THE GOAL ZERO HUNGER, A MUST

Francesco Adamo[26]

Abstract

This paper introduces some of the main world issues on food security and highlights the primary obstacles to be faced in order to reach the zero hunger objective. It starts from a brief overview on hunger geography, built on FAO's publications and data, pointing at highlighting that the current 800 million of hungry people are not depending on underproduction issues but on unequal distribution. It points out that possible future issues on food safety should not be attributed neither to world demographic growth nor to the incapability of the planet resources to feed 9.1 billion of people, but to the current soil and natural environment degradation processes, to poorly sustainable agriculture, to the distorted structure and the instability of markets.

1. Overview of the state and of the dynamic of world food insecurity

12.1 *What is hunger?*

Food malaise or food insecurity arises, as it is known, from:

1) undernourishment or overfeeding, so from shortage or excess of food in quantitative terms, to be considered primarily as a source of "life energy", quantified in calories:

2) malnutrition, intended as deficiencies of food in terms of quality due to shortcomings of some nutritious elements (or due to excesses) in the composition of the diet – for example of proteins, vitamins and various kinds of salt – and even due to healthiness conditions of consumed foods that can be unsanitary, contaminated.

These are two often connected forms of insecurity, particularly evident in underdeveloped and hungry regions. It is especially about these regions issues, and in general about the hungry portion of population – that consumes a daily quantity of food lower than the minimum necessary for an healthy life – that here I will deal with, for two reasons.

Overfeeding brings deeply different problems and asks for largely different solutions. In addition, the concern for this food insecurity, despite growing, is incomparably lower than that for underfeeding, which is the most serious form of feeding malaise and insecurity, considered by FAO as chronic hunger. Underfeeding increases the concern for the mass of people that are suffering from this condition, and that are probably going to increase in the future, if the fight against hunger is not strengthen and implemented through new strategies.

Providing an overview of hunger geography can be essentially useful for this purpose. We can merely point out which are the mostly hit countries, basing on FAO's

[26] Emeritus Professor of Economic and Political Geography, President of Geoprogress (Npo)

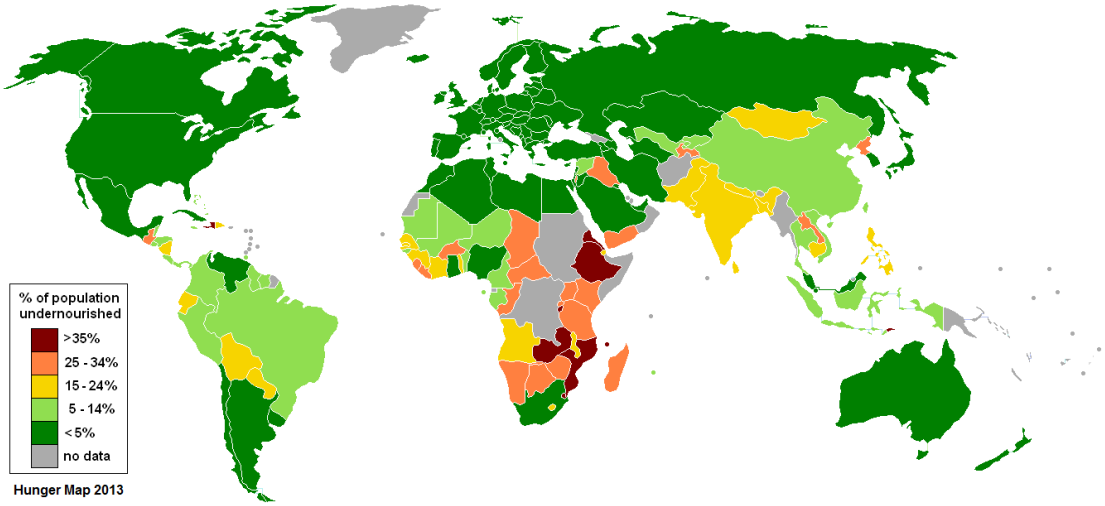
estimates, which is the only available source, and consequently assuming this UN agency hunger concept.

