

Grain 1 : Importance of aquaculture and challenges of the seafood global market

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Introduction

Although it is an activity that emerged several thousand years ago, aquaculture has been growing and facing major changes over the past last century. It often arouses curiosity and enthusiasm, it also sometimes causes fears and rejection. Critics include its impacts on the environment and biodiversity, its social consequences, the use of non-sustainable raw materials such as fishmeal, or the quality of its products, forgetting that aquaculture is also a sustainable and traditional activity, that distinguishes itself by its ability to recycle bio-resources locally available.

Today, the farming of aquatic organisms has become a major economic activity. More than one fish consumed out of two has been produced by aquaculture. Is it a good outcome? How is the farming of aquatic animals? What is the reality of farmed fish?

It is to answer those questions that this module has been conceived, by presenting aquaculture as it is practiced today.

History of aquaculture

Although it is often perceived as a modern activity, fish farming is in reality a multi-millennium-old practice.

It is generally considered that it emerged in China 4 or 5000 years ago, although some authors also consider Mesopotamia, Egypt or Australia as its centre of emergence. The oldest fish farming treaty has been written by Fan Li in 475 BC and evidences of fish farming have been found in Antiquity. In France, the oldest proof of pond establishment has been found in a document established in 1220 in les Dombes province and it is in the Middle-Age that fish farming developed on a significant scale under the impulse of religious orders.

Aquaculture has not always been supported, on the contrary. After the Middle-Age pond and marsh-related disease have justified their draining and conversion into agriculture land. This anti-pond trend culminated during the French revolution and even the famous Danton declared "We are all of the conspiracy against the carps, willing rather to the reign of sheeps"!

Current importance of aquaculture

In 2012, aquaculture produced a little bit more than 90 millions de tonnes, among which 44 millions de tonnes of fish originating at 87% from Asia. China alone contributes to 55% of the global production, Europe & America to 5% each and Africa, to 3%. If the surface of the planet was proportional to the production of each region, here is a representation of what Earth would look like today.

This landscape did not change much over the last 60 years, even if between 1950 and 1970, Europe, North America & Asia were responsible for most of the global growth, whereas since the 1990's, it is rather in South America & Africa that the most significant dynamics are located.

Fish farming is the sector of animal production that had the strongest growth in the last five decades and since 2011, it produces more than cow farming.

It also reached the same level as fisheries as regards to production of fish for human consumption. Indeed, if only one fish out of 25 consumed was originating from aquaculture in the 1960's, according to FAO, it now produces more than half.

Fish farming is an activity largely dominated by freshwater species that account for 85% of the global production. It is also a tropical activity since nearly 8 fish out of 10 come from warm countries (excluding China).

Its potential is significantly higher than the few species that today dominate the production. Unlike what can be observed with other forms of agriculture, many aquatic animals and plants are farmed. FAO identified 567 of them in 2012, among which 354 are fish. This number increased by 170% in ten years! However, the production level of most of those species remains insignificant, as the 10 most produced fish account alone to 75% of the global production, whether in marine or freshwater

In terms of social-economic impact, fish farming is major source of employment, food and livelihoods, particularly for the small rural communities of tropical countries. In 2012, almost 19 millions people worked in aquaculture, that is to say, almost the double of direct employments in less than 10 years. But it has also become a major economic for large multinational companies. In 2012, its sales reached 87 billions dollars, *versus* 29 billions ten years ago.

Aquaculture is also a truly globalised activity. Today, 40% of all fish produced is traded on global exchanges, and more than two thirds of developing countries' export is delivered to developed countries

In volume, Asia is the first global exporter and European Union, the first importer, but fluxes could change significantly in the future with Asia expected to represent 70% of the world consumption in 2030.

This raises a true challenge in terms of food security, because the global demand for fish will continue to increase, for demographic reasons as the global population

should increase by 2 billions people in 2050, but also because of a change in diet as middle-class consumers generally consume more fish.

FAO considers that by 2030, fish farming will have to produce two third of the global fish production to satisfy the demand, as a result from stagnating fisheries, even if progress margin exist through better management of wild stocks.

Another concern relates to Sub-Saharan Africa that could face a critical situation if its fish production does not increase faster. Indeed, The World Bank considers that if nothing changes, fish availability will decrease by 1% annually to reach 5.6 kg per capita and per year by 2030, due to a demographic growth that exceed the fish production growth expected on the continent.

Another concern relates to Europe which dependency to fish could also create a food security problem if its consumption does not decrease and if its reliance to imports remains as high as it is today: as a matter of fact, one fish out of two has to be imported in 2014 to satisfy the internal demand. And the situation is even worse in France, which is only 38% self-sufficient. Indeed, one French person consumes on average 34,6 kg fish every year, which almost twice the rest of the world: 18,9 kg per year on average.

In this context, how to produce more fish without harming the environment and without overfishing the wild stocks? The question is all the more complicate that the hardly predictable effects of global change will start to be perceived in a few years. We will consider these topics in the coming videos.