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# Facilitating market access for producers: addressing market access requirements, evolving consumer needs, and trends in product development and distribution

## Expert Panel Review 4.1

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**Banks, J., Lem, A., Young, J.A., Yagi, N. Guttormsen, A., Filose, J., Gautier, D., Reardon, T., Palmer, R., Rad, F., Anderson, J. & Franz, N. 2012.** Facilitating market access for producers: addressing market access requirements, evolving consumer needs, and trends in product development and distribution, *In* R.P. Subasinghe, J.R. Arthur, D.M. Bartley, S.S. De Silva, M. Halwart, N. Hishamunda, C.V. Mohan & P. Sorgeloos, eds. *Farming the Waters for People and Food*. Proceedings of the Global Conference on Aquaculture 2010, Phuket, Thailand. 22–25 September 2010. pp. 495–524 FAO, Rome and NACA, Bangkok.

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## Abstract

As one of the most highly traded food commodities, fish and fishery products form a sector that is continuing to evolve. Trends in production, trade and consumption are significantly impacting prices, product development, distribution and most notably, overall market access for producers. This paper provides a comprehensive summary of these important and emerging trends while also exploring evident consumer attitudes and purchasing behaviours around seafood. These findings represent a tremendous opportunity for the seafood sector to analyze, interpret and adapt to changes in order to remain one of the most dynamic segments in global food trade. In addition, the paper presents a useful background on the current state of the seafood sector that will enable policy-makers to make informed decisions to move fish and fishery products forward in an effective way.

Major findings on production, consumption, trade, value-chains and consumer behaviour are presented. Total world fish production continues to grow, primarily due to increases in aquaculture. Consumption of fish and fish products has risen steadily, with urbanization and the growth of modern distribution channels increasing the potential availability of fish to the world's consumers. The trade outlook remains positive, with a rising share of production from both developed and developing countries entering international markets. China is by far the largest fish exporter, but imports are rapidly growing. Other major importers include the United States of America, Japan and the European Union. With the fisheries value chain becoming increasingly globalized, production and processing are increasingly being outsourced, mostly to Asia.

Switching perspectives from producers to consumers, some general attitudes emerge. Consumers increasingly express concerns about sustainability issues, especially overfishing. Research into consumer attitudes and behaviour confirms this, and it is predicted that sustainability will continue to gain importance. The opportunity exists for the seafood industry to build on sustainability standards, allowing consumers to understand them more clearly.

Based on this in-depth analysis of the seafood sector, some key recommendations are presented as to how the sector can continue to promote growth as well as how governments can be more effective in their support. Their wider implications include facilitating market access for producers and satisfying evolving consumer needs.

**KEY WORDS:** *Aquaculture, Consumer needs, Market access requirements, Product trends.*

## Introduction

The market for fish and fisheries products is a globalized market with almost 40 percent of total production entering international trade. Not only is this share higher than for other food or agricultural products, but the role of developing country exporters in total exports is also higher, with a share of around 50 percent. This underscores the sector's importance in contributing to local, regional and international food security in general and as a generator of economic activity, employment and of net export revenue to the developing world in particular.

International trade in fish and fishery products has grown strongly over the last decades. Despite the contraction in consumer spending after the crisis in 2008, the long-term trend for fish trade remains positive, with a rising share of both developed and developing-country production entering international markets. The potential for increased demand offers significant opportunities to aquaculture producers but also challenges their ability to find innovative ways to supply markets with products aimed at satisfying consumer needs. Potential methods could include new technology to provide more targeted portion sizes and taste varieties, as well as innovative packaging and communication strategies.

With fish production dominated by developing countries, it is no surprise that fish imports are mostly by developed countries, currently responsible for 77 percent of the total import value. This dominance presents a challenge to exporters from developing countries adhering to market access requirements as a prerequisite for entering international markets. In addition, the changing nature of these market access requirements, including the emergence of private and voluntary standards and requests for certification and labels for various purposes, puts additional pressure on producers, processors and exporters without necessarily offering higher prices to offset the additional costs incurred.

## Growth of aquaculture

Total world fish production (capture and aquaculture), continues to grow. Estimates for 2010 show a slight increase from the previous year to 147 million tonnes. China<sup>1</sup> confirms its role as the principal producer, reporting 48 million tonnes in 2008, of which 33 million tonnes derive from aquaculture<sup>2</sup>. Overall, 80 percent of world production of fish and fishery products takes place in developing countries.

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<sup>1</sup> Excluding Hong Kong SAR and Taiwan POC, which produced 0.2 and 1.3 million tonnes, respectively.

<sup>2</sup> In 2008, China revised its 2006 production statistics by about 13 percent based on its Second National Agriculture Census conducted in 2007. This implied the downward adjustment of global statistics by about 2 percent in capture production and 8 percent in aquaculture production. Historical statistics of China for the period 1997–2006 were subsequently revised by the Food and Agriculture Organization of the United Nations (FAO), with the revision process known and acknowledged by the Chinese authorities.

Total world fish production grew to 145 million tonnes in 2009, of which 55 million tonnes came from aquaculture. For 2009, the contribution of aquaculture to the supply of fish and fishery products for human consumption (excluding fishmeal) is estimated to have reached 47 percent of the total. The rise of aquaculture in production and trade is having a significant impact on prices, product development, distribution and consumption patterns. The exact share of aquaculture in trade, however, remains unknown, given that international statistics do not distinguish between the two origins.

Compared with production figures a decade ago, the current supply represents an increase of more than 20 million tonnes. This additional supply is entirely due to increases in aquaculture production. As seen in Table 1, preliminary data for 2010 indicate that 57 million tonnes (excluding aquatic plants) or 39 percent of total output is from aquaculture. The decline in the long-term growth rate of aquaculture production is, however, cause for great concern, not only in terms of future food security, but also from a technological and managerial perspective. Nonetheless, as the volume of aquaculture product expands it might be anticipated that growth rates would lessen. It is clear that in many countries, significant challenges remain in order for the aquaculture sector to reach its full potential and become economically, environmentally and socially sustainable.

Capture fisheries production has stabilized at around 90 million tonnes with some annual variation. Estimates for 2010 confirm aggregate supplies from capture fisheries of about 90 million tonnes. This is in line with the pattern seen over the last 15 years, with total annual catches oscillating within a band of 85 and 95 million tonnes, in particular as a result of the El Niño in South America.

## Large variance in consumption

World per capita consumption of fish and fishery products has risen steadily over the past decades from an average of 11.5 kg during the 1970s, to 12.5 kg in the 1980s and to 14.4 kg in the 1990s. Consumption in the 21st century has continued to grow, reaching 16.4 kg per capita in 2005 according to the most recent year for FAO food balance sheets. Preliminary figures for 2007 and 2008 show a new increase to 17.1 kg per capita. Estimates for 2009 show a slight increase to 17.2 kg per capita consumption, with the contribution of aquaculture to the food fish supply estimated at 47 percent of the total.

A large share of the rise in fish production in the world relates to China, where domestic consumption of fish and fishery products per capita has risen from less than 5 kg in the 1970s to the present 25.8 kg. In the world as a whole, excluding China's domestic consumption, average consumption per capita was 13.5 kg in the 1970s, rising to 14.1 kg in the 1980s, then falling to 13.4 kg in the 1990s. The average for the 2001–2005 period was a new increase to 14.0 kg per capita, which is still lower than the maximum levels registered in the

**TABLE 1**  
**World fish market at a glance**

	2008	2009 estimate	2010 forecast	Change 2010 over 2009
	million tonnes			%
<b>WORLD BALANCE</b>				
<b>Production</b>	<b>142.3</b>	<b>145.1</b>	<b>147.0</b>	<b>1.3</b>
Capture fisheries	89.7	90.0	89.8	-0.2
Aquaculture	52.5	55.1	57.2	3.8
Trade value (exports USD billion)	102.0	95.4	101.9	6.8
Trade volume (live weight)	55.2	54.9	55.3	0.7
<b>Total utilization</b>				
Food	115.1	117.8	119.5	1.5
Feed	20.2	20.1	20.1	-0.1
Other uses	7.0	7.2	7.4	2.8
<b>SUPPLY AND DEMAND INDICATORS</b>				
<b>Per caput food consumption</b>				
Food fish (kg/year)	17.1	17.2	17.3	0.3
From capture fisheries (kg/year)	9.3	9.2	9.0	-1.7
From aquaculture (kg/year)	7.8	8.1	8.3	2.6

Source: FAO, Food Outlook, Global Market Analysis, June 2010 (note that totals may not match due to rounding).

1980s. In essence, much of the increase in total production of fish in the world has not only taken place in China, but has been consumed in China. For the rest of the world, consumption per capita has been remarkably stable, oscillating around 14 kg. It must also be mentioned that on the whole, developed countries have a much higher consumption of fish than developing countries, 24.0 kg per caput for the first group, 14.4 kg the latter when including China and 10.6 kg when excluding China. However, average consumption today in the developed world is lower than in the 1980s, whereas developing-country consumption has risen in both absolute and relative numbers.