Referring to hunger geography, it is necessary to recall that different types of hunger are existing and they tend to involve different regions. The distinction is fundamental to deepen the subnational analysis and consequently define operational strategies. In this regard, we have to mention Josué de Castro's contribution, a Brazilian researcher who had a deep knowledge of his country and his works constituted a model for various successive studies. In his masterful "Geografia da fome" (1946) he introduced the following concepts: 1) food area, as a homogeneous region relating to specific diets; 2) endemic hunger area, as a food area in which at least 50% of population is subject to permanent nutritional deficiency manifestation (for example peasants landless, that survive working in latifundiums typical of plantation agriculture, inhabitants of traditional subsistence economy regions); 3) epidemic hunger area: area where at least 50% of population is subject to transitory nutritional deficiency (for example area subject to periods of droughts, floods, etc.)

On a subnational scale, the analysis of hunger nature and of its causes are essential and are consequently precisely implemented – by FAO, as by other international, national and subnational organs – to carry out local development projects and to defeat hunger.

1.2. World undernourishment and poverty

In order to measure the degree of the phenomenon and its relative geographic distribution, on a global scale – so orienting international policies – FAO' estimates of malnutrition by country, are doubtless useful. They are the only available, continuously published. For this reason these data are most used and the ones I will report here, even if, it is necessary to highlight that the results of hunger geographic distribution arising from such estimates are not dissimilar or more useful than those of poverty which are based on per capita income (with the same purchasing power). In particular, the countries most affected by hunger coincide with those where poverty is absolute, defining such the countries where at least 50% of inhabitants has an income lower than 1,25$ a day (line raised at 1,9$ by World Bank on October 2015) and broadly also with relative poverty countries, defined as such those where at least 50% of population has an income lower than 2,0$ a day.



The spatial correlation between poverty and hunger points out that the fight against hunger is one with the fight against poverty and underdevelopment, and it does not require, as we will see, just a food production level growth.

The struggle against poverty and hunger is an inevitable objective, not only on a human fraternity and solidarity perspective, but also considering the more general effects of hunger on health and on work productivity. These are highlighted by the strong spatial connection between chronic malnourishment and high morbility (consequence demonstrated by a multiplicity of medicine studies and due both to hunger-specific diseases and others diseases to which a debilitated body, because of hunger, is more subject), high mortality (child and general) and low work productivity.

Against this struggle is impossible to give up and to face world economic crisis and increasing national and egoistic closures is necessary that the democratic political forces and the international scientific community commit themselves more vigorously.

1.3. Tendencies and conditions of progress in the fight against hunger.

The number of undernourished people in the world is estimated at 795 millions of individuals, one over nine: it is still a huge amount, as mentioned. Nevertheless, this number has decreased of 167 millions of units in the last di decade, and of 216 million in respect of the period 1990-92. About 780 millions of hungry people, the largest majority, live in underdeveloped countries, where in general, the underfeeding index has fallen of 44,4% in respect of the period 1990-92, and nowadays underfeeding involve the 12,9% of the population (FAO, IFAD, WFP, 2015) [27].

Underdeveloped countries, as a general tendency, have reached the hunger reduction objective set for the year 2015 by the "Millennium Development Goal (MDG), while they largely missed the goal set for the same year by the "World Food Summit" (WFS)

[27] The number of underfeed people per country is estimated through complex statistical computations, starting from a prevalence index of underfeeding that assess the probability that a randomly selected individual, within a certain population, consumes fewer calories than the necessary ones for an healthy and active life. The computation that starts from per capita calories consumption (food production, plus imports, minus exports, divided for current population) should consider demographic differences and socio-economic inequalities.

of Roma (1996). Wide differences have been recorded concerning the progresses toward those targets (see http://www.fao.org/3/a-i4674e.pdf):

- Latin America (except Caribbean) and Eastern and South-eastern Asia have registered large progresses and succeeded in reaching also the more ambitious WFS objective;
- Caucasian and central Asia, Northern and Western Africa reached only the MDG;
- Caribbean, Oceania, Southern Asia, Eastern and Southern Africa registered some progresses but did not reached the MDS;
- Central Africa and Western Asia reached worse positions, registering even worse percentage of underfeed people in respect of the period 1990-92.

