

# **Reforming and Transforming the Global Food Industry: Solutions and Directions**

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## **Abstract**

*The year 2007 has been a turning point in the development of agrifood markets. The sudden price raise caused a global crisis in meeting the food demand of a large part of the world's population. In this context, many specialists claimed the need to reform and transform the world food sector, which gives signs of serious malfunctioning, with a focus on solving problems such as harnessing energy and water resources, protecting and integrating biodiversity, meeting the food demands of a constantly increasing urban population, reshuffling distribution channels and cutting their expenses, and last but not least increasing consumer involvement. Finding new solutions to these problems will allow us to pass to a world food system that relies on a sustainable and durable basis.*

**Keywords:** foodstuff, consumer, sustainable, resources, biodiversity

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## **1. Introduction**

Recent assessments of the United Nations' Food and Agriculture Organization (FAO) show that in the aftermath of the food crisis triggered

by the soaring agrifood prices, the number of people affected by malnutrition has increased by another 40 million worldwide in 2008. This means that the number of people in this situation has reached 963 million. Furthermore, the FAO launched numerous warnings that this figure could increase if the prices situation on the global agrifood market continues. So, the slight drop in the global prices on food after 2008 should not be interpreted as the situation improving. The food crisis, even if only slightly alleviated today, has revealed a series of structural problems that affect the global agrifood system. The most significant of them are chronic malnutrition, lack of access to agricultural land, lack of material and financial resources that would allow satisfactory food output, unemployment, etc. Besides deepening the effects of the global food crisis, these problems have revealed the urgent need of reorganizing the global agrifood industry in the sense of sustainability, building on new fundamental grounds.

## **2. Fundamentals for Sustainable Food Production**

The global food industry, conceived in the 1940s is showing a series of structural problems, one of the most prominent of which is the high environmental costs it presently implies. Building on this prerequisite, a new approach on the production and marketing of agrifood should rest on fundamentals such as biodiversity, energy, water and urbanization.

Essentially, at the time the bases of the global food industry's functioning system were laid, there was clear evidence of a manifest gap between producers and consumers in terms of their conceptions and actions (Lang 2008). After World War II, food researchers and politicians thought that an increase in output would trigger a drop in food prices and a concurrent improvement of the food consumption profile, the meeting of food needs, and public health. But ever since the 1970s, new evidence has started to surface showing that the public health situation did not evolve as expected. At the same time, the way the food system was functioning generated a whole series of environmental problems.

Currently, 40 more years later, the situation has grown even more complex. On the one hand, the food production growth per capita is on a downward trend, while on the other hand, the global population is growing continuously, which can cause a whole series of new, very important problems. In this context, some new fundamental aspects come to light (Lang 2008), aspects that judging by the role they are currently playing, should be taken into consideration in any attempt to reshape global food production in the future. These aspects refer to (1) the role of oil and energy; (2) the water resource scarcity; (3) the state of biodiversity; and (4) urbanization and its future development.

Referring to *oil and energy* (1), today's agrifood economy notably relies almost exclusively on oil, although this is a non-renewable resource, the reserves of which are depleting (Bellanger & Nouyrigat, *Alerte a la penurie!* 2012). The impact of this on agriculture results, among others, in the volatile situation on the global food markets.

Talking about *water resource scarcity* (2), one of the important measures that should be taken is to start monitoring food products depending on the water consumption needed to obtain them (Bellanger and Lallement, 2008, p. 37). Today, the imports of food produced in countries with limited water resources can go up to 50% of the total food imports.

As far as *the state of biodiversity* (3) is concerned, we need to shift from an approach based on the notion of “protection” to one based on the notions of replacement and growth (Bellanger & Lallement 2008, 49). Such a shift will have to be also accompanied by a complete rethinking of the ways we produce food as well as the ways we use the soil (Bellanger & Lallement 2008, 51).

Last but not least, *urbanization* (4) is probably the most important social aspect under the general food topic (Balleydier 2008). Given that the number of people living in urban areas is increasing continuously while the one in the rural areas is shrinking, the arising problem is from where and how the cities will be supplied with food products.

In the context defined by these four aspects, in order to provide availability of food for a 9-billion world population in 2050, the policy makers and scientist face a fundamental challenge (Sciama, Nourrir 9 milliard d'individus, 2008). More precisely, they face the need to find a solution of producing food sustainably from the viewpoint of the four aspects mentioned above, a solution that would replace the current food production system, which is based on an uncontrolled consumption of natural resources.

### **3. Solutions to Reform the Global Agrifood Industry**

The recent crisis situation on the global food market, triggered by the soaring prices on some staple goods and the fact that they will remain high in the next period (Walker 2009), has made this challenge even stronger and at the same time made it more difficult to find a solution to overcome it. The economic threat to food security for a large part of the global population, accompanied by its constant growth, brings about the need of a quantitative increase in food production at least by doubling it. But such a need cannot be met—or at least not apparently—by changing the current production system unless we find wider solutions that will go beyond the level of production alone, on the one hand, while on the other will also consider food consumption in all its specific aspects. In this direction, relevant specialists propose a series of solutions (Kniver 2008), such as (1) integrating biodiversity as a defining parameter of any production system; (2) recovering the consumer-food relationship; and (3) containing or even eliminating waste of resources.



