DYNAMICS OF FOOD SECURITY IN RECENT DECADES

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By food security we understand the people's access, at all time, to food, needed for a healthy and active life. It can be thought at global, regional, state or local level, but only as a strategy with relevance only to the family, to be able to buy, thanks to its own production or purchase, sufficient food to meet the needs of all its members. Diet must be quantity sufficient, variety and of good enough quality and each family member should be healthy to take full advantage of consumed foods.
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Food security can be ensured if three conditions are met: food stocks exist (at any level, from family to national), food stocks are stable and affordable for families to have to provide. In terms of food availability at national, regional and local levels, they depend on the production, storing and marketing network. Any deficiencies in the chain lead to shortages and price destabilization. Such deficiencies occur in all three levels. The worst is nationwide, which is the inability to produce adequate quantities of food according to the population needs. This is the case in many countries in South Asia or Africa. Then, there is failure to storage, illustrated by what happened in the summer of 1995 to our country with wheat. At the family level, the food shortage is poverty, inability to procure necessary food. Shortcomings in the chain production-storage-marketing lead to higher prices, which primarily hits the poorest families.
At family level, inability to have access to food may have a transient or permanent character. The first case occurs when the family temporarily has no access to sufficient food due to a crisis of production, import difficulties, job loss or a natural disaster. When access to food has permanent character for families, we could be talking about chronic food insecurity.

An analysis over the future of mankind should identify current global food security, if there is enough food for a growing population and if the Earth has sufficient capacity to maintain it. It is also important to determine the maximum population that the world can support, developing all its capabilities
Thomas Malthus, English vicar, was the first to reveal in 1798, the gap between population growth and food quantity. The first has an increase in natural geometric progression, because each year the growth is added to the growth of last year, and this amount is the new growth for the following year. For food, basis remains constant, without the automatic addition of annual increase, so to have an exponential growth; improvements should be brought to production system.

Under pressure from technological progress, agricultural production has evolved continuously through history. After the medieval production, performed on small areas, with animal or manual means and especially for family use, by differentiating village from town a new economy has imposed; agricultural trade, with production at village and products sold in town, which caused a high demand for food. That is why in England, between 1700 1800, productivity in agriculture increased by 100% (1% annually) while the population increased only by 0.6%. In France, between 1750-1850 agricultural productivity increased by 60% (0.6% annually), while the population had a growth rate of 0.4%. This increase, although tiny, has made possible to compensate for population growth, especially it has provided the necessary food resources and manpower for industrial development, supporting the first industrial revolution of the mid-century. This, in turn, has created a revolution in agriculture by inventing tractors and other

machines that have begun to play an increasing role in enhancing agricultural work. Thus, he passed from small production to large-scale production

Malthusian prophecies do not seem to be done yet at globally level, as agriculture and, in general, food production, also increased along with population. Nevertheless, the world's population does not enjoy sufficient food.

In 1974 it was estimated that the 80's will be provided an average daily consumption of 6,000 calories per person, with variations from 3000 to 15,000 calories, in addition, annual food production could provide 19% more calories than needed to diets. Evolution of two decades (1970-1990) was also optimistic.

Interestingly, statistics show that food production was enough in the 80's to conveniently feed the entire population of the world, 500 kg of annual vegetable production per inhabitant. Even it has been told that today, in the world it is produced, more food per inhabitant than ever in history of mankind. However, paradoxically, currently hunger is endemic for 20% of humanity. One in five inhabitants of the world haven't enough food and also as a historical perspective, there were never more hungry people in the world than now. The problem is particularly serious, as 40% of Earth's hungry are children.

Beside the hungry in fact, there is still one third of world population living in poverty, even if not at the edge of starvation, but leading a life below acceptability. The fact is underscored by the cost of food for a family, in the U.S., for "basket" it is spent 10% of income, in the EU 10%, 50% in Ghana and in Tanzania 64%. From this point of view, our membership to the first world (which usually all Europe takes part) is questionable, given that this "daily basket" reaches, to us, in 2000 to over 80% of medium income of people, worse than in Africa.

Trying to identify the world poverty, we observe that it is present in Africa, South Asia and Latin America. There are areas where hunger is endemic, such as the Sahel, because of a very long time of absolute drought. UNO action in Somalia is known to rescue hundreds of thousands of people from death by starvation, hunger leading, also to serious deterioration of social relations, up to an internal war. Statistics by region showed a not very pleasant situation, while the world average would indicate otherwise. But it concerns only the XX century years. To ensure food security for the population boom coming decades, are inconceivable only two solutions: expansion of production area (extensive agriculture) or increased production per hectare (intensive agriculture). A third solution, the creation of artificial feeding of chemical, although not impossible, is for now for very distant future.