There are large regional differences in fish consumption per capita, but also within regions. As noted above, China's consumption has risen to 25.8 kg per capita in 2005. Asia excluding China consumes at present 13.9 kg per capita (positive trend in the 1990s, now declining), Europe consumes 20.7 kg (positive), and North and Central America consume 18.9 kg (positive). South America consumes 8.4 kg (declining) and Africa consumes 8.3 kg (positive trend but unstable), a below-average consumption per capita. The strong projected growth in population is likely to result in further declines in consumption in South America and Africa. Significant growth potential in aquaculture production may, however, help offset this situation.

In general, urbanization and the growth of modern distribution channels for food have increased the potential availability of fish to most of the world's consumers.

In some markets, this has indeed boosted fish consumption; in others, it has not. It is evident that economic and cultural factors strongly influence the level of fish consumption, and that availability alone is not the only factor.

## Long-term growth in trade

International trade in fish and fishery products grew strongly over the previous decade, reaching a new record in 2008. The economic downturn starting in the latter half of that year led to falling consumption in most countries, with a drop in imports registered in almost all markets throughout 2009. The proportion of world fishery production traded internationally (live-weight equivalent) was an estimated 37 percent in 2009. Despite the contraction in consumer spending in 2008 and 2009, the long-term trend for fish trade remains positive, with a rising share of both developed and developing-country production entering international markets. The rebound of demand in 2010 was significant, and trade figures started approaching former levels. The outlook remains positive, with new growth in trade expected, although some markets will only recover in the medium term.

Developing countries confirm their fundamental importance as suppliers to world markets, with close to 50 percent of the value and nearly 60 percent of the quantity (live weight equivalent) of all fish exports. Imports are mostly by developed countries, now responsible for about 80 percent of the total import value of USD108 billion<sup>3</sup> (2008). This was significant, as it was the first time imports exceeded USD100 billion. In volume (live weight equivalent), the share of developed-countries imports is significantly less, around 60 percent, reflecting the higher unit value of products imported by developed countries.

Net export revenues from fish trade earned by developing countries reached nearly USD27 billion in 2008. For many developing nations, fish trade represents a significant source of foreign currency earnings, in addition to the sector's important role in income generation, employment and food security. For low-income food-deficit countries (LIFDCs), net export revenues rose to USD12 billion in 2008. LIFDCs accounted for 20 percent of total exports in value terms, a slight decrease from the previous period.

In general, the long-term rise in aggregate trade values and volumes for all commodities (except fishmeal volumes) reflect the increasing globalization of the fisheries value chain. Production and processing is outsourced to Asia (e.g. China, Thailand and Viet Nam) and, to a lesser degree, to Central and Eastern Europe (e.g. Poland and Baltic countries), North Africa (Morocco) and Central America. Outsourcing of processing takes place both on the regional and global

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<sup>3</sup> Import figures differ from export figures because the former include freight costs, whereas exports are reported at FOB values.

levels, depending on the product form, labour costs and transportation time. In general, labour cost differences play a much larger role than transportation issues. Many species, such as salmon, tuna, catfish, Nile perch and tilapia, are increasingly traded in the processed form (fillets or loins). At the same time, the growth of international or global distribution channels through large retailers has furthered this development.

The rising share of developing countries in total fish production can also be considered a form of outsourcing of production and supply, at least for the part destined to enter international markets. The share of developed countries in total production fell from 29 percent in 1997 to 20 percent in 2007. The rising share of developing countries also reflects the significant increase in aquaculture, which through economies of scale and improved technology, has reduced costs and prices and thereby expanded the market overall. However, the fact that aquaculture in both developed and developing countries increasingly faces constraints in terms of space and water is significant and cannot be neglected.

The stagnation in aquaculture production in many developed countries can often be considered a societal choice. Space and water constraints, often caused by conflict with competing activities, not the least in coastal areas, and tightened regulations in general, make domestic production less competitive, and as a result, a growing share of domestic consumption is sourced from abroad, in particular from developing-country producers.

## **New and emerging markets**

China is by far the largest fish exporter at USD10.2 billion (2008), but its imports are also growing, reaching USD5.2 billion (2008). The increase in China's imports is partly a result of outsourcing, as Chinese processors import raw material from all major regions, including South and North America and Europe for reprocessing and export. It also reflects China's growing domestic consumption of species not available from local sources. Its main export markets are Japan, the United States of America, the European Union (EU) and the Republic of Korea. China will continue to dominate world production in the foreseeable future and will remain the largest exporter. As an importer, China is likely to soon overtake Spain as the world's third largest importing country behind only the United States of America and Japan.

The EU is the largest single market for imported fish and fishery products. This reflects its growing domestic consumption but also its increase to 27 member countries. The 2008 imports (EU-27) reached USD45.2 billion, up 7.8 percent from 2007, and represent 42 percent of total world imports. However, these statistics also include trade among EU partners. If intra-regional trade is excluded, the EU imported USD24.6 billion of fish and fishery products from non-EU suppliers, but this still makes the EU the largest market in the world, with about 23 percent of

world imports. It is important to note that EU markets are extremely heterogeneous with markedly different conditions from country to country.

The United States of America is the largest single import market and depends on imports for about 60 percent of its food fish consumption. With a growing population and a positive long-term trend in seafood consumption, imports reached USD13.6 billion in 2007 and USD15.0 billion in 2008. Imported quantities of fish products reached 2.5 million tonnes (product weight) in 2007, but fell slightly in 2008 to 2.3 million tonnes. The largest United States import item in value is shrimp, followed by salmon, lobster, crab and tuna. Together these represented 65 percent of import values in 2008. Of note is the strong increase in tilapia imports in 2008 (volume +3 percent, value +31 percent) and of catfish species (volume +21 percent, value +18 percent).

Japan, traditionally the largest single import market for fish, was overtaken by the United States of America in 2007. The long-term trend for Japanese fish consumption is, however negative, with meat consumption overtaking fish in 2006 for the first time. Japan depends on imports for about 56 percent of its food fish consumption. The main imported commodities are shrimp, tuna, cephalopods and salmon.

In addition to the three major importing markets, a number of additional markets have become of growing importance to the world's exporters. Prominent among these emerging markets are the Federation of Russia, Ukraine, Egypt and the Middle East in general. The number of individual markets of some relevance, i.e. markets with a total import value of a minimum of USD50 million, is approaching 85. This testifies not only to the global nature of fish trade, but also to how diversified trade has become.

In Asia, Africa and South and Central America, regional trade is of importance, although in many instances it is not adequately reflected in official statistics. Improved domestic distribution systems for fish and fisheries products have contributed to increased regional trade, as has growing aquaculture production. It must also be noted that domestic markets, in particular in Asia but also in Brazil, have proven resilient during the 2008–2009 period and therefore provided welcome outlets for domestic and regional producers.

The rise in consumption and imports in emerging economies goes hand in hand with the growth in consumer purchasing power and the adoption by middle-class consumers of international food habits and purchasing practices.

## Prices

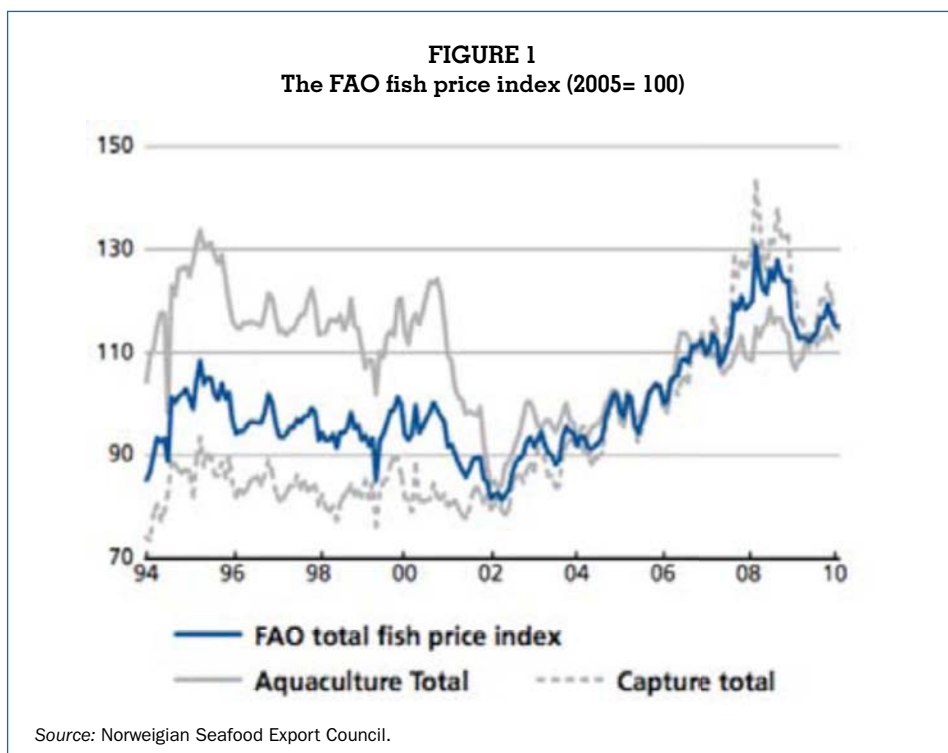
Like those of other products, fish prices are influenced by both demand and supply factors. However, the very heterogeneous nature of the sector, with



hundreds of species and many thousands of derivative products entering international trade, makes it challenging to estimate price developments based solely on supply and demand for the sector as a whole. FAO has initiated the construction of a fish price index<sup>4</sup> to better illustrate both relative and absolute price movements.

