

33 Food as a New Human and Livelihood Security Challenge

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33.1 Introduction¹

As a result of a process of “regressive globalization”² (Kaldor/Anheier/Glasius 2003; Oswald 2008b) and of an increasing concentration of wealth in few hands, the economic gap has widened between North and South and within the countries between rich and poor, which has often affected the survival of social groups. This inequality is one of the core elements of failure in the eradication of hunger and poverty. Therefore, many multilateral organizations, such as the *World Bank* (WB), the *International Monetary Fund* (IMF), and regional associations like the *Economic Commission for Latin America and the Caribbean* (CEPAL), the *Inter-American Development Bank* (IDB), the *Asian Development Bank* (ADB), and the *African Development Bank* (AfDB) and the *East African Development Bank* (EADB), have recommended to the governments to reduce the internal gap and to dedicate more resources for human development. They should address basic food production systems with job creation, increase low salaries and

subsidies for the marginalized and promote cheap prices of basic food for the urban poor.

These recommendations have directly linked ‘food security’³ to the wider concept of ‘human security’⁴ (Brauch 2008; Oswald 2008b, 2008d; Brauch/Oswald/Mesjasz/Grin/Dunay/Behera/Chourou/Kameri-Mbote/Liotta 2008). ‘Freedom from want’ requires sufficient food (‘food security’) and water (‘water security’), and both are key demands of any human security concept as a necessity for survival, and thus it has become a basic human right. Human security requires not only a quality of life and a decent livelihood, but also health and stable productive conditions for almost half of the world population living in marginal rural and urban areas (see part IX and chap. 74 to 96).

In the early 21st century, more than 2 billion persons depend on food self-sufficiency and another billion peasants suffer from eroded and polluted land, are unable to satisfy basic human needs, and are often forced to migrate to shanty towns or to cross illegally the borders to industrialized countries in search of jobs and quality of life (Schteingart 2006; Oswald 2006a). Thus, in this author’s understanding ‘food sovereignty’ goes beyond the physical conditions of production and market, and involves *social* (Campos 1995; Strahm/Oswald 1990), *cultural* (Arizpe 2004), *economic* (Calva 2008/a; Martínez 2003; Cadena

1 This article has been substantially improved as a result of an international cooperation. I want to thank two anonymous reviewers for helpful comments and Hans Günter Brauch for his critical input to the first draft. He also compiled box 33.1 and systematized important parts of box 33.3. I am immensely grateful for his careful editing and style correction and to Ronnie Lappin for his language editing.

2 Regressive globalization is understood in this context as a doctrine, rooted in the confidence of the efficacy, institutional building and moral authority of US power, allied with transnational capital in the sphere of communication, military, commerce, finance, and productive system. Using the term democracy and progress it is promoting a liberal global world order, favouring international capital and transnational productive systems. In the poor countries this process creates greater poverty, technological dependency, debts, massive rural migration and often loss of food sovereignty, while a small elite benefits from this alliance.

3 For the definition of and the scientific debate on the term ‘security’ in English and Spanish see Albrecht/Brauch (2008, 2008a); Brauch (2002a, 2003, 2008, 2008a, 2008b, 2008c, 2008e, 2008f); and Oswald/Brauch (2008, 2008c). The author will not use the term ‘food security’ developed during the past four decades (see part 34.2, where the debate in the FAO and World Bank has been briefly documented and criticized as a too technological and top-down approach), but will develop a wider concept of ‘food sovereignty’.

4 The author has developed in chap. 90 her proposal for a new and wider policy-relevant security concept that combines *human*, gender and *environmental* security (HUGE) dangers and concerns.

2003, 2005), *political* (Kaplan 2003), and *identity* factors (Serrano 2004; and chap. 89).

On this dual political and conceptual background, this chapter addresses the following research problem: food represents not only a security issue of intake of nutrients, but it forms part of a holistic understanding of life and a constituting element of any civilization. Thus it includes networks of connectedness (vertical: patron-client, and horizontal: social groups), belonging, relationship of trust, reciprocity, cooperation and exchange. It creates social benefits and risk reduction, but also innovative activities through a wider access to information and learning. It is a process of anchoring of personal and group identity (see chap. 90 by Oswald on HUGE), where social relations reaffirm the integration of a person inside a community with clear rights and obligations, such as access to land, credit, technology, training, market, life quality and rituals. Besides guaranteeing the physical and cultural survival, food also creates new opportunities for people-centred poverty alleviation and new understanding of 'rurality'. It represents a critical response to the past development and modernization paradigms and opens ways for diverse rural life processes, where agricultural activities and environmental services coexist with services, technology, and industries.

In addressing this research question, this chapter links the concept of food security with food sovereignty, a term developed by peasant movements, especially *Via Campesina*⁵ that was later also taken up by FAO. It first reviews basic concepts such as food security, food sovereignty, survival strategies, self-sufficiency, and livelihood (33.2). Then it scrutinizes the contradiction that in a world with increasing production and a diverse offer of food, hunger is still one of the most important causes of illness and death, because an important part of food is used for livestock and for industrial purposes. Recently, biofuels have aggravated the scarcity of food worldwide and regionally, affecting above all vulnerable groups such as poor peasants and marginalized urban people in the South

and North. This part reviews the internal food intake not only globally, but also for Latin America and in a case study of Mexico that focuses on the remote indigenous regions of Chiapas, Oaxaca, and Guerrero where undernourishment is still high and one of the causes of child mortality (33.3).

Part 4 explores three global models of food production: a) the productive paradigm, represented by the 'green revolution' that emerged in Mexico; b) the new paradigm of the 'life sciences', where *transnational enterprises* (TNE) have converted food not only into a commodity, but also into health and medical items; c) the third paradigm refers to 'organic agriculture' that cannot be globalized. It uses traditional agricultural methods developed in each region; recycles organic waste, produces soil enrichment with compost and uses biopesticides and natural seeds. The transformation of food uses long-established techniques and avoids the use of chemicals for conservation. This production system not only conserves the natural nutritional values of food and soils, but it is also an alternative for the self-sufficiency of poor peasants worldwide (33.4).

In the concluding part these three models are compared and related to its repercussion on environmental, gender, and human security (Oswald 2001, 2006a and chap. 90 below on HUGE). It links 'food security' with some traditional models of self-sufficiency that were proposed by Julius Nyerere in his 'ujamaa' philosophy and by ecofeminists (Mies 1998; Shiva/Mies 1997; D'Eaubonne 1974). It was taken up by *Via Campesina*, the most important world peasant movement and developed into a 'food sovereignty' paradigm. This approach is able to link up small producers from South and North, East and West, and to produce enough food for a livelihood with dignity. This approach integrates democratic land reforms, local market structures, green agriculture, and natural seeds as the patrimony of peasants and communities, with a culturally diverse livelihood (Shiva 2008, see preface essay in this vol.).

5 *Via Campesina* is a world organization of peasants and small producers and fishermen from the South and North with sub regional association such as *Latin American Peasant Organizations* (CLOC in Spanish), in Latin America, North America, Europe, Asia and Africa. Their goal is to defend an integral process of rural livelihood including agriculture, livestock, orchards, fishing, hunting and recollection, including direct producers, rural workers, women, elders and the young. Their executive committee is democratically elected and regionally representative, caring about gender and youth equity.

33.2 Conceptual Considerations and Clarifications

Why is food important for humans? Food, water, and air are the crucial elements of survival for humans. Food creates energy required for growth, sustenance, and biological and physical activities; it acts within the cells and it purveys the structural and catalytic components to build anabolism.⁶ Whenever one of these

functions fails, organisms substitute it with another process (Oswald 2006: 663–664).

Food is the generic term used for vegetal and animal nourishment as a whole, in parts or its different versions (flowers, fruits, leaves, roots, milk, eggs, muscles, kidney, blood, etc.). It can be distinguished from nutrition, which is the process through which food is absorbed and transformed. Food intake is a biological necessity, determining the quality of life and health of a human being, and its nutritional requirements vary according to age, sex, physical activities, climatic factors, and health conditions.

Nutrition refers to the process of absorption of food by living organisms.⁷ It starts with ingestion, continues with digestion, where the proteins are transformed into amino acids and keeps on with the absorption of nutrients in the intestine. Once integrated into the blood, they are assimilated by the body and transformed metabolically in each cell. The last phase is the excreta of faecal material and urine, where also toxins are eliminated from the body.

Nevertheless, food cannot be reduced only to this physiological process. It is a holistic experience where different senses intervene (smell, flavour, touch, view). Each civilization has developed a culture of tra-

ditional, ritual and food specialties linked to religious and civil events. Different diets and food preparation, but also taboos, ceremonies and rituals, are able to reinforce the cultural and territorial identity of people.

33.2.1 Food Security

Maxwell and Smith (1992) had counted more than 200 definitions of ‘food security’ (FAO 2003a, 2005c). Within the Food and Agricultural Organization (FAO) the food security concept has gradually been developed as a guiding concept for FAO’s evolving food policy (box 33.1).

The general definition of ‘food security’ that was inspired by FAO is related to the personal right to sufficient food for a person and a nation, discounting no-food uses.⁸ The US Department of Agriculture (USDA) evaluates national food security by measuring the gaps between actual food consumption, domestic production, plus commercial imports, minus unused food and consumption targets. Sometimes, nutrition gaps are also measured by the minimal daily nutritional requirements in relation to age, sex, and activities. Thus, food security is assuring the physical availability and the economic accessibility to enough food in an environmentally and socially sustainable manner, where adequate quantity and quality, but also culturally acceptable food for everybody at any time is able to guarantee a healthy and active life. Quantity refers to amount, distribution, calories and proteins, and quality to safe, innocuous, nutritious balanced, good and culturally accepted food. Among the many

6 Anabolism is the process which builds up complex molecules from smaller units, able to give the body the required energy that is coming from glucose and fatty acids. Therefore, it refers to chemical reactions that produce a combination of different molecules. The result of anabolism is the creation of new cellular material (enzymes, proteins, cells and its membrane, organs and tissues). Thus, anabolism is crucial for growth, maintenance, and reparation of tissue.

7 An optimal functioning of an organism or of its cells requires about a hundred different substances located in the environment. Their function is to maintain the structure and to control the metabolism. Metabolism means the sum of chemical changes taking place inside an organism by which food is transformed and utilized by the organisms, and water products are eliminated. Generally, there are chemical components with high molecular weight (proteins, sugar, fibres, salts, starch), which are transformed into nutrients in the intestines. Once liberated, they are absorbed by cells into the blood circulation. Essential chemical elements for the human body are – depending of the weight of the body – 65 per cent oxygen, 18 per cent carbon, 10 per cent hydrogen, 3 per cent nitrogen, 2 per cent calcium, 1.1 per cent phosphorus, 0.25 per cent sulphur, 0.20 per cent potassium, 0.15 per cent sodium and chlorine, 0.05 per cent magnesium, 0.004 per cent lead and traces of copper, manganese, zinc, cobalt, silicon, molybdenum and others (Oswald 2006: 664).

8 Today, less than a third of the grain produced worldwide is directly used in human consumption. The rest is transformed into animal food and industrial inputs. With biofuel the situation will worsen. In Mexico the price of corn per ton rose from 1,400 Mexican pesos in September 2006 to 3,500 pesos in December 2006. The International Monetary Fund indicated that the price of white corn was US\$ 102.7 per ton in the USA. As a quarter of the corn was used for biofuel, the price increased to US\$ 144, but in October 2007 the price rose by 18.2 per cent compared with September, and in November it rose again by 15.4 per cent compared with October, achieving US\$ 164. Peasant organizations explain that the corn is bought from the peasants for 1,400 Mexican pesos and sold in the towns to the tortilla factories for 3,400 pesos, due to speculative practices of monopolies of the TNE Cargill and the Mexican enterprise Maseca, together with other smaller speculators involved in corn importation and tortilla transformation (see at: <<http://www.jorgezepeda.net/13-01-2007/la-tortilla-para-entender-el-aumento-del-precio/>>).

Box 33.1: The evolution of the concept of food security within the FAO. Text is in the public domain.

According to FAO (2003a) the food security concept gradually emerged in the mid-1970's when the initial focus was on:

food supply problems – of assuring the availability and to some degree the price stability of basic foodstuffs at the international and national level. That supply-side, international and institutional set of concerns reflected the changing organization of the global food economy that had precipitated the crisis. A process of international negotiation followed, leading to the World Food Conference of 1974, and a new set of institutional arrangements covering information, resources for promoting food security and forums for dialogue on policy issues (ODI 1997).

Focus was put on productivity, within a frame of Green Revolution, independent of social, environmental, and political costs. The problems of famine, hunger, and food crises were analysed in detail, resulting in a “redefinition of food security, which recognized that the behaviour of potentially vulnerable and affected people was a critical aspect” (FAO 2003a). The insight that the green revolution “did not automatically and rapidly lead to dramatic reductions in poverty and levels of malnutrition ... were recognized as the result of lack of effective demand” (FAO 2003a). Food security was defined in 1974 as:

‘availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices’ (UN 1975). In 1983, FAO expanded its concept to include securing access by vulnerable people to available supplies, implying that attention should be balanced between the demand and supply side of the food security equation: ‘ensuring that all people at all times have both physical and economic access to the basic food that they need’ (FAO 1983a).

The commoditization of inputs and food markets widened the existing social gap, giving support to large-scale industrial agriculture and expelling millions of peasants from their land. An influential World Bank (1986) report on *Poverty and Hunger* addressed the temporal dynamics of food insecurity and introduced the “distinction between chronic food insecurity, associated with problems of continuing or structural poverty and low incomes, and transitory food insecurity, which involved periods of intensified pressure caused by natural disasters, economic collapse or conflict” (FAO 2003a). The food security concept evolved to: “access of all people at all times to *enough food* for an *active, healthy life*” (World Bank 1986: chap. 2). In the mid-1990's, this definition was widened:

to incorporate food safety and also nutritional balance, reflecting concerns about food composition and minor nutrient requirements for an active and healthy life. Food preferences, socially or culturally determined, now became a consideration. The poten-

tially high degree of context specificity implies that the concept had both lost its simplicity and was not itself a goal, but an intermediating set of actions that contribute to an active and healthy life.

In UNDP's (1994) human security concept, food security was one of its seven aspects. In 1996, the World Food Summit adopted an even more complex definition:

Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, *safe and nutritious* food to meet their dietary needs and *food preferences* for an active and healthy life (FAO 1996b).

In 2001, the FAO again refined this concept in: *The State of Food Insecurity 2001*:

Food security [is] a situation that exists when all people, at all times, have physical, *social* and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO 2002).

This new emphasis on consumption was influenced by Amartya Sen (1981) who stressed entitlements of individuals and households. A study of FAO (2003a) described:

food security ... as a phenomenon relating to individuals. It is the nutritional status of the individual household member that is the ultimate focus, and the risk of that adequate status not being achieved or becoming undermined. The latter risk describes the vulnerability of individuals in this context. ... Useful working definitions are described below.

Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern.

