



Health as Marketing Strategy for Seafood

by Evelyne Nusalim



Fish: Friend or Foe? is a question often asked by consumers before buying fish as part of their menu. There is hesitation, which demonstrates that buying fish is not always a spontaneous decision like buying potatoes or meat, considered to be standard fare. This hesitation is caused by the consumer's uncertainty about the benefits and risks of eating fish.

Governments and institutions such as the Food Standard Agency in the United Kingdom recommend eating fish twice a week, because of its health benefits. On the other hand, outbreaks and diseases caused by eating fish create an image of fish as risky food.

The Benefits of Eating Fish

Eating fish is beneficial for health because it is low in saturated fat and high in protein and selenium. The Omega 3 (*n-3*) fatty acids in oily fish are derived from bioactive properties of EPA and DHA, which are both long-chain poly-unsaturated fatty acids, present only in the *n-3* fats from marine resources. Gaining EPA and DHA from other sources such as seeds, nuts and tofu is not an efficient process. For this reason, governments and institutions recommend consuming two portions of fish twice a week, including at least one portion of oily fish such as salmon, herring, mackerel or anchovies. It is commonly acknowledged that this reduces the risk of health problems such as cardiovascular disease, cancer, depression and Alzheimer's disease, among others.

The Risk of Eating Fish

Consumers' hesitation to eat fish is derived from their worries of pollutants, which includes contaminants such as mercury, polychlorinated biphenyls (PCBs) and dioxins, and chemicals such as antibiotics and pesticide residues.

To reassure consumers and to protect them from these risks, governments have established regulations to limit the level of these specific substances in fish, and in food generally. The European Union (EU), for instance, has established several types of limits or maximum levels for certain contaminants in foodstuffs

based on the principle of proportionality. According to their definition: "Maximum levels should be set at a strict level which is reasonably achievable by following good agricultural, fishery and manufacturing practices and *taking into account the risk related to the consumption of the food*".

In the case of contaminants, which are considered to be genotoxic carcinogens (chemicals capable of producing cancer by directly altering the genetic material of target cells), or in cases where current exposure of the population or of vulnerable groups in the population is close to or exceeds the tolerable intake, maximum levels should be set at a level which is 'as low as reasonably achievable'.

Table 1 shows that for the same contaminant, each species has different maximum levels. Therefore, the exposure to the contaminant when eating fish depends on the species. One of the most important contaminants in fish is mercury, which occurs naturally in the environment and can also be released into the air through industrial pollution, then falls from the air and can accumulate in streams and oceans.

Once in aquatic environments, mercury is converted by bacteria from inorganic to an organic form, methylmercury, which is then absorbed by the fish who live and feed in these waters. The level of mercury in fish depends on what the fish eat. Certain fish and shellfish build up more toxins in their systems than others, so that the levels of mercury in fish vary according to the species and living environments. Larger fish that have lived longer, such as swordfish, sharks, tilefish, and the king mackerel have the highest levels of methylmercury.

While each person has a personal "maximum safe mercury dose", some people are more susceptible to methylmercury poisoning than others. Methylmercury is removed from the body naturally, but it may take over a year for the level to drop significantly.

What blood mercury level in adults poses significant risk of mercury poisoning? A study

Species	Lead mg/kg	Cadmium mg/kg	Mercury mg/kg
Crustacean	0.5	0.5	0.5
Bivalve molluscs	1.5	1.0	
Cephalopods	1.0	1.0	
Fish in general	0.3	0.05	0.5
Swordfish	0.3	0.3	
Anchovy, Bonito, Grey mullet, Common two-banded seabream, Eel, Horse mackerel or Scad, Louvar, Sardine, Sardinops, Tuna Wedge sole		0.1	
Anglerfish, Atlantic catfish, Eel Bonito, Emperor, Orange roughy, Rosy soldierfish, Grenadier, Halibut, Marlin, Megrin, Mullet, Pike, Plain bonito, Poor cod, Portuguese dogfish, Rays, Redfish, Sail fish, Scabbard fish, Seabream, Pandora, Shark (all species), Snake mackerel or Butterfish, Sturgeon, Swordfish, Tuna			1.0

Table 1: The maximum levels of contaminants per species in the European Union.

conducted 30 to 40 years ago revealed that clear signs of nerve damage in adults were generally associated with blood mercury levels above 200 parts per billion. However, a recent study by Edward Groth during the Tides Centre's Mercury Policy Project revealed that no correlation has been found between the blood mercury level and the severity of symptoms.

