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CONSUMERS' CONCERNS AND EXTERNAL DRIVERS IN FOOD MARKETS

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PREPARATION OF THIS DOCUMENT

This publication contributes to FAO's ongoing activities and examines consumers' preferences in food consumption and their implications for future food demand. Its focus is on how major tastes of consumers in food demand change over time, what impact consumers have in establishing food consumption trends, and which relevant actions governments, non-governmental organizations and the private sector are implementing in response to these trends.

This publication was initiated as a part of a larger technical study by Audun Lem, Trond Bjørndal and Alena Lappo, which analysed the future demand and supply of food to 2030 from an economic point of view (FAO Fisheries and Aquaculture Circular No. 1089). In view of the increasing interest that consumer concerns have attracted as drivers of food demand, it was felt that the subject warranted a more thorough examination. As a timely addition to the drafting team, José Fernández-Polanco has contributed further important insights into the factors that affect consumer preferences.

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Consumers' concerns and external drivers in food markets, by Alena Lappo, Trond Bjørndal, José Fernández-Polanco and Audun Lem.

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ABSTRACT

The objective of this publication is to analyse the major tastes and preferences of consumers in food consumption, as well as expected changes in these over time. This publication identifies five important consumer trends and purchase drivers: food safety and health benefits; corporate social responsibility; production systems and innovations; sustainability; and food origin. For each of these trends, it considers relevant actions that are being implemented by governments, non-governmental organizations and the private sector.

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1. BACKGROUND

The objective of this publication is to analyse the major tastes and preferences of consumers in food consumption, as well as expected changes in these over time, and the impact that consumers have in establishing these trends. The publication identifies five important consumer trends and purchase drivers: food safety and health benefits; corporate social responsibility (CSR); production systems and innovations; sustainability; and food origin. For each of these trends, it considers relevant actions that are being implemented by governments, non-governmental organizations (NGOs) and the private sector. The final section summarizes the findings and discusses their implications for future food demand. Consumers play a powerful role in how retailers and companies market their products and interact with one another.

It is generally accepted that consumers care about what they eat, how their food is produced and the impact that food production and consumption have on the environment and society. Consumers' concerns about the methods of food production and the conditions under which food is grown have increased in the developed world in the last two decades. This increase in concerns was primarily motivated by the "mad cow" disease crisis in Europe (Hoffman, 2000; Loureiro and McCluskey, 2000; Davidson, Schröder and Bower, 2003). The result has been an increased demand for information about the origin of food and harvest methods used in food production. Some segments of concerned consumers are using this kind of information as an indicator of product attributes such as technical quality, food safety, and environmental and social sustainability.

The way retailers react to these demands for information by consumers will vary significantly across cultures, countries, chains and products. Different factors affect the consumer's decisions to act responsibly (Nayga, 1999; Thøgersen, 2000), including the role of social agents, governmental or otherwise, in consumer information and education (Roheim, 2008), as well as certain conditions and capabilities on the part of both the media and the consumers (Sapp, 2003). The media should be able to understand the topics and communicate them adequately, while consumers should be capable of processing and understanding the information provided by the media and other sources.

According to the Foresight Report (Government Office for Science, 2011), changes in the values and ethical stances of consumers will have a major influence on consumption, which will in turn affect food security and food system governance. "Examples include issues of national interest and food sovereignty, the acceptability of modern technology (for example, genetic modification, nanotechnology, cloning of livestock, synthetic biology), the importance accorded to particular regulated and highly specified production methods such as organic and related management systems, the value placed on animal welfare, the relative importance of environmental sustainability and biodiversity protection, and issues of equity and fair trade" (Government Office for Science, 2011, p. 16).

Retailers may accept and adopt new trends in food consumption if they perceive them as a way to improve sales and customer satisfaction. However, consumers and retailers differ in the way they select and process information and make decisions about product attributes because they have different attitudes, different buying policies and different goals.

The perception of value depends on the degree to which customers believe that the product will contribute to fulfilling their goals. Creating value for consumers is a very important source of competitive advantage for a retailer. However, retailers have strong beliefs about those aspects of their business demonstrated by past experience as being important for obtaining the goals and profits they are looking for (Skytte and Bove, 2004). From a retailer's point of view, most food products are substitutes of each other in attracting consumers. Undifferentiated generic foods can be easily replaced by a multiplicity of providers. Among a group of substitute goods, the more popular products are those with the higher probability to be put on sale and promoted by retailers (Hosken and Reiffen, 2004).

The economic criterion of maximizing profits will prevail in retailers' decision-making, yet it can be a barrier for developing the market for new food products demanded by consumers that may not offer

retailers the margins required. However, at the same time that the agrifood system becomes globalized and the retail chains increase their market power, the responsibility for securing food safety and quality standards has been moving from public to private institutions. The rise in private retailer standards and labelling (Codron, Giraud-Héraud and Soler, 2005) has precipitated the rise of third-party certifiers. This trend reflects the growing power of supermarkets in their aim to regulate the global agrifood system, but at the same time the trend in private retailer standards offers opportunities to create and promote responsible practices among producers and consumers (Hatanaka, Bain and Busch, 2005).

This report is organized as follows: safety and health benefits (Section 2); corporate social responsibility (Section 3); production systems and innovations (Section 4); sustainability (Section 5); country and region of origin (Section 6); and summary and discussion (Section 7).