Considering some of the common features of the countries that showed the largest improvements in the last 25 years, it is clear that the main conditions for progress rely on the political stability and on an economic growth supported by healthy social protection policies (toward more vulnerable groups of inhabitants).

In addition, it is necessary to highlight that the success in reducing the number of undernourished people have certainly been obtained, as mentioned in FAO's statement, despite of a rapid growth of the population, the volatility of raw materials prices (that for many of those countries represent a key economic base), the high prices of food and energy, the growing unemployment and the recession occurred at the end of 1990 decade and again in 2008. It is also necessary to point out that the global reduction is mainly due to poverty alleviation and lowered level of food insecurity in some large and highly populated countries.

According to FAO's interpretation, and confirmed by many studies and experiences, additional important cues have been highlighted by the results of the last 25 years:

- "In the short run, the only means to address food insecurity is humanitarian intervention.
- In the medium and the long term, hunger eradication can only be pursued if all stakeholders contribute to designing and enacting policies for improving economic opportunities, the protection of vulnerable groups and disaster preparedness. Action undertaken at the global and regional levels should take into account country specificities and exposure to natural and human-induced disasters, especially those of small island developing states." (FAO, IFAD, WFP, 2015)

2. Zero hunger goal: obstacles and policies.

Around 2050 it is forecasted that the Earth will reach the maximum level of population, that, according to ONU's estimates, will be close to 9,1 billion of people. Reducing to zero the hunger of the current 0,8 billion of hungry individuals and satisfying the food necessities related to the rise of the planet inhabitants in respect of the current (2015) 7 billion will require a food consumption growth of at least 50%. It is also necessary to consider the increase of demand for a richer diet, necessary to

overcome malnutrition, affecting also regions where underfeeding problems had been eliminated.

Will food production be able to increase to such an extent? If yes, through which policies it will be possible to reach the zero hunger goal? These are the questions that should be addressed and constitute the fundamental world food issue.

2.1. Fundamental issues: demographic growth and food production increase..

Against catastrophic interpretations of the global food issue, I need to highlight that:

1) Eventual future insecurity problems are neither due to demographic growth nor to an insufficiency of resources.

2) The current 800 million of hungry individuals are not a consequence of an insufficient food production but of an unequal distribution and of food wastes.

The demographic issue.

Our planet counted 2,8 billion of inhabitants in 1950. In 37 years, between 1950 and 1987, the population doubled. This sharp rise slowed down: fertility has halved since 1972, from 6 children per woman to the current 2,9. If the world population will continue grow with the current trend, it will touch its maximum point in 2050 – or even sooner – and then it will start decreasing.

The depopulation phenomenon is already taking place, as known, in many countries, rich and poor, such as Germany, Japan, China, Mexico ... and Italy, where the birth rate is decreased, becoming lower that the substitution rate of 2,1 per woman, as a consequence of the standard of living improvement. As the World Bank would say *"Economic and social development is the best contraceptive"*.

During the second half of the XXI century, the problem will become the depopulation, if starting from now it is not promoted an adaptation of production to the demographic aging, that in some countries is already a problem.

Paying attention to the spatial distribution of peasantry and potential farmland, it will certainly be necessary to face the already clear problem of peasants' migrations, in order to rebalance their relationship with the land: to convince both those who leave their land and those who welcome them.

Natural resources for food production issue.

Is the planet's usable land worth supporting the demographic growth and the related increase in food production? A pedo-geographer would answer that it is more than enough[28], especially considering the various lands in which it is possible to increase food productivity thanks to small adjustments.