Governments are taking strict precautions, establishing very low maximum levels of mercury with the intention of preventing consumers who eat fish regularly from being exposed to health dangers. The European Union set maximum levels of certain contaminants for products that are available on the market, as shown in Table 1 below, based on 'as low as reasonably achievable', rather than the maximum level of risk.

Consumers' Attitudes Towards Fish Purchase/Consumption

Research done in Nottinghamshire, United Kingdom among adults of 842 households revealed that more than half of the participants (57%) agreed that they purchased fish "mainly

for the health benefits". Approximately one-fifth (18.5%) reported being confused about which type of fish to eat for health reasons.

The participants consumed on average between one and four portions of fish per week. Only one-third (31.7%) of participants consumed two-portions of fish per week as recommended by the Food Standard Agency. These participants are ranked in the highest socio-economic group and are well aware of health issues.

Forty-six per cent of participants responded that they do not usually check where the fish came from, and the same percentage indicated that they are confused about which type of fish they should eat to protect fish stocks.

Farmed fish present a further source of confusion for a considerable number of participants, requiring clarification to enable consumers to make an informed choice. Low awareness levels are problematic as they are shown in this study to be associated with negative purchasing behaviour. The fact that the purchase of MSC fish is minimal was

revealed by other studies that followed the Nottinghamshire study.

In this study, consumers expressed their preference that chemicals should not be added to food, which indicates that health is a priority in the choice of food. They also indicated that simpler information and packaging would assist them in making healthy food choices.

Consumers' Perception: Fish versus Vegetables and Fruits

Consumers consider vegetables and fruits to be a better choice for the environment and safer food. The Centers for Disease Control and Prevention analyzed cases of food illnesses and outbreaks from 1998 to 2008 and reported that leafy vegetables are the largest source of food-borne contamination in the United States. Leafy vegetables caused illness to about 2.2 million people, which represent approximately 23% of the cases of food-borne illnesses each year. Vegetables, fruits and nuts caused illnesses of about 4.4 million people per year, while contaminated beef, pork, poultry and other meat affected about 2.1 million people. Pathogens found on meat, however, are generally more deadly than in vegetables.

Interestingly, these findings do not cause people to hesitate to eat vegetables, because they accept that outbreaks and illnesses caused by vegetables are just one-off incidents.

Food contamination that caused illness mostly occurred in foodservices, which accounted for 65% of the outbreaks and 74% of the illness, while 12.3% of the outbreaks and 21.9% of illness are associated with produce. Ten per cent of that was associated with improper handling after leaving the farm and 2.2% was associated with the manner in which it was grown. Improper handling and personal hygiene caused 13 percent of the outbreaks and improper handling at community events caused 14 percent of the outbreaks. Temperature control and eating over-ripe products and leftovers are often the reason for illnesses at home and foodservices such as restaurants.

Most food-borne illnesses are acute. The illness happens suddenly and lasts a short time. Generally, people tend to associate food-borne illness with seafood, other meat products or dairy, rather than vegetables or fruit. Generally, seafood is considered a luxury product which is often consumed on special occasions or



Fruits and vegetables: safer and more sustainable than seafood....?

Disagree/strongly disagree	Strongly agree/agree		Neither agree/disagree			
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
I buy fish mainly for the health benefits	425	57.0	182	24.4	138	18.5
I am confused about which type of fish I should eat for health reasons	131	18.5	172	24.2	407	57.3
I do not usually check where the fish has come from	336	46.0	182	24.9	212	29.0
I am confused about which type of fish I should be eating to protect fish stocks	333	46.1	184	25.4	206	28.5
I am not sure whether to buy farmed fish	272	38.4	268	37.8	169	23.8
I always check that the fish I am buying has come from a sustainable source	193	26.8	262	36.4	285	36.8

Table 2: Participants' attitudes towards fish purchase/consumption.

Source: *The dilemma of healthy eating and environmental sustainability: the case of fish*, Angie Clonan, Michelle Holdsworth, Judi Swift, Didier Leibovici and Paul Wilson.