2. SAFETY AND HEALTH BENEFITS

Deloitte (2012) suggests that healthy eating is a critically important consumer driver, a trend that will have considerable influence over company strategies in coming years. Population increases and demographic changes such as ageing as well as rising gross domestic product (GDP) allow the assumption to be made that this trend will continue to gain importance until 2030. The trend is reinforced by the fact that the consumer of the future will have a better level of education worldwide and better knowledge about health and healthy eating (Lem, Bjørndal and Lappo, 2014).

The benefits derived from a healthy diet include enhanced health. It can therefore be expected that information on potential health benefits increases the demand for a specific food and consumers' willingness to pay (Marette, Roosen and Blanchemanche, 2008). However, the effects on buying behaviour from expected health benefits are not uniform across individuals. Consumers' ability to process information and understand health benefits will affect the adoption and consumption of these healthy foods. Consumer perceptions about food risks and benefits arise from social interaction, and are strongly dependent upon the trust in the public and private institutions involved (Sapp, 2003). Individuals have different levels of qualifications, cognitive skills to process information, and personal experiences with the product, which may affect the perception of potential risks or health benefits. Some attributes such as taste may dominate the decision to consume a product, but aspects such as cost or safety may be more important in deciding how much to consume (Lin and Milon, 1993). Similarly, the effect on buying behaviour may be affected by the level of consumer involvement in personal health care, and is related to other habits. Consumers that are concerned with nutrition and health are more likely to use nutritional labels than those less concerned (Nayga, 1999, 2000). However, dietary guidelines are difficult for consumers to respect. They may be receptive and able to process the information related to a healthy diet, but many of them will be unable or unwilling to comply with the diet (Hamilton *et al.*, 2000; Leipämaa-Leskinen, 2007).

Consumers' buying behaviour guided by food health benefits is not uniform across countries and individuals. In its annual study, Euromonitor International (2012) finds that respondents globally already rank good health as the most important determinant of happiness and that consumers, in both emerging and developed markets, show interest in dieting. The results of the Euromonitor Global youth survey suggest that in the 15 leading youth markets,¹ one-third of 16–24 year olds claim to be trying to lose weight, and healthy food was found to be popular worldwide, with 56 percent of global youth buying healthy products. Although the survey result might only reflect an intention towards healthy eating on some occasions, it proves that many consumers recognize the importance of eating healthily.

The main driver of this trend is the concern over the global rise in the proportions of overweight and obese consumers. Obesity increases the risk of a broad range of fatal and non-fatal diseases in developed countries, and there is a concern that a similar trend will be seen in developing countries if food consumption increases as a result of anticipated improvements in GDP. According to the World Health Organization (WHO), in 2008, more than 1.4 billion adults, 20 years and older, were overweight (FAO, 2103a). Greece, the United States of America, Italy, Mexico, New Zealand, Chile and the United Kingdom of Great Britain and Northern Ireland have the highest rates of obese children aged 5–17 where the percentage of obese boys and girls is more than 25 percent of the whole population. Countries with the highest obesity rates among adults are the United States of America, Mexico, New Zealand, Chile and Australia, where 33.8, 30, 26.5, 25.1 and 24.6 percent, respectively, are obese (OECD, 2012). In most of these countries, the consumption of meat is high. Even countries such as China and India that were not concerned by obesity in the past are now battling epidemics of diabetes and obesity (Hoffman, 2012).

¹ China, India, Indonesia, Malaysia, the Philippines, the Russian Federation, South Africa, Turkey, Brazil, Colombia, Mexico, Germany, Japan, the United Kingdom of Great Britain and Northern Ireland, the United States of America.

Along with improvements in GDP per capita, urbanization contributes to increased concerns about overweight/obesity. With changing work habits, urban people demand convenience and speed in food consumption. According to Deloitte (2012), consumers today demand convenience and are willing to pay more for it as they would rather buy time than prepare food. Thus, the amount of processed foods in the average household consumption is increasing. However, according to de Morais, Afonso and de Almeida (2010), processed, functional and convenience foods are still less familiar to older people in Europe. This is supported by a survey conducted among a group of older people in Portugal that states: “for the Portuguese elderly, good taste was strictly related to the fresh and unprepared products, which is in fact the opposite of the convenience food concept”. However, adoption of urban lifestyles provides more exposure to advertising, which increases awareness about both the benefits and disadvantages of convenience food to both young and older consumers. However, the benefits of convenience go beyond a healthy diet and are more related with social changes in gender roles and the availability of time.

As a response to the global problem of overweight and obesity, many policy-makers, health professionals and health bodies advocate greater government intervention in the habits and lifestyles of citizens. The Foresight Report (Government Office for Science, 2011) suggests that “campaigns to change individual behaviour involving public education, advertising, targeted programmes in schools and workplaces, and the provision of better labelling enable the public to make more informed decisions”.

