



In response to the European Union's Green paper on fisheries:
the Mediterranean branch of the Fisheries and Development Collective and *L'encre de mer*
(« sea ink » journal) propose this paper as a prospective commentary on fisheries in 2020.

Fisheries in 2020

an environmental approach at the global level

an economic and social organisation on the human scale

Environmental interactions from the viewpoint of biodiversity, centred on plankton...

It is now almost 10 years since we ceased to reason in terms of fish stocks in order to fully take into account environmental interactions on a global scale:

- the food chain of our oceans and seas is understood from regular observation of plankton and of its diversity, in particular close to the shore. The recruitment of 'forage' fish depends on the state of the plankton, and these fish in turn feed those that later find themselves on our menus.
- biodiversity based on the diversity of the fauna and flora constitutes the wealth of our marine territories. The emphasis is on the observation of this diversity and the understanding of marine and coastal ecosystems. Artisanal fishers and shellfish farmers, through their knowledge and regular presence on the water, feed into the daily monitoring process carried out by scientists.

... Leading to the concept of a global resource and focus on coastal management

We have understood that the deep sea marine resource, previously harvested essentially by industrial fishing vessels, depended on the state of our shores, which were most often maintained by artisanal fishers ; and that as a result the old sectoral divide had no basis in independent stocks. We have also understood the strategic interest in reducing pollution coming from the land, and even from the air in areas of serious atmospheric pollution, since the latter impoverishes planktonic diversity and as a result future sources of marine production. Great vigilance is therefore brought to the problem of discharges and effluents from adjoining coasts, and to atmospheric emissions which, by the action of the waves, end up in our waters, as a result of various maritime activities such as transport, and extraction... The lagoon and coastal environments, which are the source of great wealth, are closely monitored. In view of the ever increasing practice of recreational fishing and underwater hunting, these activities are now severely restricted (each angler having to limit his catch, with gear restrictions, and prohibition of mechanical hauling in recreational fisheries...). Everyone is surprised at the natural productivity of coastal zones since they have been restored and well-managed.

The Fisheries and Development Collective and « *L'encre de mer* »

Head office: 1 avenue de la Mame - 56100 Lorient - T. 02 97 84 05 87 - peche-dev@wanadoo.fr - http : www.peche-dev.org
Mediterranean branch : 29 Montée Sœurs Vincent - 83110 Sanary - T. 06 77 50 09 21 - encredemer@yahoo.fr - http : www.l-encre-de-mer.fr

Fisheries and aquaculture production choices adapted to environmental interaction...

Industrial fisheries and culture of carnivorous species have become marginal since they have been obliged to integrate environmental issues (diesel, CO₂ emissions, percentage of discards and 'trash-fish', protein wastage, pollution...) and social costs ; and since consumers have become very watchful with regard to the quality of products (loss of quality of frozen products, concentration of pollutants in fishmeal...). In fact fishing with a view to the production of fishmeal, which used to account for almost one quarter of world catches¹, has been stopped for several years now as a precautionary measure while the impact on the food chain of large-scale capture of 'forage' fish² has not been demonstrated.

... with high priority being given to artisanal fisheries because of its ability to adapt to ecosystems.

Artisanal fisheries, thanks to its territorial aspect³, is fully integrated in the environmental, social, economic and cultural management of marine territories ... Artisanal fishing practices are no longer considered one by one, but with respect to their impacts on the richness and biodiversity of marine territories. Artisanal fishers and scientists work closely together to refine techniques, improve their distribution in time and space on the basis of indicators that reveal the biodiversity of the plankton, fauna and flora, and of the observation of fish sizes. Not only is the analysis of living creatures done well upstream (unlike biological models for the estimation of stocks which were used as the basis for the former management of fisheries), but research is focused on the best combinations of selective gear, according to the potential of the territories.

The instruments of an artisanal fishing policy that is an integral part of territorial management...

The training of fishers includes learning various local artisanal techniques and the promotion of various catching methods, thanks to the participation of fishers themselves and much 'learning-by-doing' on the high seas. Apprentices and confirmed fishermen take lessons on the functioning of marine ecosystems, on how to observe, preserve, restore and repopulate them (artificial reefs, stocking of juvenile fish from cooperative hatcheries).