Food category	Always	Often	Sometimes	Never
Free-range eggs	46.6	23.0	23.5	7.0
Local milk	27.1	17.2	24.6	31.1
Free-range poultry	21.2	25.1	37.9	15.8
Local eggs	18.7	17.6	38.9	24.7
Local vegetables	12.4	34.4	42.3	10.9
Local cheese	11.7	18.3	42.4	27.6
Fair trade tea/coffee	10.2	11.3	34.8	43.7
Locally produced meat	7.7	22.2	48.8	21.2
Organic fruit & fruit juice	7.7	11.5	39.4	41.4
Organic eggs	7.7	6.9	23.9	61.5
Free-range red meat	7.5	16.3	43.6	32.6
Locally produced poultry	7.0	15.2	46.2	31.6
Fair trade fruit & fruit juice	5.3	14.4	44.2	36.0
Organic milk	4.8	3.1	17.0	70.2
Organic poultry	3.7	8.4	35.3	52.5
Organic yoghurt	3.7	8.0	24.0	64.3
Red Tractor-approved foods	3.4	8.4	18.1	70.1
Fair trade chocolate	3.0	8.3	36.3	52.5
Organic vegetable	2.9	10.1	49.2	37.8
Organic breakfast cereals	2.4	4.2	17.6	75.8
Organic cheese	1.7	3.7	25.2	69.4
RSPCA Freedom Foods	1.6	2.9	15.7	79.8
Organic red meat	1.4	4.8	33.3	60.5
Marine Stewardship Council-approved fish	1.3	5.1	18.7	75.0
Organic chocolate	1.0	3.6	18.2	77.2

Table 3: Frequency of Reported "Sustainable" Food Purchase.

Source: *UK Consumers Priorities for Sustainable Food Purchases*, Angie Clonan, Michelle Holdsworth, Judy Swift and Paul Wilson.

Attitude Statement	Strongly agree/agree		Neither Agree/disagree		Disagree/ Strongly disagree	
Loose fruit and vegetables are a better choice for the environment	740	90.0	68	8.4	13	1.6
Supermarkets should do more to make sure food has been responsibly produced	734	89.3	77	9.4	11	1.3
I think it is important to buy meat that has been produced with good standards of animal welfare	711	88.5	79	9.8	13	1.6
I would prefer it if my food did not contain any added chemicals	689	86.5	86	10.7	26	3.2
It would be helpful to have simpler information about making better food choices for the environment	677	83.1	124	15.2	14	1.7
I don't like the idea of lots of animals being reared indoors	654	81.1	116	14.4	36	1.7
I am prepared to pay more for a better quality product	637	78.3	120	14.7	57	7.0
The rules should be changed to make it easier for British food producers to compete with foreign imports	636	78.6	143	17.7	30	3.7
The UK governments should take more responsibility for what kind of food is available to buy	636	78.6	126	15.5	53	6.5
The amount of packaging that food comes in really annoys me	635	78.0	113	14.0	60	7.4

Table 4: Attitudinal items with Highest Consumer Concurrence (top ten)

Source: See Table 3.

holidays. A bad image about seafood is created if a person and/or their party suffers from a food-related illness during this time.

Food-borne illnesses caused by vegetables or fruit are often detected after outbreaks. After an outbreak, governments immediately take action and give advice by assuring consumers that the necessary measures have been taken to protect public health. This leads consumers to

gain confidence in eating vegetables and fruit.

The Circle of Life: Healthy Ocean, Healthy Fish, Healthy People

Consumers are becoming increasingly aware of the environment and its relationship to the food they consume. However, consumers are often unaware of aquaculture products and how they are produced, thinking that fish naturally come from the sea or ocean. The media often



Healthy seafood for healthy people.

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publishes articles about pollution at sea, such as the oil spill in the Gulf of Mexico and the depletion of fish stocks, which led to quotas being imposed in many countries. This creates a negative image of seafood in the minds of consumers, who conclude that eating fruit and vegetables is a better choice for the environment. Ignorance about fish species and fish stocks also prevents them from eating more fish.

Oceans need to be healthy to produce healthy fish. For this reason, U.N. Secretary General Ban Ki Moon came forward with an initiative called “Healthy Oceans for Prosperity” which encourages member states, the private sector and civil society to make global and individual commitments to restoring the oceans to healthy, productive and resilient systems as a matter of urgency, against the appropriate baselines to ensure human well-being and prosperity.

Another effort by governments to keep the ocean healthy is to reduce the movement of hazardous waste between nations, and specifically to prevent the transfer of hazardous waste from more developed countries to less developed countries. In this regard, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal was established.

In the same way, the Stockholm Convention on Persistent Organic Pollutants, effective May 2004, aims to eliminate or restrict the production and use of persistent organic

pollutants (POPs), thereby preventing the use of persistent toxic compounds which could end up in rivers or the sea, thereby affecting the health of fish.

There is little to no awareness that hazardous waste dumped in the sea or oceans will end up on dining room plates. Healthy oceans are needed to produce healthy fish to make healthy people, who will manage the ocean to be healthy, creating a Circle of Life.

