

ETHICAL ISSUES RELATED TO FOOD SECTOR EVOLUTION IN  
DEVELOPING COUNTRIES: ABOUT SUSTAINABILITY AND  
EQUITY

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**ABSTRACT.** After a century of major technical advance, essentially achieved by and for the industrialized countries, the evolution of the food sector in southern countries should no longer be thought of in terms of a "headlong pursuit." In the present context of demographic growth, urbanization, poverty and disparities, environmental degradation, and globalization of trade, new priorities have emerged, and new ethical questions have been raised, mainly related to sustainability and equity. This paper analyses these ethical concerns in the following terms: can the model of food sector development initiated by the industrialized countries be applied to the entire world on a sustainable and equitable basis, given the effects of this development with regard to the energy consumed, the changes in dietary behavior and related nutritional problems, the new demands in terms of food safety, the questions of biodiversity, ownership of knowledge, cultural identities, gender issues, and Man's relationship to food and Nature?

**KEY WORDS:** biodiversity, cultural identity, developing countries, dietary behavior, energy, equity, food safety, gender issue, knowledge property, sustainability

INTRODUCTION

The present challenges facing the future of the food supply stem from the need to satisfy food demand. These challenges were further analyzed in previous papers (Raoult-Wack and Bricas, 1998; Raoult-Wack and Bricas, 2001; FAO, 2001).

Firstly, food demand is increasing, with the world's population growing at an ever-increasing rate and an extra 1.7 million mouths to feed each week. The problem arises mainly in the developing countries. Secondly, food demand is moving away from the areas of agricultural production, owing to the rate of urbanization. This is particularly rapid in the developing countries, where it exceeds the rate of demographic growth. Thirdly, everywhere, food demand is changing rapidly in line with present-day socio-economic changes: changes in consumption trends related to changes in lifestyle (less time spent preparing and eating meals, women going out to work, eating out, infatuation with fast food, etc.), changes in



the international context, with the new World Trade Organization rules and the Codex Alimentarius, and changes in consumer requirements in terms of food safety. All this is taking place in a context characterized by increasing environmental degradation, and widening disparities (Landes, 1998).

These trends all go to show that one of the crucial issues for the future of the planet is to improve the relationship between production and consumption by developing the performing food sector (Raoult-Wack and Bricas, 1998), that is to say a whole range of technical, trading, and services activities aiming at reducing post-harvest losses, transporting agricultural products from the production to consumption areas, adapting product quality to consumer requirements, and increasing competitiveness on local and international products.

In the present international landscape, there is a sharp contrast between northern and southern countries. Northern countries are richly endowed with performing food sector, and overabundance of food. In southern countries, several hundred millions of people are still suffering from hunger or malnutrition and the Malthusian fears of a widening gap between people's needs and food production are once more coming to the fore.

Over the past decades, efforts devoted to the development of food sector in southern countries has been impregnated by the model of food sector initiated by the countries of the North, and dominated by the idea of transfer of knowledge and technology from the North to the South.

However, although the food sector has significantly contributed to ensuring food security, questions are now being asked about its recent developments and critical evolution trends in the industrialized countries, which have now to face the disruptive effects of some uncontrolled industrial and technological development on the environment and on society (Raoult-Wack and Bricas, 1998).

What are these critical trends and possible disruptive effects, and to what extent are southern countries also concerned? This paper aims at analyzing critical trends with regard to the energy consumed, the changes in dietary behavior and related nutritional problems, the new demands in terms of food safety, the questions of biodiversity, ownership of knowledge, cultural identities, gender issues, and Man's relationship to food and Nature. Such critical trends raise ethical questioning, mainly related to sustainability and equity, and were primarily analyzed in previous papers (Raoult-Wack and Bricas, 2001; Fresco, 2000; FAO 2001; Raoult-Wack, 2001a, b).

## ENERGY CONSUMPTION

The first critical trend is related to energy consumption (Raoult-Wack and Bricas, 2001). The present trend in the growth of demand and the rate of urbanization reinforces fears of a widening gap between people's needs and long-term food production.

In fact, town-dwellers eat more meat and more processed products with a built-in service factor (convenience foods), in other words calories that cost more to obtain, and this is accentuated by their rising level of income. North Americans consume the equivalent of 800 kg of grain per annum, Italians 400 kg, and Indians 200 kg (Raoult-Wack and Bricas, 1998).