Among countries that have taken such measures are Hungary, Brazil, India (Bangalore) and the United States of America. Andreyeva, Long and Brownell (2010) state that one way to address the issue of obesity is to change the relative prices of selected foods through carefully designed tax or subsidy policies. According to the Euromonitor International (2012) study, Hungary has imposed higher taxes on products rich in salt, sugar and carbohydrates, and in Bangalore the authorities are discouraging parents from giving processed foods to their children. The study also reveals that Brazil’s public health authorities “are arguing for aggressive official measures, ranging from healthier school meals and the aggressive promotion of breast-feeding to taxes and tougher warnings on unhealthy food products”. The authorities in the United States of America are trying to reduce fast-food consumption through zoning, counter-advertising, taxing unhealthy food, calorie labelling, warning labels and other nutritional information. Corporate Accountability International’s report (Gagnon, Freudenberg and Corporate Accountability International, 2012) encourages United States citizens to take an active part in reducing the number of fast-food restaurants in their community and suggests a number of policies that might help to do so, depending on the situation and the demands of the specific zone.

Closely related to health concerns are food safety concerns. Epidemic crises such as “mad cow” disease have triggered greater calls for increased transparency, meaning the ability to trace the food bought by consumers. Transparency represents an important aspect of quality and safety assurance by allowing the tracing of products, ingredients, suppliers, retailers, processing operations or storage procedures throughout the food production chain. This is especially relevant when failures occur. As the food chain has lengthened from local production, processing and consumption to more global commercial opportunities, the need to transfer information related to production and public health and the complexity of these transfer vehicles has expanded (McKean, 2001). With the increase in complexity, consumers wish to know about the origin (species, place, condition of rearing or catch), the transformations and the distribution of their food products (Pascal and Mahé, 2001). This is the main reason why the Hazard Analysis and Critical Control Points (HACCP) standards are applied to international trade as a response to consumer demand.

HACCP International (2013) is a food science organization that specializes in the HACCP food safety methodology and its application within the food and related non-food industries. The organization develops standards for preserving the basic environmental conditions of food: cleaning and disinfection, maintenance, personnel hygiene and training, pest control, plant and equipment, premises and structure, services (compressed air, ice, steam, ventilation, water, etc.), storage, distribution and

transport, waste management, and zoning (physical separation of activities to prevent potential food contamination).

HACCP standards are an example of regulations supporting safety of production and trade as developed countries have made them a prerequisite for exports and imports. Initially introduced as a voluntary requirement, HACCP systems are becoming mandatory for all imported food or for certain food sectors in many countries today.

Many food processing companies already have effective internal traceability systems as part of their HACCP-based quality assurance systems (Frederiksen and Gram, 2003). In many cases, however, traceability is lost before and after the company deals with the raw materials and the final products. Consequently, several e-business companies produce software allowing the integration of financial and production data in one programme package, and most of these have traceability capability components implemented (e.g. i2 technologies Inc., the United States of America; SAP AG, Germany). The United Nations Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT) standard is currently the most widely used standard for transferring data between steps in the chain (Lin, 2005).

A good example (Trendwatching.com, 2013) of food digital tracking is the Chinese organic farm Yi Mu Tian. Mindful of Chinese consumers' concerns about food safety, the high-tech farm, which uses computers for temperature regulation, lighting and watering, operates a traceability code system that allows consumers to track any food item back to the field in which it was grown. Customers can also track the growth of vegetables by camera. As of October 2012, the farm has fulfilled home delivery orders to more than 60 000 families in Shanghai.

In addition to HACCP quality assurance standards, legislation and standards have been issued in order to control sanitary standards of food. FAO and WHO established the Codex Alimentarius Commission in 1963 (Codex Alimentarius, 2013). The Commission develops harmonized international food standards, guidelines and codes of practice to protect the health of consumers and to ensure fair practices in the food trade.

3. CORPORATE SOCIAL RESPONSIBILITY

Another trend that is gaining importance globally is corporate social responsibility (CSR). It has been in vogue for some time already, and public awareness of the initiative continues to grow. According to Deloitte (2012), CSR is increasingly important for consumers as they consider sustainability, ethical sourcing, and food miles, among other factors. Consumers are expected to pay more for “socially responsible” products and may support companies that care enough to produce them.

Increasing concerns about healthy eating and social responsibility have been manifested in another trend – transparency, which was briefly touched upon in the previous chapter. Despite the development of efficient traceability systems all over the world, it is still difficult for interested consumers to find adequate and reliable information regarding where food is grown and its impact on the planet. However, “never before has it been easier to find data and information about food. It is now possible to locate your closest farmer’s market, to learn about the sustainability of your favourite brand, and to uncover the environmental and social score of products compared to similar items. You can subscribe to countless food publications, blogs and recipe sites.” (Trendwatching.com, 2012, 2013). Consumers are increasingly learning about food via the web and share the information with one another. Transparency helps consumers make better decisions regarding their food consumption. Individual consumers may have different sustainability agendas from the companies that serve them. A new partnership is needed between CSR and marketing communities to reconcile a company’s own responsibility initiatives with its consumers’ aspirations for a sustainable supply chain. “The informed consumer can effect change in the food system by choosing to purchase items that promote sustainability, equitability or other desirable goals. Clear labelling and information is essential for this to happen” (Government Office for Science, 2011, p. 36). As a result, transparency is no longer a consumer-driven trend, but a retailer’s CSR policy.

Consciousness of corporate responsibility is often driven by the media, by NGOs, and by shareholders. The transparency demanded from corporations today by better-informed consumers goes beyond the values stated in companies’ codes of ethics. Consumers are interested not only in what the company has planned to achieve in the direction of social responsibility, but also what has not been achieved in reality.