Global Challenges: The Dilemma of the Consumers and the Dilemma of the Fishermen

Fish stocks in the EU and in the rest of the world are already under pressure due to overfishing, illegal fishing and the use of unconventional catching systems such as explosives. There will not be enough fish for everybody to follow the recommendation to eat fish. This creates a dilemma for the consumer who now has to decide whether to follow the recommendation to eat fish for health reasons, or protect the fish stock through sustainable fisheries.

North Sea fishermen who are facing EU regulations are encountering another dilemma. In their Common Fisheries Policy, the EU determines the total allowable catches, which are catch limits that are set for the most significant commercial fish stocks, serving as quotas for the member states. However, one of the greatest scandals of contemporary fishing in the EU is the number of fish which are



 EVELYNE NUSALIM

Healthy ocean.

being discarded—fish which are thrown back overboard without being landed. This can happen for a number of reasons: because the fish are below the minimum landing size; they are of a species for which the vessel has no quota; they are not the species the skipper chose to target; or although large enough to land, they are rejected to make space in the hold for other, more valuable fish (“high grading”). For this reason, the European Union has imposed a “landing obligation”, which obliges vessels to land all catches including unwanted by-catch, which are to be included in the quota.

The North Sea fishermen established a manifesto against this landing obligation. They argue that fish species swim mixed, rather than species by species, which makes it difficult to selectively target a specific species. By-catch therefore is inevitable, but it often has less economic value than the target fish. Keeping the by-catch and including it in the quota, the fishermen claim, will lead to an economic disaster for the fishery sector.

Creative Solutions

In general, both governments and consumers agree that fish is beneficial for health. This has



Manifesto: no landing obligation.

created an environment in which most consumers buy fish for its health benefits. At the same time, governments have encouraged consumers to diversify their choice of fish to spread out the risk of contaminants in fish, which fish naturally acquire in their living environment. Consumers are therefore receiving mixed messages, and are also confused because they are not aware of the specific health benefits of each and every species of fish. They also do not know where they can buy these different species of fish. Meanwhile, the fishermen prefer to catch only certain species which have high economic value. They are not eager to diversify their catch with by-catch, which they figure has less economic value. A creative solution is needed to establish a compromise among the stakeholders.

In fact, consumers are ready to purchase different species of fish for health benefits. However, they lack information regarding the different



Low Mercury Eat as often as you wish	Low-Moderate Mercury Eat occasionally	Moderate – High Mercury; limit consumption	Very High Mercury Avoid eating – eat with care
Salmon	Butterfish	Seabass	Swordfish
Tilapia	American shad	Sable fish	Shark
Ocean Perch	Whitefish	Halibut	Tilefish
Whiting	American croaker	Sea trout	King mackerel
Pollock	Freshwater trout	Weakfish	Bluefin tuna
Hake	Pacific Mackerel	Scorpion fish	Bigeve tuna
Flounder	Cod	Pacific croaker	
Sole	Jack smelt	Bluefish	
Plaice	Canned light tuna	Canned albacore tuna	
Haddock	Sheepshead	Fresh/frozen tuna	
Sardine	Skate	Tuna steaks	
Herring	Freshwater perch	Chilean sea bass	
Anchovies	Monkfish	Spanish mackerel	
Mullet	Mahi-mahi	Grouper	
Catfish	Snapper	Marlin	
Atlantic mackerel	Buffalofish	Orange roughy	
Shrimp	Blue crab	American lobster	
Clams	King crab		
Oyster	Snow crab		
Crayfish	Squid		
Scallops	Spiny lobster		

Table 5: Recommendations for Seafood Choices

Source: *Over the limit: Eating too much high-mercury fish*, Edward Groth, PhD, Mercury Policy Project.

species and their unique qualities, which would help them, eat fish responsibly and healthily.

To avoid confusion regarding the term “sustainability”, a definition should be agreed upon among stakeholders. Through the landing obligation, governments have obliged fishermen to take all of the fish caught, without considering economic value, in order to protect the fish stocks. However, this obligation will not ensure the income of the fishermen. If information could be provided regarding the health benefits of by-catch, that might provide fishermen with the value they expect for their catch.

The most important aspects in this area are communicating the health benefits and risks, the promotion of aquaculture products, and how the whole chain is controlled to provide safe and healthy fish. This would increase consumer awareness in the benefits of eating fish, and provide them with a better understanding of the different species.

One way this could be achieved is by labeling fish products following the model of the

Mercury Policy Project, in which fish labels are colour tabbed, as shown in Table 5. Other means of reaching out to the community should also include, but should not be limited to, social media, information graphics, and school curricula and related projects. Through these means, business operators and regulators could support each other in the promotion of fish as part of a healthy diet.

Health as marketing strategy for seafood will increase consumer’s confidence in buying seafood as they do with vegetables and fruits. ~



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