[28] *The state of the world's land and water resources* Food and Agriculture Organization of the United Nations http://www.fao.org/nr/solaw/solaw-home/en/

Some data on agricultural production:

- Arable lands expansion between 1960 and 2010: 12%
- Increase of agricultural productivity for the same period: 150-200%
- Total arable land extension (pluvial agric. + irrigated agric.) in 1961: 1,4 billion of ha

The land area of our planet (about 15 billion of hectares) is covered for about 4 billion of ha by forests and for almost 5 billion of ha, that is one third of the overall land area, by agricultural productions (cultivation and grazing). Only one third of this agricultural area is cultivated, about 1,6 billion (including 20% of marginal lands), the remaining is employed as grazing.

The world total arable area has been determined by FAO as 4,4 billion of ha, just under three times the current cultivated area.

This global availability, here roughly computed, cannot make us forget neither the soils geography and their continual degradation, issues that demands for effective actions, nor the probable effects of climate change that require agricultural productions adaptation.

Two billion of hectares, almost the 25% of the 9 billion of hectares covered by agricultural productions and forests (4 billion), are subject to humans' related degradation, especially in regions such as Asia and Africa: damaged soils because of run-off erosion, of wind related effects, of compaction caused by excessively heavy

---

• Total arable land extension (pluvial agric. + irrigated agric.) in 2006: 1,5 billion of ha
• Irrigated agriculture cultivated surface in 1961: 139 billion of ha
• Irrigated agriculture cultivated surface in 2006: 301 billion of ha
• Average number of hectares of cultivated land necessary to feed a person in 1961: 0,45 ha
• Average number of hectares of cultivated land necessary to feed a person in 2006: 0,22 ha
• Global arable land surface: 4,4 billion of ha
• Global cultivated surface employed for pluvial agriculture: 80% (1,2 billion of ha)
• Total surface currently cultivated: 1,6 billion of ha, of which 20% (0,3 billion of ha) on lands partially adapted for agriculture
• Global surface of land subject to degradation: 25%
• Global surface of land moderately subject to degradation: 8%
• Global surface of land subject to recovery: 10%
• In many regions, issues related to soil quality affect more than half of cultivated areas, especially in Sub-saharian Africa, South America, South-Eastern Asia and Northern Europe
• Total water resources took from aquifers, waterways and lakes for agricultural use: 70%
• Global agricultural output obtained through pluvial agricultural systems: 60%
• Degree to which irrigation improve agricultural productivity: double
•Volume of cereal crops from pluvial agriculture in developing countries (on average): 1,5 T
• Volume of cereal crops from irrigated agriculture in developing countries (on average): 3,3 t/ha
• Average number of crops per year from pluvial agriculture in Asia: 1
•Average number of crops per year from irrigated agriculture in Asia: 2
• World population that currently lives in water poor regions: 40%
• Number of countries that annually employ, for irrigation, more than 40% (critical threshold) of their water resources: 11
• Number of countries that annually take 20% of their water resources (threshold that imply a serious pressure and risk of water scarcity for the future): 8
• Renewable water resources currently consumed in Libya, Saudi Arabia, Yemen and Egypt: 100%+
• Renewable water resources currently consumed in South America: 1%
• Global arable located in low income countries: 22%
• Per capita cultivated syrface in low income countries: 0,17 ha; in medium income: 0,23 ha; in high income: 0,37 ha
• The availability of cultivated land per capita in low income countries is less than half the one of high income countries and the adequacy of arable land is generally lower.
• Per capita cultivated surface in high income countries as group (0,37 ha) is double than the one in medium income nations (0,23 ha) and that of low income ones (0,17 ha).

agricultural machine, of overgrazing, of mining and industrial pollution and of urbanization.