Confronted with new models of fast food, people began to suffer more from obesity, cardio-vascular accidents, diabetes and cancer. Thus the concept of food security shifted again, now to healthy and innocuous food, able to maintain a person vigorous and active by reducing the intake of animal fat, sweet beverages, and junk food. But when confronted still with 825 million hungry people, food insecurity was addressed, together with the fact that 80 per cent of the poor live in rural areas and agriculture employs almost 50 per cent of them:

Rural development is critical for improving food security. The traditional agriculture sector has low productivity due to the lack of investment, inadequate water supply and scarce arable land. Rapid depletion of groundwater resources may be the most serious problem facing the countries (FAO 2006: 20).

definitions of 'food security' used in the scientific and policy oriented food discourse those selected here indicate its scope:

- "when people do not need to live with hunger or fear starvation"⁹;
- "physical and economic access, at all times, to sufficient, safe and nutritious food to meet dietary needs and food preferences for an active and healthy life"¹⁰;
- "the ability of individuals to obtain sufficient food on a day-to-day basis"¹¹;
- "the notion that all people, especially the most vulnerable, have dignified and unthreatened access to the quality and quantity of culturally appropriate food" that will fully support their physical, emotional, and spiritual health (Wolfe/Frongillo/Valois 2003);
- "state in which all persons obtain a nutritionally adequate, culturally acceptable diet at all times through local non-emergency sources" (Riely/Mock/Cogill/Bailey/Kenefick 1999);
- "condition of having enough food to provide adequate nutrition for a healthy and productive life" (USAID, Bureau for Africa 1986a).

USAID defined 'food security' as:

all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life. Achieving food security requires that the aggregate availability of physical supplies of food is sufficient, that households have adequate access to those food supplies through their own production, through the market or through other sources, and that the utilization of those food supplies is appropriate to meet the specific dietary needs of individuals.

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The *US Food and Drug Administration* (FDA 2003) defined 'food security' as the daily balanced intake of proteins, carbohydrates, vitamins and minerals re-

quired for a healthy life. The disequilibrium in quantity and polluted food, or with toxins, could generate illnesses and limit the physical and mental development of children. Finally, food security is also related to food safety such as hygiene and prevention of illnesses caused by food in bad conditions or food-borne sicknesses.¹² According to WHO, bacteria are the main threat for innocuous food that are present in the domestic and professional food chain.

33.2.2 Food Sovereignty

Food security, as defined by FAO, does not include social and cultural factors of food and nutrition, nor land rights, seeds, credits, family ties, social relations of productive and consumption pattern together with communitarian cohesion. Therefore, *Via Campesina* understood 'food sovereignty' as "the right of peoples, communities, and countries to define their own agricultural, labour, fishing, food and land policies, which are ecologically, socially, economically and culturally appropriate to their unique circumstances. It includes the true right to food and to produce food, which means that all people have the right to safe, nutritious and culturally appropriate food and to food producing resources and the ability to sustain themselves and their societies" (*Food Sovereignty: A Right For All*, Political Statement of the NGO/CSO Forum for Food Sovereignty, Rome, June 2002).

Thus important elements of food as a cultural and not only as a technical process are lacking in the FAO definitions. The concept of "food sovereignty represents both a social and a personal right of individuals and communities to healthy, culturally appropriate and permanent food" (Oswald 2006: 664), but includes also the process of production, land tenure, local native seeds, access to water and to other natural resources, storage processes, transformation of food, eating, fiestas and rituals in which women play a key role.

Social movements such as *Via Campesina* have used in their daily struggle the concept of food sovereignty, including geopolitical, socio-economic, identity and cultural aspects (box 33.2).

This new concept of 'food sovereignty' that differs significantly from the concept of 'food security' (box 33.1) that is being used by FAO and the food aid community has been taken up by the *UN Forum for Indigenous Peoples* during its sixth session, 14-25 May 2007 that defined food sovereignty as:

12 See; US FDA (2003); at: <<http://www.fda.gov/OHRMS/DOCKETS/98fr/01d-0583-nad00002.pdf>>.

9 See: Medicine.Net.com; at: <<http://www.medterms.com/script/main/art.asp?articlekey=32945>>.

10 See: FAO/Netherlands; at: <www.fao.org/ag/wfe2005/glossary_en.htm>.

11 See: MCGraw Hill Online Learning Center; at: <http://highered.mcgraw-hill.com/sites/0070294267/student_view0/glossary_e-l.html>.

Box 33.2: Concept of food sovereignty as developed by social movements. Text is in the public domain.

Via Campesina, social movements, ecofeminists and indigenous organizations define food sovereignty as an integral process of production, commercialization, transformation and intake related to the family and community culture of food, proper of any region, social class and nations. Their understanding of food sovereignty includes:

- a.) local production and trade of agricultural products with access to land, water, native seeds, credits, technical support and financial facilities for all participants;
- b.) women are the main food producers worldwide¹⁾ and they are often in charge of transformation and local trade;
- c.) therefore, access to land, credit and basic production means for women and girls at home and in the community is a guarantee of food security, but it is also able to overcome the violent and unjust patriarchal structures within families, communities, social organizations, countries, and global economic systems;
- d.) inclusion of the indigenous, women, and peasants in regional and national rural policy and decision-making processes related to agriculture and food sovereignty;
- e.) the basic right to consume safe, sufficient, and culturally accepted non-toxic food, locally produced, transformed and sold, since food is more than intake of proteins and calories: it is a cultural act of life;
- f.) the rights of regions and nations to establish compensations and subsidies to get protection from dumping and artificial low prices as a result of subsidies in industrialized countries;
- g.) the obligation of national and local governments to improve the food disposal of its citizens through stimulus of production and transformation of food, subsidies, and economic programmes to achieve food sovereignty in basic crops; discounts in urban poor regions, able to guarantee the basic food basket; popular kitchens; breakfast in schools, and special food for undernourished babies and pregnant mothers;
- h.) governments should guarantee an adequate nutrition above all for babies, infants, and pregnant women, offering food supply for poor people;
- i.) during bad harvests the importation of basic crops from the world market, and when countries are threatened by famine, with the advice and support from the World Food Programme;
- j.) clean water and sewage facilities to eliminate parasites, viruses, helminth and protozoa²⁾;
- k.) links among environmental services, agriculture, territorial planning and democratic participation in the decision-making process to guarantee the livelihood and dignity of the most vulnerable in rural areas. They create opportunities for rural population to stay on their field without pressure for migration. The sum of these processes reinforce for each citizen the basic rights of life, but also the right of non-migration, thanks to sustainable life with dignity in its own communities and countries.

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- 1) In most countries of Sub-Saharan Africa (SSA), women represent: 33 per cent of the rural labour force; 70 per cent of paid rural daily work; 60–80 per cent of self-subsistence crops and local sale; 100 per cent of food transformation; 80 per cent of harvest, transportation from the fields to the community and food storing; 90 per cent of weaving and hooking; 60 per cent of market activities (FAO/SDWW 1999: 2)
 - 2) Helminths are worms and their eggs living inside of a human organism or animals. Protozoa are single cell organism able to divide within a host organism. Malaria is caused by protozoa called *Plasmodium*. Other frequent protozoa parasites are *Giardia* and *Toxoplasma*.

the right of Peoples to define their own policies and strategies for the sustainable production, distribution, and consumption of food, with respect for their own cultures and their own systems of managing natural resources and rural areas, and is considered to be a precondition for Food Security.¹³

This concept has also been discussed by several NGOs, such as the *Africa Europe Faith and Justice Network* (AEFJN) that adopted a food sovereignty

document in September 2005 that points to many shortcomings of the food security concept (box 33.3).

These definitions on food sovereignty by social movements representing the interest of farmers in the South (*Via Campesina*, box 33.2) and of an African-European Catholic group (box 33.3) are just two exemplary snapshots that point to major shortcomings of the debate on food security during the past three decades. They are also responsible for the lack of progress against hunger since until today 25,000 people, above all small children, die daily of hunger. The next two concepts of 'survival strategies' and 'livelihood' that have been developed in the South address different means for the marginalized poor to achieve 'food security' with 'food sovereignty'.

13 See; [at<http://209.85.135.104/search?q=cache:ysjC3kV2zJ8J:docip.org/Permanent%2520Forum/pfo7/PFO7jointstatement100.pdf+FAO,+food+sovereignty,+definition&hl=de&ct=clnk&cd=1&gl=de >](http://209.85.135.104/search?q=cache:ysjC3kV2zJ8J:docip.org/Permanent%2520Forum/pfo7/PFO7jointstatement100.pdf+FAO,+food+sovereignty,+definition&hl=de&ct=clnk&cd=1&gl=de).

Box 33.3: Food Sovereignty Document, September 2005. **Source:** <http://www.aefjn.be/index.php?option=com_content&task=view&id=31&Itemid=37>. Text is in the public domain.

On 7 July 2005 some representatives of AEFJN met ... to discuss the principles of food sovereignty as a possible framework for the work of AEFJN.

Food Sovereignty:

The discussion stimulated interesting reflections about the definition of the term, the difference with other mainstream concepts such as the right to food and food security, weaknesses and strengths of this paradigm, and the specific aspects that can relate food sovereignty to Catholic Social Teaching, Human Rights and policymaking. We would like to summarize here some of our findings. Life is the most precious gift. The right to life is therefore the most fundamental right for any human being. An essential condition to sustain life is food. Access to food is recognized as a basic human right.

Right to Food:

The right to food was recognized in the Universal Declaration of Human Rights in 1948. It is also included in the International Covenant on Economic, Social and Cultural Rights of 1976:

"Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food..." (Universal Declaration of Human Rights, Art. 25.1)

Therefore the right to food is an integral component of human rights, based on existing international law and protected by a legally binding framework in international law. Also important are the FAO "Voluntary Guidelines" (November 2004) formally accepted by FAO members states as a useful tool to challenge unwilling governments to take their internal and external responsibilities serious.

Food Security:

The concept of food security has long dominated the discussion about the question how to diminish and eliminate poverty and hunger. Coined in the context of the UN specialized agencies, such as FAO, the term has been used since the 1970's. Although there is a definition agreed by all, the 1996 World Food Summit defined Food Security as 'the situation in which all people, at all times, have physical and economic access to safe and nutritious food that meets their dietary needs and food preferences for a healthy life'. Though it refers to having enough food to eat, it doesn't talk about where the food comes from, who produces it, how and under which conditions it has been grown.

Food sovereignty is a global or national vision oriented towards production, rather than access to food by deprived persons and groups. The way to have access to food can be different: to grow food, to have

paid work to buy food, or to receive welfare in case of inability. This allows the big food producers both in the North and South to argue that the best way for poor countries to achieve food security for their people is to import cheap food from abroad rather than trying to produce it themselves. It does not question the existing relations of inequality and processes that increase these social gaps, within a country by landlords and outside by TNE.

In spite of the green revolution, improved productivity and tremendous efforts to provide food security, the number of hungry people in the world has been growing. Surprisingly, the very people who grow food, the small peasant farmers, particularly women, are afflicted by hunger and can no longer make a living on their land. To speak only of food security is no longer enough. We have to look at the question of what kind of food is produced, how it is produced, for whom it is produced. Food security is a definition of a goal rather than a programme with specific policies that aim at the eradication of the causes of hunger and malnutrition. Therefore a more comprehensive notion is under discussion today to ensure the daily food for all through food sovereignty.

Food Sovereignty:

There are several definitions of 'food sovereignty':

Food sovereignty is the right of people, communities, and countries to define their own agricultural, pastoral, labour, fishing, food and land policies which are ecologically, socially, economically, and culturally appropriate to their unique circumstances. It includes the right to food and to produce food, which means that all people have the right to safe, nutritious, and culturally appropriate food, and to food-producing resources and the ability to sustain themselves and their societies.

Food sovereignty also refers to the right of states to protect their population by restricting the dumping of products in their markets and through the control of the domestic market.

The notion of food sovereignty has not been invented by intellectuals. It comes from the grassroots, from peasant farmers and indigenous people in Latin America who started to reflect on the root causes of their misery and to look for a way to live a dignified life. Farmers associations in Asia took up the concept. Today farmers in Europe are threatened as well in their existence by the effects of globalization. They, too, begin to accept food sovereignty as a revolutionary alternative to the dominant neo-liberal model, which tends to look at reality exclusively from an economic and a commercial angle.

More important, the concept of 'food sovereignty' wants to integrate the welfare of people/human beings as well as/and to integrate the notions of the common good of society and ecological sustainability into concepts of the market economy.

The concept of food sovereignty is not necessarily opposed to that of food security, but it goes beyond it. Food sovereignty actually expands the focus by looking at the causes of hunger rather than concentrating only on the effects. Food sovereignty can be an alternative to the current mainstream thinking on food production. It is people-centred as it looks at people not only as consumers of food, but at active agents in the production of food.

Elements of Food Sovereignty:

There are various definitions of food sovereignty. We want to look at the definition accepted by the Forum for Food Sovereignty in Rome in 2002.

Food sovereignty is the right of people, communities, and countries to define their own agricultural, pastoral, labour, fishing, food and land policies which are ecologically, socially, economically, and culturally appropriate to their unique circumstances. It includes the right to food and to produce food, which means that all people have the right to safe, nutritious and culturally appropriate food and to food-producing resources and the ability to sustain themselves and their societies."

Let us analyse the most important elements:

The *democratic principle* (who decides what we grow and eat?):

At present the decision concerning what is grown on farms and sold in supermarkets is taken by a few powerful transnational companies, which control much of the food production and distribution. Their principle aim is to produce and sell as cheaply and as profitably as possible. The concept of food sovereignty wants to give back to states or groups of states and agricultural communities and farmers the possibility to decide what kinds of food they want to grow and how to grow it. States are to remain "sovereign" and need to have a political space in order to implement their own agricultural policies.

The *question of ownership* (who controls the means of production?):

With the advance of industrialized farming the means of production (land, water, and seed) are taken over by companies, turning farmers into underpaid slave labour or slum dwellers. In an economy of food sovereignty the state will provide small farmers with the resources needed to grow their own food. Agrarian reform and redistribution of land is the most appropriate means to achieve that. In contrast to the social-

ist model (state ownership of the means of production) and the capitalist model (the capital is owner) food sovereignty demands that it is the producers who remain in control of their resources. Food is a social and personal right.

The *right to protection*:

Today the political choices made by the multilateral institutions, like IMF and WTO tend to protect the agribusiness industry both in the North and the South, and to destroy the livelihood of millions of subsistence and family farmers by controlling the food cycle all the way from agricultural inputs and the growing of the crops to the distribution, processing, and selling of food. The dumping of heavily subsidized agricultural products onto the world market thus drives local farmers into bankruptcy. This is the very vision of agriculture that the concept of food sovereignty challenges. Not only does this practice constitute a grave injustice, it contributes to the decline in food production and to the increase of hunger, and at the same time creates mass unemployment for millions of people. Food sovereignty stipulates the right of peoples to protect themselves against dumping through protective tariffs, to retain the capacity of receiving remunerative prices for their products and so remain masters of their own way of life.

The *principle of ecological sustainability* (who can best produce healthy food without destroying the environment?):

The present system of industrial monocultures is economically efficient and profitable. Yet, for the environment it is a disaster. Biodiversity and the nutritional value of the food are reduced. The destruction of the environment for the sake of profits destroys the irreplaceable richness of animal and plant life for future generations, and is thus a crime against them. Food sovereignty favours food production through family units who produce healthy food in respect of natural processes.