According to Edelman (2012), the percentage of global consumers who trust businesses to do what is right was 56 percent in 2011, with a reduction to 53 percent in 2012. Cone Communications (2012) states that 69 percent of United States consumers said they are more likely to buy from a brand that talks publicly about its CSR results, versus 31 percent who would purchase from a brand that talks about its CSR mission and purpose. As a response to the trend, many companies are motivated to actively communicate to the consumer that they carry out their business responsibly, providing full information about the product and its movement through the value chain. As an example, in September 2012, McDonald’s began publishing calorie information on all its restaurant menus and drive-through windows in the United States of America, and also started promoting its “Favourites Under 400 Calories” menu, which includes lighter dishes (Trendwatching.com, 2012, 2013).

4. PRODUCTION SYSTEMS AND INNOVATION

Traditional procedures of food production and processing, sometimes related to local cultures, are positively perceived in the assessments made by consumers about the expected quality of food products. This idea is sometimes included in “designation of origin” schemes in countries of the European Union (Member Organization) (Bertozzi, 1995; Fotopoulos and Krystallis, 2003). It has been demonstrated that a traditional appearance of food can be identified by consumers as a sign of superior quality in contrast to standardized commercial foods (Kupiec and Revell, 2001). In a similar way, some consumers tend to distrust innovation and the use of new technologies in food production (Yeung and Morris, 2001, 2006; Yeung and Yee, 2003), considering their outcomes as less authentic, of lower quality, and even hazardous (Sapp, 2003). When making food choice decisions, technology appears to be a potential source of risk for concerned consumers. Uncertainty about the possible consequences of consuming foods that have used innovative food harvest methods can adversely affect consumers’ willingness to purchase (Loureiro and Hine, 2004). Unfavourable beliefs and attitudes towards these new foods may impede adoption and diffusion, negatively affecting perceptions and appraisal of the products. Mistrust of innovation may also prevent the adoption of convenient foods in the most traditional societies (Choo, Chung and Pysarchik, 2004).

This is the case of aquaculture and other new methods of food production, including genetically modified organisms (GMOs). In some countries with significant rates of seafood consumption, farmed species are also suffering from low consumer appraisal and a low expected quality. Aquaculture is a relatively new source of food supply that is not as appreciated as traditional wild fishery in high seafood consumption communities (European Commission DG MARE, 2008; Fernández-Polanco, Mueller and Luna, 2013). This is especially true in southern European countries, where seafood forms an important part of the traditional diet. Because of this preference for wild species, farmed products result in negative perceptions and a less competitive position in terms of preferences and prices.

Conversely, organic food has become very popular thanks to trends in healthy eating. Organic food certification is a reflection of consumers’ concerns about both health and the environment. The term “organic” refers to the way agricultural products are grown and processed. Specific requirements must be met and maintained in order for products to be labelled “organic” (European Union, 2007). Organic crops must be grown in safe soil, have no modifications, and must remain separate from conventional products. Farmers are not allowed to use synthetic pesticides, bioengineered genes (GMOs), petroleum-based fertilizers, or sewage sludge-based fertilizers. Organically raised animals are not given antibiotics, growth hormones, or fed animal by-products. In addition, the animals are given more space to move around and access to the outdoors, both of which help to keep the animals healthy. The more crowded the living environment is, the more likely the animal is to fall sick. In order to raise animals organically, clear communication with farmers is important.

“An organic label indicates that a product has been certified against specific organic standards. The label carries the name of the certification body and the standards with which it complies (e.g. EU 2092/91).” (FAO, 2013b). The label of a given certification body informs the consumer about the type of standards complied with during production and processing as well as about the type of recognition granted to the certification body. “Many certification bodies operate worldwide, most of which are private and originate in developed countries. To the informed consumer, this label can function as a guide (FAO, 2013b).

In July 2010, the European Union (Member Organization) introduced a mandatory logo for organic food to strengthen the organic sector by making the identification of organic products easier for consumers. “The placement of the EU logo is mandatory from 1 July 2010 for pre-packaged food. It remains voluntary for imported products after this date. From 1 July 2010, where the Community logo is used, an indication of the place where the agricultural raw materials were farmed should accompany it. It should be indicated that the raw materials originate from 'EU Agriculture', 'non-EU Agriculture' or 'EU/non-EU Agriculture'. If all raw materials have been farmed in only one country, the name of this specific country, in or outside the EU, can be indicated instead. If operators wish to sell their products in an EU Member State other than their own, they may place an additional national or private

logo that will be recognised by the consumers of this particular country.” (European Commission, 2013a). However, according to Deloitte (2012), while consumers want healthy food they often do not know what healthy means and are easily confused. For example, organic means “not enhanced”, while functional foods usually signify “enhanced”.

The global organic food market grew by 9.8 percent in 2011 to reach a value of US\$67.2 billion. North America and South America account for 50.3 percent of the global organic food market value, with large amounts of output in South America exported to North America. In 2016, the global organic food market is forecast to have a value of US\$102.5 billion, an increase of 52.6 percent compared with 2011 (MarketLine, 2014). Taking into account the above, the standardization of labelling and increased consumer awareness about it are very relevant. Janssen and Hamm (2012), in analysing the consumer perception of the mandatory logo of the European Union (Member Organization) for organic food, found that while the introduction of the logo was generally welcomed in all countries, consumers were concerned about the trustworthiness of the inspection system. It is suggested that to address these concerns, communication campaigns should be conducted informing consumers about what the new logo stands for and how the inspection is done. This could involve topical publications and activities arranged by different social groups.