As seen in Figure 1, the aggregate FAO Fish Price Index increased markedly from 81.3 in early 2002 to 126.4 in September 2008, although with strong within-year oscillation. After September 2008, the index fell drastically, reaching 110.3 in March 2009. It has since recovered dramatically to 132 in December 2010 (base year 2005 = 100). This means that current fish prices are higher than they ever have been.

In addition to the aggregate index, separate indices have been developed for the most important commodities, as well as for capture and farmed species. It is interesting to note that the index shows quite separate price developments over time for captured fisheries and for aquaculture. The former increased significantly in the period 2002–2008, whereas aquaculture prices, despite some firming during the same period, were lower in 2008 than they were ten years ago. The main reason for this is most likely related to the cost of input



<sup>4</sup> The index is being developed in cooperation with the University of Stavanger and with data support from the Norwegian Seafood Export Council.

factors and the difference in production levels over this period; capture fisheries are frequently energy and capital intensive, whereas large-scale commercial aquaculture, although capital intensive, has benefited to a greater degree from technological improvements and economies of scale. This has increased yields in production, and together with improved logistics and distribution systems, permitted a significant increase in farmed output, but at lower prices.

However, because of the drop in demand during 2009 and reduced access to credit, many aquaculture producers cut back on production. As an example, farmed shrimp production registered its first decline ever in 2009. When demand picked up in 2010, the resulting shortage of supply quickly drove prices on many farmed species strongly upward. As a result, the index for aquaculture species showed an increase in value from 103 in December 2009 to 134 in December 2010.

## Value-chain developments

In general, the long-term rise in aggregate trade values and volumes for all commodities reflects the increasing globalization of the fisheries value chain. Production and processing is outsourced to Asia and, to a lesser degree, Central and Eastern Europe, North Africa and Central America. This includes the rising share of aquaculture production in developing countries. Outsourcing of processing takes place both at the regional and global levels, depending on the product form, labour costs and transportation time. In general, labour cost differences play a much larger role than transportation issues. At the same time, the growth of global distribution channels through large retailers has furthered this development.

A value-chain analysis can be useful in addressing emerging issues of relevance. Fisheries value chains contain numerous stakeholders and are impacted by the factors listed below to a varying degree, depending on their position in the value chain, their contractual relationship and the relative strength of negotiation in their relationship with suppliers and clients. In addition, whereas some of these factors are of a more transitory nature with an immediate market impact, others are of a long-term nature in which the real impact may only be speculative at this stage.

Some of the major issues concerning international trade in fishery products are:

- introduction of private standards by international retailers, including for environmental, ethical and social purposes;
- continuation of trade disputes related to farmed products (i.e. catfish species, shrimp and salmon);
- the growing concern of the general public and the retail sector about overexploitation of certain fish stocks, in particular of bluefin tuna;

- widespread concern in exporting countries about the impact on legitimate exports by the 2010 introduction of new traceability requirements in major markets to prevent illegal, unreported and unregulated (IUU) fishing;
- the approval by FAO conference at its thirty-sixth session in 2009<sup>5</sup> of the Agreement on Port State Measures to prevent, deter and eliminate IUU fishing;
- the proliferation of ecolabels and their uptake by major retailers;
- the increasing activity of high-profile non-governmental organizations (NGOs) in attempting to influence fish consumption and related trade patterns;
- organic aquaculture and the introduction of new standards in major markets;
- certification of aquaculture in general;
- the multilateral trade negotiations in the World Trade Organization (WTO), including the focus on fisheries subsidies;
- dissipation of economic rent in the fisheries sector due mainly to overcapacity;
- climate change, carbon emissions, food miles and the impact on the fisheries sector;
- energy prices and the impact on fisheries;
- rising commodity prices in general and the impact on producers as well as on consumers;
- the impact on the domestic fisheries sector from a surge in imports of farmed products, in particular of pangasiid catfish;
- the role of the small-scale sector in future fish production and trade;
- the availability of inexpensive communication technology and the uptake among small-scale producers to improve access to price and market information;
- notwithstanding information and communications technology (ICT) innovations, asymmetries in information flow present opportunities for value-chain actors (commonly downstream) to exercise controls;
- prices and distribution of margins and benefits throughout the fisheries value chain;
- increasing industrial concentration, notably within the retail (supermarkets) sector and to a lesser degree, foodservice, creating barriers to entry;
- the need for competitiveness versus other food products;
- economic integrity throughout the value chain; and
- perceived and real risks and benefits from fish consumption.

Of particular concern is the role of the small-scale producer, whether in capture fisheries or in aquaculture. The fragmentation of production and the vast numbers of operators at the first level of production has always weakened their commercial negotiating position. More recently, however, the fragmentation and lack of organizational structures have become a weakness in areas of quality and safety for which more formal structures are required, as these are necessary

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<sup>5</sup> FAO Conference at its Thirty-sixth Session on 22 November 2009, through Resolution No 12/2009, under Article XIV, paragraph 1 of the FAO Constitution.

for the implementation of new requirements such as traceability. As a response, small-scale producers in some countries, in particular in Asia, have developed producer groups or clusters. This has enabled them to share resources and enter the formal economy and the value chain on their own collaborative merit. In addition, it has facilitated transfer of know-how and experience, thereby improving production yields and economic results.

New regulations in major markets on traceability to prevent IUU fishing will, at least in the initial phase of implementation, place an additional burden upon many developing countries' fisheries, whether small-scale or not. From 1 January 2010, the EU's Regulation (EC) No. 1005/2008 requires that imports of wild-caught fish and fishery products supplied to EU member states from third countries be accompanied by a catch certificate validated by the competent fisheries management authority of the flag state of the vessel that caught the fish. Many exporting countries fear the impact on their legitimate exports, in particular where institutional weaknesses or lack of data prevent them from adequately managing their fisheries to the extent required. Although this regulation applies to products from capture fisheries, there is a general demand for improved traceability and certification for all fish and fishery products, in particular at the business-to-business level.

The fragmentation of fishery producers continues to hamper their ability to respond proactively to emerging issues and challenges advocated by consumer groups, retailers and civil society through NGOs, and to regulatory initiatives by governments. In particular, the harvesting sector has at times seemed reluctant to engage in a proactive dialogue with civil society and consumers on the legitimate role of modern fisheries and its future. A more active role in the debate involving producers, government, science and civil society would enable industry to address the issue of sustainability from an economic and social perspective, rather than being forced to respond to external pressure on environmental factors alone.

Over time, processors in developed countries have seen margins decrease, mainly due to high labour costs and strong competition from efficient producers in developing and transition countries. As a result, raw material is more frequently being sent to low-cost processing countries. In the European and North American markets, frozen products are frequently processed in Asia. Smoked and marinated products in Europe, for which shelf-life and transportation time is important, are increasingly being processed in Central and Eastern Europe. Processors have, through improved processing technology, been able to achieve higher yields and a more profitable product-mix from the raw material. Producers of traditional products, in particular of canned fish, have been losing market share to suppliers of fresh and frozen products as a result of long-term shifts in consumer preferences. Consequently, the price of canned fish products has dropped in most markets.

One widely debated issue, especially among producers, is that of the role of the retail sector within the distribution channel. It is often stated that the retail sector takes a disproportionate share of the value created from fish and fishery products. Many studies indicate that their share is indeed large, yet most of these studies do not include cost or net margin considerations, nor do they consider the intense level of competition at the retail level which normally would bring down any abnormal profit. In fact, industry reports in both Japan and the United States of America indicate that the retail chains have lower net margins on fish products than on other products. More studies are needed to look further into this relationship, including on how shorter distribution channels between the producer and the consumer can improve efficiency and increase benefits, in particular to the primary producer.