Another Vision of Life, Society, and The World:

Economic models are based on ideas and a vision of human nature, of the role of society, and of the purpose of creation. The present economic philosophy sees human beings mainly as producers and consumers. The social dimension which used to be part of the 'social market-economy' is gradually eliminated. The long-term ecological cost of our way of producing, transporting, and selling our goods is completely neglected. Food sovereignty wants to come back to a holistic view of the world and integrate the different dimensions that make up our reality. Economic activities have consequences for social relations and the environment that have to be considered.

33.2.3 Survival Strategies and Livelihood

The scientific modernization theories¹⁴, the economic recipes of the neoliberal ‘Chicago School’¹⁵, and the ‘Washington Consensus’¹⁶ offered by Northern theoreticians that have been implemented by many development agencies and *international financial institutions* (IFIs), especially by the Bretton Woods organizations (WB, IMF, IFC), have failed to achieve their goals in many parts of Africa, Asia, and Latin America. The implementation of these theories by governments in Latin America is reflected in three lost decades of development, while the policies have failed to eradicate poverty and to overcome hunger. In many cases these neoliberal concepts have worsened the situation of the rural and urban poor who still experience undernourishment with all the negative human, social, economic, and cultural effects.

Due to the low income of the marginalized poor as a result of underdevelopment, economic crises, the increase of productive costs and chemical inputs, the rise of prices for basic products when crop prices collapsed, erosion of soils and scarcity as well as pollution of water, the peasants started in Latin America in the 1950’s to migrate massively to big towns. In marginal slums, they have lived with *survival strategies* (box 33.4) that are defined by Diego Palma as “a sum of initiatives able to complement the salary in terms of the reproduction of their labour force” (Palma 1986: 28). Nevertheless, the origin of the concept started with Duque and Pastrana (1973) when they described the situation of rural migrants invading urban marginal land in Chile, and started to create their new livelihood. Susana Torado included in the concept “the procreation of family life cycle and labour migrations” and named them “strategies of family life” (nd: 2), a term that was amplified by the group of Quito as “strategies of existence” (PISPAL 1978).

Thus, ‘survival strategies’ were consolidated in the socio-economic crises of Latin America, when in the

1970’s the models of capital accumulation and of import substitution as post-war strategies were exhausted and the neoliberal globalization process was reinforced. On 11 September 1973, Chile experienced first with the military coup the neoliberal imposition of the Chicago school. Argentina followed with a military coup in 1975, and many other countries in South and Central America experienced this regressive globalization combined with repression and impoverishment of large social groups.

Mexico (like Venezuela and Ecuador) seemed to be exempted from these repressive coups due to its richness in hydrocarbons, however, with the fall in oil prices, and a corrupt financial management of the governments (oil rent), elites were unable to consolidate and distribute profits, and thus crashed the ‘Mexican wonder’. Confronted with the incapacity to pay the debt service, the IMF imposed its structural adjustment policies (SAP, see figure 33. 1).

From Mexico the crisis spread all over LA, Africa, and to several Asian countries. The affected nations were obliged though draconic policies to pay back at any cost their debts, and as a consequence public support and subsidies were drastically reduced. The adjustment costs of this failed policy were transferred to the workers and peasants, and later to the middle classes, which resulted in massive unemployment, loss of *purchase power*, increasing prices of the basic food basket, the elimination of controlled prices in basic products, a growing monopoly in the trade system, and a reduced purchase power parity (PPP) (Castillo 1991; Oswald 1991; Calva 2003, 2008a; Strahm/Oswald 1990). Keynes’ limited ‘welfare state’ collapsed. Without governmental support and high inflation, only complex survival strategies integrating the whole family were able to compensate for the loss of PPP. Poverty doubled in LA¹⁷ and the structural inequality avoided an improvement for poor people (CEPAL 2005)..

Without governmental support, during this crisis situation traditional networks broke apart and women above all organized themselves to survive. After an illegal occupation of risky land in urban marginal areas, they built shelters from precarious materials (waste), picked up from landfills (Scheingart 2006; Cantú 2003; De Mattos 2003). Chronic unemployment and missing opportunities for cash obliged them to get temporary precarious jobs. Simultaneously, they sold any unnecessary goods and borrowed from family

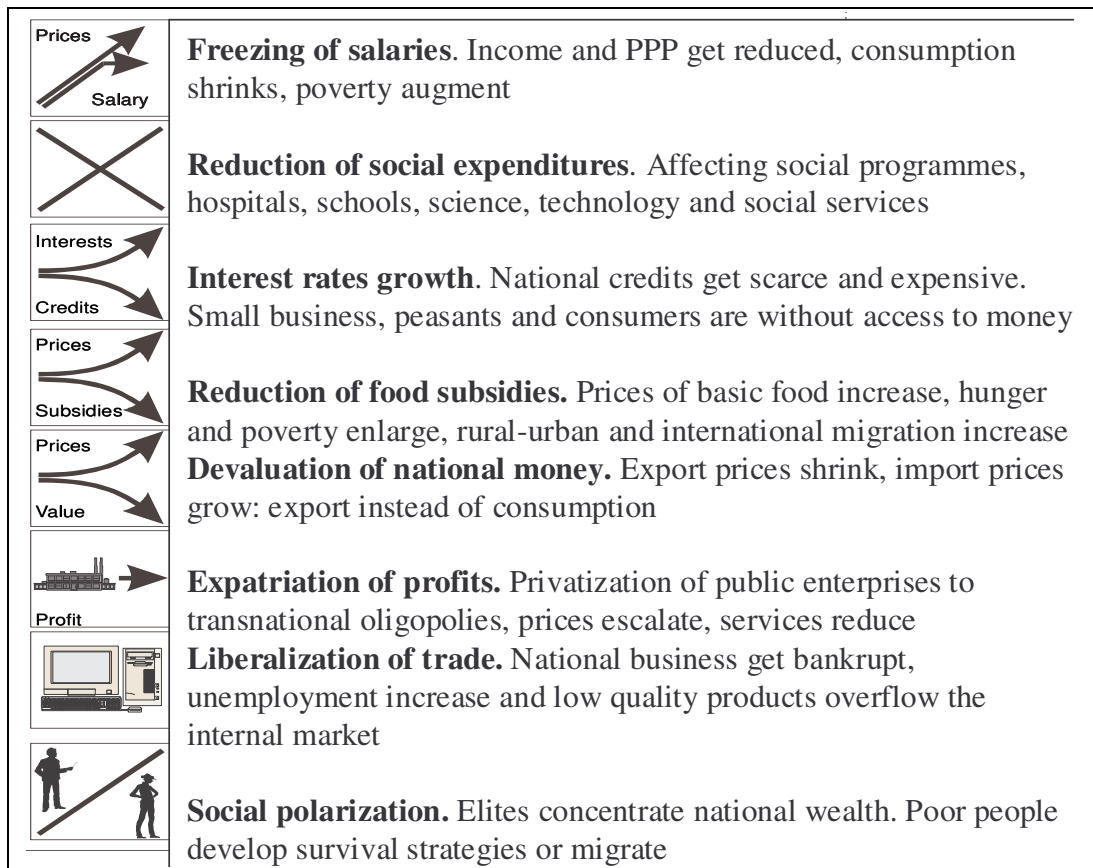
14 See references to the modernization theories and its critics in South (*dependencia*: Dos Santos 1978) and North (Sader 2005; Oswald 2008b; Shiva 2008; Saxe 2008; Dos Santos 1995; Mies 1998; Senghaas 1973).

15 See reference to Milton Friedman and the ‘Chicago school’ and its major critics (Calva 2008; Dabat 1994; Dos Santos 1993; Saxe 1999; Strahm/Oswald 1990; Omán 1994)

16 See references to the major intellectual representatives and their major critics (Calva 2003, 2008a; Dos Santos 1995; Sen 1995; Held/McGrew/Goldblatt/Parraton 1999).

17 See: Silvia Van Dijk, 2007: *Proposal for PhD Thesis*, Mexico, D.F.: University of Mexico City.

Figure 33.1: Conditions of the Structural Adjustment Policy (SAP) of the IMF for Debt Repayment in Developing Countries. **Source:** Strahm/Oswald (1990: 130).



members, neighbours, and from the corner shop. Soon, these possibilities disappeared due to the persistence of economic crisis, and food became scarce. Then, e.g. in Mexico City (Oswald 1991), women organized themselves, picking up half-perished products from the garbage of the central market and transformed these products into food in collective popular kitchens

Collective community work (kitchen, child rearing, pressure on public functionaries) was organized through a system of rotation. United, they fought for basic services (electricity, water, roads, security, health and community centres; Rosiques 2003) and the legalization of land and services. Due to lacking cash and jobs, they struggled also for public subsidies and poverty alleviation programmes (Ramírez 1991). Besides all these activities, women still found time for some temporary paid work as domestics, washing or ironing; others generated services, handicrafts, food selling, etc. to be able to maintain their families. Children, grandparents, and sometimes husbands supported these complex strategies, where poverty of

time was the highest cost paid by women (Damian 2002).

Furthermore, these popular colonies have not only been hazard-prone but also exposed to organized crime and gangs. Thus, only a strong social organization permitted them to fight against public insecurity, where often the police was involved in illegal activities. The sum of these complex actions empowered women, and therefore they were also able to fight against interfamilial violence. As a result these women were often abandoned by their partner, and as heads of household they had to struggle for the future of their children (INEGI 2005).

After a decade of intensive mobilization and organization, most of these quarters achieved some social and economic consolidation (Oswald 1991, 2007b), and their living conditions and livelihood improved. When they have been confronted with chronic unemployment, they integrated their micro-businesses vertically and horizontally (Cadena 2005) with popular savings banks, collective childhood, pre-

Box 33.4: Major survival strategies. **Source:** Oswald (1991, 2007b, 2008a).

These manifold survival strategies may be synthesized in the following scheme:

1. Massive rural migration to urban slums
2. Illegal occupation of marginal and risky land
3. Construction of shelter with precarious materials from waste
4. Chronic unemployment of men and lack of cash
5. Selling unnecessary goods
6. Credits from family members, neighbours, and local shops
7. Economic crises deepened and food became scarce
8. Collection of perished fruit and vegetables
9. Collective popular kitchen
10. Rotation of women in collective community work (kitchen, child rearing, paid jobs)
11. Common struggle for basic services (electricity, water, access, community centre)
12. Communal organization for the legalization of land and services
13. Struggle for public subsidies and poverty alleviation programmes
14. Temporary paid work
15. Multiple informal activities: services, handicraft, food, washing, ironing, services, prostitution
16. Social organization against organized crime and gangs
17. Empowerment and fight against interfamilial violence
18. Social and economic consolidation of the neighbourhood and the families
19. Horizontal and vertical integration of micro-business chains with micro-credit and technical improvements, enclosed under the term 'economy of solidarity' or 'social economy'.

school attention, and collective sale of handicrafts.¹⁸ These are some of the alternatives to avoid perverse poverty and to improve their quality of life. .

In India, Bangladesh and Africa similar processes of survival strategies took place, all of them replete with criticism of the imposed liberal modernization and globalization process. "Over the past two decades every issue ... what the industrial economy calls 'growth' is really a form of theft from nature and people" (Shiva 2000: 1). After the slogan in Seattle "No new round, turnaround", she added that the real challenge is to "turn the rules of globalization and free trade around, and make trade subservient to higher values of the protection of the earth and people's livelihood" (Shiva 2000: 127). The future of the three billion impoverished people in the world lies on small farms, peasant and marginal urban livelihood, able to produce safe and culturally accepted food. This productive process is neither marginalized nor criminalized, and food sovereignty is a secure basis for regional sovereignty.

18 After five decades of development and the creation of multilateral organizations of the UN such as the FAO (Food and Agriculture Organization), WHO (World Health Organization), UNDP (UN Program of Development), UNICEF (UN Fund for Children) and UNIFEM (UN Fund for Women) among others, the achieved results are limited. Goals proposed were several times reduced, despite enormous advances in Science and Technology (S&T). During the 1980's, 35,000 died daily, a decade earlier the number was 41,000, and today the estimate is about 24,000 persons, above all children.

33.3 The State of Art of Food Security

There exists a vicious circle linking hunger and undernourishment with poverty and ignorance (figure 33.2).

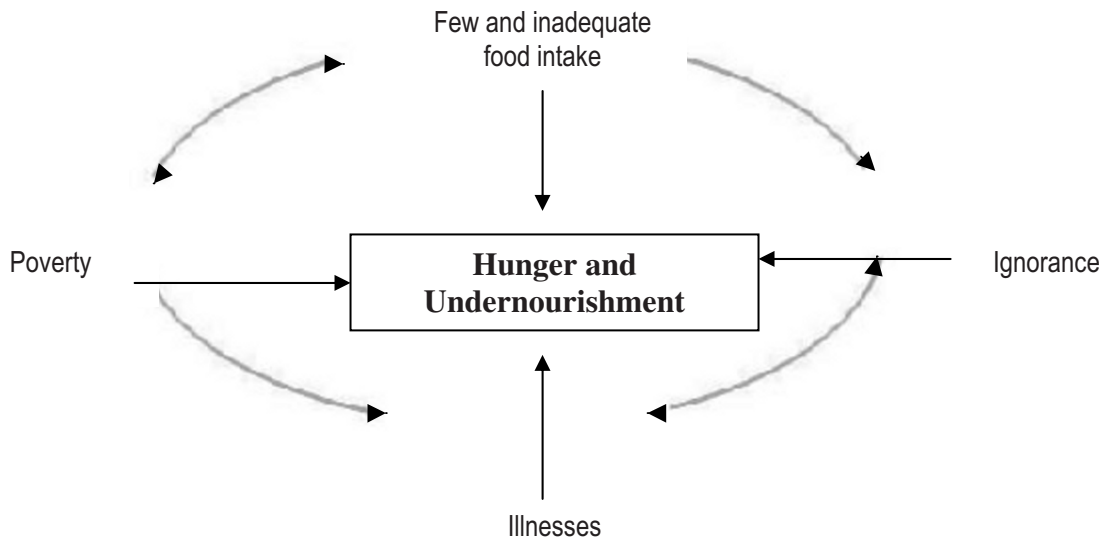
These authors analysed the food transition in the Mexican diet from traditional corn and bean intake to a modern food pattern that is rich in carbohydrates, fat and sugar, thus inducing illnesses, excess of weight, and hypertension which starts in the womb of mothers, creating chronic malnutrition and later obesity and associated epidemics. This phenomenon exists worldwide and has contributed to a deterioration of food, livelihood, and health security.

Thus, hunger is a complex interrelation where poverty is reinforced by ignorance and propaganda in the mass media, inducing people to buy junk food with their scarce money. Unhealthy food creates further health problems above all for children, limiting their brain and bone development and adversely creating modern illnesses and degenerative processes from childhood on.