However, despite its growing popularity, the development of the organic market has its own brakes. Premium prices are still a problem for increasing demand in developed countries (Magnuson *et al.*, 2001), and limit the potential of markets in less-developed countries, which become suppliers of organic food for foreign richer markets. Within the European Union (Member Organization), Spain is a good example of this gap between producer countries and destination markets. Spanish organic agriculture may benefit from enlarging the local market. However, in spite of increasing concerns about health and environment across the population, consumers’ and retailers’ attitudes towards organic food do not favour demand expansion. There are small segments willing to accept premium prices for the expected benefits of an organic diet; yet these premiums are not large enough to compensate for the cost differential between organic and conventional agriculture (Sanjuan *et al.*, 2003).

While the organic food concept and labelling met with rapid approval from consumers, acceptance of genetically modified crops and nanotechnology is low. Genetic engineering is a science that involves deliberate modification and transformation of certain genetic materials of plants or animals to create new variations of products. Genetically modified (GM) foods made their first appearance in food markets in the 1960s. As suggested in research by Chen (2008) on consumer attitudes and purchase intentions towards GM foods, many foods consumed today are either genetically modified whole foods or foods containing ingredients brought about by gene modification technology.

Nanotechnology is a technology dealing with nano-particles and allowing materials to achieve new qualities in this dimension. Although this technology makes interesting innovations possible in the food domain such as by adding additional benefits (e.g. better solubility of vitamins, longer shelf-life, cancer prophylaxis), the possible negative consequences of this technology for humans and the environment are still unknown.

Despite the perceived benefits of these technologies, consumers are rather sceptical when they see “genetically modified” in labels. Consumer attitudes in Europe towards GM foods as reported in many studies and publications appear to be strongly negative (e.g. Bredahl, 2001; Grunert *et al.*, 2001; Grimsrud *et al.*, 2004). United States consumers historically remained neutral toward GM foods until recently when research studies suggest their slight disapproval of such foods (Gaskell *et al.*, 1999). Batrinou, Spiliotis and Sakellaris (2008) demonstrated a degree of phobia concerning GM food and the importance of carefully worded labelling among younger consumers. Siegrist, Stampfli and Kastenholz (2009, p. 660) summarize the results of a survey detailing consumers’ decision-making processes with regard to nanotechnology products in this way: “Results suggest that consumers attribute a negative utility to nanotechnology foods, even though the products had a clear benefit for the consumers. Results suggest that consumers are interested in products with additional health effects only when the effect is due to natural additives”. Thus, food markets will need to make special efforts

to raise consumer awareness about the benefits and safety of these new technologies, so that consumers will have a more positive attitude towards genetic modification and nanotechnology in foods.

5. SUSTAINABILITY

Sustainable consumption and production in food, fisheries and agriculture, which has long been a concern of resource economists (Bjørndal and Munro, 2011), is another consumer-driven trend. The availability of natural capital such as fish stocks and land is limited by nature. Thus, the informed consumer cares about integrated implementation of sustainable patterns of food consumption and production, respecting the carrying capacities of natural ecosystems. Consumer choice plays a leading role in orienting production, as consumers select certain types of products according to place of origin, production processes, and producer.

Kurien (2005, p. 58) provides a good example of how consumers can influence sustainable production in the fishing industry: “Fish-exporting developing nations need to reassert their commitment to immediate resource rejuvenation and long-term conservation and management. Consumers in developed countries play an important role in this context. It is they, finally, who will decide the contours of luxury consumption. Harvesting of small Nile Perch in Kenya is based on the export demand for fillets obtained from immature fish with a body weight below one kilogram. There is a vibrant, illegal market in the United States for immature lobsters from Brazil. As long as such demands persist, it actually pays developing country fishers to fish unsustainably.”

FAO (2014) reveals that the proportion of assessed marine fish stocks fished within biologically sustainable levels declined from 90 percent in 1974 to 71.2 percent in 2011, when 28.8 percent of fish stocks were estimated as fished at a biologically unsustainable level and, therefore, overfished. Overfishing not only has negative ecological consequences, but also reduces fish production, which leads to negative social and economic consequences.

Poor natural-resource use in aquaculture not only influences fish stock depletion, but also threatens biodiversity. Mangroves, which are commonly found along sheltered coastlines in the tropics and subtropics, declined from 18.8 million ha in 1980 to 15.2 million ha in 2005 (FAO, 2007). Human pressure on coastal ecosystems and the competition for land for aquaculture, agriculture, infrastructure and tourism are often high and are major causes of the decrease in mangrove areas (FAO, 2012, p. ix).