To supply populations with enough food, more and more energy has thus to be injected into the processing system, given the increased sophistication of the technology it uses and the services involved (packaging, portioning, pre-cooking, etc.) In the industrialized countries, it was estimated that more than 80% of fossil energy in the food chain is used in post-harvest operations (transport, storage, processing, packaging, distribution, cooking). The food sector accounted for about 30% of fossil energy used in these countries (Heilig, 1993). Hence, the newly industrialized and urbanized countries in the South are moving towards an agro-nutritional model, the energy requirements of which appear difficult to cater for on a sustainable and equitable basis for the entire world.

## NUTRITION

The second critical trend is the long term detrimental effects of present dietary behavior trends on health (Raoult-Wack and Bricas, 1998, 2001).

In fact, there is a tendency for modern eating habits to lead to a breakdown of the pattern and the individual structure of meals and to eating between meals, harmful practices that are partly responsible for the increase in problems of overweight and obesity. Modern eating habits also involve visible changes in the foods consumed. It is quite apparent that when the consumers' standard of living improves, and when they are urbanized, their diet contains not only a far higher proportion of sugars and salt, but also primarily of fats, associated with the consumption of fatty foods like crisps, chips, doughnuts, and snack foods, in particular of saturated fats associated with the consumption of animal products. Such fats are currently designated the main ones responsible for cardiovascular diseases and certain cancers. Modern eating habits also involve more insidious changes as a result of industrial processing practices like refining. The refining of products such as sugar, flour, or oil takes out the

micro-nutrients, fibers, and trace elements originally present in the raw foodstuffs, all of which play a positive role in the prevention of chronic food-related diseases (Raoult-Wack, 2001a, b).

Another critical point results from the combined effects of the availability and accessibility of foodstuffs, the very heavy pressure from media advertising, and the multiplicity of nutritional and dietetic recommendations. Dietetic and nutritional points of reference and recommendations, once established empirically over several generations and transmitted as part of family upbringing, are now essentially transmitted by the media or the large food manufacturers. The rapid scientific advances made in the food sector, sometimes erroneously converted into practical recommendations, and the very short life of products and of food fashions mean that most often such recommendations are ever-changing, ephemeral, and sometimes contradictory. The result is described by Claude Fischler, in his book "*L'Homnivore*" as "dietetic hullabaloo" and "food cacophony" (Fischler C, 1990).

As a whole, in the countries of the North, but also in the newly industrialized and urbanized countries of the South, the overabundance of food products on the market, with an ever-higher fat and sugar and salt content, combined with changes in lifestyle (less physical exercise), modern eating habits, and the blurring of dietetic reference points, is reflected in an increase in illnesses caused by dietary excess: overweight, obesity, diseases of the cardiovascular system, acquired diabetes, cancer. We thus have a paradoxical situation in which abundance of food is not necessarily synonymous with health and well-being.

## FOOD SAFETY

The third critical trend deals with the new requirements about food safety, which raise at least three types of ethical issues.

Ingested foods or drinks can have a variety of more or less serious toxic or infection effects. This is known as the health risk, which can be of a biological, chemical, or allergic nature (Raoult-Wack, 2001b). The health risk has frequently been at the center of the news over the last ten years, with the various crises that have shaken the food sector in northern and southern countries. The crisis associated with Genetically Modified Organisms (GMOs) and bovine spongiform encephalopathy (or "mad cow disease") are but further episodes in a series of crises that include baby milk, hormones in veal, food colorings, and ionized foodstuffs in Europe, mercury in fish in Asia, and food aid cereals, flavor cubes, and mangoes

treated with acetylene in Africa papers (Raoult-Wack and Bricas, 1998, 2001).

The need to take the increasing safety concern into account has become a watchword for politicians and business firms, on local and international markets. However, there is a great discrepancy between real risks and perceived risks in northern countries. The main reasons for such a discrepancy were analyzed elsewhere (Raoult-Wack, 2001a, b). As a general rule, food risks are both overestimated and not well accepted. The real question today is how to find a way of satisfying the new requirements with regard to food safety, while at the same time being aware of this discrepancy.