Consumers are increasingly being encouraged to express concerns about sustainability issues, especially overfishing and global warming. Much of this initiative emanates from NGOs, related media coverage and consequently chain actors eager to be perceived consistent with emergent concerns and to demonstrate their corporate social responsibility (CSR). Within the supermarkets' product range, fish has the attractive characteristic of being separable and readily identifiable, yet not being overly important in terms of turnover, to serve as an indicator of sustainable purchasing practices. Inferences to other components of their product range are seldom questioned nor substantiated. Air transportation of food is increasingly questioned, although a detailed and more objective assessment is often lacking. Health and well-being are other factors influencing consumption decisions; this explains in part the rise of the organic food sector, and related emphasis upon responsible sourcing. In the fisheries sector, organic production has been hampered by lack of market-wide standards in the most important markets, and by trenchant divisions as to whether this might be restricted to aquaculture or capture fisheries. New regulations in the EU and the United States of America have the potential to lower costs of certification and thereby increase the market for organic seafood products. Supply remains a weak point given the narrow range of species and products currently available. However, the principal purchasing parameters among consumers remain price and food safety<sup>6</sup>. The perceived benefit of fish consumption also remains strong in most consumers' minds.

## Market access and the World Trade Organization

International fish trade is governed by the rules of the World Trade Organization (WTO). After the accession of China in 2001 and Viet Nam in 2007, all major fish-producing, importing and exporting countries have become WTO members, with the exception of the Russian Federation. The latter, a WTO observer, is in

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<sup>6</sup> Audun Lem, Lahsen Ababouch and Iddya Karunasagar, 2010. Salient issues for fish trade. FAO Aquaculture Newsletter, 45: 18–21.

the midst of accession negotiations, but its full accession remains pending. Countries that have joined WTO lately are Cape Verde and the Ukraine.

In addition to securing improved market access for their exports and more transparent and foreseeable trade rules, membership is a prerequisite for having access to the WTO Dispute Settlement Mechanism which increasingly has been used to solve disputes involving both wild and farmed fisheries products. In the future, as aquaculture products will increasingly dominate production and trade, we will most likely see a growing number of farmed species involved in international trade disputes, with subsequent recourse to the Dispute Settlement Mechanism. Farmed species involved so far have been Atlantic salmon (*Salmo salar*), seaweed and shrimp.

With international trade in fish and fishery products increasing rapidly, it is obvious that market access is of crucial importance to all exporters, and not only to developing-country exporters. In general, import duties in developed countries for this sector are quite low, with the exception of a few species of particular domestic importance. More important is the issue of tariff escalation in which raw material imports are given a lower import duty than processed products. For imports by developing countries, the picture is different, with tariffs often being prohibitively high. This particularly hurts regional trade and prevents many developing-country producers from accessing neighbouring markets and diversifying from their reliance on the large international markets.

With current import duties being low in the main international markets, the major issue of market access for developing-country exports is related to quality and safety requirements. Adhering to these market access requirements has therefore become a prerequisite for entering international markets. For this reason, international standards agreed upon by all stakeholders are important, as are rules set out to ensure that safety and quality measures are neither designed nor implemented in a manner that leads to the creation of unnecessary barriers to trade. In this respect, international standard-setting bodies such as Codex Alimentarius and the World Organisation for Animal Health (OIE) play a vital role, as do the rules and agreements of the WTO, in particular the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS agreement) and Agreement on Technical Barriers to Trade (TBT agreement).

### **Negotiations on new rules**

The ongoing negotiations within the WTO, the so called Doha Development Agenda, was initiated in 2001. The two major issues of relevance to the fisheries sector are i) fisheries subsidies, discussed in the Negotiating Group on Rules, and ii) market access, discussed in the Negotiating Group on Non-Agricultural Market Access.

Whereas the negotiations on subsidies deal directly with overcapacity and overfishing in world capture fisheries, and therefore have little relevance

for aquaculture (although the WTO Agreement on Subsidies also applies to aquaculture), the market access negotiations have clear ramifications for the aquaculture sector.

On market access, although there is no consensus yet, there has been convergence on several issues, including the use of the so-called “Swiss formula” in future tariff reductions with separate coefficients for developed and developing country members. The texts also include an “anti-concentration clause”, to avoid excluding entire sectors from tariff cuts. There are also separate provisions for recently acceded members and for developing countries. The 32 least-developed country members (LDCs) would be exempt from tariff reductions in their own countries.

Fish and fishery products remain part of sectoral initiatives that would result in deeper voluntary cuts for certain non-agricultural products. Progress is linked to reaching a critical mass of countries signing on to the initiative and then subsequently, the implementation of further cuts in current rates.

### **Distribution, consumers and certification**

The role of the retail sector within the distribution channel continues to be debated, especially its negotiating power on prices. Aquaculture products, however, have certain advantages over wild products that increase their share of supermarket sales; in the future, markets are more likely to distinguish between the two modes of production.

Consumers increasingly express concerns about sustainability issues, especially overfishing; although there is evidence to suggest that much of this originates more from retail chains eager to allay concerns over their green credentials rather than from consumers themselves. As a result, certification schemes for both wild and farmed products are gaining market share in many developed-country markets. However, the emergence of private and voluntary standards in addition to the fulfilment of mandatory regulatory requirements and requests for certification and labels for various purposes puts additional pressure on producers, processors and exporters. This increases costs, without the market being necessarily willing to offer higher prices to offset the additional costs incurred. Consumer confusion is also increasing, given the often divergent claims represented by many of the guides and indices promoting sustainable seafood.

As mentioned in the value-chain developments section above, global warming is another area of growing concern, with the air transportation of food increasingly being questioned. Health, well-being and consideration of fair payment to fish sources are additional factors influencing consumption decisions. However, principal purchasing parameters among consumers remain price and food safety.

### **Economic integrity**

As there has been more emphasis placed on the environment and the state of natural resources, sustainability of sourcing has become an issue for the full distribution chain. Less focus, however, has been given to the integrity of commercial practices between economic operators in the value chain, or between the point of final sale and the consumer.

Most countries have some sort of regulations to prevent outright deception and to ensure correct information to consumers, in particular regarding labelling, but they are commonly under-resourced. In the fisheries sector, with the vast variety of species offered, the fact that many species are sold in the form of fillets or portions and the almost total lack of branding except for processed products, make enforcement of such rules a challenge. As a result, fraud does occur when many species are sold to customers, and the end result is incorrect names, incorrect provenance and most importantly, the incorrect shelf-life is marketed to consumers.

In addition, lack of industry-wide standards in areas such as glazing, injection, shelf life, etc. may lead consumers to choose the cheapest product without having any knowledge of the variance in product quality or of the real net weight. It is true that the Codex Alimentarius has standards for many of these issues, but unless adopted and integrated into national legislation, they remain voluntary and set only minimum and maximum values, thereby giving a lot of flexibility to operators.

One may object that the industry is unable to regulate itself in such matters. However, the fragmentation of the industry, the vast asymmetry in information and the lack of strong industry associations to discipline errant members make it difficult to implement minimum industry standards and to safeguard the sector's reputation in the eyes of consumers. As a result, consumers are frequently disappointed by inferior quality products, hurting overall consumption of fish and fishery products.

It is likely that in the future, this situation will improve for three reasons; (i) the rising share of aquaculture products in total supply and consumption will facilitate standardization and branding of product and fish name; (ii) the concentration at the retail level increases the reputational risk of the retailer, as consumers tend to rely on the retailer's image when choosing their point of purchase, thereby encouraging better practices throughout the value chain; and (iii) the growing use of voluntary certification and labelling for quality products. Such market-based initiatives, including use of geographic provenance, rely on industry-agreed norms and are certified by third-party bodies, thereby guaranteeing quality levels for the consumer.



It must be mentioned that many countries that are implementing programmes to encourage fish consumption also include activities for educating the consumer about how to judge fish quality. Such campaigns frequently include educational programmes aimed at school children. It must be hoped that the future consumer can have more confidence in the quality of the fish offered than is currently the case.

Despite such initiatives, in practice, most consumers will continue to use price as their most important purchase parameter, with food safety as the overriding prerequisite for any food purchase. However, the growing segmentation of the market with producers and retailers looking for opportunities to add value and margins, will see a large increase in voluntary market-based initiatives, not only in developed countries but also in emerging economies in Asia, South and Central America and Africa.

## Research into consumer behaviour

When companies attempt to gauge consumer sentiment or measure the underlying parameters of consumer behaviour, they often turn to specialists in consumer research. Such specialized companies have access to a number of data sources including (i) electronic point of sale (EPOS) scanning data from store checkouts; (ii) household panel data from homes; and (iii) consumer research where consumers in various countries are asked about their thoughts and concerns on issues related to their purchasing activity. In addition, media consumption by different groups of consumers is measured to take account of which media channels are more effective for a specific target audience.

In this way, consumer research companies build up a picture of what is being done, where, by whom and most interestingly of all, why. In the following section, some of these findings are presented. A few are specific to the market for fish and fishery products; others are more generic and relate to the context within which fish consumption is taking place.