Fisheries sustainability, assured to consumers through ecolabels and other types of certification, reflects the seafood sector’s increasing willingness to be environmentally friendly. From a retailer’s point of view, ecolabelled products increase transparency in aspects going beyond food safety and quality standards. The goal of ecolabels is to create market incentives for the implementation of sustainable processes in the food industry. Research has provided evidence pointing to a positive effect from the use of ecolabels on seafood demand and consumers’ willingness to pay. Within the same species, certified fish may be preferred to non-certified, as long as the premiums do not exceed a limit of tolerance (Wessells, Johnston and Donath, 1999). Environmental labels are more useful than quality claims in obtaining premium prices for seafood products and for particular species (Jaffry *et al.*, 2004). However, it was recently found that consumers are not willing to shift from their preferred species to other lower-priced ones owing to the presence of environmental labels alone (Johnston and Roheim, 2006). The effects of ecolabels differ among species and certifying agencies (Wessells, Johnston and Donath, 1999; Jaffry *et al.*, 2004), and across countries (Johnston *et al.*, 2001).

The number of consumers persuaded to purchase these environmentally labelled products, and their willingness to pay a premium for them, become key factors in assuring the success of these kinds of strategies (Roheim, 2008). One cannot expect consumers to be attracted by the presence of ecolabels alone in a set of buying options; they need to be convinced to act in an environmentally friendly way. As with healthy behaviour, it is a process that begins with consumers’ concerns, which do not necessarily result in a willingness to behave sustainably without the concurrence of other psychological factors (Abdul-Muhmin, 2007). Consumers will not pay attention to ecolabels unless they are environmentally concerned and convinced to act for environmental protection through their buying decisions. Consumers have to perceive that buying those products is an effective means to achieve this goal, and they need to recognize that the information on the label is useful for this purpose (Thøgersen, 2000). Confusion on the meaning of the term sustainability and on the wide number of

different options is one factor that may affect the conclusion of the process. In addition, the availability of these labels in stores is the main requirement for the success of ecolabelled products, and this decision lies in retailers' hands.

The proliferation of ecolabels in fish consumption in the last decade or so has led to calls for some international guidance in the area. As a response, FAO developed the Guidelines for the Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries (FAO, 2009). The guidelines set out principles, minimum requirements, and procedural aspects that any ecolabelling scheme should encompass, and provide a benchmark against which various schemes can be compared. Washington (2008, p. 2) states that "by purchasing fish and seafood products certified to a respected ecolabelling scheme [consumers] can reassure themselves that their consumption is not having an adverse effect on fish stocks or the marine environment, and assuming no price premium, they can 'do the right thing' at no additional cost." At the same time, information on potential health benefits has been shown to increase demand for specific seafood species and consumers' willingness to pay (Marette, Roosen and Blanchemanche, 2008).

The world's leading certification programme for wild capture fisheries is that of the Marine Stewardship Council (MSC). The MSC has developed standards for sustainable fishing and seafood traceability, which are consistent with the above-mentioned FAO guidelines and the assessment schemes set by the ISEAL Alliance (the global membership association for sustainability standards).² The MSC programme is not mandatory, but certain retail chains in countries such as Germany and the United Kingdom of Great Britain and Northern Ireland, have a preference for MSC-certified sea products. In other countries, any fishery can try to become certified if it passes the rigid standards of the MSC. However, MSC certification is expensive, which puts small-scale fisheries at a disadvantage. In addition, the requirements of the MSC programme in some countries of the European Union (Membership Organization) create market-access problems for developing countries. By 2013, 188 fisheries had been certified to the MSC standard, while 106 were in the formal process of being assessed but not yet certified. The total landing of MSC-certified fish is 6.5 million tonnes, amounting to 7 percent of the global seafood supply (O. Oloruntuyi, MSC, private communication). An analysis of MSC-certified frozen processed Alaska pollock products in the London metropolitan area shows a statistically significant price premium of 14.2 percent (Roheim, Asche and Santos, 2011). However, their conclusions are conservative when considering whether the premium is sufficient to cover producers' costs of certification.

The benefits of carrying the MSC logo have recently been put in question by certain producers and governmental institutions, Alaskan salmon processors being the best-known case. A group of salmon processors from Alaska withdrew from the MSC in 2011 and kept selling their products under the coverage of the local and governmental certification programme alone (Alaska Sea Food Marketing Institute). This withdrawal appears to have had no significant consequences on their sales, even in markets with a strong presence of MSC-certified products such as Germany. Among other well-known government certification programmes are Krav (Sweden), Iceland Responsible Fisheries and Ø-mark (Denmark).

Consumers also have concerns about how the production of food affects climate change. A report by Lippincott Mercer (2006) states that "28% of consumers in the UK, and 19% in the U.S., are 'strongly concerned' about climate change. This group shows a latent demand for products, services and brands that would allow people to reflect their climate-change concern in their spending". "Global climate change has been largely driven by the activities of the industrialized countries. Yet its most severe consequences will be and, indeed, are already being felt by the developing countries. Moreover, it is the poor of those countries who, in part because of the poverty, are most vulnerable. If left unchecked, climate change will increase hunger and cause further deterioration of the environmental resources on which sustainable agriculture depends." (Conway and Wilson, 2012).