Indeed, there are major risks involved in the long term with too much hygiene concern. In fact, as a result of consuming aseptified food, the population's immunity is declining: so a North American is far more vulnerable than a European, and a European is far more vulnerable than an African. As a result of efforts to destroy micro-organisms, more and more resistant pathogenic micro-organisms are being selected, which results in a constant increase in levels of food sterilization. By sterilizing food, we are depriving ourselves of the natural self-protection mechanisms of food-stuffs through their endogenous enzymatic or microbiological systems. In other words, too much hygiene is self-defeating and might impair the sustainability of food safety.

In the developing countries, it is difficult to identify the part played by diet-related risks in diseases because of the population's very poor overall state of health. What is more, these risks are not always recorded and quantified. However the key issue would also appear to be hygiene problems, aggravated by the climatic conditions in the tropics, where heat and humidity are favorable to the development of microbes, and by the problem of access to drinking water (Raoult-Wack, 2001a, b). In addition to the problems of chronic exposure to chemical risks, the poor countries are also confronted with risks of acute toxicity that do not exist in the rich countries, for instance the risk of mycotoxins, a real public health problem with outbreaks of collective food poisoning (Raoult-Wack, 2001a, b).

Questions of food safety in the poor countries have repercussions not only for the health of the consumers in the local markets but also for access of the products concerned to the international markets (e.g., mycotoxins in groundnuts, pistachios, almonds, walnuts, etc., or microbiological problems with seafood products, notably prawns), which are controlled by a complex collection of national, European, and international standards (e.g., the European ISO 9000 standards, the Codex Alimentarius). In fact it must be recognized that the level of acceptable risk varies according to each individual's level of resistance and according to the perception of the risk.

The level of food safety requirements may thus be different according to the countries. This point raises two types of ethical issues: the risks of two-tier food safety (local/international) and the risks of international regulations based on the elevated requirements of the rich countries, which would reinforce the divide between rich countries and poor countries (Raoult-Wack, 2001b).

#### BIODIVERSITY, CULTURAL IDENTITY, OWNERSHIP OF KNOWLEDGE, GENDER ISSUE

The fourth critical trend deals with the impact of industrialization of the processing systems that leads to a reduction in the diversity of cultivated plants (Raoult-Wack and Bricas, 2001). Technical constraints of large scale processing lead to select a few adapted agricultural raw materials and microbiologic flora. This is reinforcing the tendency already inherent in the industrialization of agricultural production systems (Raoult-Wack and Bricas, 2001). Figures available for vegetal biodiversity are illuminating: there are more than 50,000 edible plants, but only 15 of them cover more than 90% of food needs; two thirds of the world agricultural production are covered by only three plants: rice, wheat, and corn; since the beginning of the twentieth century, 75% of the genetic diversity of agricultural crops have been lost (Collomb, 1999). Long term risks concern both the patrimony loss for mankind – and most of the biodiversity is located in southern countries – and the threats for food security related to possible large scale crop destruction by pathogens.

The fifth trend deals with the respect of cultural specificity and identity (Raoult-Wack and Bricas, 2001). Food is a powerful medium for the construction of cultural and collective identities, in a context of major internationalization. The start of internationalization is far from recent, given that Europe has imported tropical goods like spices, sugar, coffee, cocoa, and tea since the 12th century. The major presence of large companies in the media and the world-wide distribution of bread, rice, chicken, dry milk solids, beer, hamburgers, and Coca-Cola may provoke fears that local produce will disappear and that food will become completely standardized. This risk must be taken into account, even though further analysis of consumption practices reveals a considerable capacity for appropriating and reinterpreting external elements thanks to local styles of cookery and consumption.

The sixth trend concerns the ownership of knowledge (Raoult-Wack and Bricas, 2001). There is deeply felt anxiety on this subject, as evidenced by the exchanges recorded during the 1999 World Conference on

Science in Budapest. It appears essentially to spring from scientific and technical “domination” by the countries of the North, the technological and economic dependence of the countries of the South, a lack of respect by the North for the South’s technical resources (or an ignorance of them), “pillaging” of the South’s resources by the countries of the North (genetic material, know-how, raw materials, scientific skills, etc.) (Raoult-Wack et al., 1999). By identifying and characterizing the traditional knowledge of a particular human community, a research team potentially disseminates it on a world-wide basis, through its publications. Nothing then prevents other communities or business firms from appropriating and using such knowledge. The community that had time-honored ancestral control of this knowledge can find itself dispossessed of the possibility of putting it to economic use. It is still legally very difficult to protect traditional knowledge, in particular for poor countries that do not have access to the costly tools of international legal protection.