Being aware that this 25% is composed by 8% of degradation moderately subject lands and by 10% of lands subject to recovering, while only 7% is at high risk, should be consoling. Unfortunately this situation does not totally eliminate the problem, which is instead of wide amplitude, touching 50% of soils in some regions.

The ways to guarantee, in ecological and sustainable terms, the production of an amount of food able to feed more than the 9 billion of people predicted as maximum level of population, refers essentially to the rehabilitation of degraded lands and the increase in productivity, but also to the expansion of aquaculture.

If soils degrade faster and more than how they naturally regenerate, before discussing about this challenge and about the agricultural production sustainable growth (whose demand is constantly rising), it is necessary to highlight the aquaculture great potential; in particular the production and reproduction of food in marine waters (not in fresh waters), whose products are a more acceptable alternative (at least for Western's tastes) and ecologically more credible in respect of insects.

Moreover, as Daniel Nahon (2008) pointed out, there exist remedies to soil degradation to such an extent that, from the point of view of the agricultural economy geographer, the lands necessary to the food production growth are already sufficient, without the need to affect the forest heritage.

Finally, there exist vast regions in which are still employed traditional techniques with minimal agricultural yields. These are so low that a few, sustainable innovations would gradually but largely increase the level of output and at the same time stop the arable field expansion toward marginal lands and boost the reforestation process.

This objective, as that of avoiding affecting forests or that of stopping the expansion of degraded soils, requires an overall reduction of wastes. From the speculative plantation agriculture for products destined to the world market, thanks to the adoption of innovations devoted to reducing wastes as well as increasing productivity; to the more recent bio combustibles production agriculture, that from a certain perspective should be discouraged as it needs the use of extensive areas and shows a low ratio between the combustible energy and the relative amount necessary to produce it.

The removal of the obstacles through the previously cited ways, identified in order to increase the sustainability of food production and to transform the final zero hunger goal, "for everyone", from dream to reality, require multiple innovations in the related fields. From the production techniques to the organizations of the interventions, it is necessary to support the whole process with social innovations and the consequent reaffirmation of the primacy of politics, as it is at the various scales of social systems that the major obstacles are embedded.

2.2. United Nations and other entities lessons and those arising from the history of development of underdevelopment.

On some essential policies that should be implemented, and especially on methods and techniques of intervention in poor countries, it is possible to follow the lessons that arise from the 25 years of FAO's experience, already briefly analyzed; in addition we

can look at the experiences of other organs of the United Nations, of some state agencies and of some NGOs specifically invited to this conference and engaged in the fight against hunger and the local development of poor countries (v. FAO, IFAD, WFP, 2015).

It is seems useful, as a proper introduction of the debate, to highlight some of the main social obstacles that such policies are ignoring and that I think, should be necessary to remove, to reach the zero hunger goal.

In this respect, I will not dwell on events and processes of the global system that mainly constitute the causes of underdevelopment (such as colonialism and imperialism, and during the last seventy years: neo-imperialism, globalization and exchange liberalization) and that are certainly essential to understand the current geographic distribution of hunger. It is about, more or less remote, but known, facts (Adamo, 2006), that are impossible to eliminate. I consider at least useful to recall them, in order to commit ourselves to eliminate the effects that still survive and obstacle progress policies. Recalling the historical development of underdevelopment is especially useful to try to overcome, internal and international, unequal and unfair social relationships, that form the hearth of underdevelopment and to which depend poverty and hunger; it is also necessary in order to avoid that those relationships, still present in many countries, reproduce themselves as already happened in history.

The breakup of the balances between population and resources during colonialism and imperialism, had been worsen, after WW2, by the breaking of the balance between births and deaths, and lastly by the establishment of neo-imperialism, for which the 'food weapon' had been a key instrument.