33.3.1 The World

One billion persons suffer from hunger and undernourishment. Daily 24,000 persons die as a consequence of hunger; three quarters of them are children below five years. Furthermore, in half of the deaths among the 150 million undernourished children, malnutrition is the main cause. Between 1990 and 2003 undernourishment in children increased from 29 to 37 million, and only in East Asia hunger was reduced from 24 to 10 million (UN 2005a)¹⁹.

Figure 33.2: Vicious circle of hunger, undernourishment, poverty, and ignorance. **Source:** Chávez/Ávila/Shamah (2007: 208).



The FAO (2005a) estimated that there are still 468 million people suffering from hunger in poor countries, implying a loss of GDP of 30 billion dollars/year. Chronic infant undernourishment linked to a lack of iron and iodine reduces the intellectual capacity of infants by 10 to 15 per cent. Combining protein-calorie insufficiency with missing micro elements, the economic loss in poor countries affects 5 to 10 per cent of their GDP, equivalent to 500 bd/year. Regions threatened by war and internal conflicts are responsible for 10 per cent of deaths limited by famine. Nevertheless, malnutrition is basically concentrated in rural areas of poor countries and increasingly chronic undernourishment is present in urban slums, affecting also industrialized countries²⁰.

The global demand of food is estimated to increase between 70 to 85 per cent between 2000 and

2050, and simultaneously an increase of irrigation water of 15 to 35 per cent is estimated, due to an unsustainable management of aquifers. Water withdrawal is regionally limited and it will affect regions that have already today overexploited its reserves. This refers also to areas with high population growth and countries such as India, the south of the USA, and northern Mexico, Peru, to the south-east of Australia, to North Africa, Spain, the Sahel region, the Nile basin, East Africa, South Africa, Central Asia, the south of China, Pakistan and Mongolia (Millennium Ecosystem Assessment 2005). Thus, the future of food production increase is limited due to the availability of water, desertification processes, and loss of soil fertility, but also due to growing food prices since 2006 because of the promotion of biofuels. The trend towards an increasing undernourishment may grow when natural, population, and economic factors together become more urgent (figure 33.3)..

In 1996, in countries with a high *human development index* (HDI) the intake was 3,347 calories (11.6 per cent more than in 1976) and 102.7 g of proteins (a 13 per cent increase); in countries with a medium HDI the intake was 2,696 calories (26.9 per cent increase) and 69.6 g of proteins (33.7 per cent increase) and in countries with low HDI the intake was 2,145 calories (1 per cent less) and 51.0 g of proteins (4.4 per cent less). Another indicator of life quality is the birth weight. In industrialized countries in 1997 seven per cent of babies had low weight, 17 per cent in countries with medium development and 20 per cent with low HDI (UNDP 1999: 172–175). According to UNDP

19 During three decades of crises, the popular sector of Mexico lost 80 per cent of its PPP and the relation of wealth between capital/work of GDP increase from 50 per cent to 85 per cent in favour of capital (Bank of Mexico 2006). This process reduced the workers' capacity to negotiate labour conditions and salaries, and the survival problems pulverized the labour struggles of a whole favor of capital.

20 In 1999, when on 1 June the rally against hunger started in the US, 31 million US citizens (12 million children) were exposed to food insecurity, meaning, they suffered from hunger or did not know how to get their next food. Hunger increased in African countries affected by war, but also in East and South Asia, and an increase of 23 million in Latin America.

Figure 33.3: Food Production, Prices, and Undernourishment. Globally an estimated 852 million people were undernourished in 2000-2002, up 37 million from the period 1997-1999. Only undernourishment in poor countries is plotted here. **Source:** FAOSTATS Millenium Ecosystem Assessment. This map is in the public domain.

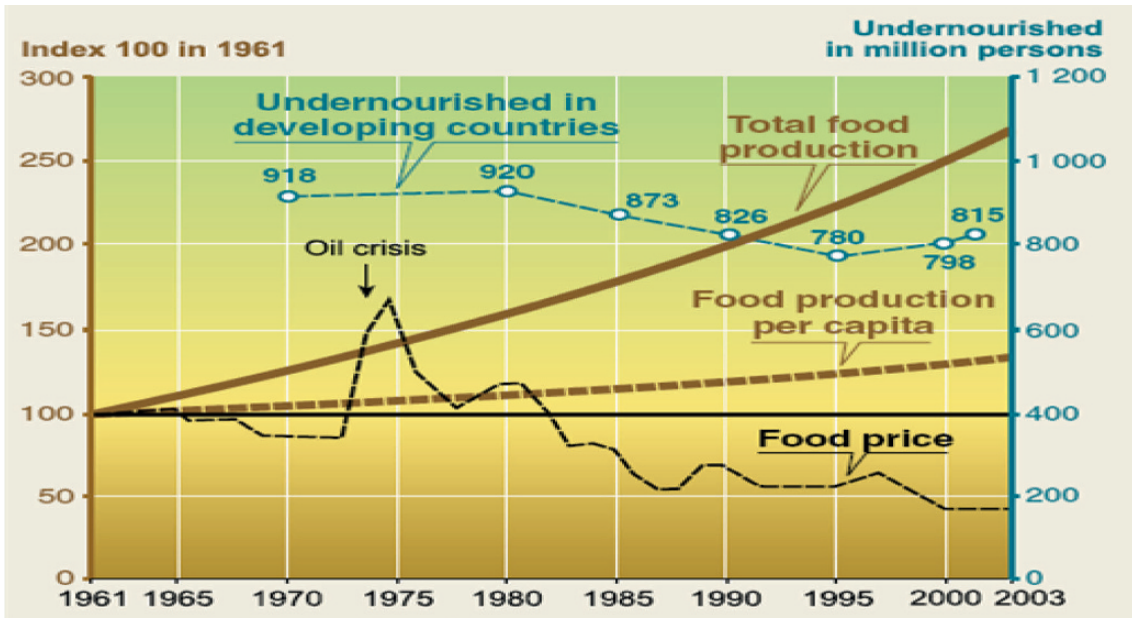
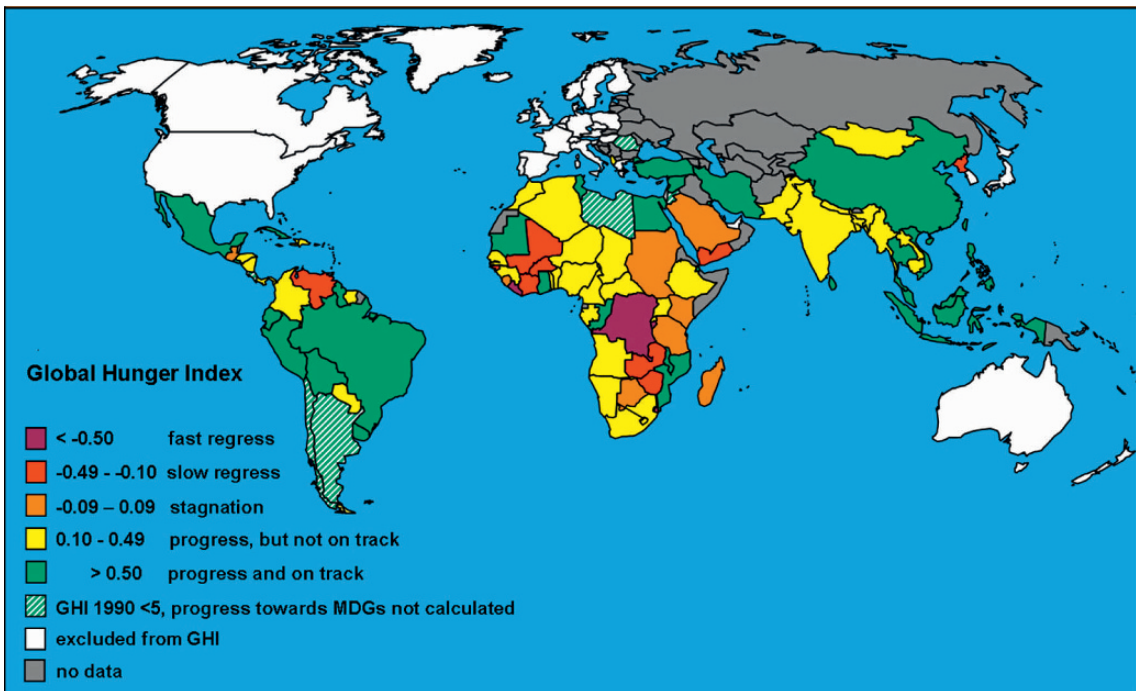


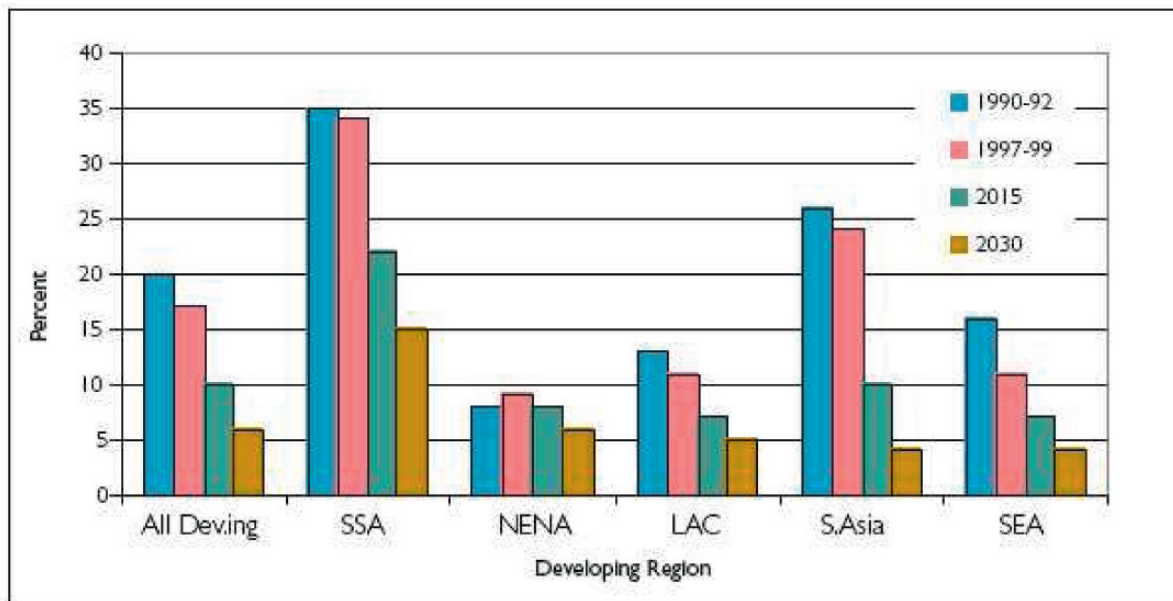
Figure 33.4: The Global Hunger Index Progress towards the MDGs. **Source:** IFPRI (2007). The map is in the public domain; at: <<http://www.ifpri.org/media/20071012GHI/GHIMap07hr.jpg>>.



(2006), still 46.8 per cent of children below 5 years were undernourished in poor countries and 14.7 per cent in medium HDI countries. These processes are

expressed in the Hunger Index summarized referred to in figure 34.4

Figure 33.5: Proportion of Undernourished in Developing Regions. Actual and FAO Baseline Projections. **Source:** FAO/IFAD/WFP (2002: 9).



¹ Legend: SSA: Sub-Saharan Africa; NENA: Near east and North Africa; LAC: Latin America and the Caribbean; S.Asia: South Asia; SEA: East and Southeast Asia.

Furthermore, regional and social differences exist (figure 33.4). Food production has augmented, but at the same time poverty, hunger, and preventive illnesses (HIV/AIDS) increased in several countries, above all in *Sub-Saharan Africa* (SSA). This region has at its disposal today 20 per cent less food than 25 years ago, despite the population increase (UNDP 1998, 1999, 2000, 2001). The SSA countries produced between 2002 and 2003 about 22.89 million tons of cereals; a small increase compared with the 21.55 mt of the previous year. This production is insufficient to feed the population and 15.2 million people are threatened by famine or require international food support (figure 33.5). Causes are complex: in the former grain reserve of the region in Zimbabwe a corrupt government rules; in Congo a civil war is ongoing; and Namibia is confronted with a severe desertification process. In general, severe droughts and disasters have affected food production in many countries, but also the international trade rules are unequal for Africa (Turner 2003).

In SSA the fifth poorest segment of the population obtained only 72 per cent of nutritional requirements, in Latin America 78 per cent, and in the recent independent countries of the former USSR, 80 per cent. The gap among and within countries in Africa and Asia is increasing, and only the fifth wealthiest

will get their nutritional requirements in the near future. These negative results are reinforced by the present policy of cash crops, the food production, and the policy of biofuel controlled by multinational enterprises (MNE).

Tajikistan and probably Azerbaijan will lose their food security without armed conflicts, but the food situation can get worse in the event of political destabilization (chap. 34 by Salih). In sum, with the estimated population growth in poor countries and the present policy of food as a commodity, poor countries will be highly affected by the change of food patterns, and therefore more exposed to hunger and famine. These processes are reinforced by propaganda, where occidental introduced values of food patterns are taking away the few resources able to offer healthy food to poor people.

With a global population of more than 6.5 billion inhabitants, more than one sixth in 70 countries are suffering from hunger (USDA 2005). Natural factors such as loss of fertile soils, salinization of coastal areas and deltas, intrusion of salty water into coastal aquifers, and greater droughts will increase food vulnerability in countries that are today food insecure. These processes will be aggravated by climate change and more frequent hazards.

Table 33.1: Models of World Global Food Consumption by Social Classes. **Source:** Lang/Heaseman (2004 or 2005: 195), modified by Oswald.

Category of consumption	High	Medium	Poor
Diet of social class	1.5 billion people: meat, packed food, bottled drinks	3 billion: grain, clean water	1.8 billion: insufficient grain, polluted water
Transportation	Private cars, planes	Bicycles, buses, cars	Walking, public transportation
Origin of food	Food from far away, supermarkets, shops of specialties, delicatessen	Some food from outside, local shops and markets	Local food, local shops and markets
Materials	Throw away	Durable	Local biomass
Goals	Wide with global horizons	Sufficient, regional horizons	Limited or missing local horizons
Fuels	Gas, gasoline, kerosene	Gasoline, gas	Wood, excrement, organic waste
Environmental Impact	High	Considerable	Low

33.3.1.1 Food Prices and Trade

The export of primary commodities from the poor countries to the world market equals that of 1980, representing 26 per cent of the global trade. Nevertheless, the imports grew from 28 per cent in 1970 to 37 per cent in 1997. The net food imports in the poorest countries have increased by about 50 per cent between 1980 and 1997 (a rise from US\$ 3.9 to US\$ 6 billion). The increase in 19 medium income countries was 40 per cent (from US\$ 9.3 to US\$ 13; see: Kwa 2003: 24). Food distribution is another unequal issue (Sen 1995). Globally, one fifth of the world population has access to 86 per cent of world consumption, compared with the poorest 20 per cent that obtain 1.3 per cent, and consumption in rich countries is still rising.