The seventh trend deals with gender issues (Raoult-Wack and Bricas, 2001). Whether on a world scale and over a long period of time or on a more local level, it is noticeable that the development of the food sector often results in the appropriation by men of activities that were usually the domain of women. Even projects for the mechanization of small-scale processing operations in tropical countries cannot escape this problem. The introduction of motorized mills for cereals or roots and tubers, of oil presses or of dryers very often results in the seizure by men of know-how previously put to economic use by women. The consequences of this phenomenon are not yet known, but this should still not stop us from wondering about the risks involved.

#### MAN’S RELATIONSHIP TO HIS FOOD, MAN’S RELATIONSHIP TO NATURE

The last trend deals with the overall long-standing, long term move towards greater remoteness in Man’s relationship to his food.

In the industrialized countries, as well as in urban centers in southern countries, there has been a much greater change in food demand during the last fifty years than throughout the preceding centuries. With the movement of urbanization, with the food sector becoming more industrialized and self-contained, with food supply chains growing longer and more complex, and with food processing technologies and food itself becoming more sophisticated, consumers are moving away from their traditional proximity with their food (Raoult-Wack and Bricas, 1998). Modern lifestyles, in particular the urban lifestyle and women going out to work, have

been reflected in an increase in eating out and in the demand for quick and easy to prepare dishes. Technical developments like the home use of refrigerators and freezers have changed purchasing and preservation practices. Under the pressure of the new requirements of practicality, health, and safety, the marketed products have become more and more highly processed, even sophisticated.

As a whole, scientific and technical progress, together with industrialization and urbanization has put a growing distance between Man and nature in general, and between Man and his food in particular. The current food crises are very revealing about these changes in Man's relationship to his food and about the radical shift in his perception of nature, previously regarded as being more threatening than threatened. Natural risks now give rise to far less indignation than the risks caused by the action of Man (mad cow disease, GMOs). The latter two crises can be regarded as major transgressions: feeding ruminants with the carcasses of other animals transforms herbivores into carnivores; and the manufacture of GMOs, with the grafting of genes from one plant to another or more, their transfer between animal species and plant species, comes down to crossing the natural barrier between the different species and kingdoms (Raoult-Wack, 2001a, b).

The current fears and anxieties are also very clearly the expression of a deep need to reappropriate one's food for oneself. According to Claude Fischler, the statement "We no longer know what we are eating" has constantly reappeared over the last thirty years. Unquestionably the statement has a deeper meaning: *"If we are what we eat, and if we no longer know what we eat, we no longer know who we are."*

They are also very clearly the expression of a deep need for "setting the limits between the possible and the acceptable," as stated in the mandate of the Comest, the world commission on ethics of scientific and technological knowledge.

## CONCLUSION

The current context is marked by a dynamic of transition between the advance of knowledge and its technical application with very short time steps as a result of the increasing globalization of economic exchanges and, as a corollary, the issue of competitiveness. Scientific progress and the rate of production of new technologies clearly outstrip the absorption capacity of present-day societies (Raoult-Wack, 2001a) and give rise to questions of an ethical nature.

This is a particularly sensitive aspect for a consumer product like food, with its strong social, identity-related and cultural component, and for a domain like food, which by its very nature is opposed to sudden and over-rapid change, as is shown for instance by the rejection of irradiated or transgenic foodstuffs or by some devastating effects of modern life on food behavior and health (Raoult-Wack, 2001a). This discrepancy creates a need for debate, which can for instance take place through consensus conferences or citizen conferences inspired by American initiatives (e.g., citizen consensus conferences on transgenic foodstuffs).

The present paper analyzed various critical trends and ethical issues related to energy, nutrition, food safety, biodiversity, cultural identity, ownership of knowledge, gender issue, and man's relationship to his food, both in northern and southern countries. Some of the ethical questions presented above have already become consumers', politicians', or business firms' concerns: the search for less polluting packaging, for more natural, more authentic products that enable consumers to rediscover their roots, the rejection of scientific innovations linked in part to uncertainty about the long-term environmental effects of the technologies used (e.g., transgenic or irradiated foodstuffs). This type of social concern should lead to further revise and modify the priorities, models, and methods of intervention in national and international public policies, in particular research priorities and nutritional education and dietary behavior.

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