## Demographic and economic trends

There are several large geo-demographic changes occurring that are worth remembering when we consider fish consumption and trade:

- The world's population is growing – currently there are 6.8 billion inhabitants on the planet. This number will continue to grow until 2050, when it is predicted to stabilize at about 9.2 billion. This is 1 billion fewer than predicted only five years ago.
- Much of this decline in the rate of global population increase is caused by declining fertility rates. This is due to increasing levels of wealth and,

as more women receive more education, they enter into careers of their own, marry later and have their first children at an older age. Additionally, lower infant mortality means that parents can be more confident that their offspring will survive childhood, and therefore they are less likely to have additional offspring to compensate for the previously felt risk. However, there are clearly still many improvements that can be made in lowering infant mortality.

- Average life expectancies continue to rise, but around the world we see large variations in life expectancy. Most Japanese, Europeans and North Americans can expect to live until they are nearly 80, more than ten years above the global average. At the other end of the scale, citizens in many developing countries have low life expectancies, some as low as just 32. This is a result of a combination of lower levels of wealth, and therefore reduced access to adequate healthcare and to safe and nutritious food, and the widespread presence of disease.
- While the world's wealth remains unevenly dispersed, economic growth over the last decades has seen a large number of people move out of poverty and reach the status of middle-class consumers, with purchasing patterns starting to resemble those of many developed-country consumers. However, it is too simplistic to equate wealth with consumer confidence, one of the key parameters underlying consumer behaviour. In consumer research, therefore, consumers are asked about how they judge the immediate future and their outlook on issues that impact their own economic situation and thereby their willingness to spend.

## Consumer confidence

The Nielsen Company undertook global research to understand consumers' attitudes to various aspects relating to their shopping and consumption behaviour. Quarterly surveys conducted in over 50 countries ask respondents:

- Do you think job prospects in your country over the 12 months will be: excellent, good, not so good, bad, don't know?
- Do you think the state of your own personal finances will be: excellent, good, not so good, bad, don't know?
- Considering the cost of things today and your own personal finances, would you say at this moment the time to buy the things you want and need is: excellent, good, not so good, bad, don't know?
- Based on these responses, a Consumer Confidence Index has been constructed representing consumers' attitudes in over 50 countries.

## Consumer concerns

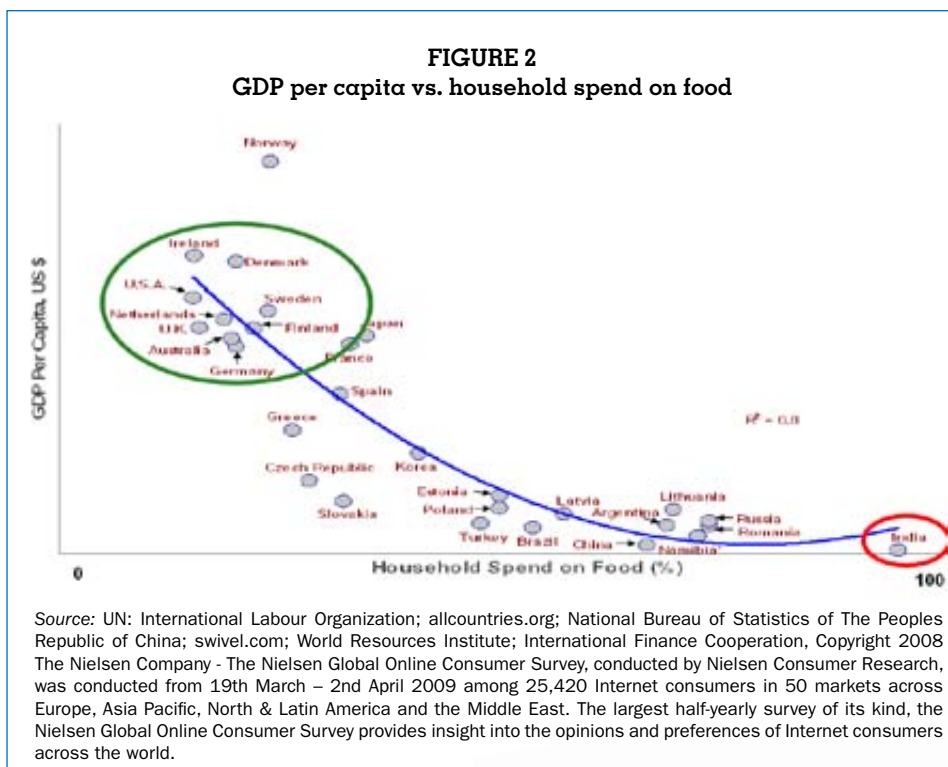
In the past decade, in most countries, health and work/life balance issues were normally in the top three concerns when asked "What is your biggest, and second biggest, concern in the next six months?" Global warming and environmental issues also started to rank among the issues consumers were

concerned about. With the economic set-back in the second half of 2008, economic issues and job security became the overriding concerns for consumers. There are however, large variations at the country level, as local issues naturally influence domestic sentiment.

In a recession, volume levels are largely static or falling, and the growth in value is mainly due to inflation, as opposed to trading up. The growth of value channels – discounters – has therefore more to do with their increased store numbers than constraints on household expenditure.

The increases observed in promotional expenditures may be because shoppers were seeking out “bargains”. This may also have been caused by an increase in the number of promotions being put in front of shoppers. In other words, if the retailer thinks that in a downturn, shoppers will want to buy more on promotion, and they are then given more promotions to buy, it becomes a self-fulfilling prophecy. This is confirmed by consumer research demonstrating that shoppers “want what they get, as opposed to getting what they want”. In this way, shopping behaviour is greatly influenced by the shopping environment and infrastructure available to them.

Despite the recession, for many consumers, especially in developed countries, consumption patterns have not changed much. This is because while consumers



do not have to buy a new car every year or have several exotic vacations, they do have to eat. Despite rising prices on a number of agricultural products and on fish, the long-term trend is towards generally cheaper food.

The household expenditure amount on food directly relates to household income. For example, a subsistence farmer in India earning less than USD1 per day would likely spend his entire income on food. In richer western countries, about 15 percent of household expenditure goes to food, which demonstrates that even after food inflation, only a small part of income is actually spent on food. Employed individuals may now have even more disposable income as they reduce their spending on big-ticket items like cars and holidays and are able to obtain historically low mortgage interest rate levels.

It is crucial for the food industry to understand that while it is not recession-proof, it is certainly recession-resistant. Sales levels are not declining; the majority of categories measured are either static or growing. As a result of growth in commoditization, there is undoubtedly pressure on categories and the value and profit they generate. This is caused by (i) the growth of discounters, (ii) increased reliance on promotional activity and (iii) the growth of private labels.

The above is also supported by aggregate trade data for 2009. International trade in fish and fishery products fell sharply in value compared with 2008. Volumes, however, were almost unchanged, declining less than 1 percent from the previous year. It was fish prices and margins that fell, not the actual quantity of fish traded and consumed. This was reinforced by consumers changing the product mix within their fish consumption, looking for value for money (i.e. farmed freshwater species rather than traditional high-value species).

### **Private label**

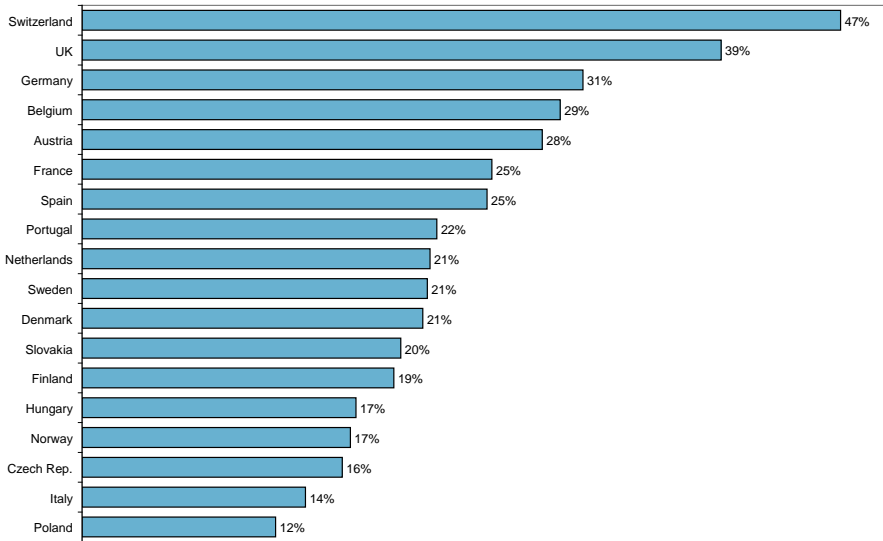
Private label's growth is only in part driven by the economic downturn, but is more a function of increasing consolidation of store ownership. Retail concentration allows chains to reach the critical mass needed to make more private label product lines viable. As their most important key performance indicator will often be the percentage profit on return achieved, decreasing brands' share is often seen as a high priority in the management of their category. The figure below shows the private label's share by country in terms of value and share.