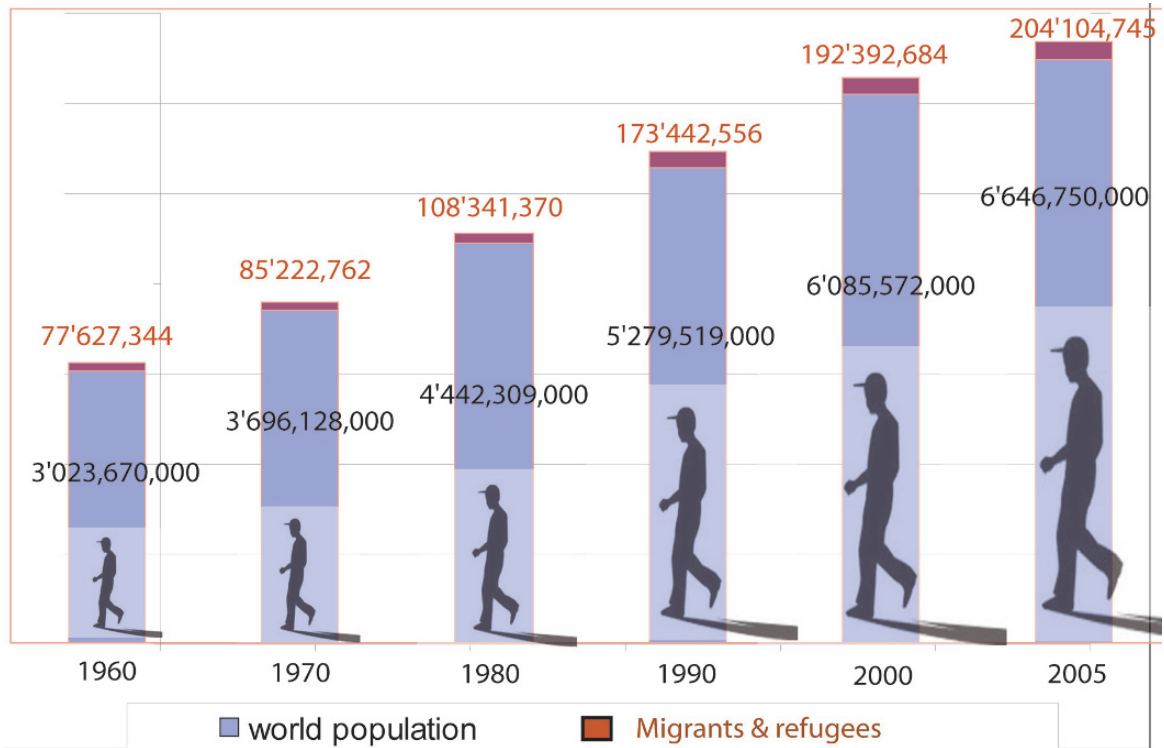
These data show the concentration of food in industrialized countries and a situation of increasing hunger in the poorest nations as a result of missing money, unemployment, low prices for prime material, unjust terms of trade and trade system, low salaries, population growth and corrupt governments, but also missing land and production means for the poorest. Especially women and girls belong to the group of highly vulnerable persons, and are affected by this perverse poverty.²¹ The sum of these factors prevents rural people from getting sufficient food to overcome hunger, and thus many are forced to migrate to slums in cities where environmental, social, and economic deterioration affects again the most vulnerable (Villarreal 2003; Scheitingart 2006).

33.3.1.2 Food Aid and Internal Gaps

During 1996/97, 66 low income countries required 8.5 million tons (mt) of grain from food aid, and in 1998 it increased to 11 mt. The USDA estimated that this aid covered 85 per cent of the projected needs, and the minimal nutritional requirements are 17.6 mt. The FAO (2005b) calculated that the food deficit will grow in 2008, and with the same minimal ingestions, per capita insufficiency will increase by 80 per cent to 19.8 mt, while nutritional deficiency will rise by 65 per cent to 28.4 mt. As a result, 35 poor countries will experience food shortage and 47 countries more must reduce food intake. This implies new subsidies for food surpluses and a greater food power for exporting countries (USA, Canada, EU, Australia). This power is based on highly subsidized prices affecting poor countries and their rural people. TNE obtain a

21 Extreme poverty is better characterized as 'perverse poverty' (Oswald 1990). The perversity lies in the fact that a child before being born, is condemned already to becoming a second class citizen due to brain damage, caused by chronic undernourishment and having an anaemic mother. Later, the child enters into the 'Valley of Death' between 1 and 2½ years of age, because of its fragile immune system. If they survive despite chronic hunger, often the growth, intellectual improvement, and motricity of the child is seriously damaged. During the first year of life a child requires 80 per cent of the nutrients for brain development and growth. Malnutrition causes irreversible intellectual and physical damage. Besides the small size, there are problems for logical learning, altered micro-motricity, and slow reactions.

Figure 33.6: International migrants and refugees (1960-2005). **Source:** UN (2006); at: <<http://esa.un.org/migration/>> (15 October 2006).



major part of these subsidies, and Gorelick (2000) estimated that profits obtained by big companies in the USA in form of subsidies and external support amount to US\$ 2.4 billion dollars, without including environmental costs or health damages. Vandana Shiva (2003) calculated that each kilogramme of food consumed in the USA travels 1,500 miles, generating 10 kg of CO₂, thus contributing to global warming.

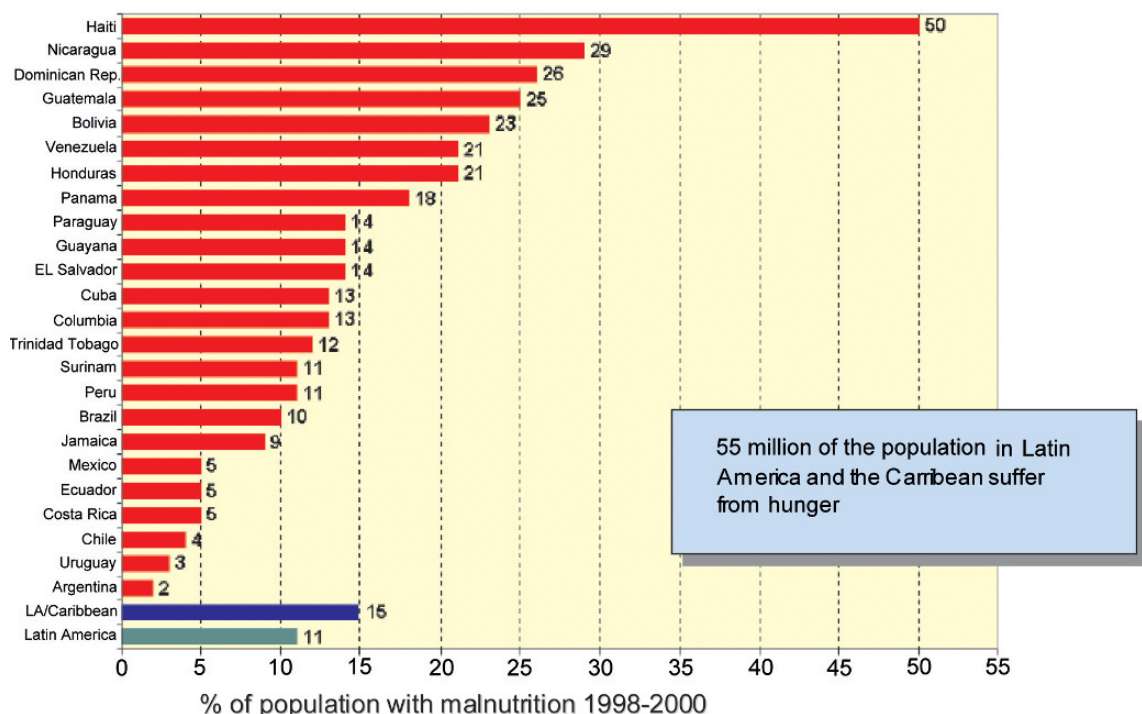
These structural inequalities create worldwide prototypes of food consumption, depending on economic possibilities (see table 33.1). It represents a kind of schizophrenic behaviour of upper classes that are damaging to the global environment (see chap. 59 by Dalby/Brauch/Oswald) and their personal health, with their inadequate food intake (Murray/López 1996).²² Middle classes are becoming aware of their health and consume more locally produced organic food, but they also buy fruit and vegetables from outside. The lower classes struggle not only for their food survival, but also for drinking water and other basic services. These social groups create the lowest environmental impact.

This global food pattern is the result of complex and multicausal processes, where local and global activities get negatively reinforced, and where *Free Trade Agreements* (FTA), indiscriminate openness of

agricultural markets in the South, SAP imposed by IMF (Strahm/Oswald 1990; Stiglitz 2002), failed policies by the World Bank (mega-projects of dams and irrigations districts, and modernization of agriculture in hands of agribusiness) have created hunger. This critical situation worsened due to subsidies for agricultural products by industrialized countries, corrupt national governments, and local elites²³, financial monopolies, exports of prime materials at international prices below production costs, debt payments, bank rescues, patriarchal structure inside families and society, lack of peasant support also for organic agriculture, and low agricultural wages. With deteriorated and marginal land, polluted resources and high prices

22 In 2003 more than 40 billion dollars were spent for food advertisements, what is equivalent to 70 per cent of the GDP of poor nations. For each dollar spent by WHO to heal damages caused by inadequate food intake, more than \$500 were spent to support these diets. Three quarter are oriented to promote junk food, empty calories, and a high level of sugar and low nutrients. In Eastern Europe 60 per cent of investment in foreign food are oriented to sweets, jam, and bubble water, and only 10 per cent of food expenses were used for fruit and vegetables (Dalmenry/Hanna/Lobstein 2003).

Figure 33.7: Undernourished Population in Latin America and in the Caribbean. Percentage of Population with Malnutrition (1998-2000). **Source:** The estimates by CEPAL (2004) are based on FAO data.



a) Simple average of 24 countries; b) Statistical weighted average of 24 countries

for agricultural inputs, most peasants are obliged to leave their community and migrate to megacities, and illegally to industrialized countries in search of a livelihood (figure 33.6). The increasing data on migration

and refugees reflect the deep rural crises worldwide (Negrete/Ruíz 1991), affecting the most sustainable and productive food system in the world, i.e. of the peasants (Barraclough 1995; 1995a) thereby transferring food security to transnational agribusiness. All these factors have forced important rural groups to migrate to megacities or leave their country, confronted with a 'survival dilemma' (Brauch 2008c).

Natural disasters and armed conflicts have further accelerated this flight, and in 2005 there were an estimated 37 million environmentally-induced migrants or displaced people (UN 2005a; see figure 33.5; see chap. 15 by Wisner; chap. 18 by Bogardi/Birkmann/Gebert/Setiadi and chap. 19 by Ahmed). Kofi Annan (2005) referred to one billion environmental refugees due to desertification, water scarcity, and soil depletion.

33.3.2 Latin America

The repercussions of the failed development policies in Latin America are affecting vulnerable groups, especially indigenous and rural children, the elderly, and women. The causes of chronic hunger in the most biodiverse countries of the world are complex and are directly related to the unequal income distribution,

23 An aggravating phenomenon for food insecurity is social inequality. Latin America is the region with the highest social gaps. This is a result of the appropriation of surplus by the military, political and economic elites, using repression, in alliance with transnational capital, The Catholic Church and the mass media were instrumental in creating a clientelist and corporative model of government. CEPAL (2004, 2007) compared the economic growth between 1960 and 1980 of 5.5 per cent/year with that of the neo-liberal phase from 1980 to 2000 of 2 per cent when the IMF applied SAP programmes, consolidating the exclusive model of development (UNDP 1990-2005). Most affected by these developments were peasants and indigenous people during these crises years, which were often pushed from their land and natural resources by TNE that imposed a model of capital intensive production when the country had enough human power. As a model of this unsustainable agribusiness a modern chicken farm must produce yearly about 240,000 birds. After paying credit and inputs to the TNE "this prodigious (and inhuman) production left the farmer only US\$12,000, or five cents/bird" (Gorelick 2000: 5).

and as mentioned above as a result of failed policies. In 2007, still 55 million Latinos have suffered from hunger (figure 33.7), affecting particularly the conflict prone regions, such as Haiti and Central America. Several economic crises have concentrated income during 2000 to 2004 in Argentina, Colombia, Panama, Ecuador, Venezuela, Uruguay and Costa Rica, thus increasing the number of poor people. Countries with higher levels of undernourishment are simultaneously affected by political instability or are recovering from civil wars, such as Haiti, Guatemala, Honduras, Bolivia, Peru, Nicaragua, El Salvador, Guyana, and Mexico from a severe economic crisis.

In terms of food intake 50 per cent of the population in Haiti lack basic food; 20–30 per cent in Nicaragua, the Dominican Republic, Guatemala, Bolivia, Venezuela, Honduras; 10–20 per cent in Panama, El Salvador, Guyana, Cuba, Colombia, Peru, Suriname, Brazil, Paraguay, and Trinidad & Tobago (CEPAL 2004). During the last few years, specific governmental programmes have improved the situation of nutrition in El Salvador, Venezuela, Guatemala, Mexico, Argentina and Nicaragua (CEPAL 2004), and recent efforts of integral food programmes (zero hunger) were implemented in Brazil, Venezuela, and Bolivia (CEPAL 2006).

33.3.3 Mexico

Mexico is one of the most unequal countries, with the richest man in the world (Forbes, 10 August 2007). During the 1980's its model of import substitution and stable development was replaced by a neoliberal globalization process (Klein/Fontan/Tremblay 2003). After joining NAFTA in 1994, the effects in rural areas and for the peasant economy were disastrous. The wealth has been even more concentrated (table 33.2).

Table 33.2: Social Vulnerability and Internal Gaps in Wealth and Income in Mexico. **Source:** INEGI (2005) and Bank of Mexico (2004).

Concept	% of population	% of national wealth	% of financial savings
Very rich	0.23	40.3	78.0
Poor	52.7	18.4	10.0

The effects of free trade, promoted by business monopolies, and the rapid openness by government without compensatory processes permitted an evaluation a decade later. The results are complex: economic

growth was below one per cent; the employment policy was unable to offer to more than one million young people a job and the new employments are precarious, without social protection, and with 'white' trade union leaderships that are favouring enterprises. About half of the labour force is (self-) employed in the informal, often illegal sector, salaries declined by 60 per cent since 1982 and during a decade of NAFTA by 23 per cent. The indigenous and peasant economy is in crisis with half of the 80 per cent of poor people living in perverse poverty. More than one million peasants have left agriculture since the signing of NAFTA, and poverty is affecting half of the population (Wise 2003; Nadal/Wise 2004; Ackerman 2005; Calo/Wise 2005).

Half of Mexican children suffer anaemia and 56 per cent of the indigenous children are severely undernourished²⁴ (INNSZ 2005). The indicator of municipal nutritional risk with 14 variables indicates that 70 per cent of the municipalities in the rural areas with a population of 30 per cent have severe undernourishment as a result of regional and social inequality (figures 33.8 and 33.9). The severe undernourishment hardly declined since 1989 due to inflation and economic crises, while the concentration of wealth owned by a tiny elite has increased dramatically.