This weapon, even more powerful than the atomic bomb, was held by the "wheat merchants" and lead by the US policy in support of its exports (launched since 1954, with federal law 480). In some poor countries, food farming has also had even worse negative effects from the policy, associated with the former, of the "gifts" of food surpluses to the "free world". And in some regions, even food aid (from Western countries), although essential to addressing emergency situations, has produced long-lasting adverse effects. Food agriculture and food security have been more generally compromised by trade liberalization than not only will continue to benefit the rich countries, but will also have negative effects on poor countries. Consider, for example, the spread of powdered milk (more expensive and less nutritious than breast milk) and Nestlé plants, which have transformed and monopolized agriculture in entire regions; or the spread of extensive breeding farms to provide low-cost hot dog and burger meat for McDonald and similar fast-food companies (at the expense of forests and even grassland crops, reduced to pastures in central and southern America).

Food farming aimed at meeting local needs was further penalized by the tremendous growth of the foreign debts of many countries that took place in the early 1980s and determined by the sudden, large rise of US interest rates. The debts growth bit especially underdeveloped countries that got indebted (when it was convenient because of the international inflation and the low US interest rates) especially to finance their industrialization process and the exports of more industrialized countries. The foreign debt and the IMF's constraints on the debt restructuring forced such countries, as evident in major emerging countries such as Mexico, Brazil, Argentina and others of the same macro region and of Africa, to export at any cost and consequently to a continuous deforestation or to an expansion of lower intensive productions. Among the IMF's

impositions on the restructuring of foreign debt, a clear liberal inspiration for the benefit of rich countries, in 1995 it also added that of ceasing to sustain local agriculture, not much profitable, and instead specializing on tropical plantation products (sugar, cocoa, coffee, soy, peanut...), on non-food products such as cotton demanded by medium-high classes (for example biofuel to fuel car engines).

It is just in this kind of things, that I reported as examples, and especially in social relationships and policies that made them possible, that we can assess the worsening of hunger and of natural environment degradation until the 1990s, and for many countries even later.

2.3. Affirming the primacy of politics toward insecurity and market instability.

A constant factor of food insecurity until nowadays, that constitutes one of the most difficult obstacles to overcome relies on the structure of the global market. This is particularly evident considering cereals, whose market[29], as known, is characterized by a strong geographical and economical concentration of supply, such that a few companies control the whole market and exercise the power of increasing prices, autonomously or politically motivated
Such a rise would appear irrelevant in high income countries, but in low income ones it can even cause hunger and those "bread-reels" that seemed to us to be of old times, and also other consequences due to initiatives of countries (such as China) that are acting to guarantee their own future food safety in response to market instability.

"For Americans, who spend less than one-tenth of their income in the supermarket, the soaring food prices we've seen so far this year are an annoyance, not a calamity. But for the planet's poorest 2 billion people, who spend 50 to 70 percent of their income on food, these soaring prices may mean going from two meals a day to one". Written by Lester R. Brown in 2011, in a context in which are certainly clear the risks of the new food geopolitics, 'new' as based on a different pricing situation: of scarcity, rather than of abundance. This is a situation similar to when international prices were lower than the US internal ones and the Federal Government were sustaining exports, offsetting the gap, and promoting the increase in demand of countries with different eating habits. The American abundance made possible to face serious famines that, before the Green Revolution, took place in India, or crop losses in Russia.

Despite the green revolution, in the new context the risks did not lessen, but increased
In fact, the same companies that control the prices of cereals control even those of feed for farms without land, widely diffused during the postwar period; these firms control

[29] World trade in cereals, feed and largely also of seed oils is substantially controlled by Five Big companies:

ADM -Archer Daniels Midland : US- based corporation, operating in 75 countries. Runs 265 processing plants; **Bunge** : founded in the Netherlands in 1818, new with its headquarters in New York state. operates in 40 countries, processing oilseeds, wheat, corn and sugar cane;

Cargill: based in the United States, a 150 year-old company employing 150,000 people in 70 countries. Distributes grain and oilseeds;

Glencore International (Anglo-Swiss multinational has about one-tenth of the grain market. Also distributes oilseeds and sugar),

Louis Dreyfus (French company founded in 1851, now operates in more than 50 countries).

the sale of seeds, fertilizers, fungicides and related products, on which food safety[30] also depends.