Agrifood and agriculture cannot be separated from biodiversity (Kniver 2008)

*Integrating biodiversity as a parameter of agrifood production systems* (1) implies mainly to change the perception on the role biodiversity must have in a production system reoriented towards durable functioning. Thus, one view in this sense is that the biodiversity of the organisms that are subject to agrifood production—and not only—must become part and parcel of the production system instead of representing just an outside aspect that would be subject to protection policies.

Biodiversity or the variety of living organisms is an important health-measuring tool for biological systems and thus a fundamental factor for global agrifood production. This significance derives from the functions natural biodiversity fulfills in relationship to agrifood production. These functions particularly include the role in improving agricultural performance by providing new genetic material, the role of strengthening and increasing the self-defense capacity of crops against diseases, or the function of biodiversity of increasing the variety of food resources for the people, etc. In general, experts (Colectiv, Rapport de synthèse de l'Évaluation des Écosystèmes pour le Millénaire, 2008) classify the benefits biodiversity brings to the global agrifood sector in services of (i) supply; (ii) regularization; and (iii) cultural.

For the global agrifood industry, the ones directly relevant are the supply services (i) that biodiversity brings and which mean, among others, supplying food resources and providing a genetic fund that would ensure the further development of agriculture. And if we consider the fact that the development of organisms that would ensure the production of agrifood raw materials was done at the expense of their genetic fund, this relevance grows larger. Moreover, even if the mechanisms through which biodiversity fulfills its functions can be replaced or ensured by way of technology, the latter's costs are very high, both for poor and developed countries. These costs are brought even higher by the fact that the level of biodiversity fulfilling its function has dropped to 40% (Sciama, *Préserver la biodiversité*, 2008). Integrating biodiversity as an active mechanism in the world agrifood production would allow reducing these costs and a

gradual coming back to a higher role of biodiversity in food stability and safety.

The second solution mentioned above implies a fundamental *change in the coordinates of food consumption* (2). Here, the most important aspect that should be solved is to reconnect the consumer and the food and implicitly the consumer and the producer. Essentially, this connection implies to recover the *identity of the food* starting from its origin, from the way, the time and the place it was produced. A way to recover the food-consumption connection is believed to be *the consumer's direct involvement in the way food is produced*. Once he/she gets directly involved in food production, the consumer can rediscover the cultural value of food production, of food cooking, and implicitly of the deeper meaning food consumption can have as well as the importance of food behavior for health and environment. An insight into the relationship between the way food is consumed and the way it is obtained will have direct and beneficial implications on the relationship between meeting the people's food necessities and the need to protect the environment as a prerequisite of durable development that would provide future generations with the same benefits we enjoy today (Lang 2008).

An interesting fact is that such a tendency could be encouraged by the way food prices evolve on the world market. Their continuous increase could foster a shift to a way of procuring food based on autonomous and even individual production systems and implicitly with higher consumer involvement in producing the food.

A third proposed solution for reforming the global food system relies, as we have previously presented, on *containing or even eliminating the waste of resources* (3), especially renewable natural resources as well as the waste of raw materials and agrifoods. From this perspective, experts believe that the way the current situation looks like on the global agrifood industry is completely non-sustainable as it is based on a systematic waste and often finds itself on the fringes of immorality in the way resources are harnessed. A very telling example is the fact that numerous food products

do not reach the shelves in stores because they do not meet criteria such as shape, color or size, although all the other standard qualities are perfectly met.

Until not so long ago, in the European Union, about 30% of the fresh agrifood products were in this situation. The recent reform of the European provisions regulating these aspects is a first step towards solving this situation. Yet, for the time being, it cannot remedy it completely because more often than not selection on such criteria is made by either suppliers or producers. Applying commercial and marketing criteria, suppliers appear to prefer especially uniformity of color and shape. The use of such criteria is also encouraged by the consumers' behavior, who most often than not choose the products only by visually appraising their features (Poulain 2007). This behavior has to do with both preference and the way goods are displayed, which in many cases does not allow other ways of assessing their quality than visually. In this sense, an important factor is the generalization of prepackaging (Burda 2011, 154). Although its benefits in terms of hygiene and protection of quality are beyond doubt (Constans 2007), prepackaging limits the consumer's possibility to assess the quality of food and at the same time deepens the distance between consumers and food. Furthermore, the suppliers' push for getting products with certain features is manifest in agricultural research as well. It causes a prevalence of the hygiene-sanitary criteria (which are important for the legal aspect involving consumption, among others) and productivity (accelerated growth and large size) when the seeds are selected rather than other



A sustainable food production helps protect rare species and natural variations (Kniver 2008)

features that are equally important such as taste, consistency, texture or nutritional value. For the supplier, these aspects are less significant than appearance and shelf life.

Producers, in their turn, relying on technical criteria, attach great importance to size. Production lines in food industry work more efficiently when vegetables or fruits and not only are as uniform in size as possible (Bologa & Burda, 2006, p. 114).

Essentially, at the point these three solutions meet, the need emerges to increase the responsibility the consumer has when chooses a product. His/her consumption decision has not only economic, nutritional, sanitary or legal implications, but also political, socioeconomic and environmental ones. The purchase decision can be considered a statement in which the consumer also expresses his/her option about the kind of society he/she wants to live in and about the way the foods he/she wants to eat should be produced.

#### **4. Transforming the Global Agrifood Sector: Directions**

Today, the prices on the global food market have become more stable and apparently more favorable, showing a drop against the last two years. Nevertheless, their current levels remain higher than the one before the increase which triggered the food crisis (Walker 2009). This is a fact that causes experts to believe that the phenomenon has not ended yet, but tends to become a status quo. In this context, the arising problem is that of the prospects and directions towards which the global agrifood production system should evolve (Lang 2008).

A first proposed direction is that of recovering the relationship between authorities and suppliers, and in the long run, of the relationship of them both with the consumers. Therefore, the public authorities should set out strategies to find harmony between the social development interests and the supply development interests so that priority is given to common interests such as climate change, waste, harnessing water resources, protecting ecosystems, nutrition and fight against obesity,

establishing fair supply-delivery chain, etc. (Sustainable development commission 2007).

A second direction could be the development of programmes under the aegis of FAO, dedicated to developing sustainable agricultural production in the countries with scarcer resources. Such programmes could seek durable management of water resources (which is a constraining factor for agricultural development in certain regions of the globe), stimulating agricultural crops on biological principles, finding solutions of agrifoods on the internal markets of the concerned states as well as on the external markets, improving management skills and organizational capacity, etc. (Sciama, Yves, Nourrir 9 milliard d'individus, 2008, 78).

*A third direction could be an orientation towards developing the food production capabilities*, while focusing on (1) increasing production capacities, (2) improving accuracy in estimating the production potential of resources, and (3) on assessing the social side of food consumption.

The main aspects that are pursued towards *increasing production capacities* are (a) providing a solid basis for production, (b) controlling supply chains, and (c) ensuring effective and durable training of human resources. *Estimating the production potential of resources* (2) seeks to establish precisely the impact of food production on the environment, soil and natural resources, in a time of significant climate stress caused by human activities. *The social side* (3) implies assessing all the important dimensions of food consumption and consumer expectations in a context characterized by increased costs triggered by health problems as a result of unhealthy nutrition, and by the consumers' expectations in terms of a low price on food, without considering the environment costs these expectations imply.

*A fourth direction could try and solve the environmental problems that getting the agrifood raw materials imply.* For animal-based agrifoods, producing them should imply in the future a reduction of specific pollution, reducing the land surface used and the impact on land

and water resources, both in terms of pollution and use, as well as increasing the level of secondary product conversion. These are complemented by a reduction of their negative nutritional impact caused by excessive consumption. In the case of plant-based agrifoods, which as a whole have a positive nutritional impact, obtaining them in the future should imply an increase in the training of human resources, finding more effective ways to compensate for seasonality, cultural differences and inequalities, and limitations imposed by the possibilities to use available land depending on its agricultural potential.

### **Conclusions**

Building on the four fundamentals that should be the key to reforming the global food production system, its organization and functioning in the future should meet a series of requirements that would ensure *sustainability* in meeting the food needs of the global population, on the one hand, and on the other hand, *durable development of the communities involved* in this economic sector. These requirements are, among others:

Finding a balance between the need to ensure availability of foods (in terms of price, seasonality and proximity) and the need to protect the environment;

Rising consumer awareness, especially in developed countries, about the importance of food quality as selection criterion rather than the price and individual benefits, starting from the idea that an increase in quality is more acceptable than changing one's life style;

The public authorities defining what a sustainable food system means, and even setting out food polices based on this principle;

Finding less costly supply solutions in terms of shipment, solutions that should look towards the future, when the availability of fossil fuel drops;

Reorganizing supply systems which are experiencing difficulties, especially in the areas with low-income consumers, in order to compensate for this disadvantage;

As a whole, the main starting points for a new global food production system should be (1) stopping the tendency to expand biofuel crops rather than agrifood crops, (2) reducing the use of fossil fuel, (3) increasing training on all areas of the agrifood production and supply systems, (4) rearranging markets on sustainable principles and consumer involvement, including in the production of foods, by rising awareness about his/her major role in the way the global food sector interacts with the factors that determine his/her life and development.

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