Women have developed survival strategies for their children and elders, and often they have to pay the debt for the illegal crossing of their husbands. Also feminization of agriculture rose to 35 per cent (INEGI 2006). Food imports affect both countries: the USA due to pollution of agrochemicals to raise yield productivity, and Mexico due to payment of US\$ 72 billion for food importation and job creation in a foreign country (INEGI 2005). Only a small elite representing 0.23 per cent of the population benefits from this type of modern rape capitalism, owning 40.3 per cent of national wealth and 78 per cent of financial savings (table 33.2).

Nevertheless, these global data do not reflect the existing regional disparities. Table 33.3 explains the

24 The indigenous population is especially marginalized. Only 20 per cent have water connections in their houses, 17.2 per cent have no electricity, 31.3 per cent have no schools; 19.9 per cent of men and 12.3 per cent of women have only a basic education, and only 8.1 per cent live more than 65 years. Mexico has a rich cultural diversity with 85 indigenous languages, where Náhuatl, Maya, Mixteco and Zapoteco represent 51.4 per cent. Nevertheless, languages such as Cucapa, Papago and Kilwa are spoken by less than 500 persons and are on the verge of disappearing (INEGI 2000, 2003).

Figure 33.8: Comparison of national surveys on food, nutritional stage of children below 5 years of age, measuring size and weight in relationship to age. **Source:** National Nutritional Survey (INNSZ 1974, 1979, 1989, 1996).

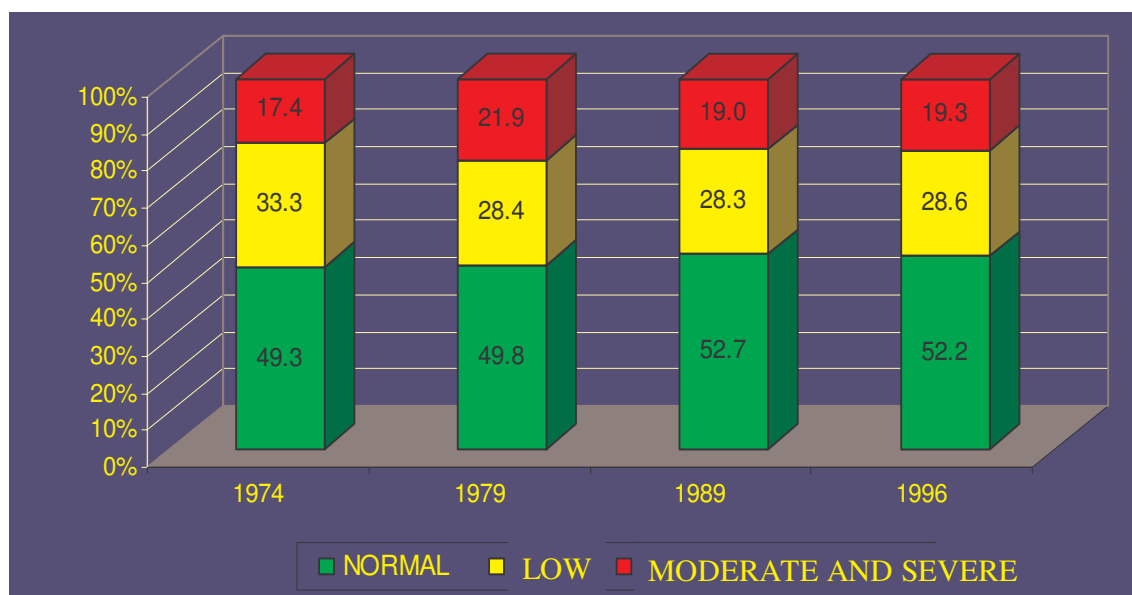


Table 33.3: Nutritional Priority in 2,443 Municipalities in Mexico. **Source:** Chávez/ Ávila/Shamana (2006); based on the National Survey of Nutrition (INNSZ 2005).

Level of marginalization	Municipalities		Level of under-nourishment	Low size/children		Affected municipalities
	Number	%		number	%	
Very low	247	10.1	Very high	50	100	222
Low	417	17.1	High	40	49.9	510
Medium	486	20.0	Medium	30	39.9	365
High	906	37.9	Low	20	29.9	737
Very high	387	15.8	Very Low	10	19.9	369
Total	2,443	100.0	Without priority	0	9.9	240

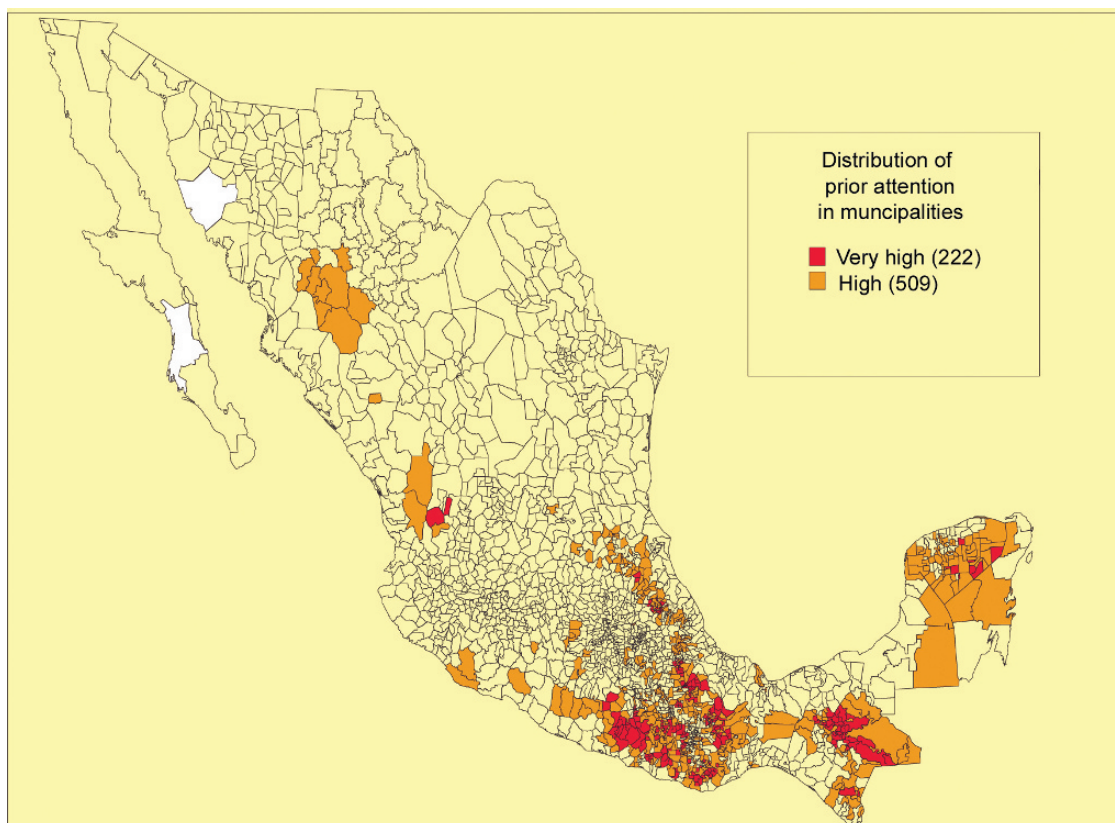
level of marginality of Mexican municipalities where 54 per cent have high levels of poverty. This marginality is directly linked to hunger and low school achievement, mortgaging the future of indigenous and peasant children. There is also a direct relationship among a high level of undernourishment, low size or weight for children under 5 years, with low income in rural marginal municipalities.

Marginality and undernourishment are geographically located in the south of Mexico, where poor peasant and indigenous survive, and also in some indigenous municipalities in the north (figure 33.10). In the last survey on nutrition (2005), the northern states had improved their food access (except the indigenous Tamaulipas) and the traditional poor states in the south, Chiapas, Oaxaca, Guerrero, Veracruz, Yucatán, Hidalgo, Puebla and Campeche, are getting worse

(INNSZ 2005). Regional inequalities are often triggered by internal and interfamilial social and gender discrimination. These processes further aggravate the existing perverse poverty among the most vulnerable within poor families.

The food perspectives for the future are uncertain, and will most likely get worse due to the massive use of corn and oil seeds for biofuel. Furthermore, confronted with climate change, disasters and greater drought, Mexico must take its food security problem seriously, especially if the USA and Canada that presently provide more than 16 million tons of basic grain should become food insecure. Therefore, the term of 'food power', created in 1972 by Henry Kissinger, may generate structural instability, migration, and social riots (figure 33.6).

Figure 33.9: Map of municipalities in Mexico with high and very high needs for nutritional attention. **Source:** Chávez/Ávila/Samanah (2007), based on the National Survey of Nutrition (2005).



Based on global and regional scenarios on temperature rise, precipitation, decline in groundwater, and hydro-meteorological disasters, together with biofuel from cereals, the worldwide supply of basic grain will be reduced drastically. In 2007, still half of the people live in regions with a low level of underground water, including the three large grain producers: China, India, and the USA. Countries such as Mexico, Iran, Israel, Pakistan, Saudi Arabia, Jordan, and Yemen are overexploiting their aquifers and limiting alternatives for the future. Due to projected water scarcity in the next 25 years, cheap grain will disappear from the world market and only very few countries will be able to improve their agricultural production due to climate change. In 2005, the world market price of rice, highly vulnerable to water, increased by 30 per cent reaching US\$ 260/t (USDA 2005). The corn price in Mexico rose between September and December 2006 from 1,500 to 3,500 pesos/ton, as a result of the demand for biofuel for corn in the USA, but also due to speculative practices. Therefore, the future of the world food system is complex and uncertain, and a

new policy of food sovereignty will play an important role in the political stability of many countries.

33.4 Three Models of Food Production

Related to the conceptualization of food security and food sovereignty (see 34.2), three models of food production and commercialization have evolved: a) the *productivity model* based on the green revolution; b) the *life science model* that relies on modern biotechnology and genetics; and c) the *traditional organic or green model*.

33.4.1 The 'Productivity' Model

Throughout the 20th century the productivity model tried to homogenize food crops similar to industry, and during the last two centuries the supply of food and agricultural inputs was in the centre. The green revolution promoted monocultures, intensive use of chemicals, veterinarian drugs, improved seeds, machines, fossil energy, and irrigation systems. Politically, this system relied on high government subsidies (USA,

EU, OCDE, Japan), offering the consumers cheap products. The production was controlled by agronomists, veterinarians, and the chemical industry. Health and environment concerns were marginal. The Ministry of Agriculture managed natural resources such as soils, water, forests, flora, fauna, and fish.

Internationally, this model should have eradicated hunger and given the whole world food security. Until today it remains the basic tool against hunger (FAO 1996a, 2000a, , 2005b, 2005c). High crop yields and 'free markets' were at the centre of the concern and therefore hunger could not be eradicated, owing to the maximization of profit of agribusiness and governmental subsidies in developed countries. Hunger and poverty were considered undesirable side effects for southern countries and for people with a low capacity to modernize. Social, environmental, and cultural factors of diverse food production are only marginally considered. Food is not treated as a cultural good or as a patrimony of thousands of years of human effort. The limits of this model are imposed by negative effects on health (Gallaher 2005) and on the environment (scarcity in water and oil resources).

33.4.2 The 'Life Science' Model

In the 21st century a new model is emerging that establishes links among health, food production, and dietetic habits. It represents the new health safety and food security concerns where individuals with purchasing power are at the centre of attention. Concrete genes were linked to specific illnesses (Nestlé 1999), creating a scientific basis for life or a 'life science' paradigm (Lang/Heaseaman 2004). This model is demand-oriented and takes into account the consumers and their needs. Productivity is still important. It refers to the balanced daily intake of proteins, carbohydrates, vitamins and minerals, all of them necessary for a healthy life.

This *life science model* integrates the food chain in the form of clusters and relates it to production, transformation, and trade of food. It combines genetic research with field experiments, including biology, engineering, nutrition, pharmacology, health, and mobile field labs. The industries are controlled by multinational food chains. They offer clean, safe, and homogenous products that can stay for weeks on the shelves of supermarkets, thanks to *genetically modified genes and organisms* (GMO). Food is not only modified but also enriched artificially with nutrients to prevent illness, such as enzymes, proteins, minerals, etc. At the centre of concerns is the individual health, improved

by technological proceedings in bio-labs, where specialists are in charge of human lives (Nestlé 2002). These processes of 'healthy' food can only be controlled through sophisticated scientific procedures in well-equipped laboratories in universities or research institutes of MNE. The experts are paid by the food MNE, which are simultaneously producers, sellers, and supervisors. When nonconformities arise, due to the complexity of the process, governments rely on these institutions, where those who are interested and involved are both judge and arbiter (Beck 1998; 2000).

Independently of an intensive propaganda in mass media, some undesired effects can not be denied, and NGOs are trying worldwide to carefully educate people on these negative effects. Most evident are genetic modified crops (GMO), which started commercially in 1995. In 2005 more than 80 million hectares were produced in the USA (68 per cent), 22 per cent in Argentina, 6 per cent in Canada, and 3 per cent in China. South Africa, Chile, India, and Brazil are joining this production process. On GMO seeds there exists an oligopoly of four main multinational enterprises. One sole holding (Monsanto) controls 90 per cent of all seeds with two genetic modified properties: a herbicide (roundup) and an insecticide (Bt). Conclusive results are still lacking whether these seeds are innocuous, but there are risks that the recombinant process could produce unknown effects in human and animal health and environment. Unwanted pollution occurred in Canada where wind, water, insects, and other animals have polluted natural crops of canola with GMO ties, destroying the great biodiversity and the natural production of this crop (Schmeiser 2002). Another threat is related to new toxics, new plagues, and insects resistant to GMO and other insecticides. Paediatricians have found a high level of food allergy in babies and therefore baby food is produced without GMO seeds.

In socio-economic terms, eight MNE merged in 2007 into four, able to produce 83 per cent of biotechnological research in the world. This is a threat for the freedom of science and technology in favour of humankind. There is another danger that small farmers may be forced to stop farming due to the expensive productive processes of GMO seeds (40 per cent of cotton production in 2005), what is reinforced through subsidies that are highly concentrated in big enterprises. Finally, these GMO seeds are controlled by patents and the WTO is the arbiter through TRIPS (Heineke 2002; Schmid 2000; Oswald 2000; 2002). The study of FAO (2005a) in different countries has shown that the income of producers in Mexico in-

creased by 12 per cent using cotton GM-seeds from Monsanto, but the benefits were more than three times as high in China where a national research institute produced their own GM-seeds.

The 'life science' paradigm continues with the same model of productivity, but it oriented at the consumers and their health needs. The integration into the food chain is through clusters. This model of production has generated new illnesses (BSE²⁵) and could promote new epidemics such as avian flu, since genetically modified organisms work with virus and bacteria that could have their own dynamism when they are modified and inserted into different plants or animals.

Therefore, the cornucopian vision to resolve by MNE environmental, social, and health problems through science and technology shows its limits, but above all poor people have to pay for the mistakes, and biodiversity can get lost for ever. It is horrific that thousands of peasants have committed suicide when GMO harvests failed and credits could not be paid back (Shiva 2003, 2008, 2009). With regard to food sovereignty there is no doubt. This model of production has enormously increased the costs of production (GM-seeds), and created a monopoly of agrochemicals and the transformation of basic food in the hands of TNEs. These processes are able to concentrate wealth within few hands, increasing poverty not only due to more expensive food, but also due to associated health problems.