"More alarming still, the world is losing its ability to soften the effect of shortages. In response to previous price surges, the United States, the world's largest grain producer, was effectively able to steer the world away from potential catastrophe. From the mid-20th century until 1995, the United States had either grain surpluses or idle cropland that could be planted to rescue countries in trouble"(Brown, 2011).

2.3. Affirming the primacy of politics.

Countries' governments and political forces should effectively intervene on the regulation and restructuring of markets, and in general on unequal and unfair internal and international social relationships, through ways and forms that are still to be defined. No one has a ready recipe describing how governments and political-social forces will have to intervene in sustainable and right manner in absolute terms.

However, we can and we must continue to look for new methodologies, forms of governments and tools to implement the needed changes in social relationships and in ecological solutions needed to eradicate hunger and other related shortages.

FAO, various agencies, international programs and many NGO's commitment, mainly sustained by state funds, is undoubtedly praiseworthy – and all those still believing in "zero hunger goal" utopia and willing to fight for a sustainable and fair world, should address their support to hunger reduction programs promoted by those organs.

However, such commitment is insufficient if not followed by the reaffirmation of politics primacy and consequently the role each State to govern its own territory and contribute to govern the international socio-economic system, exercising such duties in the interests of populations and peace.

On the internal perspective, the State should serve and ensure the social order (guaranteeing a decent lives, ensuring freedoms and safeties, including the food one) and a "sustainable" development (ecologically, economically and socio-culturally): in other terms, an "alternative" development in respect of the current one. The processes in place in many societies, including those of many Western countries, continue their development toward the further increase of wealth concentration, of social disparities and of ecological imbalances. In the meanwhile politics seems unable and unwilling – although the public expenses devoted to remedy to the ecological effects of firms and families and to the social effects of economic organizations – to lead the firms' system and to regulate the economy.

On the international perspective, it is necessary that States, with the support of their citizens, act to achieve a fundamental objective: a new political and economic order

[30] The Big Six in the market of seeds and chemicals products for agriculture are **Sygenta, Bayer, Basf, Dow, Monsanto, DuPont.** Since the 90s have absorbed more than 200 companies and their patents. Today they have 77% of the "crop protection" market: agro-pharmaceuticals, fertilizers, insect antagonists; and 61% of the production of seed and GMOs (banned in Italy) and from genetic crosses (allowed).

It was announced (La Repubblica, February 2, 2016) the function between ChemChina-Syngenta will be one of the two supergiant oligopolists.

with the aims of ensuring political and economic stability to support a more sustainable development, of winning poverty and hunger, of intensifying development cooperation. Such a new order implies the reorganization of the existing institutions and the creation of multipolar governmental organs capable of effective decision-making and fact acting.

On both perspectives, ultimately, the fundamental problem is the realization of a fairer relation between national and international institutions and the market, especially with economic organizations, starting from credit institutions. The problem is not merely related to the definition of rules - that imply the avoidance of speculations, parasitic ransoms, dominance and exploitation positions - and to enforce them. It is crucial that State, so the international community, has the necessary tools to intervene and address the economy toward the satisfaction of general interests. To this regard it is relevant the presence and the work of social firms (of various genres), but also in strategic sectors the development of public-owned companies, which can be managed (willingly) with efficiency equal to that of private companies (and even higher, since they use public money).

Concerning methods and technical tools of governments, it is useful to highlight, referring to food development, the effectiveness in the adoption on the integrated approach promoted by the best research centers looking for positive and ecological solutions to food issues. It Italy it is for example the ENEA's case, that recognize "the possibility to tackle the issue through an integrated system based on a finite number of subsystems (agriculture, environment, food safety, water, health, energy, infrastructure, economy, etc.), to be managed in a coordinated manner, to face challenges ..." in pursuit of a sustainable production.