Private labels are increasingly supported by professionally marketed initiatives. Labels evolve from being just a cheaper copy of the brand, to a more differentiated offering, with category leading innovations, at times sold at a premium to the brand.

From studies of thousands of categories in many countries over a long period of time, it becomes evident that brand owners can indeed influence the destiny of their brand and thereby mitigate the downward pressures on their categories

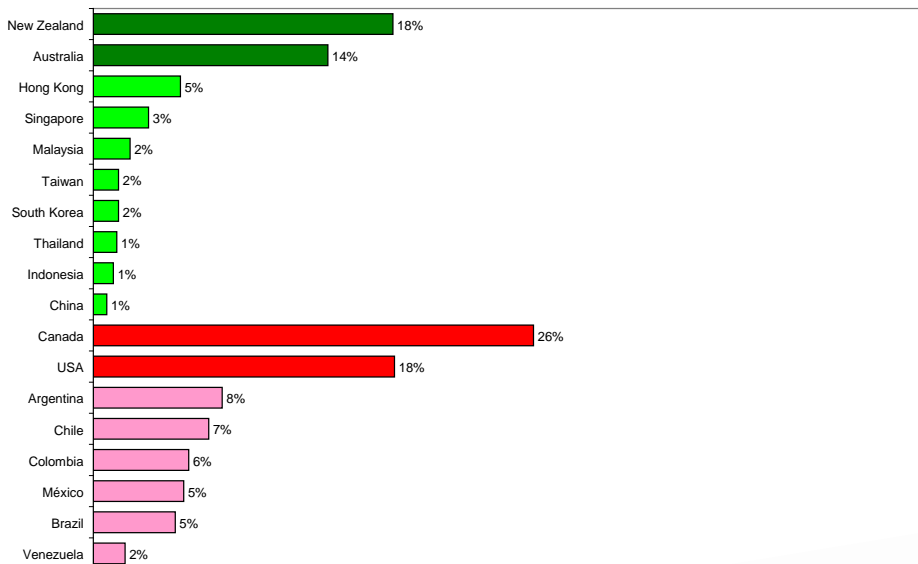
and margins. A private label does not necessarily cause brands to weaken, but if brands are already weak, private labels will take over.

**FIGURE 3**  
Private label value (%) by country



Source: The Nielsen Global Online Consumer Survey.

**FIGURE 4**  
Private label share (%) by country



Source: The Nielsen Global Online Consumer Survey.

## Megatrends

Producers and brand owners have many options for adding value. Despite the economic downturn, consumers remain willing to spend more on products that align with these megatrends:

- health and well-being;
- indulgence and pleasure;
- convenience and practicality; and
- ethical considerations.

Going forward, the last of these megatrends – ethical considerations – is potentially the most powerful. It means different things to different people, and might include:

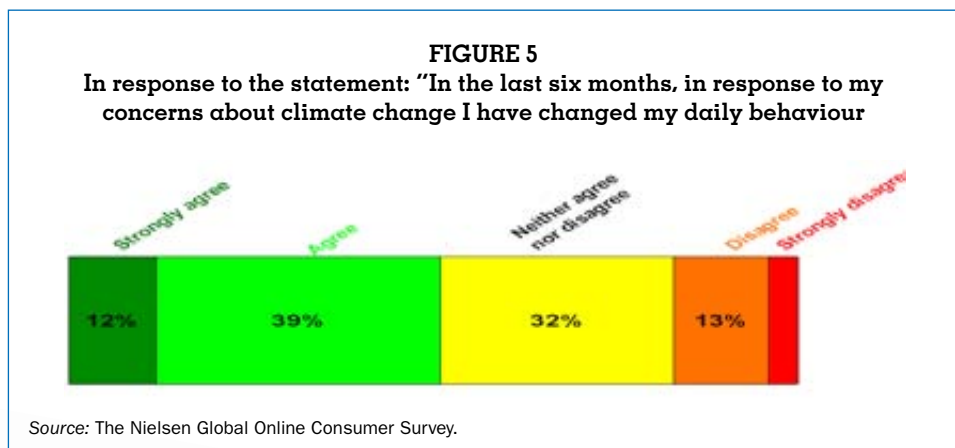
- local connection;
- animal welfare;
- sustainable sourcing (e.g. forestry or fish products; recyclable packaging);
- organic production;
- fair trade & increasing concern with intermediate labour; and
- low carbon emissions (footprint).

That sustainability is a concern is confirmed by research. The Nielsen Global Online Survey covered over 50 countries, surveying many individuals and asking a wide array of questions about consumers' attitudes and behaviours around sustainability.<sup>7</sup> The figures that follow are based on these survey findings.

The majority of respondents claimed to be concerned about the global environment when asked the following question:

How strongly do you agree or disagree with the statement “I am concerned about the global environment”:

- Strongly agree: 29%
- Agree: 51%



<sup>7</sup> Nielsen Global Online Survey April 2009.

**TABLE 2****In response to the question: “Which of these products do you actively try to buy?”**

Type of Product	Total %
Energy efficient products or appliances	53%
Locally made products	51%
Products in recyclable packaging	45%
Products bought from a Farmer’s Market	42%
Organic Products	35%
Products with little or no packaging	31%
Fair-trade products	27%
Products that haven’t travelled long distances to get to the store	27%
Ethically produced or grown products	25%
Products that have not been tested on animals	23%

Source: The Nielsen Global Online Consumer Survey.

Do these concerns translate into action? Shoppers’ perception of ethical consumption varies greatly – here are the key findings:

Despite a probable degree of over claiming, the data indicate a propensity to want to buy what is ethically considered the superior product.

However, when trying to consume food in a more sustainable manner, there is much confusion among consumers. There has been focus on “food miles”, however a more scientific concept is carbon emissions and life-cycle analysis. This is because carbon audits often reveal counter-intuitive findings. Products transported from far away may have lower total carbon emissions than local ones – sometimes depending on the time of year or mode of transport. The carbon emissions from the energy inputs needed to grow and process a product can be much higher than those associated with transportation.

Some products declare on their packaging the carbon emissions associated with their production. However, it does not tell the consumer whether that is good, bad or indifferent. What it does demonstrate is that the manufacturer is considering food miles enough to (i) measure it, and then (ii) try to reduce it. After all, one can only effectively manage what is measured.

More fundamental questions arise about the increasing complexity of such measures and the likelihood of them being objectively evaluated by consumers. Individual food choices are made frequently (since we have to eat every day) and thus the level of involvement might be expected to be low, or certainly diminish, as repeat choices are made. It is debateable to what extent consumers will remain enthusiastic about absorbing evermore complex signals, especially when some of these may countermand earlier advice and recommendations from the same source.

**TABLE 3**

**“Within the next 10 years, how do you think your quality of life will be affected by the impacts of climate change?”**

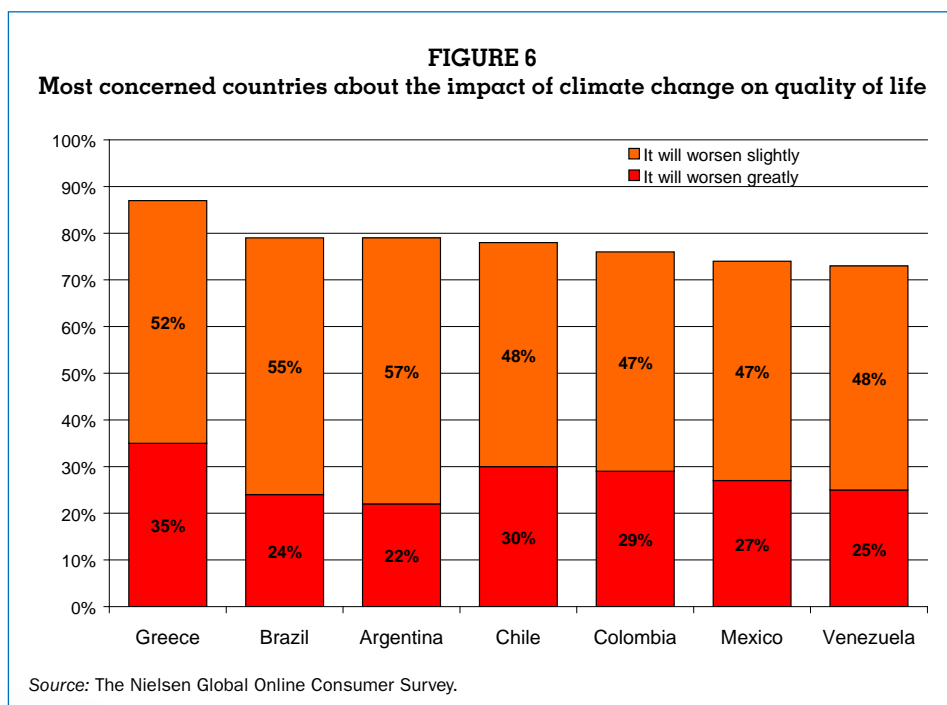
Belief	Total %
It will improve greatly	4%
It will improve slightly	15%
It will neither worsen nor improve	32%
It will worsen slightly	38%
It will worsen greatly	11%

Source: The Nielsen Global Online Consumer Survey.