33.4.3 'Green Agriculture' Model

The green model generates symbiotic relations and mutual dependence between nature and food production, and therefore uses soft methods of agriculture. They are regionally diverse and utilize polycultivation, association of crops, rotation, mixed agriculture, fixation of nitrogen from air to soil, biopesticides, traditional methods of soil conservation and food, integral management of water, plagues, and environmental services. The combination of traditional and modern

knowledge is consolidating food sovereignty in any region. A biodiverse and regionally adapted use of seeds is conserving diversity of species, and therefore is agro-ecological. This mode of production cannot be globalized. The surplus of production is sold in the local markets and thus reduces environmental pollution and global warming linked to transnational agribusiness and global markets.

Local agricultural production and trade, with access for peasants to water, seeds, credits, as well as technical and financial support could promote this model of agriculture. This green model takes women and peasants as key elements for food issues and agricultural consolidation. It encourages the participation of indigenous, women, and peasants in the national and regional definition of rural policies. It can guarantee women access to land for production and livelihood, and through empowerment they can overcome the violent and patriarchal structures inside families, regions, countries, and the global economic system. It includes the right that peasant organizations have developed their own model of food sovereignty and are now struggling for their right to produce and consume healthy, permanent, and culturally accepted food which is locally produced, sold, cooked, and consumed. Governments have the obligation of protecting their economy from subsidized food imports. They have to establish agricultural prices which are able to cover the production costs and to protect the environment. By linking environmental services with farming, land planning, and participative democracy, this paradigm supports a stable rural development and therefore respects the human right for non-migration. When livelihood in villages and countries is guaranteed with public resources for poverty and hunger alleviation,²⁶ bottom-up efforts can be reinforced. In the medium term, safe ecosystems and stable social relations create synergies and cooperation where safe food and the environment improve public health and cultural diversity at the local level.

This third model reflects the food sovereignty debate. It understands food in a holistic way, where livelihood, sustainability, and culture are the driving elements to maintain the genetic diversity for future generations, offering healthy nutrition and establish-

25 BSE is a result of feeding cows with waste from animals instead of grass. After 15 years research of more than 500 drugs, it was proven that *Bovine Somatropina*, an amino acid able to stimulate growth in cows, is responsible for an increase of 180 per cent of breast cancer in pre-menopausal women and the same number of prostate cancer in men (World Cancer Research Fund 1997). Confronted with avian flu threats, the same MNEs are producing expensive medicaments with dubious results to combat a potential epidemic.

26 Foreign food aid from outside has to be targeted to avoid a distortion of non-market items such as equity, corruption, electoral use, etc., but above all it can destroy the local productive systems. Thus, it must always be an emergency support, limited in time and for specific events.

ing a direct relation among productive, commercialization, and consumption cycles. It represents also an alternative for more than 1.5 billion peasants and small farmers who still depend on their ancient technology. They carefully selected the seeds from the former year that were and are able to guarantee the next harvest. It consolidates the basic right to consume safe, sufficient, and culturally accepted toxic-free food that is locally produced, transformed, and sold.

Thus, in the green agricultural paradigm food is a cultural act of life and more than the intake of proteins and calories. It is until today the only real possibility to overcome existing famine and hunger and offer humankind an opportunity to create justice and well-being all over the world by fulfilling the Universal Declaration of Human Rights in its Art. 25.1. Food sovereignty within the green paradigm represents the rights of people, communities, and countries to define their own ecological, social, economical, and cultural project of the future. Besides maintaining food as a pleasure of life, and not a threat to health and survival, it consolidates the world food culture and consumption for the future.

33.4.4 Food Perspectives: Models of Production, Population Growth, Climate Change, and Environmental Deterioration

'Food security' in the context of the model of agribusiness production or life science has failed to improve the world food situation. It is not a problem of the amount of food and of the knowledge how to produce more, but it is basically a problem of poverty (FAO 2006). Therefore the evidence is that in most poor countries the total number of hungry people has not been reduced, except for China and India and the former countries of USSR. Rather, new threats of food insecurity are rising. This requires the reformulation of the basic assumption of how to reduce hunger and how to achieve the MDGs. The globalization process in its regressive phase has reversed some advances, but in countries with high population growth that are threatened by severe impacts of climate change and disasters, the eradication of hunger is further limited.

Both the 'productivity' and the 'life science' paradigms have also led to higher emissions. Aquifers have collapsed in India and Mexico. Through genetic pollution both models have been destroying the biodiversity of southern countries. Thus, with regard to food

security, but also for the survival of humanity and nature, the present understanding of food security has failed to combat hunger. It has rather increased the threats and risks of more serious famine not only in Africa, but worldwide. Imposing food security instead of food sovereignty, and destroying the traditional green production, could become a boomerang also for northern and developed countries.

From 2000 to 2005 organic food production has grown by 20 to 30 per cent. In Germany organic food products grew annually by 15 per cent. A major increase has also occurred in the US where the *National Organic Programme* (NOP) supports small farmers and promotes the certification of green agriculture where organic products grew from US\$ 1 to 13 billion from 1994 to 2003. In 2005 about 26 million hectares of land were certified and 560,000 farmers were affiliated.²⁷

In most countries, due to the productive model of the political elites, the support for organic agriculture is still limited. Nevertheless, the TNEs have discovered this green option for supermarkets. They are now charging higher prices for naturally grown products. Consumers, confronted with doubts about GMO, are demanding comprehensive labelling, but TNEs have tried to influence national laws to avoid or restrict this. Propaganda on different products is confusing the consumers even more by letting them believe that they determine their own model of life.

Via Campesina has challenged this TNE and has campaigned against gene modified seeds and promoted laws favouring its alternative agricultural model. They insisted that environmental, cultural, and social factors are as important as the economy. Further, economic crises and increasing poverty in rural areas have created among peasants, the indigenous, and women a sense of security that they can manage their own food supply with regional resources and local seeds.

At the international level, FAO has argued that food needs could be linked with a protection of the natural heritage by:

promoting market-based incentives that compensate farmers for their stewardship efforts, thus maintaining their economic viability; replacing polluting agricultural practices with approaches that can reverse the dramatic trends in biodiversity loss; thriving on community par-

27 See: Research and Market, 2005: *Current Organic Agriculture Market Worldwide: A Year in View, 2005*, at: <http://www.researchandmarkets.com/reportinfo.asp?report_id=302678>.

ticipation in land conservation. Meeting food needs while protecting the natural heritage is a challenge shared by all countries of the planet. Organic agriculture can meet this challenge head-on by: promoting market-based incentives that compensate farmers for their stewardship efforts, thus maintaining their economic viability; replacing polluting agricultural practices with approaches that can reverse the dramatic trends in biodiversity loss; thriving on community participation in land conservation (El-Hage Scialabba 2003: 15).

Simultaneously, FAO has also promoted GMO seeds in diverse poor countries, and continues to support the 'green revolution' model. Many existing contradictions are inherent in the three productive models, and reflect the struggle for hegemony. They can be synthesized as follow: the 'productive' model is unsustainable due to the scarcity and pollution of natural resources (water, soil, seeds, and loss of biodiversity). Ministers of agriculture have shifted slowly to the 'life science' model that is supported by ministers of trade who promote free trade and bilateral agreements. Health ministers have supported nutria-genomic research, biosecurity protocols and vaccines that are often produced from genetically modified plants. Productivity concerns dominate over inherent risks and threats for biodiversity and humankind, due to the uncertainty and insecurity of genetic manipulation and nanotechnology. Both could affect the essence of human beings and the future of life (Habermas 2001).

These two models induce a scenario of a 'food war'²⁸ (Lang/Heasman 2004), when multiple factors of aggravation of conflicts intervene: the quality and innocuous food demand, international commerce, governmental regulations, nutritional requirements, control of TNEs, anti-monopoly laws in transportation, financial monopsony, security in food chains, supply of safe food products, coexistence of over- and undernourished people, environmental damages, science and technology (S&T). Arbitration among these many contradictions are often handled by experts associated with TNEs.

But despite the unimaginable advances in S&T; hunger is still increasing and far from being eradicated. Why is this so? There is a second related factor. The model of transnational agribusiness is oriented at

the individual, considering his or her consumption and PPP. As with the modern health system, the individuals become victims and objects of persuasion for food recipes to strengthen their health that are often counterproductive. These two realities have opened for social movements, NGOs, and critical scientists a space for struggle. Confronted with the nutritional and health deterioration, they have denounced these TNEs and often corrupt government allies which try through early alerts and catastrophic predictions about epidemics²⁹ to push the errors and possible consequences of this erroneous productive system to various 'natural' causes.

The global deterioration of life quality and limited progress in hunger alleviation in most developing countries, as well as high levels of obesity and cancer³⁰ in industrialized countries, offer organic agriculture an option for the future. Social movements understood these opportunities and are promoting food sovereignty with native seeds and organic input as a real alternative against hunger and malnutrition.

Table 33.4 summarizes, contrasts, and compares the many advantages and disadvantages of the 'life science' model with those of the 'sustainable organic agricultural' model.

In synthesis, the paradigm of 'science of life' relies on governmental financial resources; however, the consolidation of this model depends on the acceptance by consumers who are induced through advertisements to buy these products. Therefore, the competition among some TNEs could leak information about damages in health through this model of food intake, and strict governmental control can avoid a manipulation of consumers. But often the same pharmaceutical holdings are also selling medicaments, control hospitals through the stock market, and often repel demands to pay compensation for damages caused by unhealthy food. Their treatment (chemo-

28 The authors understand under food war the aggravation of the conflict where a vision between offer and demand of food, new scientific knowledge, unknown technologies, but also global and national policies linked to demographic changes and epidemiological transition could convert food in a generator of illnesses, as a result of private decision-making processes.

29 This has happened with the so-called 'mad cow' disease or Bovine Spongiform Encephalopathy (BSE), an encephalopathy as a variant of the Creutzfeldt-Jakob illness, see chap. 34 by Salih), with the avian flu (SARS), and some chronic degenerative sicknesses plus chronic degenerative processes (strokes to the myocardium, brain stroke, arthritis, osteoporosis, cancer, diabetes, and obesity; US National Institute of Health 1998; Tansley/Worsley 1995; Barker 1992; WHO/FAO 2003; WHO 2003, 2003a; Dalmenry/Hanna/Lobstein 2003; World Cancer Research Fund 1997).

30 45 per cent of deaths from cancer worldwide happens in the industrial countries with less than 20 per cent of the total world population (Times, 15 January 2008: 5).

Table 33.4: Advantages and disadvantages in the food production sectors. **Source:** Compiled by the author.

Concepts	Food Security: 'Sciences of Life'	Food Sovereignty: 'Sustainable Production'
Food	Scientific: vitamins, proteins, sugar, carbohydrates, synthetic additives of sugar, flavours and colours	Integral, nutritional, natural, empirical and culturally accepted, healthy, regionally produced, diverse and ritual
Food intake	Fast, frozen, homogeneous, pre-prepared, rich in fat and sugar with artificial additives, vitamins and minerals	Elaborated at home, fresh and varied depending on the season of the year and the products available regionally
Hunger	Result of low productivity	Result of poverty, lack of land reform, credits, local markets and governmental support
Food Security	Production and food import (including 'virtual water')	Local and biodiverse production, reinforced by recollection, hunting and environmental services
Land	Big extension of monocultivation	Small plots with orchards, policultivation, mixed agriculture, small livestock
Technology	Highly specialized, heavy machinery, drop system irrigation and by aspersion, agrochemicals to fight against plagues and illnesses, veterinarian medicines, hormones, drugs, capital intensive	Agro-ecological, rotation and association of diverse crops, intensive in human-power, natural combat of plagues and illnesses, natural growing of livestock, horizontal integration of waste for production and recycling
Seeds	GMO protected by TRIPs, animal genetically homogenized	Cultural patrimony of seeds, yearly selected and reproduced during the next cycle, diverse types of livestock
Gender	Patriarchal, male, feminization of paid rural workers	Extensive family integrating men and women, leadership in communities, cooperation, solidarity and mutual help
Market	International with fitosanitary controls, TRIPs, unequal terms of trade, subsidies, dumping	Local and regional with social control and equal terms of trade, social sanction and local saving and redistribution of accumulated capital
Commercialization	TNE are integrated with supermarkets chains, monopolies and oligopolies of nutria-genomics	From farmers to consumers on a small scale
Capital	Financial	Natural, social and cultural
Credit	International and national banks	Public resources, family savings, micro-credits and popular savings and cooperation, economy of solidarity
Transformation	Chains of TNEs inducing artificial proteins, vitamins, minerals and enzymes	In family enterprises with traditional methods
Productive Organization	Contract-agriculture based on paid temporary labour force with temporary unemployment, informal economy	Family unity, diverse, multiple activity during the whole year combined with livestock, forestry, recollection, hunting and environmental services
Environment	GMO induce biodiversity loss, agro-chemical, high pollution, abuse of water, depletion of aquifers, exploitation of natural resources	Sustainable production including integral environmental management, recycling of waste, care about natural resources
Policy	Demand-oriented for international consumer, socialization of pollution	Oriented to cover local supply and demand, minimal environmental impact
Economic Philosophy	Value of change, with maximization of profits and socialization of losses	Value of use with maximization of social relations and collective livelihood

Table 33.4: Advantages and disadvantages in the food production sectors. **Source:** Compiled by the author.

Prices	Artificial international prices due to subsidies, generating <i>dumping</i> in the world market	Local, interchange of products and services fixed by the economy of solidarity and support for the vulnerable
Productive Integration	Monopolies, oligopolies and monopsonies	Local chains of integrated micro-business
Trade organization	Monopsonies integrated in FTA, WTO controls through GATS, TRIPS and international arbitration	Family unity and local market with incipient household transformation, local non-violent conflict resolution
Food disposal	World supply-demand, depending on available capital and prices, speculation with crops, increase of hunger	Proper system of production for local food, family and regional storage
Economy	Free-market	Family and solidarity
Subsidies	Paid to agribusiness in industrialized countries, generating <i>dumping</i> in poor countries	Poverty alleviation programmes, support for green agriculture, care for the environment, job creation at the local level, biodiversity support
Science and Technology	GMO, nutria-genetic, nanotechnology, chemical and genetic conservation, integration of food with pharmaceutical chains, highly specialized	Combination of traditional technology improved with modern natural methods, seed selection, traditional harvests and conservation methods, mixed agriculture
Democracy	Formal electoral, with elements of authoritarianism, vertical and excluding decision-making favouring elites	Democratic and participative decision-making processes favouring majorities and protecting the vulnerable
Future	Inefficient farmers disappear with debts, fusion of enterprises creating <i>holdings</i> , conflicts and violence, authoritarian and vertical model of decision-making, survival dilemma and migration	Political stability, guards of biodiversity and food sovereignty, participative model with direct democracy, care for the vulnerable and good governance

therapy and radiotherapy) creates further collateral effects compensated with other expensive drugs. Their goal is only the maximization of profits by taking away the surplus created by society.³¹ These contradictions in the health, education, and food system were exposed by Ivan Illich (1976).

On the other side, there is the small green production for poor people, peasants, women and minorities. Organizing production and transformation, food diversity, and local markets increase local food security. More governmental support is still lacking, and also scientific and technological efforts to combine traditional and modern knowledge has to be developed, e.g. in New Zealand. There are enough universities that could support green models of production able to facilitate the creation of local jobs and offer

young people an opportunity for employment and a decent life. However, the political and economic elites that benefit from the other two productive models are preventing an enhanced 'food security' combined with 'food sovereignty' and a dignified livelihood (Nord/Andrews/Carlson 2004).

33.5 Conclusions: Food Security with Self-sufficiency, Food Sovereignty, and Cultural Integration

On this dual political and conceptual background, this chapter addressed the following research question: food represents not only a security issue of intake of nutrients, but it forms part of a holistic understanding of life and a constituting element of any civilization. Thus, food includes networks of connectedness, belonging, and relationship of trust, reciprocity, cooperation, solidarity, care, and exchange. It creates social benefits and risk reduction, but also innovative activities through the wider access to infor-

31 The case of old people is often dramatic. They lose their savings for medical treatment and hospitalization. Once without resources they are abandoned and in the best case they go back to the traditional medical sector. However, governmental controls can further limit this alternative.

mation and learning. It is a process of anchoring of personal and group identities (see chap, 88 by Oswald on HUGE; Oswald 2008 a), where social relations reaffirm the integration of a person inside a community establishing rights and obligations, such as access to land, credit, technology, training, market, life quality, and rituals.

Besides guaranteeing physical and cultural survival, 'food sovereignty' creates also new opportunities for people-centred poverty alleviation and new understanding of rurality as a complex social network. It represents a critical response to the accepted development and modernization paradigms, and opens ways for diverse rural life processes where agricultural activities and environmental services coexist with services and industries.

Thus, food is part of a holistic model of life and a constituting element of any civilization. Networks of interrelationships, and processes of identity and social belonging, create relationships of trust, reciprocity, cooperation and exchange. They are at the basis for 'food security' which could evolve into an integral 'food sovereignty'. Confronted with new threats of global environmental change, 'food sovereignty' represents social benefits and contributes to risk reduction through innovative creativity where instant world communication helps to establish new learning processes. During this process of achieving 'food sovereignty', personal and group identity is anchored and social relations may overcome stereotypes by reaffirming the integration of a person or a group within a community. Such a wider understanding of rurality that includes non-agricultural activities facilitates critical responses to historical injustice, abuse and environmental changes, and opens ways for diverse rural-urban life processes, where agricultural activities and environmental services coexist with other services and non-contaminating industries and transportation systems.

The future is getting complex and the world is confronted with unexpected climatic events, generating massive migrations, chaotic urbanization, pollution of natural resources, and loss of biodiversity. The ecological footprint and the size of the 'food footprint' is converted from food consumption by this equation:

$$\frac{\text{FoodQuantity(mt)}}{\text{CropYield(mt/ha)}}$$

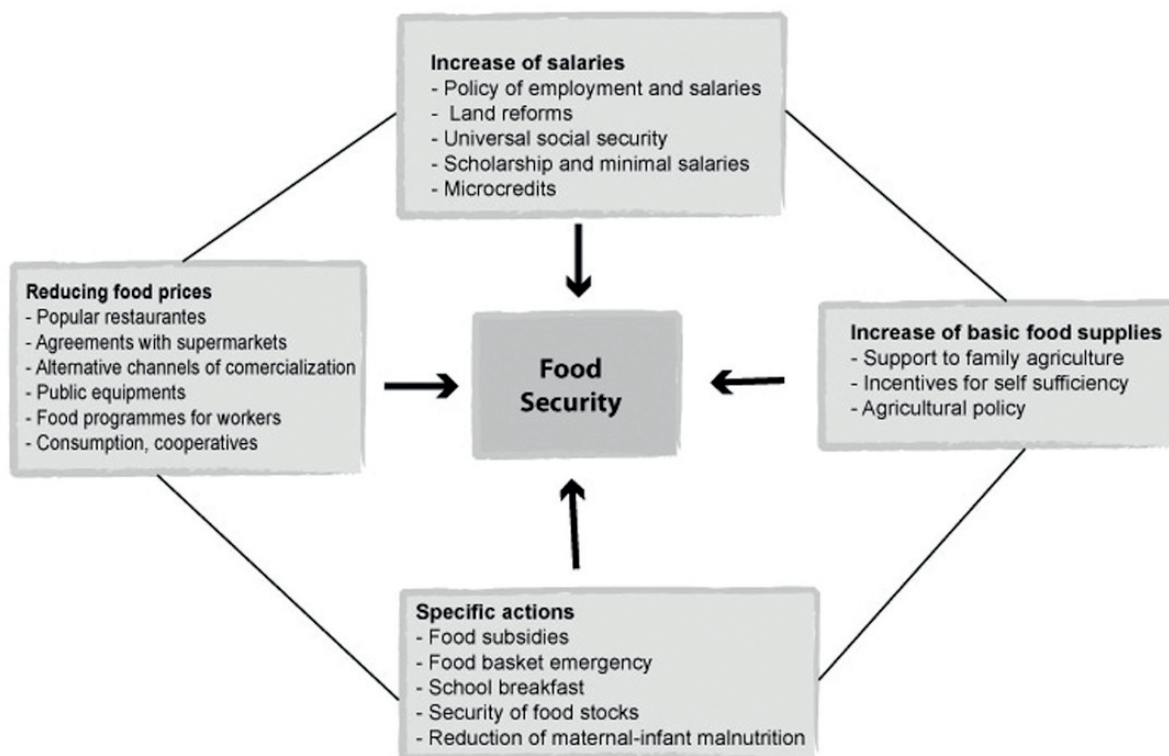
where crop yields are taken from the FAO database (Friends of the Earth 1997). Population growth creates new challenges when billions of young people ask

for dignified employment. On the contrary, the lack of jobs could create complex emergencies. In this multifaceted panorama new agreements among governments at all levels with business and organized civil society should be negotiated where public well-being has to prevail over private interests. This implies to transform through creative activities related to food production, transformation and consumption, the existing monopolies into local chains of micro-enterprises that are able to offer cheap, healthy and, culturally accepted food in a framework of an economy of solidarity.

But market forces are pushing in a contrary direction. The future food sector will experience a competition between the 'life science' and 'sustainable small production' model. New food-related illnesses (e.g. BSE) have created a greater awareness among people, what they are eating. In Europe, some 20 per cent of the population is familiar with the associated risks of agribusiness by TNEs and 80 per cent reject GMO food. Increasing degenerative illnesses and obesity have forced the TNEs to focus on new products, and the culture of 'light' food has been their response. However, only a comprehensive approach with preventive health, vitamins, proteins, iodine, flour, and other microelements for the undernourished will be able to alleviate hunger and create livelihood for all with a distribution of profits. The future will show if the public relations activities by TNEs will be able to counter a wider public awareness on the risks associated with the life science approach or whether small green food production will slowly replace big food monopolies. However, there are some global decision-making processes that may contribute to and speed up a strategic shift aiming at 'food sovereignty' (CLOC 2004):

1. *Global Policy*: The Special Rapporteur of the UN for Food Rights, Jean Ziegler, said in November 2005 that there "are no secrets how to eradicate hunger. There are no new technologies necessary. Simple political will is required to change the existing policies which make the rich richer and the poor poorer".
2. *Poverty Alleviation*: Jeffrey Sachs (2004 or 2005) linked the multidimensional roots of hunger to poverty. In the Kenyan village of Sauri he tried 'the big five' with US\$ 70 per person and year, including retroviral against HIV/AIDS.³²
3. *Support for women in agriculture*: Women are not only more affected by modernization, they represent also an alternative for self-sufficiency and to the food supplies by TNEs. In poor coun-

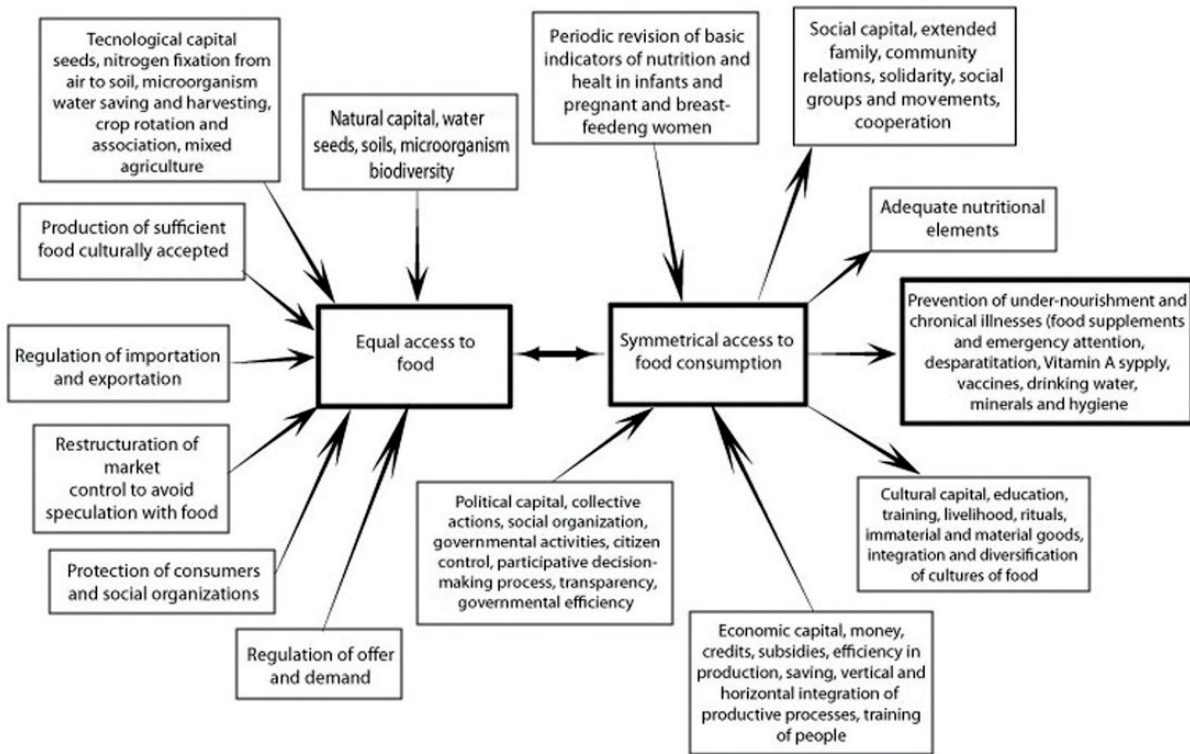
Figure 33.10: Programme 'Fome zero' (without hunger) in Brazil. **Source:** Instituto Cidadania (2001), São Paulo, Brazil.



tries women produce most of the local food (FAO 2002; 2005b).

4. *Regional Food Sovereignty:* Via Campesina, CLOC (2004), MST (2005), and the Peasant University of the South (UNICAM) are promoting an integral model of food with democratic land-reform, credits and local savings, green agriculture, chains of integrated local micro-businesses, an economy of solidarity, and traditional medicine.
 5. *Food policy to alleviate hunger:* Brazil proposed a model of food support for popular sectors linking the small production system with an offer of healthy food, increase of minimal salary of workers, and an urban offer of cheap food for the poor (figure 33.10).
 6. A well developed system of periodic measurement of basic indicators of undernourishment is needed, above all for children below five years, including anthropometric measurements of weight and size related to their age. UNICEF, WHO, and INNSZ have proposed six steps with minimal costs to avoid premature deaths, slow development, and brain damage in infants: Vitamin A complements; a complete scheme of vaccines; nutritional supplements to overcome severe undernourishment; periodic elimination of parasites, complements of iron, iodine, and other minerals (such as flour against caries) depending on the water composition, floors covered with cement, latrines, clean water access, and nutritional education and care (Álvarez/Oswald 1993). Furthermore, the metabolic syndrome of undernourished children with small size should be addressed. They of
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- 32 1. *Improvement of local food* through a mixed agriculture of fruit trees, plants able to fix nitrogen from the air to the soil, rotation of crops, organic composting, and bio-pesticides; 2. *Community Health Centres* able to treat the most common gastro-intestinal illnesses, malaria, dengue, reproductive health and campaign for vaccination, undesired pregnancy, and sexually transmitted illnesses; 3. *Basic Education:* training in simple technologies for production, and conservation of safe food at the community level, especially for women; 4. *Renewable energies:* solar systems, biogas, oil and other energies able to give children light for studying, energy for water pumps, machines for grain mills, and refrigeration of medicaments and food; 5. *Clean water,* building of latrines, water harvesting, protection of wells, and other simple techniques to conserve safe water and to avoid water-borne illnesses.

Figure 33.11: Food sovereignty: equal access to food and symmetrical access to food consumption. **Source:** Chávez/Ávila/Shamah (2007); modified by Oswald (2007a).



ten rely on a diet that is rich in carbohydrates and fat, and are subsequently frequent victims of obesity, later on diabetes and coronary illnesses.

7. Education, training, and the rescue of traditional elements of food culture are basic requirements to improve the nutritional situation in poor countries. Education and training, especially of women, reduces not only the illnesses in families and premature death, but it opens the cooperation in reproductive health and creates stable livelihood conditions in villages, and colonies, and slums of the urban poor.

Figure 33.11 synthesizes the conjugation of natural, political, social, economic, technological, and cultural capitals (Chávez/Ávila/Shamah 2007; Oswald 2001, 2007a) enabling women, indigenous, and peasants to handle food and nutrition for their families in an integral way, improving their quality of life, and reducing premature death and preventing diseases. Such a new comprehensive security process that combines 'food security' with 'food sovereignty', and also with 'water' and 'health security', may be better able to resolve the food problems of the other half of the world population for whom food security has been an issue of daily survival of their families that avoids the overconsump-

tion and loss of life quality with which the food security problems of the OECD world and the elites in the global South are struggling (see chap. 34 by Salih).

The discussion has shown that the evolution of the concept of 'food security' within multilateral organizations has failed due to a top-down approach that is neither questioning the demands of the people, nor the interests behind the driving forces of world business. The continuous adaptation of the 'food security' concept and model by FAO reflects its basically technocratic approach that is far away from the real problems of hunger and of agribusiness. The FAO has tried to resolve a complex health problem with aspirin (Preker/Feachem/De Ferranti 2000).

Confronted with serious environmental deteriorations and adverse economic conditions resulting from the neoliberal approach, the directly affected people started first with a critical analysis of agricultural and food aid policies from industrialized countries. Greater environmental destruction, new threats due to climate change, and deeper ecological footprints forced organization of civil society to create the new paradigm of 'food sovereignty' as a holistic life concept.

This understanding could overcome the limited productive approach, but also the behaviour of converting poor people into victims of their circumstances, when the real causes of their situation of marginalization are precisely the forces of the free market, the political domination and the exploitation of humans and nature for profit. The future is complex and the situation will probably get worse. Then biodiverse and culturally determined approaches to food sovereignty could foster solidarity among human beings and protect their remaining common natural and cultural capital.