Such an integrated approach can only be operational if we overcome the (ideological) opposition between two only seemingly irreconcilable theses:

1) The one of the promoter of modern conventional agriculture, referring to how mechanization, irrigation, fertilizers and genetic improvements can effectively boost agricultural yields to contribute to demand satisfaction. And they are right!

2) The one of the promoter of local and biological agriculture. They retype that small farmers, all over the world, could enhance yields and be able to overcome poverty, employing techniques to improve fertility and avoiding synthetic fertilizers and pesticides. They are right too!
The integrated approach, to be implemented, requires facing anti-environmentalist variants of the two theses: the one of chemistry and growth apologist and that of traditional agriculture apologist, typical of each culture.

The desirable integration of ecologically better and more productive technologies can be more dynamically pursued and best achievable through the implementation plan for food production. It should be achieved thanks to the execution of territorial developments plan: a planning process that is systemic and consequently integrates its various sides looking at determined objectives.
Such a planning could lead to fully achieve the sustainability goals only if intended as continuous process and supported by constant monitoring, executed with the participation of local communities.

4. References

Adamo IEF"A world eco-fund for the regulation of the international environmental system", in United Nations Workshop on *Creative Financing for Environmentally Sound Technologies*, Belèm do Parà (Brazil) 2nd-7th December 1990, New York, United Nations Centre for Science and Technology for Development (UNCSTD), Document 21, Group F

Adamo F. (2006), "Sviluppo e sottosviluppo nell'era del globalismo", in D. Lombardi (ed.) , *Percorsi di geografia sociale*, Bologna, Patron, pp. 165-192

Brown L. R. (2011), *The New Geopolitics of Food - From the Middle East to Madagascar, high prices are spawning land grabs and ousting dictators. Welcome to the 21st-century food wars*, FP, May/June 2011, in http://foreignpolicy.com/2011/04/25/the-new-geopolitics-of-food/

FAO, IFAD and WFP (2015), *The State of Food Insecurity in the World 2015.* Meeting the 2015 international hunger targets: taking stock of uneven progress. Rome, FAO.

FAO and ITPS (2015), *Status of the World's Soil Resources (SWSR) – Technical Summary*, Rome, Italy, Food and Agriculture Organization of the United Nations and Intergovernmental Technical Panel on Soils.

George S., *How the Other Half Dies. The Real Reasons for World Hunger,* Ital. ed. *Come muore l'altra metà del mondo. Le vere ragioni della fame mondiale*, transl.. Luca Trevisani , Feltrinelli, Milano 1978

Iannetta M., *La centralità del cibo: sostenibilità e competitività del sistema agroalimentare, EAI Speciale*, III-2015, ENEA per EXPO 2015

IFAD (2016), *IFAD Strategic Framework 2016-2025 Enabling inclusive and sustainable rural transformation,*

IFAD (2016), *Global Forum on Remittances and Development 2015,* Official Report,

Milan, 16-19 June, the International Fund for Agricultural Development (IFAD)

Murphy S., Burch D., Clapp J. (2012), *Cereal Secrets: The world's largest commodity traders and global trends in agriculture*, Oxfam Research Reports, , London.

Nahon D. (2008), *L'épuisement de la terre, l'enjeu du XXI siècle*, Paris, Ed.Odile Jacob.

Sassi M. (2007), *Sicurezza alimentare e sovranità alimentare: aspetti tecnici e impegno politico per la lotta contro la fame*, paper in XLIV Convegno SIDEA – Produzioni agroalimentari tra rintracciabilità e sicurezza: analisi economiche e politiche d'intervento, Taormina, 8-10 novembre.

Sonnino A. (2014), I limiti della risorsa terra e delle altre risorse naturali,

EAI - *Energia, Ambiente, Innovazione,* n,6, 2014, 102 (DOI 10.12910)

World Bank **(2015),** *FAQs: Global Poverty Line Update*

http://www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq