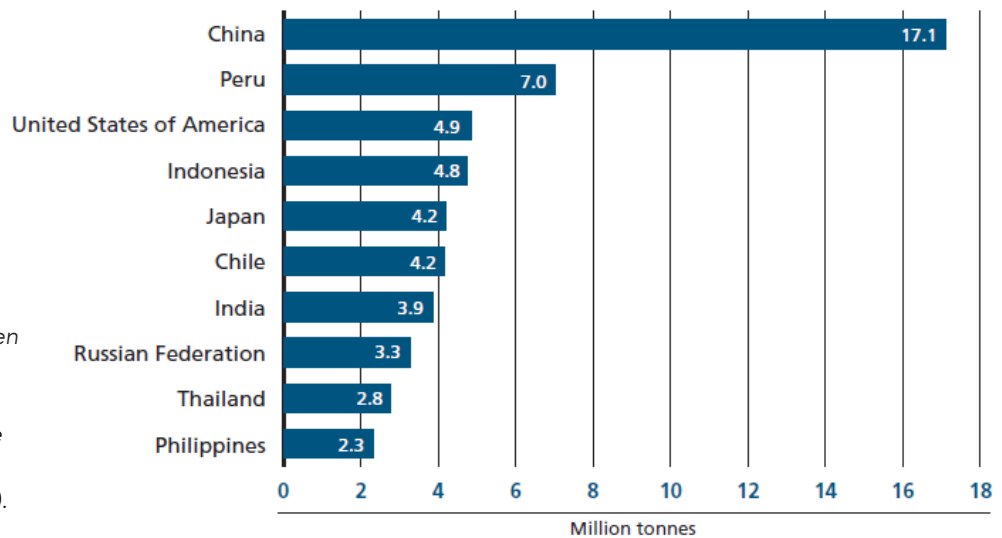
**Fish utilization (million tonnes) and food supply (kg/capita)**

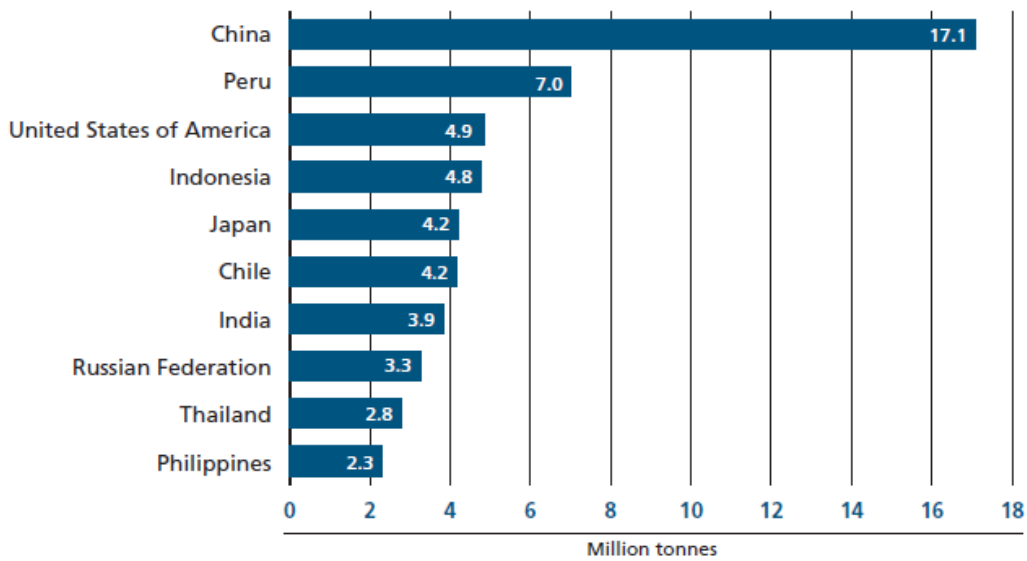


World fish utilization and supply, excluding China.  
(from FAO source "The state of world fisheries and aquaculture 2008")

**Marine and inland capture fisheries: top ten producer countries in 2006.**

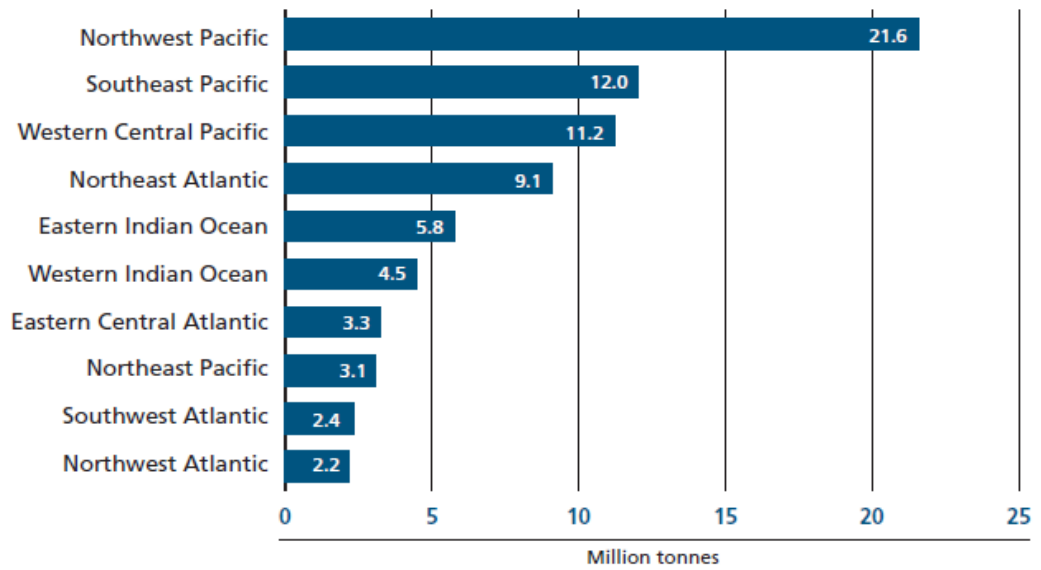
(from FAO source "The state of world fisheries and aquaculture 2008").





Marine capture fisheries production: top ten species in 2006. (from FAO source "The state of world fisheries and aquaculture 2008").

Capture fisheries production: principal marine fishing areas in 2006 (from FAO source "The state of world fisheries and aquaculture 2008").





# Fact Sheet S 1

## "FROM THE SEA TO THE TABLE"

With your parents' help, look in your kitchen for all the seafood products that you have (fresh, frozen, canned, ready-to-eat). Then do the following exercises.

 List the seafood products hereunder and for each one indicate its origin and price.

Product	Origin	Price/kg
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

 How many times per week do you eat...?

Fresh seafood ..... Canned seafood .....  
 Frozen seafood ..... Ready-to-eat seafood .....

 How much does your family spend per week for?

Food	€/week	Food	€/week	Food	€/week
Seafood		Fruit		Pasta/Rice	
Meat		Vegetables		Bread	
Eggs/Dairy product		Pulses		Other	

 Where does your family usually buy seafood?

.....



## Fact Sheet R 2 "THE FISHERY AND AQUACULTURE WORLD"

Look for the following requested information on fishery and aquaculture economy.

 Write the definition of "import" and "export".

Import:.....

.....

Export:.....

.....

 Indicate, for each listed continent, the nations living on fishery and/or aquaculture activities.

Europe:.....

America:.....

Asia:.....

Africa:.....

Oceania:.....

 Among these, which are the main exporters of fishery and aquaculture products respectively?

Fishery products exporters

Aquaculture products exporters

.....

.....

.....

.....

.....

.....

 On the other hand, what are the main seafood products importers in the world?

.....

.....



# Fact Sheet R 3

## "THE FISHING AREAS"

Look for the main fishing areas of the world and, for each one, indicate the main seafood resources exploited.

Mediterranean Sea

*Anchovy*

.....  
.....  
.....

Northeast Atlantic Ocean

.....  
.....  
.....  
.....

Southwest Atlantic Ocean

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.....  
.....  
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Southeast Pacific Ocean

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.....  
.....  
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Western Central Pacific  
Ocean

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.....  
.....  
.....

Eastern Indian Ocean

.....  
.....  
.....  
.....



# Fact Sheet E 4 "THE FISH TRIP"

From the sea to the table, seafood make a certain trip. Put in the correct order the following legs of the journey that a fish has to make to reach your table.

Two cases are presented :

-  1) A fish from Eastern Pacific Ocean (example from China)  
B, .....
-  2) A fish from Mediterranean Sea (example from Italy)  
H, .....









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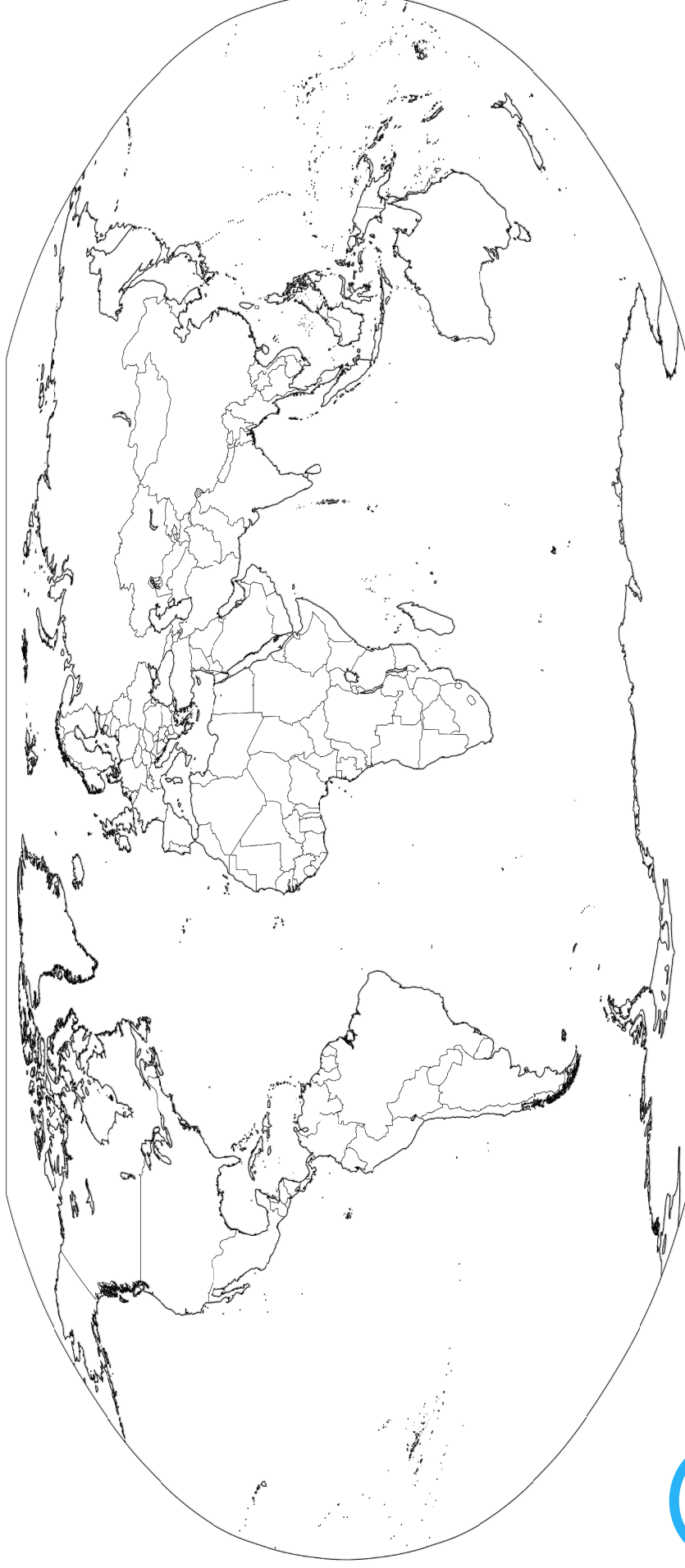
Note: some legs can be repeated or missed as well



# Fact Sheet E 5 "THE SEAFOOD ECONOMIC MAP"

Now draw a map in which you highlight:

- on the mainland, the main seafood importer and exporters nations
- on the oceans, the main fishing areas



Main fishing areas



Main seafood importers



Main seafood exporters

- choose a colour -

- choose a colour -

Compare your map with those of your classmates.