² ISEAL Alliance website: www.isealalliance.org/about-us

In Europe, the concept of buying local products is strongly promoted. The “food miles” concept, which originated in the United Kingdom of Great Britain and Northern Ireland in the early 1990s, has been supported by a range of environmental, community and farmer groups, and has become very popular among consumers and stakeholders in assessing the sustainability of production and the impact on climate change. Food miles is the distance that food travels from its production until it reaches the consumer. Long-haul trucking and flying require large amounts of fossil fuel, the combustion of which releases carbon dioxide and other pollutants into the atmosphere. Extended supply chains due to globalization with large flows of imported products have significantly increased the distance in recent decades. An example is given by salted and dried cod, a traditional product made in Norway for export to countries such as Portugal and Brazil. In recent years, China has started importing frozen cod from Norway. After salting and drying, this cod is exported to Brazil, where it is sold in competition with the Norwegian product. The food miles involved in these two alternative supply chains are vastly different. According to the Worldwatch Institute (2013): “in the United States, food now travels between 1,500 and 2,500 miles from farm to table, as much as 25 percent farther than two decades ago.” In the same vein, reflecting the consumers’ concern about the carbon intensity of transportation, two major retailers in the United Kingdom of Great Britain and Northern Ireland (Tesco and Marks and Spencer) now place plane stickers on fresh produce that has been air freighted from abroad (Hogan and Thorpe, 2009).

Forestry sustainability is another environmental concern among consumers. Forests are the lung of the planet. They absorb and recycle carbon dioxide (CO₂), helping to reduce global greenhouse gas emissions and stabilize the climate. The loss of forests has major climate, biodiversity and socio-economic impacts. Deforestation accounts for an estimated 10 percent of global greenhouse gas emissions and 60 percent of Brazil’s emissions, its largest source (Mata no Peito, 2013). In addition, the Amazon is the most biodiversity-rich rainforest in the world and is home to one in ten known plant and animal species. According to the BBC (2011), “last December, a government report said deforestation in the Brazilian Amazon had fallen to its lowest rate for 22 years. However, the latest data shows a 27 percent jump in deforestation from August 2010 to April 2011.” As Brazil is the largest importer of soybeans in the world, some environmentalists argue that rising demand from both developed and developing countries motivates farmers to clear more and more of their rainforest land.

Many aspects of sustainable production rely on national policies. Therefore, the onus of a major transformation of the market to ensure sustainable production and consumption rests in the hands of different agents. Consumers, especially wealthy, developed-country consumers, can influence production conditions. However, the ability to effectively affect or influence the way food is produced, especially in developing countries, will be limited by the size of the segments, their purchasing power, and their dependence on imports for supplying these concerned and involved consumers. Actions focused on consumer education may be effective, but this is a complex process. The role of relevant government agencies, certifiers and NGOs in this process consists of providing information, clarifying concepts and options, and promoting environmentally responsible behaviour among consumers, which may support the producers’ increasing costs of becoming sustainable by increasing market returns (Roheim, 2008).

6. COUNTRY AND REGION OF ORIGIN

As briefly mentioned above, a country or region of origin is an important determinant of consumers' food preferences, and it possibly has the longest history in terms of its use for product differentiation. Some regions have special environmental conditions or processing traditions that make their products' quality especially appreciated and celebrated in national and overseas markets. In the area of the European Union (Member Organization), the protection of geographical indications was extended to foodstuffs and other agricultural products in 1992 (European Council, 1992).

One example of this differentiated strategy is the programme of Protected Denomination of Origin (PDO) of the European Union (Member Organization). This is currently governed by Council Regulation (EC) No. 510/2006 of 20 March 2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs (European Council, 2006). According to the programme, products from certain geographical areas are identified with a collective brand related to certain land, climate or process advantages particular to that region. Feta cheese has been a protected designation of origin product since 2002 (European Commission, 2013b). According to the PDO, only those cheeses produced in a traditional way in some areas of Greece (Macedonia, Thrace, Thessaly, Central Mainland Greece, the Peloponnese and Lesbos), and made from sheep's milk, or from a mixture of sheep's and goat's milk (up to 30 percent) of the same area, may bear the name "feta". Among more recent PDO-protected products is Aceite de Navarra, an olive oil registered by Spain in September 2009. Despite the globalization of some ethnic or regional cuisines, there are some foods and preparation methods that tend to be associated with certain geographic areas. Other important variables that may affect consumers' preferences, such as attitudes and traditions, may be related to geography (Larson, 1998). Country or region of origin is used by consumers as an external sign in making quality assessments of food products (Hoffman, 2000; Scarpa, Philippidis and Spalatro, 2005; Kim, 2008).

A second aspect of origin is reflected in consumers' predisposition to prefer local or domestic food over food imported from other regions or countries. This consumer attitude, also called "ethnocentrism" (Shimp and Sharma, 1987; Sharma, Shimp and Shin, 1995), represents the consumer's beliefs about the appropriateness of purchasing products made in foreign countries. Highly ethnocentric consumers may be systematically refusing to purchase imported products. Consumer ethnocentrism may be a significant predictor of consumers' assessments of domestically made foods, and its effects seem to be stronger in food choices than those of demographic variables (Orth and Firbasová, 2003) or even health and sustainability claims (Fernández-Polanco, Mueller and Luna, 2013).

The effects of claims based on the region or country of origin may vary across products and regions (Scarpa, Philippidis and Spalatro, 2005). When testing the interest in local farm-raised species, familiarity with aquaculture and frequent seafood consumption were found to be determinant factors of preference and willingness to pay (Quagraine, Hart and Brown, 2008). Experience with the product, both from the point of consumption and production, may be affecting the strength of the influence of country or region of origin claims.

7. SUMMARY AND DISCUSSION

Following the analysis above, Table 1 summarizes some of the main trends that will influence future food demand.

Table 1. Future consumer trends

Trends	Actions	Impact on food demand
Food safety and health benefits	<ul style="list-style-type: none"> • Government intervention in the diets and lifestyles of citizens in order to control obesity • Campaigns to change individual behaviour involving public education, advertising, targeted programmes in school and workplaces • Established systems for food traceability 	<ul style="list-style-type: none"> • Increased demand for food that is ecolabelled and certified by authorized bodies • Increasing popularity of organic food • Decreased consumption of fast food
Production systems and innovations	<ul style="list-style-type: none"> • Change in food production processes • Return to traditional production processes in cases such as organic foods • Application of genetic modification and nanotechnology to production of new foods 	<ul style="list-style-type: none"> • Further adaptation to new foods, although slow in cases where genetic modification, nanotechnology, aquaculture and convenience apply • Growth in relevant certification and ecolabelling
Corporate social responsibility	<ul style="list-style-type: none"> • Increased awareness about social issues in food production by media, NGOs, consumer brands and other stakeholders • Full information about the product and its movement through the supply chain provided by producers • Increased availability of information about product flaws, production mistakes, failures and unreached social responsibility goals provided by producers • Tendency to shift business practices towards social responsibility by producers and other stakeholders involved 	<ul style="list-style-type: none"> • Increased preference for “socially responsible” products • More-informed consumer choice about food products • Increased demand for products from reliable brands/producers • Affinity with “honest” brands/producers
Sustainability	<ul style="list-style-type: none"> • Established legislation for sustainable and safe food production • Ecolabels 	<ul style="list-style-type: none"> • Increased demand for products that are produced sustainably and certified
Country and region of origin	<ul style="list-style-type: none"> • Promotional actions for local food by social agents (governments and NGOs) 	<ul style="list-style-type: none"> • Consumer preference for local foods over imported items if products prices are competitive

Food safety and health benefits

Healthy eating will be one of the dominant trends in food consumption in the coming decades. Driven by concerns about a global rise in the proportion of overweight and obese consumers and obesity-related diseases, governments will play an important role in promoting healthy eating habits to the public through campaigns, advertisements, and targeted programmes in schools and workplaces. As a consequence, demand for food that is certified by an authorized body, labelled with safety assurances, whether public or private, or organic-labelled, will increase, and the consumption of fast and higher-fat food will decline. The adoption and consumption of healthy foods will vary among countries and individuals owing to different abilities to process information, understanding of health benefits and consumer involvement in personal health care.

Consumers' concerns about health are closely related to food safety concerns. Consumers will demand more information about food products and the possibility to trace their movement through the supply chain.

Corporate social responsibility

Corporate social responsibility is a rising trend among consumers and retailers. Consumers will demand more transparency from producers about food products, and will pay more attention to production sustainability, ethical food sourcing, and food miles, among other factors. An abundance of publicly available information related to the food industry, product flaws, production mistakes, failures and unmet social responsibility goals will motivate producers to disclose full information about their products. The reliability and honesty of the producer will increasingly influence consumers' choice towards food. Corporations will progressively change their practices by making them more socially responsible as a response to media, NGOs and consumer demands.

Production systems and innovations

Food production and processing procedures will be affected by consumers. In some cases, such as the cultivation of organic foods, production systems will revert towards more traditional ones. In other cases, developments in nanotechnology and genetic modification will stimulate the production of new foods. The acceptance of genetically modified products and nanotechnology will continue to be low owing to negative perceptions by consumers of modified foods. These developments in the food industry will further facilitate growth in relevant ecolabelling and certification schemes among producers.

Sustainability

Consumers' interest in the sustainable production of foods will continue to be an increasing trend, especially in wealthy developed countries. Fish-stock and forest depletion as well as the effect of production on the climate are among some areas of consumers' concerns. Legislation will reinforce the trend towards sustainable production. The popularity of sustainable and "socially responsible" products will increase as a result.

Country and region of origin

The concept of buying local products is favoured among consumers, in Europe in particular. Attitudes, traditions, and special production methods distinguishing foods in national and international markets are the elements that will influence preferences among consumers for local foods over imported products.

Discussion

The extent to which these new trends will affect food demand in the future is conditioned by the level of involvement in promotion by retailers as well as the size and the economic value of the segments of

concerned consumers. Unless the segments of concerned consumers reach a minimum profitable size for producers and retailers, the main drivers in global food consumption will remain price, health and safety and technical quality, as per the dominant present trend. Given that most of the above issues mainly concern consumers in developed countries, expected future changes in international food flows will have some impact in this respect. One interesting question is whether all these consumers' concerns, which seem to have some impact on the demand for food in South–North trade, will have any impact in South–South flows and the production of food to address local demand.

The rise in consumer concerns strongly depends on the promotional efforts undertaken by stakeholders, mainly governments and NGOs, but also media and other relevant groups. These stakeholders do not always act in the same way, or share the same interests and goals, often resulting in increased confusion rather than increased concerns. Price sensitivity will have a major impact on the development of these markets. Even concerned consumers are limited in their budget when they make food choices, and this will affect the acceptability of premium prices. The fall in household purchasing power in many Western countries owing to the policies adopted to overcome the financial crisis will also have an impact on the demand for premium foods and may become an obstacle for market development. Finally, even in countries with similar levels of income, cultural issues may result in differences in terms of concerns and consumption.

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