Starting from the impossibility of increasing agricultural areas, the only solution to meet future needs for food is increasing production. This, in the three key departments: agricultural production, meat and fish production. Calculations can be different: increasing total production, growth, per area unit and per capita growth (the latter in kilograms or calories). It also should be mentioned that meat production can be converted into feed, so also as agricultural production.

Given the serious problems of food shortages in third world, in the '50s was launched a major campaign to increase agricultural production, especially in poor countries, known as the "Green Revolution". Its appearance led to the definition of three types of agricultural systems:

1) An industrial agriculture, practiced in the U.S., Europe, Australia and New Zealand, based on a significant capital investment, practiced on a large scale and having all the modern techniques of production facilities, storage and transport. We can consider that, also the stat agriculture practiced in the former socialist countries belonged to it;

2) A "green revolution" agriculture type, possible in rich regions in high agricultural resources, generally flat, with good irrigation and it was practiced in the countries of South and South-East Asia, North Africa and some countries Latin America countries;

3) A low resources agricultural, specific for areas unsuitable for agriculture (dry, poor soil, high altitudes, especially a forestation and water scarcity, based on a more uncertain rain than

irrigation). Is the agriculture of the countries of Africa south of Sahara, some Latin American countries and in remote areas of Asia.
It is obvious that in the first decades after the war, there were dramatic increases in food production, especially agricultural ones, and is sufficient to mention two cases belonging to the first two types of agriculture.
In terms of industrial agriculture, Europe is a good example, because the grain production of 199 million tons in 1970, reached to 283 million tons in 1990 (a growth rate of 42%), while the cultivated land decreased from 72 million hectares in 1970 to 66 million ha in 1990. This means increased productivity tons of grain per hectare.
For Green Revolution, India is a good example for the production of 50 million tons in 1950, reached to 108,000,000 tons in 1970, and in 1990 to 170,000. tons, so doubling every decade. "Green Revolution" agricultural technique involves changing:
- Giving up their monoculture and rotation;
- Use of new plants, with higher fertility and physical resistance (temperature, drought, poor soil) and biological (diseases and insects), obtained either by hybridization or by seeds brought from elsewhere;
- Intensive use of chemical additives, which are fertilizers and pesticides (insecticides, fungicides, herbicides);
- Irrigation on a larger scale.
With such techniques, applied also in other types of agriculture, the world agricultural production has increased considerably in the first decades after the war.
Massive use of fertilizers has contributed to the extraordinary growth of grain production between 1950-1984 (the ratio of grain supplement / supplement fertilizers - 9,1), but between 1984-1989, although the amount of fertilizer was higher, grain production increase was more modest (report supplement cereal / supplement fertilizer = 1.8).Therefore we believe that we cannot count on infinite growth of agricultural production even by using more fertilizers, there is a biological limit determined by the power plant photosynthesis.
Intensive irrigation of land may be a factor that could help increase production. There are now 237 million hectares of irrigated land, 16% of cultivated land would provide more than a third of world agricultural production. In 1978, irrigated land area per capita reached a peak, however, then falling by 6%.
We should recall, however, also the limitation imposed by water scarcity, which itself represents a problem for human evolution, fresh and recyclable quantities of water available cannot cope with the explosive growth of population. The idea of using sea water by desalination is also not viable because of the prohibitive price that would achieve.
Therefore it is difficult to believe that in the future decades , solutions would be found to maintain agricultural production needs corresponding to population growth, not as global production quantitative, nor per hectare production or per capita.
Meat and derived products (milk and eggs) constitutes a key to food security, providing especially needed protein. However, it is strictly dependent on agricultural production, representing the feed conversion in animal products. These are natural (grassland) and from agricultural production. It is recognized that for a pound of beef ("live") is needed 7 kg of feed, for one kg of pork - 4 kg of feed, for one kg of chicken meat 2 kg of feed, and for a kilogram of cheese 3 kg of feed. So, issues raised by grain production, partly reflected on the animal one, stopping the increase of agricultural production is visible also in the hay.
The amount of grain used for feeding represents at world level about 40% of total agricultural production and has increased steadily since 1960, from 289 million tons to 650 million tons in 1990. So the production of beef and mutton increased 2.6 times, raising consumption with about 26 % per capita.

Discovery of new productive areas, increasing interest in this work (an example can be given the industry sea fishing, initiated also in Romanian, people with no tradition in the field, unfortunately today annihilated), and improving equipment, increased the production of marine fish.

Increase marine fish production was outstanding until 1990, but figures show a decrease in the coming years, with oscillations around a level, the perspective can foresee an increase in fish production, mainly due to aquaculture, but in any case not may expect too much.

The overall conclusion on the prospect of meeting the future mankind need for food is not encouraging. Agricultural production, having grown spectacularly in the years 1970-1990, it reached a plateau difficult to overcome, given that there is no land for cultivation in the world, lack of water will not allow too broad irrigations to bring new land into cultivation, and agricultural chemical treatment has reached the limit of possible assimilation by plants in such circumstances it is difficult to see how agricultural production will keep pace with the 2% annual growth in world population.

Pork production is increasing and not seen a reason to limit this growth, up from lack of fodder. Beef and sheep reached a limit due to lack of pasture, instead chicken can offer some hope, but still limited because of fodder from agriculture.

Nor even fishing seems to be a solution, but it can hope to increase production from aquaculture.

It is estimated that world population will increase from six billion now to more than eight billion in 2020, meaning by 40%.

We observe intriguing situation of Romania, starting from the fact that as the share of food costs in total consumption expenditure of population is higher, we are dealing with a more poor population. Analyzing data provided by the U.S. Department of Agriculture, on our economy, we conclude that 34.3% of Romanians income was used to purchase food, a share almost triple than for developed countries where food costs revolve around 10%.The same source presents the situation in our immediate neighborhood countries: Czech Republic - 15.6%, Hungary - 16.3%, Poland 20.3%. If we take into account absolute amounts, we see that in Romania a family spent an average of 1592 USD. This amount is 13% higher than a Polish family, 9% than in the Czech Republic and 46% more than the Hungarians as a family. Nevertheless due to much lower incomes obtained in Romania than in other countries compared. To remember, at this point in our analysis, is the situation in Bulgaria, which with food costs per family of 804USD, is located only half of what we, the Romanians consume.

From the data sequence above, we are tempted to detach two conclusions: either we (Romanians) are eating more than our neighbors, or on the Romanian market, foods are more costly. But this is contradicted by various statements by politicians, who, at every opportunity point out that food prices in Romania are lower than in other European countries, and then to return to the statements and say that prices cannot be lower than the European average, because then all local producers would prefer to sell their goods on the market which would get the highest price. In this final part of the statement it raises again a question mark: Why we do not identify the same behavior of producers in the Czech Republic, Poland, Hungary or Bulgaria? As for me, things are very simple: the market is one that has the last word. If there are consumers willing to pay a high price for certain products, manufacturers certainly will not reduce prices! Trying to anticipate the evolution of food prices in Europe, we must consider first the upward trend (1.4% per month on average). But, in a complete ranking of European countries, Romania holds the fourth position with 7.4%, after Turkey - 17.6%, Hungary - 9.7% and Poland 8.6%.

Given the above, Romanian food safety must be given special attention, showing extreme volatility amid an election year and the obvious political instability - not less than three governments in four months

Bibliography

1. Apostu, S. *Managementul calității*, Editura RISOPRINT, Cluj Napoca, 2004
2. Cook, L., Verma, R, *Exploring the linkages between quality system, service quality, and performance excellence: Service provider's perspectives*. Quality Management Journal 9, no. 2: 44-56. 2002
3. HEHOE, D.F. *The Fundamentals of quality management*, Chapman and Hall, London, 2006
4. Lathan, M., *Human nutrition the developing world*, FAO, Roma,1996
5. McMICHEL, P. *The impact of globalisation, free trade and technology on food and nutrition in the new millennium*. Proceedings of the Nutrition Society, 2001
6. Tracy, M. *Food and Agriculture in a Market Economy. An introduction to Theory, Practice and Policy*, Editura APS – Agricultural Policy Studies, La Hutte, Bruxells, 1993
7. Konway, R. *The doubly green revolution. Food for all in the XXI century*, Penguin Books, Londra, 2008
8. http://www.ers.usda.gov
9. http://epp.eurostat.ec.europa.eu