The idea that certain foods are seasonal and cannot be expected to be available all year round is also gaining wider acceptance. Consumers need manufacturers and retailers, or restaurateurs, to do “choice-editing” for them and provide sustainably sourced products that are seasonally available.

Some consumers are more attuned to this than others:

And at a country level, the most concerned countries can be seen below in Figure 8. With the exception of Greece, these countries are all in Latin America.

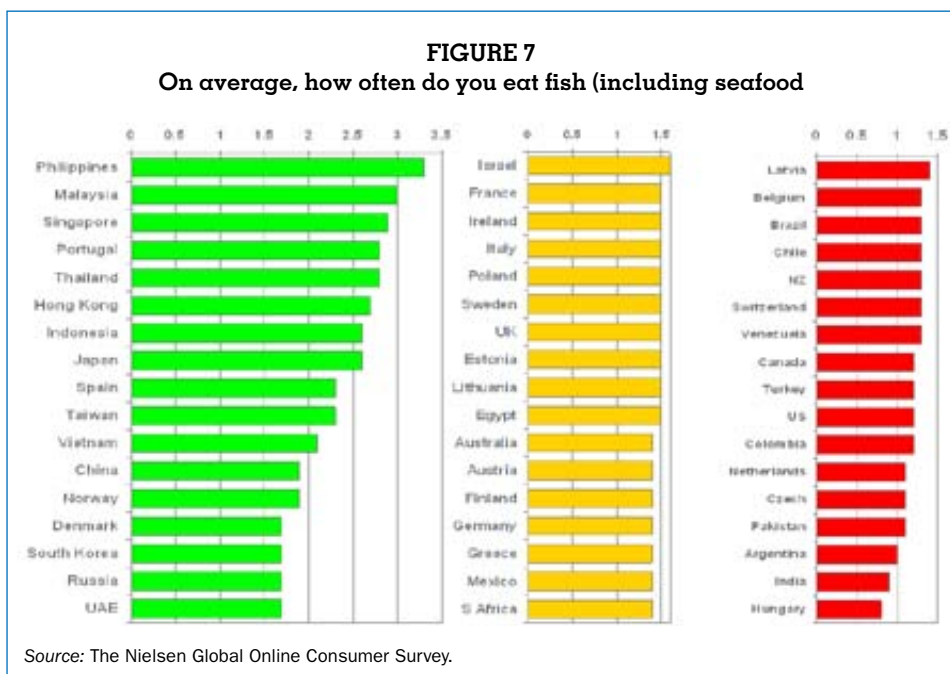




## Fish versus meat

With the global population rising from its current 6.8 billion to a peak of 9.2 billion in 2050, a tremendous amount of additional food will be needed. There must be a sufficient quantity of food that is safe to eat and sustainably sourced for everyone.

Fish has certainly gained in popularity, and consumers are encouraged to regularly eat oily fish in order to improve the intake of long-chain omega-3 and omega-6 essential fatty acids. At the same time, consumers are encouraged to eat less red meat. Fish consumption levels vary hugely from country to country, but in the case of the Nielsen panel, 92 percent claim to have eaten fish in the last year (see figure below).



Further questions might be anticipated, as the comparatively favourable criteria for fish production are set against those for alternative protein sources, notably red meat and dairy products. For example, feed conversion ratios (FCRs) for fish compare well and with further growth only available from aquaculture, it might be logical to expect greater concern to be expressed about the relative efficiencies of utilization of fishmeal for food production. There are of course entrenched political interests within terrestrial food production sectors which may mitigate any such movements, but greater transparency as the green house gas (GHG) debates become more popularized might countermand such efforts.

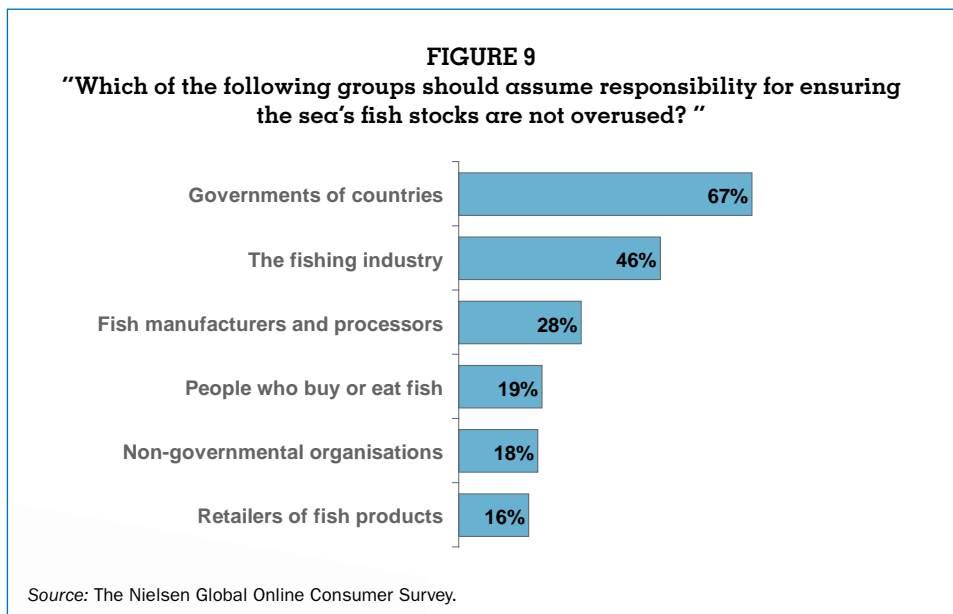
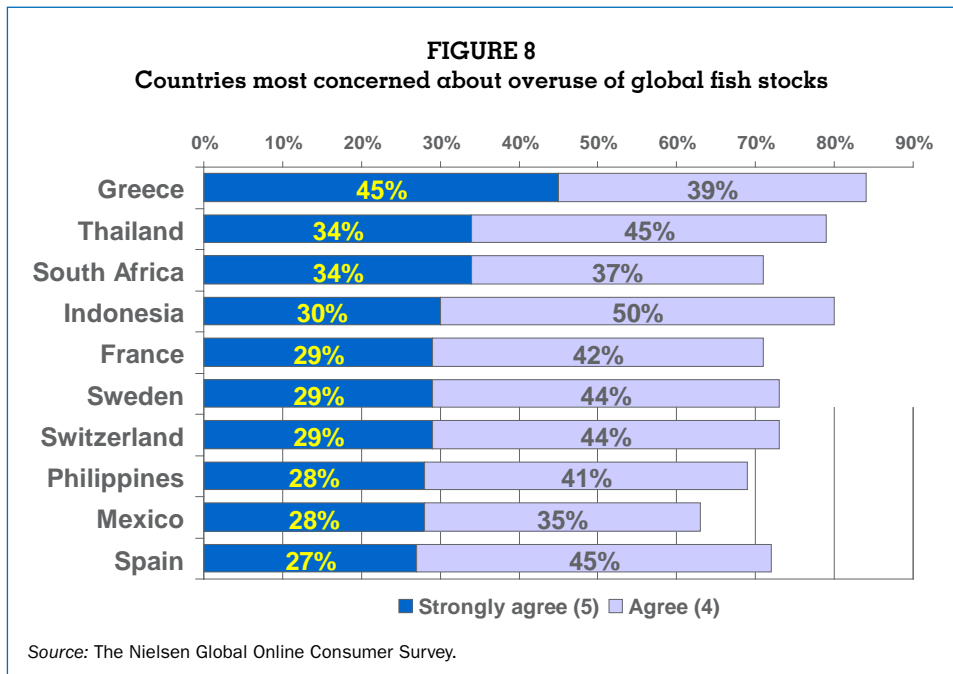
Poor management of fisheries and over-fishing has led to the depletion of many species in the worlds' fisheries. Consumers are becoming more aware of the

need to ensure that the fish they buy has been sustainably sourced. Consumer awareness of the issue is currently low – but growing:

“I am concerned about overuse of global fish stocks”:

- Strongly agree: 17%
- Agree: 36%

Countries most concerned with this issue can be seen in the following figure.



**TABLE 4**  
**“What level of influence do product labels declaring that fish is sustainably sourced have on your purchasing decision?”**

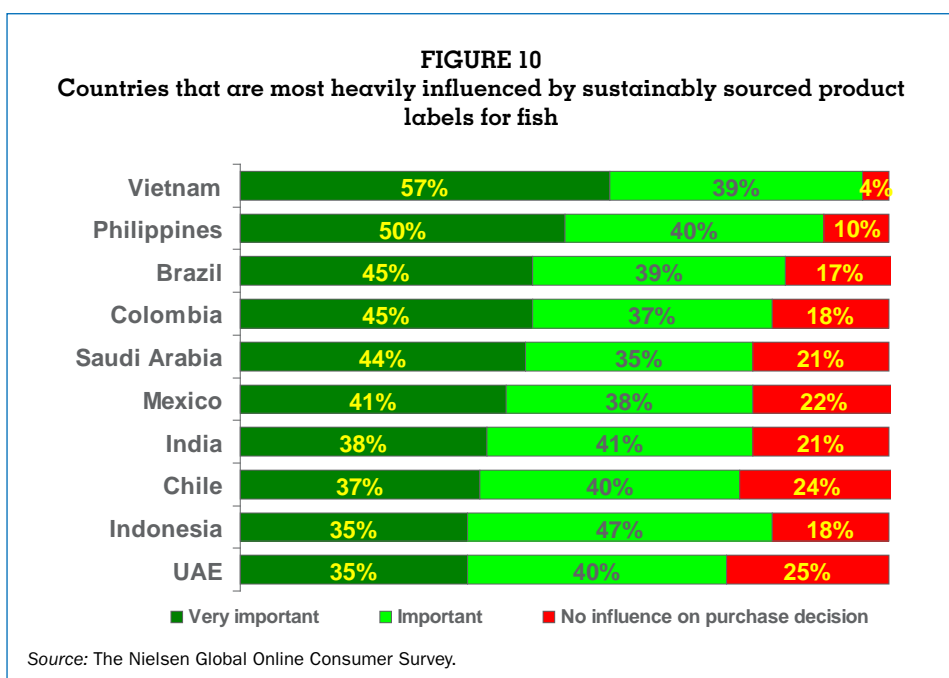
Very important	27%
Important	43%
No influence on purchase decision	30%

Source: The Nielsen Global Online Consumer Survey.

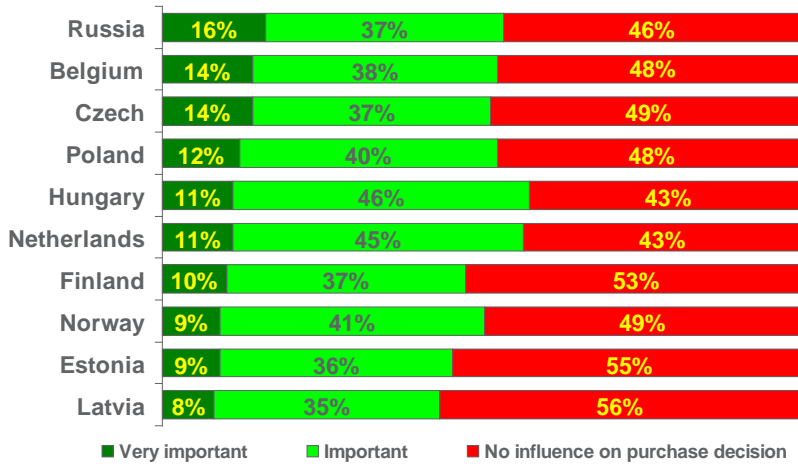
But who did consumers think should take responsibility for it? Not themselves!

Over the last decade, a number of market-based initiatives have emerged in many countries to promote sustainability, with consumers having the option to buy products certified and labelled to come from sustainably managed fisheries. Starting out initially with marine capture fisheries, they now also embrace inland capture fisheries and aquaculture.

For most people, this kind of on-pack accreditation is at best a “nice-to-have” and is only a “must-have” for a minority.



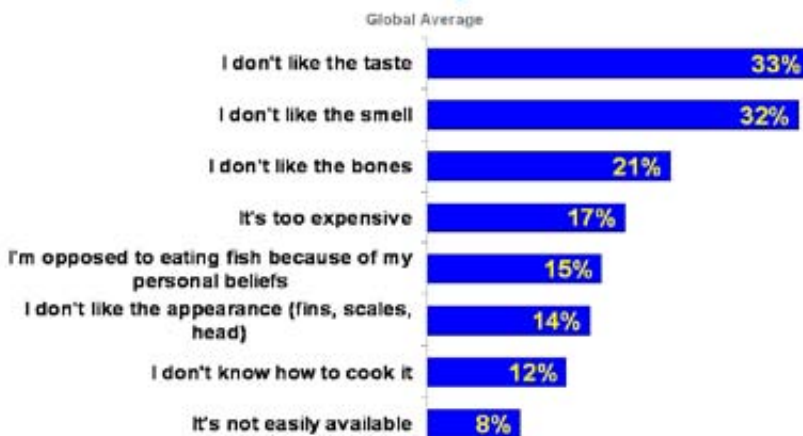
**FIGURE 11**  
**Countries that are the least engaged by sustainably sourced product labels for fish**



Source: The Nielsen Global Online Consumer Survey.

However, as the following figure shows, there are other reasons why fish consumption is still low compared to many other products, including meat and poultry. It is clear that the fish industry still has significant hurdles to overcome among groups of consumers, as this research from an earlier survey demonstrated:

**FIGURE 12**  
**Global average for responses to, "What are the main reasons you don't eat fish?"**



Source: The Nielsen Global Online Consumer Survey.

## Outlook

Twenty years ago, when the world realized that chlorofluorocarbons (CFCs) were depleting the ozone layer, effective action was taken with the Montreal Protocol. While that was a good precedent, the world struggles with affirmative action due to the inequality that developing countries perceive from developed countries' negotiations. The follow-up to the Copenhagen Summit might help reduce emissions. Some countries with high emissions appear to be showing greater understanding of the issue and give signs of willingness to adopt policies based on science.

The food industry has much work to do in this area and needs to proceed with some urgency and above all, integrity. Marketers should not be complacent and get beguiled by trying to achieve short-term gains with “greenwash”. Similarly, when the organic industry claims their product is “better for you, and better for the planet”, they must make sure that it is. For example, carbon emissions can be lower from the non-organic alternative. Currently, there are also mixed research findings exploring organic food production's impact on nutritional value of foods and soil systems and thus, more research is needed.

We are currently in a transition phase, where displaying ethical credentials might be a differentiator in the fight for consumer loyalty. It is likely that in the future it will cease to be a differentiator – and instead become a given prerequisite for manufacturers and retailers.

In the food industry, provenance and sustainability will gain in importance. Consumers will be more discerning about why they are paying a premium for some products, and will question the value for money of more expensive products (e.g. organic food, locally sourced items or bottled water). The opportunity exists for industry to build on standards, thus making it easier for consumers to understand these issues.

In all probability, with the end to the economic downturn, we can expect a new growth in consumption. This does not mean that one will see a return to the consumer behaviour of the previous ten years. There will be changes, and not all will revert to previous patterns. The outcome is likely to be a more permanent adjustment to more prudent financial behaviour in general and more environmentally sustainable purchasing overall, both by companies and by consumers.

Around the world, as the presence of modern self-service supermarkets and hypermarkets increases, their economies of scale, especially from supply-chain savings, will be passed on to consumers, keeping a brake on inflation. Over time, with food bills becoming a smaller component of total household expenditure, in particular in emerging economies, there will be ample opportunity for the creation of new exciting, premium, value-added propositions for consumers.

## Conclusions and recommendations

As issues regarding food security amplify and as the increasing affluence of developing countries leads to increased seafood consumption in these countries, the pressure on developed countries to engage a more visionary approach to aquaculture than we have seen to date will likely increase. This will further expand the opportunities for environmentally sustainable aquaculture, bearing in mind that wild catch has peaked and is unlikely to expand.

Hence in a not too distant future, aquaculture's share of total supply for human consumption will rise to somewhere between 60 and 70 percent. This will have a profound impact on the sector's ability to shape world markets in areas of pricing, product development, distribution and consumption. However, it will also challenge the sector's ability to respond successfully to evolving consumer needs. The potential for growth and economic success is evident; so are the many challenges presented to the world's aquaculture producers.

The following recommendations can be made:

1. Governments should promote integration of the small-scale aquaculture sector into the globalized market economy.
2. Governments should promote and increase the sector's competitiveness by facilitating intra-sectoral cooperation, collaboration and sharing of experience, facilitating economies of scale in purchasing, processing, certification and marketing.
3. With a growing share of seafood consumption represented by aquaculture production, the aquaculture sector will increasingly influence price formation, and product and market development in the overall fisheries sector. This will present opportunities to producers, but in order to be successful, companies will need to analyze, interpret and adapt to changes in customer and consumer needs. To this purpose, policy-makers are encouraged to promote transparency with improved data collection and dissemination throughout the value chain.

## Additional reading

Recent developments in fish trade. A working document presented at the 12<sup>th</sup> Session of the FAO Committee on Fisheries Sub-Committee on Fish Trade from 26-30 April 2010 in Argentina. [www.fao.org/docrep/meeting/018/k7162e.pdf](http://www.fao.org/docrep/meeting/018/k7162e.pdf)