Fishers are allocated space in each territory according to the frequency and intensity of their customary use. General objectives are set on a large scale but their application at local level is the subject of consultations between representatives of different activities. Given the strategic importance of artisanal fisheries, the fishing positions are given priority and protected, as are mooring places at quayside and required port facilities. The creation of marine protected areas is no longer a goal defended for its own sake, but an instrument available to stakeholders, taking into account the specific situations of each marine territory. Each coastal municipality must, depending on its original situation, keep a certain area in its natural state, especially in the coastal fringe, which has reduced the latter's urbanisation, as well as its impact on the coastal fauna and flora.

Encouraged by cultural programs and information campaigns, consumers have discovered the seasonal species at local level, which has reduced the massive imports of both wild and cultured fish products. In each region, in countries in both North and South, artisanal fishing contributes fully to economic and social development of the marine territory.

¹ 100 Mt for world catches divided into 60 million tonnes for direct human consumption, 30 Mt for fishmeal, and 10 Mt of discards.

² Small pelagic fish, on which feed other species down the food chain and are called, very functionally, "forage fish".

³ The difference between industrial and artisanal sectors can be explained in a schematic way (to be qualified according to different fields of study) as follows: while the fishing industry seeks to combine, within a period of time t, the most profitable components (sources of finance, fish stocks, fishing areas, crews, markets ...) by playing on mobility, artisanal fishing tries to adapt itself, over time, to the components of a marine territory (behavior of species in a particular area, requirements of specific customers, know-how of crews that are based in the territory ...). The concepts of « sustainability, environment, territory ... » are an integral part of the artisanal logic while the industrial logic denies the territorial principle and relies on instantaneous capture ...

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... With a decentralized management system and strong cooperation of European institutions.

The Directorate General of Fisheries of the European Union no longer seeks to manage and monitor the activity in a top-down fashion but strives to advance knowledge about ecosystems and plankton, to circulate information and results of experiments from one territory to another, to organize exchanges in order to promote good management of territories and to maintain environmental, social and economic consistency between territories.

The actual management of marine territories is therefore at the local level ; it is delegated to the fishers who collectively decide the rules and customs, and benefit from the help of scientists in order to achieve this. Fisheries management by the quota system is replaced by management according to fishing effort, the fisheries management units collectively deciding which are the best practices for their respective territories (in terms of gear, spatial and temporal allocation, adjustment measures ...). Innovation of an artisanal nature is encouraged in order to develop the versatility of the fishers. Any new practice whose impact could be significant in relation to the stability of the fishery leads to collective decisions (testing, precautionary rules...). Aquaculture of non-carnivorous species (mussels, oysters, scallops, algae ...) has been developed (especially out at sea) either as a complementary or a full time activity. Each fisher undertakes to use all means to preserve the marine territory and respect the work of others. The fishing community identifies monitoring methods and disciplinary measures.

The end result is that ...

... The change brought about in the space of ten years is instructive. Nature, and its constraints, have taught us the risks of the mathematical notion of infinity when applied to financial, economic and social development and the need to work in harmony with all living beings. This new target, which is essential for the future of our planet, is gradually mobilizing minds rather than the basic quest for the accumulation of goods and capital, together with social and political "representation" through the media. These changed objectives are being reached gradually, by fostering competitiveness on the basis of know-how rather than the accumulation of capital. Moreover, any idea of saleable individual rights to the resource or to the plankton has been abandoned : this was never a good idea for effective management of resources but, more importantly, presented a clear risk of undue appropriation of worldwide living resources. Increased awareness of the constraints and wealth of living resources, as well as the efforts deployed to establish places of consultation and decision-making on a human scale, give each stakeholder opportunities for political , social, economic, and cultural involvement, and a sense of individual and collective responsibility. Within this new framework for thought and concerted action aimed at preserving the environment for the future of our planet, women have gradually taken their place.

Instead of our previous system where individual initiative had to be authorised by the market, by social networks or by the media, which tended to isolate each individual, we now adhere to the idea of a need for cooperation to build our economic and social organisation on the basis of know-how and capacity for thought. It is a new direction for man to take in order to preserve his world for the future.

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